

The Experience of Breastfeeding Among Mothers of Low Birth Weight (LBW) Infants in the Neonatal Intensive Care Unit (NICU)

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How to Cite: Fatimah, O. Z. S., Astuti, A. W., & Kurniawati, H. F. The Experience of Breastfeeding Among Mothers of Low Birth Weight (LBW) Infants in the Neonatal Intensive Care Unit (NICU). *Jurnal Kesehatan*, 18(1), 25-37. <https://doi.org/10.23917/jk.v18i1.4505>

Article Information

Article History:

Submission: 7 March 2024

Revision: 20 August 2024

Reception: 29 August 2024

Keywords: Experience, breastfeeding, low birth weight

ABSTRACT

Introduction: According to WHO (2022), global exclusive breastfeeding reached 40%, still below the 50% target. A major barrier is low birth weight (LBW) babies, whose physical limitations complicate breastfeeding. Mothers' concerns about their babies' health also affect their decision to breastfeed exclusively. **Method:** This systematic review aims to identify the experience of providing breast milk (ASI) to mothers who have low birth weight (LBW) babies in the Neonatal Intensive Care Unit (NICU). The search used relevant databases from Pubme, Wiley online library, Science Direct, and used Google Scholar gray literature. Article search keywords are written using Boolean, MESH and Truncation. The keywords used in searching for articles are Experience OR Opinion* AND Giving Breast Milk* AND Low Birth Weight* AND Neonatal Intensive Care Unit* the author added a filter for the last five years (2019-2023). **Result:** The final result of selecting articles that were suitable for use for the scoping review was 8 articles. The experience of providing breast milk (ASI) to mothers with low birth weight (LBW) babies who are treated in the Neonatal Intensive Care Unit (NICU) is a complex journey. **Conclusion:** In the context of self-efficacy, emotional support, information from medical personnel, the mother's understanding of the baby's condition, and self-strengthening strategies are the main pillars in forming the mother's confidence to provide breast milk effectively.

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INTRODUCTION

According to the World Health Organization (WHO) data in 2022, the global rate of exclusive breastfeeding reached 40%, which is still below the target of over 50%. One of the significant challenges that hinder the practice of exclusive breastfeeding is the presence of

low birth weight (LBW) infants, defined as babies born weighing less than 2,500 grams. These infants often face difficulties in breastfeeding due to physical weakness and underlying health conditions (Taqwin et al., 2022). The physical limitations of LBW infants, such as impaired sucking and swallowing abilities, make the breastfeeding process more complicated and exhausting. Mothers may feel overwhelmed by the extra efforts required to ensure their babies receive adequate nutrition. Additionally, maternal anxiety about the infant's health can emotionally influence the decision to provide exclusive breastfeeding (Chabibah & Khanifah, 2019).

Research indicates that LBW infants require intensive medical care to ensure their health and optimal development. These infants are vulnerable to various health complications, including respiratory problems, infections, and nutritional deficiencies. Therefore, care in the Neonatal Intensive Care Unit (NICU) is often necessary. In the NICU, infants can be closely monitored, and the medical team can provide individualized care according to each baby's specific needs (Yuanita, 2022) (Nidaa & Hadi, 2022).

Studies also show that providing only breast milk to LBW infants in the NICU can carry certain risks that require careful consideration. In some cases, LBW infants may have limited ability to breastfeed due to physical weakness or complex medical conditions. Additional nutritional support may be needed to ensure adequate intake and optimal growth. Nutritional supplementation either through intravenous feeding or specialized formula may be necessary to address the risks and ensure that LBW infants receive nutrition appropriate to their condition. In the NICU setting, where health and developmental monitoring is intensive, this approach helps manage risks and supports the individualized care required by each infant (Bayuana et al., 2023) (Khofiyah, 2019).

Based on the description above, a literature review is needed to identify the management of fatigue using non-pharmacological interventions such as physical exercise therapy and psychological treatments, which are most effective in managing cancer-related fatigue during and after cancer treatment.

