

Factors Related to Breastfeeding Success in Post-Partum Mothers: A Quantitative Approach in the Context of Applied Health Sciences

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Abstract: This study aims to identify these factors in the context of health science education, particularly in the applied health sciences and maternal and child health. The study adopts a quantitative approach using a cross-sectional design. The study population includes postpartum mothers at Harapan Mulia Hospital in Bekasi (83 post-cesarean section mothers), Pondokgede District General Hospital (35 post-cesarean section mothers), and TPMB Lia Kamalia (35 normal postpartum mothers). Research instruments included structured questionnaires, observations of breastfeeding techniques, and interviews. Bivariate analysis was performed using the Chi-Square test, with a significance level of $p < 0.05$. The results revealed that most mothers had good knowledge (62.9%), good nutrition (62.7%), were not at risk (73.3%), had a complete ANC history (66.7%), received good family support (60%), had good healthcare support (69.8%), adopted a healthy lifestyle (77.4%), practiced Early Breastfeeding Initiation (94.3%), and used correct breastfeeding techniques (85.7%). All these factors were significantly associated with breastfeeding success (p value < 0.05). Multivariate analysis using multiple logistic regression indicated that the dominant factors contributing to breastfeeding success were good breastfeeding technique (OR = 20.1; $p = 0.004$), Early Breastfeeding Initiation (EBI) (OR = 9.56; $p = 0.045$), and healthcare support (OR = 8.15; $p = 0.001$). This study underscores the need for comprehensive education and promotion of exclusive breastfeeding, emphasizing its significance in health science education. A holistic approach, including family-based interventions and strengthening maternal health literacy in the context of applied health sciences, is essential for enhancing breastfeeding success, particularly for mothers post-cesarean section. This research contributes to the improvement of maternal and child health services and the advancement of health science education in the context of midwifery services.

Keywords: Antenatal care; Family support; Knowledge; Maternal age; Nutrition

Introduction

The postpartum period is a critical phase in a mother's life following childbirth. During this time, mothers experience significant physiological changes as they adapt to their new role. A major challenge faced by mothers is exclusive breastfeeding, which is essential for optimal infant growth and development (A'yun et al., 2021). Breastfeeding not only provides

nutritional benefits but also promotes bonding between mother and baby, while playing a vital role in strengthening the baby's immune system (Sasanti et al., 2024). Exclusive breastfeeding, particularly within the first six months, is recognized globally as the gold standard for infant nutrition, as it supports both physical growth and cognitive development (Vaishnavi & Kavita, 2023).

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In Indonesia, the coverage of exclusive breastfeeding has increased from 52% in 2017 to 68% in 2023. According to WHO, approximately 130 million babies are born each year worldwide, and 4 million infants die within the first 28 days of life (Kurniawati et al., 2019). Breastfeeding, especially exclusive breastfeeding, is crucial in reducing neonatal mortality and promoting health. The physiological process of lactation, which involves complex hormonal mechanisms such as the interplay between oxytocin and prolactin, regulates milk production and release (Lestari et al., 2024). The proper functioning of these hormones is vital for breastfeeding success, as oxytocin facilitates milk letdown, while prolactin is responsible for milk synthesis (Murdiyanti, 2019). These physiological processes highlight the importance of understanding the science of lactation in breastfeeding education (Lars et al., 2003).

Breastfeeding success is influenced by a variety of factors, including maternal knowledge, nutritional status, lifestyle, family support, antenatal care (ANC), and healthcare services (Nadiya & Mutia, 2018). Maternal education and knowledge significantly contribute to a mother's ability to make informed decisions about breastfeeding, as those with higher educational levels tend to seek and apply evidence-based practices (Rahmawati & Sulastri, 2020). Knowledge about breastfeeding mechanisms, such as understanding the role of hormones in milk production, can influence a mother's confidence and success in breastfeeding (Zahra et al., 2023). Nutrition also plays a key role; proper nutritional status is essential for optimal milk production. Adequate intake of macronutrients, micronutrients, and hydration helps maintain a sufficient milk supply, especially for mothers who have undergone cesarean section (Yanti et al., 2022).

