



THE DETERMINANT FACTOR OF PATERNAL BREASTFEEDING SELF-EFFICACY AFTER HOSPITAL DISCHARGE: A CROSS SECTIONAL STUDY

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ABSTRACT

Breast milk is essential for infant health, providing vital nutrients and supporting immune development. Despite improvements in exclusive breastfeeding rates in Indonesia, challenges persist, particularly in the early days postpartum. Paternal involvement is crucial for successful breastfeeding, yet many fathers express a lack of confidence in their ability to support this process. This study aims to examine the determinants of paternal breastfeeding self-efficacy (PBSE) following hospital discharge, focusing on factors such as delivery type, paternal education, and mental health. A cross-sectional design was employed, targeting fathers whose partners delivered at public hospitals in Jakarta. Data was collected on paternal characteristics and their influence on PBSE, utilizing multiple linear regression analysis to identify significant associations. The analysis revealed that fathers whose partners had vaginal deliveries exhibited significantly higher PBSE (unstandardized B coefficient of 5.2, $p < 0.001$). Fathers with a high school education or below showed a positive association with PBSE (unstandardized B of 3.4, $p = 0.015$). Additionally, anxiety and depression negatively impacted PBSE, with unstandardized B coefficients of -0.2 ($p = 0.038$) and -0.3 ($p = 0.021$), respectively. Enhancing paternal confidence through targeted educational interventions and addressing mental health concerns is essential for improving breastfeeding practices. These findings underscore the importance of involving fathers in breastfeeding, contributing to better health outcomes for both mothers and infants.

Keywords: breastfeeding self-efficacy; cross sectional; determinant factor; indonesia; paternal

How to cite (in APA style)

Pratiwi, N., Chodidjah, S., & Huda, M. H. (2025). The Determinant Factor of Paternal Breastfeeding Self-Efficacy after Hospital Discharge: A Cross Sectional Study. *Indonesian Journal of Global Health Research*, 7(3), 483-492. <https://doi.org/10.37287/ijghr.v7i3.6130>.

INTRODUCTION

Breast milk is a remarkable source of nutrition, containing all the essential nutrients required to support optimal infant health and enhance their immune systems (Bravi et al., 2016). It is specifically formulated to meet the unique dietary needs of newborns and young infants, providing not only macronutrients such as proteins, fats, and carbohydrates but also vital micronutrients, antibodies, and bioactive compounds that play a crucial role in the development of the infant's immune response. The World Health Organization (WHO) (2023) strongly recommends that infants should be exclusively breastfed for the first six months of life, without the introduction of any additional water or food. This exclusive breastfeeding period is critical, as it ensures that infants receive the full benefits of breast milk, which is tailored to their developmental needs. Following this initial six-month period, the WHO advises that breastfeeding should continue alongside the introduction of appropriate complementary foods and water until the child reaches at least two years of age (World Health Organization, 2023). This extended breastfeeding duration is associated with numerous health benefits for both the child and the mother.

The rate of exclusive breastfeeding in Indonesia has demonstrated notable progress in recent years, reflecting a growing recognition of the importance of breastfeeding for infant health. According to the National Health Survey (SKI) conducted in 2023, the prevalence of exclusive breastfeeding during the first six months of life has risen significantly, increasing from 52% in 2017 to an impressive 68% in 2023. This upward trend indicates a positive shift in breastfeeding practices, likely influenced by various public health initiatives and increased awareness of the benefits of exclusive breastfeeding. Despite this encouraging improvement, several challenges persist, particularly during the critical newborn stage. Alarming, only 27% of newborns in Indonesia are breastfed within the first hour of life, which is a crucial period for initiating breastfeeding and establishing a strong bond between mother and child (Health Research and Development Agency, 2023). Furthermore, it is concerning that one in five infants are introduced to foods or liquids other than breast milk before the age of six months. This early introduction of complementary foods can undermine the benefits of exclusive breastfeeding and may lead to adverse health outcomes for infants (Wilde, 2021).

