

Integrating the *Mararang* Postpartum Tradition into Biomedical Care: An Interdisciplinary Study of Health Beliefs, Communication, and Maternal–Infant Outcomes

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ARTICLE INFO	ABSTRACT
<p>Manuscript Received: 18 Jun, 2025 Revised: 25 Oct, 2025 Accepted: 31 Oct, 2025 Date of Publication: 03 Dec, 2025 Volume: 8 Issue: 12 DOI: 10.56338/mppki.v8i12.8407</p>	<p>Introduction: Traditional postpartum care practices remain an integral aspect of maternal and child health in indigenous communities. <i>Mararang tradition</i> is a postpartum care tradition that continues to be widely practiced among Batak postpartum mothers, as it is believed to accelerate maternal and infant recovery through heat therapy. . This study aims to examine the historical evolution of the <i>mararang tradition</i>, its cultural significance, and its implications for maternal and infant health.</p> <p>Methods: A qualitative phenomenological approach was employed to explore the experiences of postpartum mothers practicing the <i>mararang tradition</i>. Data were collected through in-depth interviews with postpartum mothers, their husbands, traditional leaders, and healthcare providers in North Sumatra Province. Source triangulation, methodological triangulation, and data analysis were applied in this research. Thematic and content analyses were conducted to explore key dimensions of health beliefs, communication, and the transformation of the <i>mararang tradition</i> over time.</p> <p>Results: Participants ascribed thermal balance, comfort, and social support to <i>mararang</i>, while acknowledging potential risks from heat and smoke. Communication between families and midwives produced adaptive forms (e.g., moderated heat, improved ventilation, time-limited sessions), balancing cultural continuity with safety. We synthesise a conceptual model showing how explanatory beliefs, family authority, and professional guidance co-produce negotiated care.</p> <p>Conclusion: <i>Mararang</i> persists through culturally safe adaptations facilitated by respectful dialogue; practical safeguards (distance from heat source, ventilation, exclusion post-caesarean) can be embedded within routine postpartum care. Programmes should integrate culturally anchored counselling and risk-mitigation protocols, enabling context-sensitive maternal and newborn care.</p>
<p>KEYWORDS</p> <p>Ethnic Batak; <i>Mararang</i>; Maternal Health; Postpartum; Traditional Medicine</p>	
<p>Publisher: Fakultas Kesehatan Masyarakat Universitas Muhammadiyah Palu</p>	

INTRODUCTION

Women's health is essential not only for their own well-being but also for the welfare of their families and communities (1). Throughout a woman's life cycle, key processes such as fertility, pregnancy, childbirth, and postpartum recovery require comprehensive health management that respects both physiological and socio-cultural dimensions (2). These services must prioritize women's physical and mental health during the prenatal, intrapartum, and postpartum periods through accessible, respectful, and culturally sensitive care(3) (4).

According to the Ministry of Health of the Republic of Indonesia maternal mortality remains a pressing issue, with 7,381 maternal deaths reported in 2021, primarily due to hemorrhage and hypertension. This marks an increase from 4,627 maternal deaths in 2020 (5). Regional disparities are significant; West Java reported the highest number of cases, In North Sumatra, provincial records show 131 maternal deaths in 2022, rising to 202 in 2023 the previously stated declining to 124 by September 2024 (6). Conversely, the Infant Mortality Rate (IMR) in North Sumatra has steadily declined from 44 deaths per 1,000 live births in 2000 to 18.28 in 2020, reflecting some progress in child health outcomes (7). However, maternal health indicators highlight persistent systemic challenges that require multifaceted interventions (8).

A crucial factor influencing maternal health outcomes is the interplay between cultural beliefs and biomedical practices (9). In Indonesia, traditional postpartum rituals such as *mararang* coexist with biomedical postnatal programmes as part of a broader pattern of medical pluralism, the concurrent use and negotiation of multiple healing systems in everyday care. Comparative scholarship shows that postpartum “confinement/warming” practices persist across settings (for example, *zuo yuezi* in Chinese contexts and *la cuarentena* in Latin America), underpinned by logics of thermal balance, recovery, and social support, even as families increasingly interface with professional services. These practices also raise context-specific safety questions—particularly heat and household-air-pollution exposures—reinforcing the need to integrate cultural meaning with pragmatic safeguards within routine care (10). Although national health strategies advocate biomedical interventions to reduce maternal mortality, many women continue to practice traditional healing rituals during the postpartum period, reflecting deeply rooted cultural frameworks (11).