Another crucial factor in breastfeeding success is the practice of Early Breastfeeding Initiation (IMD), which involves breastfeeding within the first hour after birth, accompanied by skin-to-skin contact (Siregar, 2020). IMD stimulates the release of oxytocin and accelerates the milk letdown reflex, fostering early bonding between mother and baby. Studies have shown that early initiation of breastfeeding significantly increases the likelihood of exclusive breastfeeding success (Zahra et al., 2023). However, the implementation of IMD remains suboptimal, with the 2018 Basic Health Research (Riskesdas) indicating that national IMD coverage was only 58.2%, far below the target of 80%. This highlights the need to enhance midwifery practices and support for IMD implementation (Widyaningsih & Hidayati, 2021).

Breastfeeding success is also closely linked to the correct technique, which includes proper positioning of

both mother and baby, correct latch, and effective milk transfer. Incorrect technique can lead to various issues such as sore nipples, engorgement, mastitis, and insufficient milk production, all of which hinder breastfeeding success (Fitriani, 2021). Therefore, breastfeeding education and counseling play a pivotal role in ensuring the correct technique and preventing these issues, contributing to long-term breastfeeding success.

In addition to medical factors, social support—especially from family—is an important determinant of breastfeeding success. Active involvement from the father and other family members can provide emotional support, reduce stress, and encourage the mother to continue breastfeeding, particularly after cesarean section (Fitriani, 2021). Maternal age is another influencing factor, with older mothers often having better knowledge and preparedness compared to adolescent mothers. Furthermore, antenatal care (ANC) plays a key role in preparing mothers for breastfeeding. The education and counseling provided during ANC visits, particularly on breastfeeding techniques and the benefits of exclusive breastfeeding, have been shown to improve breastfeeding outcomes.

This study aims to explore the various factors that influence breastfeeding success, including maternal knowledge, nutrition, maternal age, family support, ANC history, lifestyle, healthcare worker support, IMD, and breastfeeding techniques. The study also emphasizes the importance of integrating scientific health literacy and applied science education into breastfeeding practices, thereby enhancing mothers' understanding of lactation physiology and promoting evidence-based decision-making in postpartum care.

Method

This study is a quantitative research with a cross-sectional approach, aimed at identifying factors related to breastfeeding success. The study population consisted of 83 post-cesarean section (CS) mothers at Harapan Mulia Hospital, 35 post-CS mothers at Pondok Gede District General Hospital, and 35 normal postpartum mothers at TPMB Lia Kamalia. All participants were selected based on the inclusion criteria, which included postpartum mothers within 24–72 hours after delivery.

The research instruments used in this study included structured questionnaires, observations of breastfeeding techniques, and interviews. The structured questionnaire assessed various factors that may influence breastfeeding success, including maternal knowledge, nutrition, family support, and healthcare worker support. The observation of breastfeeding techniques was based on a validated

observational checklist that evaluated correct positioning and latch, which are essential components of effective breastfeeding. This checklist was developed based on the latest lactation physiology guidelines, which emphasize the role of correct technique in optimizing milk transfer and reducing common breastfeeding issues such as nipple pain or insufficient milk production. Interviews were conducted to gather qualitative insights into maternal perceptions and experiences regarding breastfeeding practices and challenges.

The collected data were processed using computer software in several stages: summarizing the responses from the questionnaires, followed by editing, coding, and cleaning the data. Data analysis was performed using the Chi-Square test to assess the relationship between categorical variables. Additionally, a multivariate analysis using multiple logistic regression was conducted to identify the dominant factors influencing breastfeeding success, adjusting for potential confounders. The significance level was set at $p < 0.05$ for all statistical tests.

Result and Discussion

This study explores various factors that influence breastfeeding success among postpartum mothers, both those who delivered vaginally and via cesarean section (CS). Breastfeeding is a crucial aspect of maternal and infant care, offering long-term benefits for both the mother and the baby. The results are presented through univariate, bivariate, and multivariate analyses, shedding light on the significant relationship between factors such as maternal knowledge, nutritional status, family support, healthcare worker support, maternal age, antenatal care (ANC) history, early breastfeeding initiation (IMD), and breastfeeding techniques. The findings emphasize the importance of a holistic approach to promoting breastfeeding success, particularly in the postpartum period, and highlight key factors such as proper breastfeeding techniques, maternal knowledge, and support from both family and healthcare workers. These insights aim to enhance healthcare practices and policies supporting exclusive breastfeeding.

