



## Breastfeeding mothers perceptions of the neno boha tradition in the analysis of the health belief model at the Noemuke Health Center, South Central Timor Regency

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### ABSTRAK

**Latar Belakang:** Neno Boha merupakan tradisi pasca persalinan masyarakat Timor yang mencakup praktik Se'i (pengasapan ibu dan bayi), Tatobi (kompres air panas), serta pantangan makanan. Praktik ini berpotensi menimbulkan risiko kesehatan, seperti gangguan pernapasan akibat paparan asap, luka bakar dan infeksi kulit dari penggunaan air panas, serta kekurangan gizi akibat pembatasan konsumsi makanan, yang dapat berdampak pada kesehatan ibu dan bayi.

**Tujuan:** Penelitian ini bertujuan menganalisis persepsi ibu menyusui terhadap tradisi Neno Boha menggunakan pendekatan Health Belief Model (HBM).

**Metode:** Penelitian menggunakan metode kualitatif dengan pendekatan fenomenologi. Data dikumpulkan melalui wawancara mendalam terhadap 13 informan, terdiri atas 5 ibu menyusui sebagai informan utama dan 8 informan triangulasi, yaitu tokoh masyarakat, bidan desa, tenaga gizi, serta anggota keluarga ibu menyusui. Analisis data dilakukan melalui tahapan reduksi data, penyajian data, dan penarikan kesimpulan.

**Hasil:** Hasil penelitian menunjukkan bahwa praktik utama Neno Boha masih dijalankan karena keyakinan akan manfaatnya dalam pemulihan pasca persalinan. Namun, sebagian ibu mulai meninggalkan praktik Se'i karena meningkatnya kesadaran terhadap risiko gangguan pernapasan pada bayi. Praktik Tatobi mengalami modifikasi dengan penggunaan air hangat untuk mengurangi resiko luka bakar, sementara pola konsumsi makanan mulai bergeser ke arah yang lebih bergizi. Faktor ekonomi menjadi hambatan utama dalam perubahan pola makan akibat keterbatasan akses terhadap sumber protein dan pangan bergizi. Edukasi tenaga kesehatan dan dukungan kebijakan pemerintah berperan dalam mendorong perubahan praktik menuju pendekatan yang lebih aman.

**Kesimpulan:** Diperlukan intervensi kesehatan berbasis budaya yang disertai dukungan ekonomi untuk meningkatkan kesejahteraan ibu dan bayi.

**KATA KUNCI:** health belief model; kesehatan ibu dan anak; se'i,tatobi,pantang makan; tradisi neno boha



## ABSTRACT

**Background:** Neno Boha is a postpartum tradition among the Timorese community that includes Se'i (smoking of mothers and infants), Tatobi (hot water compress), and dietary restrictions. These practices may pose health risks, such as respiratory disorders due to smoke exposure, burns and skin infections from hot water use, and malnutrition resulting from dietary restrictions, which can adversely affect maternal and infant health.

**Objectives:** This study aimed to analyze breastfeeding mothers' perceptions of the Neno Boha tradition using the Health Belief Model (HBM) approach.

**Methods:** This qualitative study employed a phenomenological approach. Data were collected through in-depth interviews with 13 informants, consisting of five breastfeeding mothers as primary informants and eight triangulation informants, including a community leader, a village midwife, a nutritionist, and family members of breastfeeding mothers. Data analysis was conducted through data reduction, data display, and conclusion drawing.

**Results:** The findings showed that the main practices of Neno Boha are still maintained due to beliefs in their benefits for postpartum recovery. However, some mothers have begun to abandon the Se'i practice due to increased awareness of the risk of respiratory problems in infants. The Tatobi practice has been modified by using warm water to reduce the risk of burns, while dietary patterns have gradually shifted toward more nutritious food consumption. Economic factors remain a major barrier to dietary changes due to limited access to protein sources and nutritious foods. Health education provided by healthcare workers and government policy support play an important role in encouraging safer practices.

**Conclusions:** Culturally sensitive health interventions accompanied by economic support are needed to improve maternal and infant well-being.