Beyond descriptive accounts, emerging work documents hybrid maternal and newborn care, where families combine or alternate traditional rituals and biomedical options; however, much of this literature catalogues practices or outcomes without explaining how families and providers negotiate safer adaptations in everyday services. To address this gap, our study analyses how explanatory beliefs and family–midwife communication shape the adaptation of *mararang* within routine postpartum care and synthesises a conceptual model of integration that is portable to other pluralistic settings (12).

Culture, defined as the transmission of shared values, beliefs, and practices across generations (13), profoundly shapes individuals' perceptions of health and illness. Within this context, postpartum care is not merely a biomedical process but a culturally constructed event infused with traditional practices intended to safeguard maternal and infant health. For instance, the belief in bodily "coldness" following childbirth and the necessity of restoring balance through "warming" practices is widespread across various Indonesian ethnic groups (14).

The *mararang tradition* among the Batak ethnic community in North Sumatra epitomizes this cultural practice. *Mararang tradition* involves postpartum mothers undergoing thermal treatments, where they sit or lie near smoldering wood or charcoal to promote postpartum healing, strengthen bones, and expedite the expulsion of lochia (15). Similar practices, such as *Bedaring* among the Gayo of Aceh and *Bafufu* on Halmahera Island, illustrate the rich diversity yet thematic similarity of postpartum rituals across Indonesia (16) (17); (18).

Although these practices are believed to enhance postpartum recovery, they may also pose health risks. Unregulated exposure to heat can damage skin tissue, while indoor air pollution from burning wood increases the risk of respiratory infections for both mothers and infants (19). Poor ventilation exacerbates these risks, highlighting the tension between cultural tradition and biomedical safety standards.

Importantly, traditional postpartum practices like *mararang tradition* embody medical pluralism, wherein Indigenous medical knowledge operates alongside, but sometimes in conflict with, modern biomedicine (20). Despite their deep historical roots, scientific evaluations of these practices remain limited. Few studies have systematically

assessed their physiological impacts or their compatibility with evidence-based postpartum care (21). This research examines *mararang tradition* from medical and historical anthropological perspectives, exploring its impact on postpartum health and its evolution in contemporary maternal care.

METHOD

Study Design and data source

This study employed a qualitative case study design to conduct an in-depth, holistic investigation of the *mararang tradition* as a complex socio-cultural and health phenomenon within the Batak ethnic group. This design was selected for its suitability in examining a contemporary phenomenon (the "case") intensively within its real-world context, allowing for the integration of multiple perspectives to address the study's diverse objectives. The research was conducted in the Samosir Regency of North Sumatra Province, Indonesia. These areas were selected because they are among the core regions where *mararang tradition* is actively practiced by the Batak community. Data collection took place between January and August 2023

Participants

A total of 10 key informants participated in this study, which was conducted in Samosir Regency, North Sumatra Province. This area was specifically chosen because it is one of the core regions where the Batak community still actively practices the *mararang tradition*. Sampling was conducted using a purposive sampling approach facilitated by community leaders and local health workers, then expanded using snowball sampling to identify additional informants with in-depth knowledge of the tradition. The informants were recruited from four different stakeholder groups: (1) practitioners (postpartum mothers), (2) family members (husbands), (3) tradition goalkeepers (traditional and community leaders), and (4) formal healthcare providers (midwives).

The characteristics of the informants in detail are as follows:

A total of 5 postpartum mothers were selected as the main informants to provide a phenomenological perspective on their experiences. Their ages range from 25 to 37 years old, with occupations as farmers (four people) and homemakers (one person). According to the inclusion criteria, all participants were Batak women or married to Batak men, had practiced the *mararang tradition* during postpartum recovery, had at least one child born in the last five years, and had lived in the study area for at least one year.

Two 28-year-old husbands, one a driver and the other a 40-year-old farmer, were interviewed to provide insights into the role of family in decision-making, spousal support, and household dynamics that facilitate the implementation of *mararang*.

Two traditional and community leaders were selected to provide historical and sociocultural context for the tradition. This informant was selected because of their in-depth knowledge of the ritual and philosophical aspects of *mararang*.

One 56-year-old senior midwife was interviewed to represent the biomedical perspective. This information not only provides professional insights into communication between healthcare workers and families regarding *mararang*, but also includes personal experience of undergoing the *mararang tradition* after the birth of her first child.