The analysis revealed that the majority of breastfeeding mothers at Class D Pondok Gede Regional General Hospital (62.9%) had good knowledge about exclusive breastfeeding. The majority of breastfeeding mothers (65.7%) had good nutritional consumption patterns. The majority of breastfeeding mothers (57.1%) were successful in breastfeeding. At Harapan Mulia Hospital, most mothers (73.3%) were not at risk, confirming that age is an important

determinant of breastfeeding success. Mothers at ideal ages are more likely to succeed in breastfeeding, whereas those at risk require additional support. Most mothers had complete ANC histories (66.7%), and a complete ANC history plays a significant role in preparing mothers to breastfeed. Family support was also crucial, with 60% of mothers reporting good family support, which helped them succeed in breastfeeding (70%).

Table 1. Frequency Distribution of Knowledge, Nutrition, and Breastfeeding Success at Class D Pondok Gede Regional General Hospital, Harapan Mulia Hospital, TPMB Lia Kamalia

Variable	Frequency	Percentage
Knowledge		
Good	22	62.9%
Not Enough	13	37.1%
Nutrition		
Good	23	65.7%
Not Enough	12	34.3%
Breastfeeding Success		
Good	20	57.1%
Not Enough	15	42.9%
Maternal Age		
Risk (<20 or >35)	8	26.7%
No Risk (20-35)	22	73.3%
ANC History		
Complete (≥6 times)	20	66.7%
Incomplete (<6 times)	10	33.3%
Family Support		
Good	18	60%
Not Enough	12	40%
Breastfeeding Success		
Successful	21	70%
Not Successful	9	30%
Support from Health Workers		
Supported	37	69.8%
Not Supported	16	30.2%
Lifestyle		
Healthy	41	77.4%
Not Healthy	12	22.6%
Breastfeeding Success		
Successful	36	67.9%
Not Successful	37	69.8%
Early Breastfeeding Initiation (IMD)		
Yes	33	94.3%
No	2	5.7%
Breastfeeding Technique		
Good	30	85.7%
Not Good	5	14.3%
Breastfeeding Success		
Successful	33	94.3%
Not Successful	2	5.7%

The study further showed that 69.8% of mothers at Harapan Mulia Hospital received support from healthcare workers, and 77.4% of mothers adopted a

healthy lifestyle. Among these mothers, 67.9% were successful in breastfeeding. At TPMB Lia Kamalia, 94.3% of mothers practiced Early Breastfeeding Initiation (IMD), leading to 94.3% breastfeeding success. Additionally, 85.7% of mothers demonstrated correct breastfeeding techniques, resulting in a 94.3% breastfeeding success rate.

Table 2. Relationship Between Maternal Knowledge and Breastfeeding Success at Class D Pondok Gede Regional General Hospital

Knowledge	Breastfeeding Success		p-value
	Successful	Not Successful	
Good	19 (54.3%)	3 (13.6%)	
Not Enough	1 (2.9%)	12 (34.3%)	

Based on Table 2, 54.3% of mothers with good knowledge of exclusive breastfeeding were successful in breastfeeding. The chi-square test yielded a p-value of 0.000, indicating a significant relationship between maternal knowledge and breastfeeding success.

Table 3. Relationship Between Maternal Nutrition and Breastfeeding Success at Class D Pondok Gede Regional General Hospital

Nutrition	Breastfeeding Success		p-value
	Successful	Not Successful	
Good	20 (57.1%)	3 (8.6%)	
Not Enough	0 (0%)	12 (34.3%)	

In Table 3, 57.1% of mothers with good nutritional status successfully breastfed. The chi-square test yielded a p-value of 0.000, showing a significant relationship between maternal nutrition and breastfeeding success.

Table 4. Relationship Between Family Support and Breastfeeding Success at Harapan Mulia Hospital

Family Support	Breastfeeding Success		p-value
	Successful	Not Successful	
Good	16 (88.9%)	2 (11.1%)	
Not Enough	5 (41.7%)	7 (58.3%)	

Table 4 shows that mothers with good family support had a significantly higher breastfeeding success rate (88.9%) compared to those with less support (41.7%). The chi-square test showed a p-value of 0.005, indicating a significant relationship. Table 4 shows that mothers with good family support had a significantly higher breastfeeding success rate (88.9%) compared to those with less support (41.7%). The chi-square test showed a p-value of 0.005, indicating a significant relationship.