LITERATURE REVIEW

Based on research, maternal knowledge about breast milk and its benefits has a significant influence on the decision to provide exclusive breastfeeding, particularly for low birth weight (LBW) infants in the NICU (Juniar et al., 2023). A study by (Juniar et al., 2023) confirmed that knowledge of the benefits of breast milk and breastfeeding techniques is closely related to the practice of exclusive breastfeeding. Support from healthcare professionals also plays an essential role in the success of exclusive breastfeeding, as emphasized by (Wicaksana et al., 2023). Additionally, (Herman & Ode Chalifa, 2021) found that a mother's positive attitude and personal breastfeeding experience greatly impact the decision to breastfeed, though individual factors like emotional stress and technical difficulties are often obstacles.

Family support, especially from the husband, is crucial in the breastfeeding process. Research by (Hasanah et al., 2020) indicates that support from family members and healthcare professionals enhances the practice of exclusive breastfeeding. Social barriers, such as pressure to use formula and lack of social support, can influence a mother's decision, as found by (Mutiar Sepjuita Audia et al., 2023). Hospital policies that support breastfeeding, such as lactation facilities and flexible NICU visitation, are also important in assisting mothers with breastfeeding, as outlined by (Saraha & Umanailo, 2020) and (Devi Octavia et al., 2020).

METHOD

The method used in this literature review is a *scoping review*, which aims to identify knowledge gaps, inform systematic reviews, and determine the implications for decision-making (Munn et al., 2018). The steps in conducting this scoping review follow the Arksey and O'Malley framework as the methodological guideline. These steps include identifying the review question, identifying relevant sources, selecting studies, charting the data, and finally collating, summarizing, and reporting the results.

This paper is designed as a Systematic Review. The systematic review follows a protocol and evaluation framework, namely PRISMA, to determine the completeness of the studies found and their alignment with the review's objectives. The author applies the PEOS framework in formulating the review questions. This framework is used to help identify key concepts within the question for further development and management (Pham et al., 2014).

Table 1. Framework PEOS

P (Population)	E (Exposure)	O (Outcome)	S (Study)
Breastfeeding mothers	Low birth weight (LBW) infants admitted to the NICU	Experience	All of the studies included in this review focused on the experiences of mothers in providing breast milk to their low birth weight (LBW) infants who were admitted to the Neonatal Intensive Care Unit (NICU)

In identifying relevant articles, the author established inclusion and exclusion criteria. The inclusion and exclusion criteria are as follows:

Table 2. Inclusion and Exclusion Criteria for Scoping Review

Kriteria Inklusi	Kriteria Eksklusi
- Articles discussing the experience of breastfeeding for mothers with low birth weight (LBW) infants admitted to the NICU.	- Opinion articles
- Articles in both Indonesian and English.	- Articles published within the last 5 years (2019-2023)
- Original research articles.	- Articles not published in scientific journals
	- Books/Theses/Dissertations