Inclusion criteria were:

Women of Batak ethnicity or those married to Batak men;

Having practiced *mararang tradition* during postpartum recovery;

Having at least one child born within the last five years;

Residing in the study area for a minimum of one year to ensure familiarity with local traditions.

Participants were identified through purposive sampling facilitated by local community leaders and healthcare workers. Snowball sampling was subsequently used to reach additional key informants with in-depth knowledge of the tradition

Data Collection

Data were collected through in-depth semi-structured interviews, participant observations, and document reviews. Interviews were conducted in Indonesian or Batak dialects depending on participant preference. Each

interview lasted approximately 60–90 minutes and was conducted either at participants' homes or community centers in a private setting. Core Interview Questions. The interviews explored several core questions, including:

- How do you describe the *mararang tradition*?
 - What materials and procedures are involved?
 - What are the perceived benefits and risks of this practice?
 - How has the practice changed over time?
 - What influences decisions to adhere to or modify traditional practices today?
- The full interview guide is attached in the supplementary material.

Interviews were conducted across multiple sessions to accommodate participants' schedules. Several participants were interviewed three to four times to explore emerging themes and clarify inconsistencies. Data triangulation was achieved by incorporating multiple perspectives: postpartum women, husbands, traditional leaders, and healthcare providers.

Data Analysis

The entire interview recording was transcribed word for word. Data analysis followed an iterative and manually conducted thematic analysis approach to ensure the researcher could fully immerse themselves in the narrative data. This process began with open coding to identify recurring ideas, continued with axial coding to group these codes into broader conceptual categories (e.g., codes related to "lighter body" and "pain gone" were grouped as "Perceived Health Benefits"), and concluded with selective coding to synthesize and define the four main themes presented. Content analysis is also used to deepen the interpretation of patterns and variations within narratives. The accuracy and credibility of these findings are fundamentally ensured thru the systematic application of a triangulation strategy. This includes source triangulation, where findings are validated by comparing perspectives from four different informant groups (mothers, husbands, traditional leaders, and midwives); methodological triangulation, where in-depth interview data is cross-checked with data from participant observation and document review; and researcher triangulation. This researcher triangulation was achieved thru regular team meetings, which served to collaboratively review the coding process, ensure inter-coder reliability, and reach consensus on theme interpretation, thus mitigating researcher bias and strengthening the validity of the analysis.

Ethical Considerations

The study was approved by the Ethics Committee of the Faculty of Public Health, University of North Sumatra (Approval No. 014/KEPK/FKM-UINSU/2023). All participants provided written informed consent after being briefed about the study objectives, procedures, and their rights to confidentiality and voluntary withdrawal at any point.

RESULTS

Table 1. Characteristics of *Mararang Tradition* Participants

Initial	Age	Occupations	Sex	Nmber of women giving birth
AD (postpartum mother)	25	Housewife	Female	Multipara
WN (postpartum mother)	37	Farmer	Female	Multipara
KH (postpartum mother)	28	Farmer	Female	Multipara
LN (postpartum mother)	31	Farmer	Female	Multipara
NH (postpartum mother)	29	Farmer	Female	Multipara
HL (husband)	28	Driver	Male	-
SH (husband)	40	Farmer	Male	-
MH (community leader)	52	Village head	Male	-
ZL (Traditional leader)	50	Farmer	Female	
MS (Midwife)	56	Midwife	Female	Multipara

The informants in this study consisted of postpartum mothers who practiced the *mararang tradition* (five postpartum mothers), their husbands (two individuals), a community leader, a traditional leader, and a midwife. The informants held various occupations, including farmer (six individuals), housewife, driver, village head, and midwives.

Matrix 1. Evolution of *Mararang* Tradition as a Postpartum

Informant	Statement
ZL, Traditional Leader, 50 years old	"In the past, all postpartum rituals were fully performed — not just the <i>mararang</i> ceremony. There were even more practices involved. Specific herbal preparations and selected types of wood were used. All medicinal concoctions had to be sourced and prepared carefully. Some remedies were meant to be ingested by the mother, while others were applied externally to both the mother and the newborn."
MH, Community Leader, 52 years old	"In the past, the <i>mararang</i> ritual involved prayers and incantations. At that time, people still believed deeply in the forces of nature and feared disturbances from spirits, ghosts, or other supernatural entities. Nowadays, however, <i>mararang</i> is maintained primarily as a cultural tradition. The prayers have been adapted to align with each individual's religious teachings."
KH, Postpartum Mother, 28 years old	"I have practised <i>mararang</i> since the birth of my first child. My mother also performed this ritual in the past, and I feel a strong obligation to continue it. In the future, my own children must also uphold this tradition."