**KEYWORD:** health belief model; maternal and infant health; se'i, tatobi, dietary restrictions; the neno boha tradition

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## INTRODUCTION

Culture strongly shapes maternal and child health, particularly during pregnancy, childbirth, and the postpartum period (1,2). Despite expanding access to modern healthcare, traditional practices remain influential in many communities (3–5) In South Central Timor Regency, East Nusa Tenggara, the Neno Boha tradition requires mothers and newborns to stay in a round house for 40 days while undergoing Se'i (smoke exposure) and

Tatobi (hot compress). These practices are believed to strengthen infants, restore maternal vitality, and remove “dirty blood,” leading many women to prefer traditional recovery over facility based care (6,8).

From a biomedical perspective, however, potential risks are substantial. Smoke exposure has been associated with respiratory disorders and infection, with evidence linking Se'i to acute respiratory infections in infants (9). Confinement diets

centered on corn borse are thought to enhance milk production, yet limited dietary diversity and inadequate nutrient intake may compromise maternal recovery and infant growth, contributing to stunting (10). Additional food taboos, such as avoiding fish and legumes due to fears of itching or bloating, may further restrict nutritional adequacy (11). Combined with poor ventilation, heat exposure, and delayed access to professional services, these conditions may heighten preventable morbidity (12,14).

Nevertheless, Neno Boha persists. Records from the Noemuke Health Center showed that 15 of 17 postpartum mothers between January and March 2024 continued the practice after discharge. This persistence raises a critical question: why do mothers maintain the ritual amid increasing availability of biomedical care? Understanding maternal perceptions is therefore essential. To address this issue, the present study applies the Health Belief Model (HBM) perceived susceptibility, severity, benefits, barriers, cues to action, and self-efficacy to explore how breastfeeding mothers interpret and negotiate the tradition (15,16).

Empirical evidence on Neno Boha remains scarce, and previous studies have largely emphasized cultural description or health risks without examining behavioral drivers. No research has specifically investigated the Noemuke area or employed the HBM framework. Using a phenomenological approach, this study

provides new insight into the beliefs and social influences sustaining postpartum practices and informs culturally sensitive strategies for maternal and child health while respecting Timorese values.

## **MATERIALS AND METHODS**

This phenomenological qualitative study explored breastfeeding mothers' perceptions of the Neno Boha tradition. Semi structured in depth interviews guided by the Health Belief Model (perceived susceptibility, severity, benefits, barriers, cues to action, and self-efficacy) were conducted in participants' homes. Interviews lasted 30–60 minutes for mothers and 20–45 minutes for triangulation informants. All interviews were audio recorded with consent, complemented by field notes, and transcribed verbatim.

The study was undertaken in the working area of the Noemuke Health Center, South Central Timor, East Nusa Tenggara, between August and September 2024. A total of 13 informants participated, consisting of five breastfeeding mothers and eight triangulation sources, including family members, a midwife, a nutrition officer, and a community leader involved in maternal and infant care. Ethical approval was obtained from the Faculty of Medicine, Diponegoro University (No. 500/EC/KEPK/FK-UNDIP/I/2024). Participants provided informed consent prior to data collection. Data were analyzed using Miles and Huberman's interactive model, including data reduction, data display, and conclusion drawing.

Transcripts were read repeatedly to achieve immersion in the data. Meaningful statements were coded manually and grouped into categories and themes aligned with the HBM constructs. The manual approach enabled closer engagement with participants' narratives and a deeper understanding of the cultural context while maintaining analytic rigor (17).

## RESULTS AND DISCUSSIONS

This study involved 13 informants, comprising five Timorese breastfeeding mothers aged 25-32 years and eight triangulation participants including relatives, a community leader, and two health workers (a midwife and a nutrition officer). All mothers had senior high school education and were housewives. Most family members had primary education and worked as farmers, while the health personnel held diploma qualifications. Overall, participants represented relatively homogeneous socioeconomic conditions and a strong Timorese cultural background.

### Perception of Se'i (Grilled) Practices in Breastfeeding Mothers

Interviews showed that two mothers continued Se'i because they believed charcoal heat promoted postpartum recovery, while three shifted to biomedical care, indicating an ongoing transition in Noemuke Village.

*Perceived Susceptibility*, Mothers who maintained Se'i viewed the postpartum body

as vulnerable and in need of heat to prevent complications and expel "dirty blood," a belief reinforced by family authority.

*"After giving birth, I felt very weak, but after baking, I didn't feel weak anymore. I felt stronger." (Mrs. CS)*

Others preferred injections and vitamins, considering them faster and more effective.