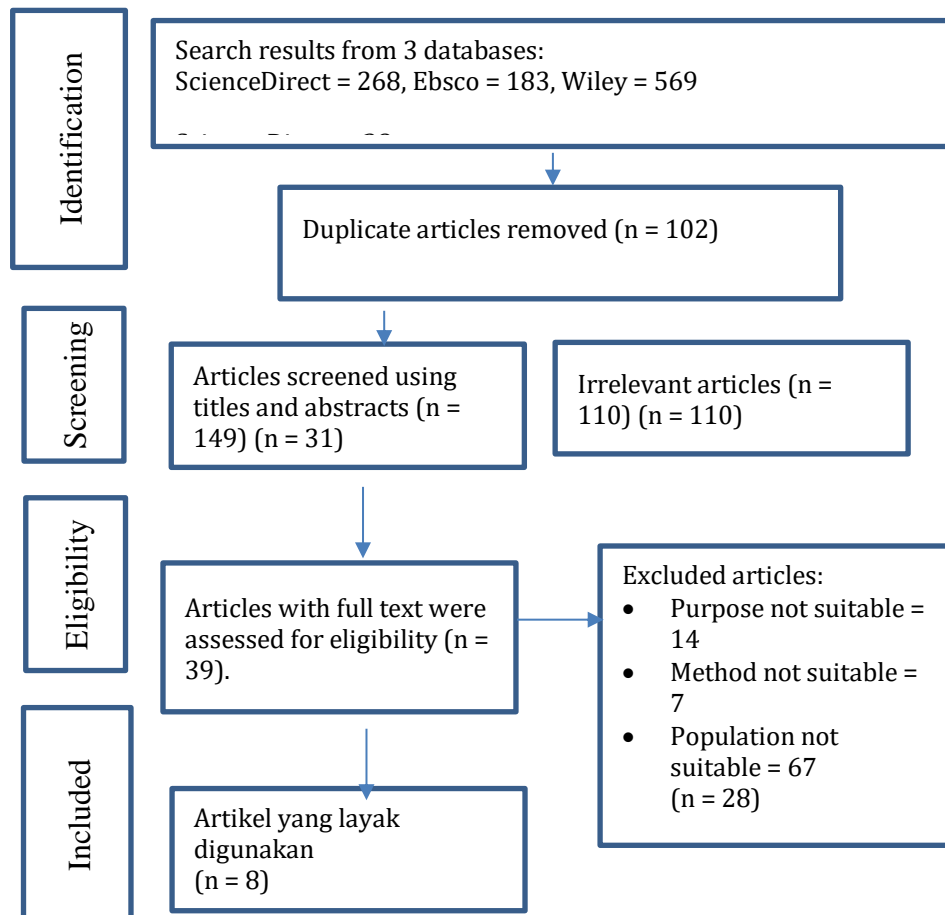
RESULT AND DISCUSSION

To search for relevant articles, the author utilized databases such as PubMed, Wiley Online Library, ScienceDirect, and grey literature from Google Scholar. Keywords for article searches were constructed using Boolean operators, MeSH terms, and truncation. The keywords used were: *Experience OR Opinion AND Giving Breast Milk AND Low Birth Weight AND Neonatal Intensive Care Unit*. The search was filtered to include articles from the last five years (2019–2023), open-access publications, and original research articles. The selected articles were downloaded and saved for reference.

Once evidence was collected, a critical appraisal was conducted using the Joanna Briggs Institute (JBI) Critical Appraisal tools appropriate for different study types, such as quasi-experimental studies, cross-sectional studies, and review articles, to assess the quality of the evidence. The data were selected according to predetermined inclusion criteria. Article searches through the three databases yielded 268 articles from ScienceDirect, 183 articles from EBSCO, and 569 articles from Wiley. From the total, 251 articles were initially selected. After removing 102 duplicate articles, 149 articles remained. Title and abstract screening reduced this number to 39 articles. Of these, 22 articles were excluded based on

irrelevance identified during the review process. Full-text screening was then conducted, resulting in the exclusion of an additional 28 articles for the following reasons: 14 articles had objectives that were not aligned with the study, 7 articles used inappropriate methods, and 7 had irrelevant populations.

In the end, 8 articles met the criteria and were included in the final scoping review. The search and selection process were documented in the PRISMA Flowchart as follows:



Picture 1. PRISMA Flowchart

Table 3. Data Carting

No	Research Title/Author/Year	Country	Objective	Study Design	Population, Sample, Research Instruments	Research Findings
1	Breastfeeding self-efficacy predicts breastmilk feeding in preterm infants at discharge from the neonatal intensive care unit/ M. Brockway, S. Mcleod, J. Kurilova, T.R. Fenton, L. Duffett-Leger, dan K.M. Benzies/2022 (Brockway et al., 2023)	Kanada	To explore the relationship between self-efficacy in breastfeeding and breastfeeding outcomes in premature infants upon discharge from the hospital.	Cohort	221 mothers of premature infants participated in the standard care group of the trial. Breastfeeding self-efficacy was measured using the modified Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF)	Mothers who provided exclusive breastfeeding when their premature infants were discharged from the hospital had higher BSES-SF scores at hospital admission (68.4, SD = 13.7) compared to mothers who provided a combination of breast milk and formula or only formula (59.6, SD = 14.7; p < .001). Multivariate logistic regression showed that higher breastfeeding self-efficacy at hospital admission, maternal birth in Canada, and the absence of diabetes were significant predictors of exclusive breastfeeding when the premature infant was discharged from the hospital.
2	Opportunity to bond and a sense of normality: Parent and staff views of cuddling babies undergoing therapeutic hypothermia in neonatal intensive care: 'CoolCuddle'/G. Sullivan, K. Vaher, M. Blesa, P. Galdi, D.Q. Stoye, A.J. Quigley, M.J. Thrippleton, J. Norrie, M.E. Bastin, dan J.P. Boardman/2022 (Ingram et al., 2022)	Australia	Exploring the perceptions and experiences of the five families and NICU care staff regarding interventions that enable parents to breastfeed their children during their stay (CoolCuddle), and whether this intervention was well-received or not.	Qualitative Research	21 parents of children in the NICU (11 mothers and 10 fathers) and 10 neonatal care staff members (4 consultants and 6 nurses)	Parents breastfeeding their children during the CoolCuddle intervention strengthened the parent-child bond and family-centered care in the NICU, and it was well received. The study also found that adverse perinatal mental health, discomfort in the mother-child bond, and its impact on caregiving control could be addressed by adopting the CoolCuddle intervention.
3	Lessons learned in implementing the Low	Amerika Serikat	To share the challenges faced and apply	Qualitative Research	Population or Sample: Infants with low birth	Hospital guidelines and the provision of care for MLBW infants vary both across and within

No	Research Title/Author/Year	Country	Objective	Study Design	Population, Sample, Research Instruments	Research Findings
	Birthweight Infant Feeding Exploration study: A large, multi-site observational study /2023 (Vernekar et al., 2023)		learnings from a complex mixed-methods study on infant feeding.		weight (LBW) ranging from 1.50-2.49 kg (MLBW). Method: The study assesses infant feeding practices and care through: (1) Documentation review of 603 MLBW patient charts at the facility, (2) Intensive observation of 148 MLBW infants during their stay at the facility (3) A 1-year prospective follow-up of 1,114 MLBW infants. Focus group discussions and in-depth interviews were conducted to gather perspectives on infant feeding among doctors, families, and key stakeholders.	countries. Overall, 89% of the charts lacked data on the timing of first feeding, and 56% lacked discharge weight information. Among the 148 infants observed at the facility, 18.5% were discharged before reaching the set weight target. Despite the challenges during COVID, 90% of the prospective cohort was followed up until the infants reached 12 months of age.
4	Breastfeeding practices in neonatal wards in Spain. Neo-BFHI international survey/ Marta Cabrera-Lafuente, Clara Alonso-Díaz, Maria Teresa Moral Pumarega, Mariana Díaz-Almirón, Laura N. Haiek,	Spain	To evaluate breastfeeding practices in neonatal units in Spain and compare them with practices in other countries that have implemented the Baby-Friendly Hospital Initiative (BFHI).	Cross-sectional	The sample population consists of neonatal units in Spain and other countries that have implemented the BFHI program. The research instrument: A survey was conducted using a questionnaire that	Breastfeeding practices in neonatal units in Spain have improved in recent years, but there is still room for improvement. Survey results indicate that neonatal units in Spain have lower compliance rates with the BFHI practices compared to other countries that have implemented the BFHI program. Some factors affecting compliance with BFHI practices in neonatal units in Spain include a lack of support from staff and insufficient training in