Matrix 2. Cultural Communication for *Mararang* Tradition

Informant	Statement
KH, Postpartum Mother, 28 years old	"I have practised <i>mararang</i> since the birth of my first child. My mother also performed this ritual in the past, and I feel a strong obligation to continue it. In the future, my own children must also uphold this tradition."
ZL, Traditional Leader, 50 years old	"For Batak women, performing the <i>mararang</i> ritual after childbirth is a longstanding tradition — it is part of who we are. Even before giving birth, a customary ceremony is already prepared, and the husband understands his role in making the necessary arrangements. It does not take long to organise, as it has been passed down from our ancestors. Good practices like this must continue to be preserved."
MH, Community Leader, 52 years old	" <i>Mararang</i> has become an established tradition among us Batak people. It is passed down orally from one generation to the next. Young women observe how their mothers, aunts, and female relatives perform <i>mararang</i> , and when the time comes for them to give birth, they naturally continue the practice."

Matrix 3. Health Beliefs of *Mararang* Tradition

Informant	Statement
KH, Postpartum Mother, 28 years old	"After undergoing <i>mararang</i> , my body felt lighter, and all the aches and pains disappeared. My wounds also dried and healed more quickly."
AD, Postpartum Mother, 25 years old	"When I performed <i>mararang</i> , I felt no bodily aches, and I began to sweat easily."
AD, Postpartum Mother, 25 years old	"When I underwent <i>mararang</i> , I experienced no bodily aches and found that I began to sweat easily."
KH, Postpartum Mother, 28 years old	"After performing <i>mararang</i> , my body felt noticeably lighter, and all my aches and pains subsided. Moreover, my wounds dried and healed more rapidly."
MS, Midwife, 56 years old	"I participated in <i>mararang</i> after the birth of my first child. However, I did not undergo the ritual after my second child because it was a caesarean delivery. It can be dangerous to perform <i>mararang</i> following surgery, as the stitches could reopen. Therefore, I would not recommend <i>mararang</i> for mothers who have delivered by caesarean section."
KH, Postpartum Mother, 28 years old	"The midwife advised that if the baby was delivered by caesarean section, it would be unsafe to undergo <i>mararang</i> . However, if the birth was normal, then participating was acceptable. If I chose not to participate, my in-laws and husband would likely be upset."

DISCUSSION

Evolution of mararang tradition as a Postpartum

Local knowledge, passed down through generations, incorporates traditional postpartum care (16). Before the introduction of religious teachings, postpartum care practices stemmed from beliefs about natural forces. Historically, these practices have included herbal remedies and specific actions based on ancestral experiences. Postpartum care involving herbal concoctions and certain rituals is believed to possess spiritual power, protecting both the mother and baby from malevolent forces (11).

"In the past, all postpartum rituals were fully performed — not just the mararang ceremony. There were even more practices involved. Specific herbal preparations and selected types of wood were used. All medicinal concoctions had to be sourced and prepared carefully. Some remedies were meant to be ingested by the mother, while others were applied externally to both the mother and the newborn." (ZL, Traditional Leader, 50 years old)

The traditional leader asserted that historically, the *mararang tradition* imposed more stringent rules and regulations that postpartum mothers were required to adhere to. They were obligated to consume herbal concoctions and apply medicinal preparations to their bodies. These practices were believed to facilitate postpartum recovery, restore physiological equilibrium, and safeguard mothers from illnesses. However, over time, certain aspects of the tradition have been modified to align with contemporary healthcare knowledge while still preserving its cultural significance.

The herbal remedies commonly consisted of locally sourced plants, such as turmeric, ginger, and betel leaves, which were traditionally processed and prepared using methods passed down through oral tradition (22). These natural ingredients aid postpartum recovery by promoting circulation, reducing inflammation, and enhancing maternal well-being. Modern medical interventions have been introduced, but many communities still combine traditional postpartum care with newer healthcare methods. This keeps cultural traditions alive while adapting to the changing maternal health needs (23).