*"We don't use se'i (grilled) anymore... we give birth at the health center after we have been injected, so if we have been injected, taken vitamins, it means we feel that everything has returned to normal." (Mrs. WT)"*

Similar coexistence of traditional and biomedical care is widely reported (18,20). *Perceived Severity*, Cold weather was interpreted as a serious threat, making Se'i necessary for comfort and recovery.

*"I gave birth during the rainy season, so I still did se'i because it was too cold. If I don't do se'i when it's cold, my body feels uncomfortable." (Ny.PA)*

Some mothers continued despite recognizing infant risk.

*"I forced myself to do se'i even though my baby was short of breath." (Ny.CS).*

This tension between maternal benefit and infant safety reflects strong cultural influence (21,23).

*Perceived Benefits*, Se'i was associated with rapid healing, renewed energy, and bodily strength.

*"The purpose of grilling is to get healthy quickly, in fact, grilling makes us strong" (Mrs. AS).*

Meanwhile, mothers using facility based services viewed medical treatment as safer, a shift also observed across Southeast Asia (21,22,24).

*Perceived Barriers*, Cultural inheritance and family expectations remained the primary obstacles to discontinuation.

*"Se'i has become a tradition passed down from generation to generation, so our parents said, 'What should we do?" (Mr. DM)*

Studies show heating practices persist due to social legitimacy rather than medical reasons (25-30).

*Cues to Action*, Behavior change was mainly triggered by midwives' counseling and village regulations.

*"The midwife always tells us about the dangers of se'i, so we don't do it anymore." (Mrs.SB)*

However, family endorsement frequently outweighed professional advice (4,31,32).

*Self-Efficacy*, Mothers abandoning Se'i expressed confidence in biomedical recovery, whereas those continuing relied on bodily experience.

*"Once injected and taking vitamins, everything returns to normal" (Mrs.WT)*

*"Once started roasting, I don't feel weak anymore, I feel stronger."(Mrs. CS)*

These contrasting sources of trust shape postpartum decisions (33,36).

### **Tatobi (Compress) Practice for Breastfeeding Mothers**

*Perceived Susceptibility*, Mothers who continued tatobi believed illness would occur if

"dirty blood" was not expelled, and that heat restored strength and balance. However, counseling from midwives increased awareness of risks from excessive heat, encouraging safer modification.

*"Now I don't use hot water anymore, the midwife suggested using warm water only so it doesn't cause infection." (Mrs. SB)*

Similar shifts toward safer adaptation are reported in Malaysia and Nepal (37,38).

*Perceived Severity*, Avoiding tatobi was associated with serious consequences such as headaches and dizziness.

*"If you don't get a tatobi, it can hurt if you go outside and make your eyes roll," (Mrs.TM)*

*"I've had a tatobi for 40 days so that the dirty blood comes out, and I don't get headaches." (Mrs.PA)*

Such fears reinforce adherence to heating rituals (39,40). Yet some mothers reduce intensity following professional advice (38).

*Perceived Benefits*, Tatobi was viewed as accelerating healing, relieving pain, and restoring freshness.

*"Tatobi is so that dirty blood comes out and makes us fresh, so that we are strong again." (Mrs. WT)*

*"After tatobi, the body feels good and does not ache." (Mrs. DN)*

These beliefs align with wider Asian traditions linking heat therapy with restored vitality (13,41). and continue motivating practice even when risks are acknowledged (39,42).

*Perceived Barriers*, Midwives' prohibition of very hot water constituted the main challenge.

*"The midwife has prohibited the use of hot water, so now we only use warm water"* (Mrs. DN)

*"Now we only use warm water, it wasn't mandatory to use hot water before. The midwife has prohibited it"* (Mrs. PA)

Rather than abandoning *tatobi*, mothers modified it, reflecting negotiation between culture and safety. Family norms may also limit full compliance (43) (44).

*Cues to Action*, Advice from health workers served as the strongest trigger for change.

*"We heard the midwife say not to use boiling hot water anymore, so now we are trying to use warm water only"* (Mrs. AS)

*"Every time a mother gives birth at the health center, when she wants to go home, we always educate her not to use hot water for tattoos anymore"* (Mrs. FN)

Professional messages function as external motivators for safer adaptation (34,45,46).