Table 5. Multivariate Analysis

Variable	B (Coefficient)	OR (Exp(B))	95% CI OR	p-value
Good Knowledge	1.85	6.36	1.80 - 22.5	0.003
Good Nutrition	1.95	7.02	1.92 - 25.6	0.002
Age Not at Risk	1.12	3.07	1.10 - 12.8	0.041
Complete ANC History	1.35	3.85	1.12 - 13.2	0.029
Family Support	1.65	5.20	1.51 - 17.9	0.008
Health Worker Support	2.10	8.15	2.20 - 30.1	0.001
Healthy Lifestyle	1.48	4.39	1.30 - 14.8	0.016
IMD	2.25	9.56	1.05 - 87.3	0.045
Good Breastfeeding Technique	3.00	20.1	2.30 - 176.1	0.004

Table 5 presents the results of the multivariate analysis, showing that the most dominant factor in breastfeeding success is good breastfeeding technique (OR = 20.1, p = 0.004). Other significant factors include health worker support (OR = 8.15), early breastfeeding initiation (IMD, OR = 9.56), maternal nutrition (OR = 7.02), and maternal knowledge (OR = 6.36).

This study examined the key factors influencing breastfeeding success among postpartum mothers, particularly those who delivered by cesarean section (CS), with a focus on knowledge, nutrition, family support, healthcare support, and maternal age. The findings highlight the significant role of maternal knowledge about breastfeeding in promoting exclusive breastfeeding success. The majority of mothers who had good knowledge of breastfeeding were more likely to successfully breastfeed their infants exclusively, aligning with previous studies. Knowledge about breastfeeding helps mothers understand the physiological processes involved, including the role of oxytocin and prolactin in milk production, which is essential for a successful breastfeeding experience.

In terms of maternal nutrition, this study found that mothers with better nutritional status had higher breastfeeding success rates. Proper nutrition is crucial for maintaining adequate milk production and supporting the mother's physical recovery post-delivery. Sufficient nutritional intake directly impacts breast milk quality. A balanced diet ensures that mothers have the necessary energy and nutrients to support lactation, emphasizing the importance of integrating nutritional education into maternal healthcare.

Family support was also found to play a crucial role, particularly for mothers recovering from a CS. Emotional and physical support from family members, especially the husband, contributes significantly to a mother's confidence and ability to breastfeed effectively. This finding aligns with the work of Wardani et al. (2024), who highlighted the positive impact of family involvement on breastfeeding success. Additionally, the study reinforced the importance of early initiation of breastfeeding (IMD), with the majority of mothers who practiced IMD successfully breastfeeding their infants. IMD has been shown to trigger the release of oxytocin and prolactin, hormones critical for milk production and bonding, confirming previous research by Trisnawati et al. (2023).

The analysis also demonstrated the importance of healthcare worker support in breastfeeding success. Mothers who received adequate breastfeeding guidance from healthcare professionals were more likely to breastfeed successfully. This underscores the critical role of healthcare providers in providing both technical and emotional support to mothers, especially those who have undergone CS. The findings of this study are consistent with Wati & Nuzuliana (2021), who found that professional counseling significantly improves breastfeeding practices.

The study further explored the relationship between breastfeeding techniques and success, revealing that good breastfeeding techniques were the most dominant factor in achieving breastfeeding success. Proper positioning, attachment, and overall technique prevent issues like nipple pain and poor milk transfer, which are common barriers to successful breastfeeding. This aligns with the findings of Syahri & Farah (2022), who emphasized the importance of education on proper breastfeeding techniques in ensuring exclusive breastfeeding success.

Finally, the multivariate analysis confirmed that a combination of factors—knowledge, nutrition, family support, healthcare support, IMD, and breastfeeding technique—contribute synergistically to breastfeeding success. The findings highlight the need for a holistic approach to promoting exclusive breastfeeding, which includes not only medical care but also education, social support, and practical guidance. These results have significant implications for improving breastfeeding support programs, especially in settings with high cesarean section rates, ensuring that mothers receive comprehensive care and guidance to foster successful breastfeeding outcomes.

Conclusion

This study found that breastfeeding success is influenced by factors such as maternal knowledge,

nutrition, family support, age, ANC history, and healthcare worker support. Good breastfeeding technique and early initiation of breastfeeding (IMD) were identified as the most dominant factors for success. The results emphasize the importance of educating mothers on proper breastfeeding techniques, optimizing IMD practices, and strengthening support from healthcare workers and families. To improve breastfeeding outcomes, a comprehensive approach combining education, technical support, and social support is essential.

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Author Contributions

N.Y., L.K., A.U., V.M., B. T, contributed to the conceptualization, data collection process, data processing, and article writing

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Conflicts of Interest

The authors declare no conflict of interest.

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