"In the past, the mararang ritual involved prayers and incantations. At that time, people still believed deeply in the forces of nature and feared disturbances from spirits, ghosts, or other supernatural entities. Nowadays, however, mararang is maintained primarily as a cultural tradition. The prayers have been adapted to align with each individual's religious teachings." (MH, Community Leader, 52 years old)

The community leader stated that the *mararang tradition* has existed since ancient times, initially incorporating prayers and chanting. Postpartum mothers and their infants believed the *mararang tradition* to ward off spirits, ghosts, and supernatural entities. In contemporary practice, the *mararang tradition* has evolved to integrate cultural approaches with religious prayers, reflecting the adaptation of traditional beliefs to modern spiritual and healthcare frameworks.

The *mararang tradition* has been practiced since ancient times, although its precise origins remain unknown. This tradition serves as a foundational framework for traditional postpartum medicinal practices, which have been passed down through generations and continue to be practiced in contemporary society (24).

The *mararang tradition* has deep historical roots that extend back for centuries. Numerous studies suggest that the ancestors of the Batak community practiced heat therapy as a traditional postpartum care method to expel toxins and facilitate postpartum recovery, thereby promoting optimal maternal health (25). Historical records indicate that similar postpartum heat therapy practices are also prevalent among various ethnic groups with Indigenous cultural traditions in other regions, such as *zuo yuezi* in China and the *doing the month* in Taiwan (26). These practices share fundamental characteristics, including exposure to heat and specific dietary restrictions, reflecting a cross-cultural emphasis on maternal recuperation and well-being after childbirth (27).

The *mararang tradition* is a postpartum care practice widely observed among women of the Batak ethnic group in Indonesia. Generations have perpetuated this practice, which originated from their ancestral customs. Members of the Batak community continue to uphold this tradition under the guidance of parents, predecessors, and traditional leaders, who advocate its maintenance among postpartum women. Traditional and community leaders consistently emphasize the significance of the *mararang tradition* to expectant mothers, asserting that it contributes to a more rapid recovery of postpartum health.

Cultural Communication for Mararang tradition

The *mararang tradition* is a cultural heritage that has been preserved and passed down through generations in the village. Families, groups, and even broader communities directly transmit these traditions. *mararang tradition* has remained an integral practice since ancient times, owing to the continuous commitment of the Batak ethnic community, who believe that this tradition provides health and spiritual benefits for postpartum mothers.

"I have practised mararang since the birth of my first child. My mother also performed this ritual in the past, and I feel a strong obligation to continue it. In the future, my own children must also uphold this tradition." (KH, Postpartum Mother, 28 years old).

The informants' narratives indicate that the *mararang tradition* continues to be practiced because information about it is directly passed down from generation to generation. Postpartum mothers learn the *mararang tradition* method from their parents and must teach their daughters to practice it when they have children.

"For Batak women, performing the mararang ritual after childbirth is a longstanding tradition — it is part of who we are. Even before giving birth, a customary ceremony is already prepared, and the husband understands his role in making the necessary arrangements. It does not take long to organise, as it has been passed down from our ancestors. Good practices like this must continue to be preserved." (ZL, Traditional Leader, 50 years old).

The informants revealed that the *mararang tradition* is perceived as an essential obligation for postpartum mothers of Batak ethnicity, as it has been passed down through generations from their ancestors. They emphasized the importance of continuing to practice *mararang tradition* to preserve Batak culture, as long as it doesn't pose any health risks or adverse effects.

The significance of the *mararang tradition* is consistently communicated from generation to generation, from mothers to daughters, grandmothers to grandchildren, and community leaders to the wider society. When a family is expecting a birth, the head of the household is informed to make the necessary preparations for the *mararang tradition*, which is traditionally performed within 40 days of childbirth. The Batak ethnic community meticulously arranges all essential aspects to ensure that postpartum mothers can undergo *mararang tradition*, with preparations beginning as early as the second trimester of pregnancy. In this process, grandmothers (*opung*) and mothers-in-law (*namboru*) play a crucial role in guiding the husband, as the head of the family, to ensure that all necessary arrangements—both direct and indirect—are properly made. Their involvement is essential for maintaining the continuity of this tradition and ensuring that all aspects are prepared according to cultural customs and values.

"Mararang has become an established tradition among us Batak people. It is passed down orally from one generation to the next. Young women observe how their mothers, aunts, and female relatives perform mararang, and when the time comes for them to give birth, they naturally continue the practice." (MH, Community Leader, 52 years old).

The informants further explained that parents or family members directly transmit the the *mararang tradition* 's messages orally to their children. Families expect them to continue this practice by sharing knowledge of the *mararang tradition* with their children and ensuring its preservation for future generations to come.