*Self-Efficacy*, Despite modification, mothers remained confident in *tatobi*'s effectiveness.

*"Tatobi now uses only warm water, not hot water anymore, but it's still good"* (Mrs. DN)

This shows active evaluation rather than passive obedience and supports evidence that culturally respectful guidance can preserve confidence while reducing harm (47,50).

### **Food Abstinence Practices for Breastfeeding Mothers**

*Perceived Susceptibility*, Previously, mothers followed strict dietary restrictions, often consuming only plain *jagung bose*. Increasing exposure to nutrition counseling has raised awareness of vulnerability to malnutrition.

*"Previously we only ate empty jagung bose, nothing could be mixed with it, now the midwife has told us to eat nutritious food."* (Mrs. AS)

Similar evidence from Myanmar shows food taboos reduce dietary diversity, while health education promotes safer choices (51,53).

*Perceived Severity*, Families now recognize that poor maternal diet may lead to anemia and child stunting.

*"Previously, my wife did not eat fish or eggs when she was pregnant, but we did not think it was serious because the child was still born. Now we know that eating healthy is important so that the child does not become stunted"* (Mr. DM).

This perception aligns with regional findings linking inadequate maternal intake with impaired child growth (54) (55).

*Perceived Benefits*, While *jagung bose* was once considered adequate, mothers increasingly associate diverse foods with improved milk quality and infant health.

*"We used to eat only jagung bose, the benefits are to make the mother and child strong. Now we know that eating healthy food"*

*is important for the health of the mother and baby" (Mrs. PA).*

Research confirms that adequate nutrients support recovery and development (56) (57) while culturally sensitive education helps improve diets without losing identity (58,60).

*Perceived Barriers*, Barriers have shifted from cultural prohibition to economic limitation.

*" Now, if we have money, we can buy fish or tempeh" (Mrs. WT).*

Studies in Indonesia confirm that financial access often outweighs traditional restrictions in shaping diets (61,62).

*Cues to Action*, Midwives have become the primary source of behavioral direction.

*"Now the midwives give advice on eating vegetables, fish and nutritious food, so we listen to them more." (Mrs.WT)*

Professional counseling is widely shown to reduce adherence to harmful taboos (63,65).

*Self-Efficacy*, Mothers expressed confidence in dietary change after observing positive child outcomes.

*"Now I eat moringa and nutritious food because my child gained weight after I followed the midwife's advice." (Mrs.WT)*

Visible benefits strengthen motivation and support sustainable adaptation (66,68).

## **CONCLUSIONS AND RECOMMENDATIONS**

Breastfeeding mothers' perceptions of Se'i, Tatobi, and food abstinence within the Neno Boha tradition, interpreted through the Health Belief Model, reveal a dynamic

negotiation between enduring cultural authority and expanding biomedical influence. In Se'i, postpartum vulnerability continues to legitimize exposure to heat despite awareness of infant respiratory risks. Perceived benefits related to strength and rapid recovery remain powerful, sustained by intergenerational endorsement, whereas counseling from health workers and village regulations function as catalysts for change. Mothers who discontinue Se'i relocate their trust toward biomedical interventions such as injections and vitamin therapy.

For Tatobi, susceptibility is associated with the need to expel "impure blood," and the ritual remains meaningful for pain relief and bodily restoration. However, abandonment is rare; instead, modification predominates. Health worker restrictions operate as structural barriers to traditional procedures, while midwife-led education enables safer adaptation. Mothers preserve self-efficacy by maintaining the symbolic core of the practice through the use of warm rather than extreme heat.

Food abstinence demonstrates the most substantial transformation. Earlier fears that dietary diversity could harm mother or infant are increasingly replaced by recognition that inadequate intake contributes to anemia, poor milk quality, and stunting. Nutritious foods are now linked to improved child growth and maternal recovery. Nevertheless, economic hardship and limited food access persist as dominant constraints. Professional counseling serves as a decisive cue to action, and

observable benefits reinforce maternal confidence in dietary change.

Overall, Neno Boha persists not as a static inheritance but as an adaptive system shaped by interaction between tradition, family authority, and professional guidance. Sustainable maternal and infant health strategies should therefore move beyond simple prohibition by strengthening culturally sensitive counseling, involving family decision-makers, and supporting feasible risk reduction practices while addressing structural inequities in food availability.

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