No	Research Title/Author/Year	Country	Objective	Study Design	Population, Sample, Research Instruments	Research Findings
	Ragnhild Maastrup, Carmen Pallás-Alonso/2020 (Cabrera-Lafuente et al., 2022)				measures compliance with BFHI practices.	BFHI practices. This study suggests that efforts are needed to improve compliance with BFHI practices in neonatal units in Spain to enhance breastfeeding practices and the overall health of neonatal infants.
5	Addressing the Needs of Mothers with Infants in the Neonatal Intensive Care Unit: A Qualitative Secondary Analysis/ Ah Rim Kim, Ph.D./2020 (Kim, 2020)	Korea Selatan	To evaluate the needs of mothers with children in the neonatal intensive care unit (NICU) and how these needs impact the quality of the care training provided. 40 mini	Qualitative Research	The sample population consists of 344 mothers with experience in the NICU in South Korea. Research Instrument: A questionnaire provided to mothers to answer independently.	Mothers are an essential part of the care team and should be attended to with utmost care. It is important to create a NICU environment that feels compassionate for families, which is a crucial aspect to keep in mind. This includes providing access to 24-hour, unrestricted services and encouraging active involvement in the care of their children.
6	"It was all taken away": Lactation, embodiment, and resistance among mothers caring for their very-low-birth-weight infants in the neonatal intensive care unit/ Aunchalee E.L. Palmquist, Sarah M. Holdren, Cynthia D. Fair/2019 (Palmquist et al., 2020)	Amerika Serikat	To investigate the experiences and challenges faced by mothers in caring for their children in the neonatal intensive care unit (NICU) and how these experiences affect their health and well-being after their involvement.	Cross-sectional	Population: Teenage mothers 17 mothers with children born at nearly 37 weeks in the NICU in the United States. Research Instrument: This study uses analytical text to explore the experiences and challenges faced by mothers in caring for their children in the NICU. Survey.	Mothers caring for children born at nearly 37 weeks in the NICU face various challenges, such as difficulties in resuscitating, managing care, and feeding their babies. These mothers also struggle with medical challenges, such as laboratory tests, apnea tests, and sepsis screenings. Additionally, some mothers find it hard to cope with social challenges, such as the stigma associated with loss and the time constraints caused by NICU care. The study also highlights that the support provided to mothers in the NICU may sometimes be marginalizing or even abusive, which threatens their experience in caring for their children.
7	Psychological Processes of Postpartum Mothers with Newborns Admitted to the	Taiwan	To explore the psychological process of mothers postpartum during the care of their	Cross-sectional	Postpartum mothers with newborns admitted to the intensive care unit.	The psychological process consists of a core category and three main categories. The core category is "worrying about the baby and striving to fulfill responsibilities as a mother."

No	Research Title/Author/Year	Country	Objective	Study Design	Population, Sample, Research Instruments	Research Findings
	Intensive Care Unit/ Chiu-Kuei Lee, Xuan-Yi Huang/2022 (Lee & Huang, 2022)		newborns in the intensive care unit.			The three main categories are as follows: "impact on the mother's role," "recognition of the mother's identity," and "exhibition of the mother's role." The entire process can be influenced by intrinsic and extrinsic factors, such as breast milk supply, skin-to-skin contact time, the severity of the newborn's health condition, support systems, and the style of post-delivery integrated care.
8	Patience of Mothers Caring for <i>Low Birth Weight</i> Babies (BBLR) / Rita Setyani Hadi Sukirno / 2019 (Hadi et al., 2019)	Indonesia	To explore the portrayal of mothers' patience in caring for low birth weight (BBLR) babies	Cross- sectional	Five mothers who gave birth to BBLR babies and then cared for them	All five subjects were able to patiently care for their babies. Their patience was based on their faith in God, which helped them remain resilient, persistent, and calm in caring for their babies.

Based on the search results from three databases using the PEOS framework keywords, a screening process was carried out using Mendeley. The next step involved article screening, which is described in the form of a PRISMA flowchart, resulting in 8 articles that met the inclusion and exclusion criteria and were deemed eligible for further assessment through Critical Appraisal using The Joanna Briggs Institute (JBI) tool. The articles included in this scoping review present several characteristics from the 8 selected studies, including analysis based on country and study type. From the review results, several themes were identified that align with the focus of this review based on Table 4.

Based on the review of eight articles that aligned with the objectives of the scoping review, several relevant themes were identified that explore mothers' experiences in providing breast milk to low birth weight (LBW) infants admitted to the Neonatal Intensive Care Unit (NICU):

Self-efficacy

In the context of breastfeeding mothers with low birth weight (LBW) infants hospitalized in the Neonatal Intensive Care Unit (NICU), maternal self-efficacy—or a mother's confidence in her ability to breastfeed—is significantly influenced by several crucial factors. Emotional support, information provided by medical professionals, mothers' understanding of their baby's condition, and self-empowerment strategies play essential roles in shaping and strengthening this self-efficacy.