Oral tradition has long been a key way of passing on knowledge in indigenous communities, with older women playing an important role in guiding the younger generation, especially in terms of postpartum care (18). In the *mararang tradition*, storytelling, the use of proverbs, and direct guidance are important ways to preserve and transmit cultural health practices. Communication plays a key role in upholding said traditions and can be seen in the structure of interactions among all groups, such as midwives, mothers, and members of the community (28). Even so, moving to cities and learning about modern medicine pose a threat to these oral traditions. To make sure they stay relevant, we need flexible ways of communicating (29).

The *mararang tradition* is deeply embedded in symbolic communication, wherein rituals and dietary restrictions serve as conduits for the transmission of cultural values and health beliefs (20). Traditional massage techniques and the use of specific herbal remedies function as ritualistic expressions that facilitate physical healing and reinforce the interconnectedness between bodily health and spiritual well-being (26). These caregiving rituals are essential for strengthening communal bonds and preserving Indigenous health knowledge within the community. However, variations in symbolic representations and ritualistic practices across different sociocultural groups may create barriers for individuals unfamiliar with traditional healing frameworks, limiting access to Indigenous

healthcare practices. Consequently, careful negotiation is imperative to integrate traditional healthcare systems with biomedical interventions, ensuring that culturally sensitive maternal health services are accessible and comprehensive within the ethnic group.

Over time, external factors have influenced traditional practices, such as the *mararang tradition*. Herbal remedies and dietary modifications have become more prevalent, extending beyond purely ritualistic approaches to treatment. Community-based maternal health programs now acknowledge the therapeutic value of traditional postpartum practices, fostering collaboration between traditional healers and biomedical healthcare providers (30). Digital platforms and workshops on maternal health have facilitated the dissemination and documentation of the *mararang tradition*. This supports the assertion by health communication experts that utilizing culturally appropriate language enhances the acceptability and trustworthiness of Indigenous postpartum care.

Health Beliefs of Mararang Tradition

Postpartum mothers are generally prohibited from leaving the house for any non-essential activities for 40 days. This belief remains deeply ingrained across various regions in Indonesia, both in urban and rural areas, even when addressing maternal health needs (31). In some ethnic groups in East Nusa Tenggara, postpartum women choose to self-isolate in their rooms for 40 days, while others practice *hatuka ha'i* for up to three months (32). During this period, postpartum women focus on rest and infant care, adapting to the restrictions imposed by cultural traditions.

From pregnancy to postpartum, a woman must take care measures to ensure optimal health during and after childbirth. Postpartum care is crucial to the health of mothers and babies. Postpartum women give birth in labor clinics and hospitals, but when they return home, they undergo traditional care in accordance with the culture or habits that they have maintained for a long time (24).

The belief of the Batak ethnic community in the benefits of the *mararang tradition* strengthens the continuation of the *mararang tradition*. Not only is the *mararang tradition* considered a tradition, but it also offers benefits to postpartum mothers.

"After undergoing mararang, my body felt lighter, and all the aches and pains disappeared. My wounds also dried and healed more quickly." (KH, Postpartum Mother, 28 years old).

"When I performed mararang, I felt no bodily aches, and I began to sweat easily." (AD, Postpartum Mother, 25 years old).

Postpartum mothers stated that practicing the *mararang tradition* positively affected their health. They reported feeling physically revitalized, experiencing reduced fatigue, increased warmth, and enhanced perspiration, which they believed contributed to their overall recovery.

Comparative studies indicate that traditional postpartum beliefs and practices are prevalent among mothers in Southeast Asia. A study comparing Indonesian and Filipino mothers revealed that traditional beliefs significantly influence postpartum care practices in both populations (14). These practices encompass dietary restrictions, physical activities, and rituals intended to promote the health of the mother and child.

The *mararang tradition* in the Batak tribe is an integral part of the belief system of the Batak ethnic community. It is a form of harmonious relationship between humans and nature. People view the *mararang tradition* not only as a health practice but also as a way to speed up the recovery of postpartum women. However, it can also be considered a respect for nature and ancestors.

"When I underwent mararang, I experienced no bodily aches and found that I began to sweat easily." (AD, Postpartum Mother, 25 years old).

"After performing mararang, my body felt noticeably lighter, and all my aches and pains subsided. Moreover, my wounds dried and healed more rapidly." (KH, Postpartum Mother, 28 years old).

The belief of the Batak ethnic community in the benefits of the *mararang tradition* strengthens the continuation of the *mararang tradition*. Not only is the *mararang tradition* considered a tradition, but it also offers benefits to postpartum mothers.

In many ethnic groups, warming the body of a new mother after giving birth is a very important part of keeping their traditional beliefs alive (33). The belief of the Batak ethnic community in the benefits of the *mararang tradition* strengthens the continuation of the *mararang tradition*. Not only is the *mararang tradition* considered a tradition, but it also offers benefits to postpartum mothers. Physiological changes in mothers underlie various beliefs,

rituals, and practices in the postpartum period. Postpartum mothers do not have easy access to postpartum health services due to limitations in physical activity during health recovery (32).

The *mararang tradition*, as discussed in this study, is based on the belief that the body must maintain a balanced state between hot and cold conditions. Postpartum mothers are considered to be in a predominantly cold state. If this condition persists, it may lead to adverse health effects in the short and long term. Several traditional methods, including charcoal, hot water, smoke, and steam mixed with certain medicinal plants, are used to bring the body back into balance after giving birth. This helps the woman recover and get back to her normal routines (34).

Traditional beliefs and sociocultural factors play significant roles in shaping postpartum practices. In Indonesia, the *marsidudu tradition* involves warming the postpartum mother's body, which aligns with similar traditions observed across many Asian cultures (19). These customs are often essential for restoring bodily equilibrium and well-being after childbirth. Postpartum mothers from the Batak ethnic group strongly believe in the health benefits of the *mararang tradition*. They perceive this practice as instrumental in promoting maternal well-being, expediting postpartum recovery, and enabling a quicker return to prebirth activities. Many postpartum mothers have reported experiencing substantial benefits from the *mararang tradition* and strongly advocate its preservation and transmission to future generations.

"I participated in mararang after the birth of my first child. However, I did not undergo the ritual after my second child because it was a caesarean delivery. It can be dangerous to perform mararang following surgery, as the stitches could reopen. Therefore, I would not recommend mararang for mothers who have delivered by caesarean section." (MS, Midwife, 56 years old).

"The midwife advised that if the baby was delivered by caesarean section, it would be unsafe to undergo mararang. However, if the birth was normal, then participating was acceptable. If I chose not to participate, my in-laws and husband would likely be upset." (KH, Postpartum Mother, 28 years old).

Both midwives and postpartum mothers stated that they would not practice the *mararang tradition* after undergoing a cesarean section, as it could pose health risks. However, in cases of normal vaginal delivery, they were permitted to follow the *mararang tradition* in accordance with Batak customs and traditions.

Traditional practices provide psychological and cultural support, but the influence of these practices on maternal and infant health is yet to be determined (35). Some of these practices offer rest and social support while others may pose a risk if not implemented according to modern medical standards (36). It is important to blend these approaches with evidence-based healthcare methods for better healthcare results.

Understanding the Batak tribe's cultural practices is essential for health professionals to provide culturally appropriate healthcare services. Traditional treatment methods may not always be sufficient to address all maternal and neonatal cases, necessitating careful consideration (37). The cultural background of the Batak tribe significantly influences health behaviors and practices, requiring healthcare providers to adapt their interventions accordingly (38). This is particularly relevant in neonatology, where a generalized approach to therapy may have unintended consequences on both the mother and neonate (39).

The *mararang tradition* is a sophisticated postpartum care system rooted in traditional practices, including herbal medicine, massage, and spiritual purification. It has been passed down from midwife to midwife and from elder woman to elder woman, preserving a deeply ingrained belief in a life not solely reliant on modern medicine. The *mararang tradition* exists at the intersection of Indigenous knowledge and biomedical obstetric care, shaping how families navigate contemporary medical discourse. This toughness is an example of medical pluralism, where scientific and traditional ways of healing coexist, and local knowledge still affects how mothers are cared for (40).

The *mararang tradition* has been adapted to align with modern healthcare knowledge. Midwives and other healthcare professionals who oversee prenatal care and assist during childbirth now recommend and approve its implementation. Midwives or other healthcare professionals provide pregnant women with guidance and information about the necessary preparations for practicing *mararang tradition*, especially for those who experience pregnancy complications or undergo caesarean deliveries.

The persistence of *mararang tradition* in the modern era necessitates a comprehensive understanding of medical pluralism in postpartum care among Batak women in Indonesia. Despite the significant expansion of biomedical interventions, Batak women continue to uphold *mararang tradition* as an integral aspect of their cultural heritage while simultaneously adhering to the recommendations of midwives and healthcare professionals.