Table 4. Mapping/Theme Grouping

TEMA	SUB TEMA	
Self-efficacy	1. Internal Strength	A1, A7
	2. Information Provided by Healthcare Providers	A1, A2, A5
	3. Mother's Understanding of the Baby's Condition	A1, A4
	4. Self-Empowerment Strategies	A1, A8
Psikologis ibu	1. Emotional Support from Partner/Family	A1, A5, A8
	2. Breastfeeding Barriers	A3, A4, A6
	3. Stress or Anxiety Factors	A7
adaptation process	1. Mother's Patience	A6, A8
	2. Interaction with Healthcare Staff in NICU	
	3. NICU Environment	
	4. Mother's Response to Baby's Development	

Emotional support plays a central role in building maternal self-efficacy. In the NICU environment, which is often filled with challenges and uncertainty, support from partners, family, and friends can provide the emotional foundation that mothers need. Positive sentiments, encouragement, and belief from the mother's social environment can have a substantial impact on her self-efficacy in breastfeeding an LBW infant (Handayani et al., 2023) (Sulistiyowati et al., 2020).

Informasi Information provided by healthcare professionals, including lactation counselors and NICU nurses, is also a determining factor. Accurate knowledge and in-depth understanding of the specific needs of premature infants, effective breastfeeding techniques, and ways to overcome potential obstacles can enhance a mother's self-efficacy. Accurate information provides a solid foundation for mothers to feel confident in breastfeeding and managing situations within the NICU.

A mother's understanding of her baby's condition is another key element that shapes self-efficacy. Education about the health status of LBW infants, their developmental progress, and the interventions carried out by the medical team can help mothers feel more prepared and capable of breastfeeding effectively. A clear understanding of the infant's specific needs can provide direction and boost a mother's confidence (Silvian et al., 2023) (Rani et al., 2022).

Additionally, self-empowerment strategies also contribute to the level of self-efficacy. Involving mothers in the decision-making process, encouraging active participation in their baby's care, and helping them plan concrete steps to improve breastfeeding practices can strengthen their self-confidence. These strategies create a supportive environment that empowers mothers to overcome challenges and achieve positive outcomes in breastfeeding their LBW infants. Research by (Brockway et al., 2023) showed that high breastfeeding self-efficacy at hospital admission is associated with exclusive breastfeeding upon discharge from the neonatal intensive care unit.

Maternal Psychology

Breastfeeding (ASI) for mothers with low birth weight (LBW) babies who are being cared for in the Neonatal Intensive Care Unit (NICU) involves not only physical aspects but also has a significant impact on the mother's psychological well-being. Psychological factors, including emotional support from partners or family, breastfeeding challenges, and levels of stress or anxiety, can have major implications for the mother's experience in breastfeeding her premature baby.

Emotional support from partners or family plays a central role in the psychological well-being of the mother. In challenging situations like those in the NICU, the presence and positive support can provide the emotional strength needed for the mother. Partners or family who provide ongoing support can help reduce stress levels, boost self-confidence, and create a supportive environment for breastfeeding (Astria et al., 2023) (Lee & Huang, 2022).

Breastfeeding barriers, such as technical difficulties, health issues with the baby, or the need for intensive medical care, can be sources of stress and anxiety for the mother. Feelings of uncertainty or inability to overcome these barriers can negatively affect the mother's psychological state. Therefore, supporting the mother in overcoming breastfeeding challenges, whether through medical support or lactation consultant assistance, can help reduce psychological burdens.

The stress or anxiety factor, which often increases in the NICU environment, can affect the mother's psychological well-being. Anxiety related to the baby's health, uncertainty about the future, or feelings of helplessness can present significant psychological challenges. A holistic understanding and handling of stress factors, including providing psychological support and clear information regarding the baby's condition, can help alleviate anxiety and give the mother peace of mind.