Midwives in postpartum care perceive *mararang tradition* and modern medical practices as complementary, provided that the tradition does not pose health risks. In this study, potential risks related to *mararang* namely smoke inhalation and excessive heat are reported by participants and noted in prior literature; we did not measure exposures or estimate causal effects. In response, healthcare professionals and traditional leaders are actively negotiating to develop culturally sensitive postpartum care models that integrate Batak Indigenous knowledge with evidence-based maternal health practices. The enduring practice of *mararang tradition* is profoundly connected to intergenerational knowledge transmission, ensuring the continuity of cultural beliefs despite ongoing biomedical advancements.

The *mararang tradition* faces challenges in contemporary maternal healthcare due to the predominance of clinic- and hospital-based midwifery care and the effects of urbanization. Younger generations frequently perceive traditional practices as obsolete, contributing to an intergenerational knowledge gap that threatens the continuity of this tradition. Nevertheless, this study demonstrates that *mararang tradition* provides psychological, social, and physiological benefits that complement biomedical postpartum care among the Batak ethnic group. Certain maternal health programs have begun integrating traditional postpartum care practices with medical care to establish a more comprehensive approach to maternal health.

The persistence of the *mararang tradition* despite the availability of modern medical interventions for postpartum care underscores its cultural significance. The Batak ethnic community continues to integrate both traditional and contemporary medical approaches in postpartum care, demonstrating the resilience of their cultural practices while ensuring that the *mararang tradition* does not pose health risks. There needs to be more research done on the *mararang tradition* because it has a lot of potential to improve maternal health when looked at in its entirety, including both traditional and modern medical practices.

This study contributes to the anthropological literature on medical pluralism in postpartum care among Batak communities. Limitations include: First, the qualitative design and small, purposeful sample recruited through community networks and healthcare providers limit coverage and introduce potential selection bias, as participants may disproportionately represent those willing or able to participate. Second, the records were self-reported and collected around the immediate postpartum period, making them susceptible to the influence of memory and social desirability. Third, we did not collect objective environmental or clinical measures (e.g., indoor particulate matter/CO₂, surface temperature, wound healing index); therefore, references to smoke or heat should be interpreted as participant perceptions triangulated with prior literature, rather than causal estimates. Fourth, interviews conducted in local languages were translated into Indonesian or English; despite team checks and briefings, some cultural nuances may have been lost. Finally, the heterogeneity of *mararang* among Batak subgroups and rural-urban settings limits transferability beyond the study community. We mitigated these issues through triangulation (mothers, midwives, traditional leaders), reflexive memos, and audit trails; however, these constraints limited the scope of inference and should guide careful interpretation and future mixed methods research.

CONCLUSION

The *mararang tradition* embodies an intricate interplay between medical history, medical anthropology, and medical pluralism, persisting amid the modernization of postpartum care. While *mararang tradition* is associated with specific health and psychological benefits, it also presents potential health risks for both mothers and infants. Therefore, its continued practice necessitates the development of structured guidelines that align with modern safety standards, ensuring oversight from healthcare professionals and traditional leaders to mitigate potential adverse effects.

This study underscores the significance of an integrated postpartum healthcare model harmonizing Batak cultural practices with biomedical care. Within this framework, professional healthcare providers collaborate with traditional birth attendants and community elders to safeguard maternal and neonatal health while preserving Batak's cultural heritage. Future research should focus on conducting comprehensive health impact assessments of *Mararang*, alongside historical and paleopathological investigations to elucidate its short-term effects and long-term consequences on maternal and infant health.

Culturally respectful integration of *mararang* within routine postpartum care is feasible when guided by explanatory understanding and skilled communication. Programmes should institutionalise pragmatic safeguards that preserve meaning while protecting mothers and infants.

AUTHOR'S CONTRIBUTION STATEMENT

Authors explicitly outline and describe their individual contributions to the research and the development of the manuscript. This statement is intended to provide transparency and clarity regarding each author's role in the project. It helps readers and reviewers understand the specific contributions of each author to the research process

CONFLICTS OF INTEREST

This study has no conflict of interest.

SOURCE OF FUNDING STATEMENTS

This research did not receive any funding assistance.

ACKNOWLEDGMENTS

The authors would like to thank all those who have provided much assistance, especially the Indonesian Ministry of Health and the Universitas Islam Negeri Sumatera Utara Medan.

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