In the research by Lee & Huang (Lee & Huang, 2022) the psychological process is divided into one core category and three main categories. The core category is "worrying about the baby and trying to fulfill the responsibilities as a mother." The three main categories include "impact on the mother's role," "recognition of identity as a mother," and "exhibition of the mother's role." This entire process can be influenced by intrinsic and extrinsic factors, such as milk supply, skin-to-skin contact time, and social support. The study recommends adopting family-centered care in the NICU, which takes the initiative to empathize with and care for the mother, as well as encourages participation in support groups to reduce the impact of the situation on the mother's role and enhance her recognition of her identity as a mother.

Adaptation Process

Maternal patience lies at the heart of the adaptation process in breastfeeding low birth weight (LBW) infants in the NICU. Confronted with the infant's serious health conditions and the demanding NICU environment, which often requires a prolonged healing process, maternal patience emerges as a crucial quality. This patience encompasses the mother's learning and adjustment to the demands of breastfeeding, which may require extra time and effort. When dealing with slow progress or challenges in infant care, maternal patience serves not only as a personal trait but also as a fundamental adaptive strategy for providing optimal support to the infant's health and development in the NICU. A study by (Hadi et al., 2019) found that respondents were able to demonstrate patience while caring for their infants. This patience was grounded in their faith in God, enabling them to remain steadfast, persistent, and calm throughout the caregiving process. Factors influencing maternal patience include individual traits, the condition of the infant, and the surrounding social environment.

The mother's interaction with healthcare professionals in the NICU has a significant impact on her adaptation process. Effective communication and mutual understanding between the mother and the neonatal care team play a key role. Clear explanations regarding the infant's condition, medical procedures, and care plans help reduce uncertainty and maternal anxiety. Conversely, a lack of proper communication can heighten maternal stress and uncertainty (Hadi et al., 2019).

The NICU environment, which often differs significantly from the home environment, serves as a determining factor in the mother's adaptation process. Intense visual and auditory stimulation, as well as limited physical access to the infant, present distinct challenges. Therefore, creating a supportive and comfortable environment for mothers in the NICU is essential. A sense of comfort can increase maternal engagement and confidence in providing breast milk.

The mother's response to the infant's development reflects her adaptation process. A mother's understanding of her infant's medical, cognitive, and emotional development can influence her readiness to breastfeed. Positive responses and active maternal involvement in daily care can strengthen the mother-infant bond. Conversely, limited understanding or difficulties in managing emotional responses to the infant's condition may hinder the adaptation process.

CONCLUSION

The experience of breastfeeding among mothers of low birth weight (LBW) infants hospitalized in the Neonatal Intensive Care Unit (NICU) is a complex journey, involving multiple interrelated themes and sub-themes. Within the context of self-efficacy, emotional support, information from healthcare providers, the mother's understanding of the infant's condition, and self-empowerment strategies serve as key pillars in shaping a mother's confidence to provide effective breastfeeding.

The psychological aspects of the mother including emotional support from a partner or family, managing breastfeeding challenges, and coping with stress or anxiety reflect the multifaceted psychological struggles faced by mothers in the NICU environment.

Finally, maternal patience emerges as a fundamental pillar in the overall adaptation process. Patience is not only a personal trait but also a critical element that underpins a mother's ability to face emotional, physical, and environmental challenges with calmness and perseverance. In the journey of breastfeeding, a mother's patience helps her understand and respond to the complex changes in the condition of her LBW infant, fosters emotional balance, and strengthens the relationship with the NICU care team. Therefore, it can be concluded that maternal patience plays a central role in the success of the adaptation process, positively influencing the infant's health and optimal development, and reinforcing the emotional bond between mother and baby.

ACKNOWLEDGEMENT

We would like to express our sincere gratitude to the Master of Midwifery Program at Aisyiyah University Yogyakarta for providing facilities and access to various online databases for literature review. We also extend our appreciation to the Ministry of Research and Technology/National Research and Innovation Agency (Kemenristek DIKTI) for funding this research.

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