Paternal support is an essential component in the successful initiation and continuation of breastfeeding (Zhou et al., 2024). The involvement of fathers in the breastfeeding process has been shown to significantly influence various outcomes related to breastfeeding. A recent systematic review and meta-analysis highlighted that when fathers actively participate in breastfeeding, there are several positive outcomes associated with this involvement. These outcomes include a notable increase in the rate of exclusive breastfeeding at six months, which is critical for ensuring that infants receive the full benefits of breast milk during this vital period of development. Moreover, fathers who engage in the breastfeeding journey tend to exhibit enhanced knowledge and more positive attitudes towards breastfeeding. This increased awareness not only benefits the fathers themselves but also contributes to a supportive environment for breastfeeding mothers, ultimately leading to a reduction in breastfeeding-related challenges. Such challenges can include difficulties with latching, concerns about milk supply, and the emotional stress that can accompany the breastfeeding experience (Mahesh et al., 2018).

Despite these positive associations, it is important to note that many fathers often express a lack of confidence in their ability to support their partners during breastfeeding (Baldwin et al., 2021). This lack of confidence can stem from various factors, including insufficient knowledge about breastfeeding practices, societal norms that may not encourage paternal involvement, and a general feeling of being unprepared to assist in this critical aspect of infant care (Huda et al., 2024). Addressing these barriers is essential for fostering a more supportive environment for breastfeeding, where fathers feel empowered to take an active role in the process. By enhancing fathers' confidence and providing them with the necessary resources and education, we can improve breastfeeding outcomes and promote healthier feeding practices for infants. Therefore, understanding modifiable factor is crucial in designing potential educational program to boost paternal breastfeeding self-efficacy. The aim of this study is to examine the determinant factor of Paternal Breastfeeding Self-Efficacy after hospital discharge.

METHOD

Study Design and Participants

This research employed a cross-sectional design to investigate the experiences and perspectives of fathers whose partners delivered their babies at public hospitals or health centers in Jakarta. The study aimed to gather comprehensive data on paternal involvement in breastfeeding and the factors influencing it. To be included in the study, fathers had to meet specific eligibility criteria: they needed to be at least 20 years old, possess the ability to read

and write in Bahasa Indonesia, and have access to an electronic device with internet connectivity. These criteria were established to ensure that participants could effectively engage with the study materials and provide informed responses. Conversely, fathers were excluded from participation if their partners faced any complications that would impede their ability to exclusively breastfeed. This exclusion criterion was crucial to maintain the focus of the study on those families where exclusive breastfeeding was a viable option.

The questionnaire used in this study was the Bahasa Indonesia version of the Paternal Breastfeeding Self-Efficacy Scale (BSES-SF), which consists of 14 items with a 5-point Likert scale. The total score ranges from 14 to 70, with a higher score indicating a higher level of breastfeeding self-efficacy (Dennis et al., 2018). The paternal self-efficacy score was measured at hospital discharge and 2 weeks after the first time filling out the questionnaire. Data entry and statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) version 23.0 and AMOS vers. 25 (IBM, Chicago, IL, USA). The demographic characteristics were summarized using mean and standard deviation for continuous data; while frequency and percentage for categorical data. The internal consistency reliability was determined using Cronbach's alpha. Internal consistency is adequate if the value greater than 0.7 (Tavakol & Dennick, 2011). The intraclass correlation coefficient (ICC) was used to examine the test-retest reliability of the paternal version of BSES-SF, a value greater than 0.75 indicating adequate reliability (Koo & Li, 2016).

To examine the construct validity of Paternal BSES-SF, we performed a confirmatory factor analysis (CFA) using the maximum likelihood estimation method. In confirmatory factor analysis, the goodness-of-fit was evaluated by using Chi-square/degree of freedom (χ^2/df) < 3, a cumulative fit index (CFI) > 0.90, a Tucker-Lewis index (TLI) > 0.95, and a root mean square error of approximation (RMSEA) < 0.06, with $z = 0.30$ as a cut-off for items loading onto a factor (Bollen, 1990; Kline, 2005; MacCallum et al., 1996; Watson & Thompson, 2006). Concurrent validity was evaluated using Pearson correlation coefficient between the paternal BSES-SF and maternal BSES-SF, while divergent validity was evaluated using Pearson correlation coefficients between scale BSES-SF and SAS as well as BSES-SF and EPDS scores. We also examined the predictive validity using Spearman correlation, t-test between paternal BSES-SF and exclusive breastfeeding at two weeks postpartum among 150 participants. Item-response analysis, i.e., Rasch analysis was conducted to assess the dimensionality, item and person separation, model fitting, and item difficulty of the paternal BSES-SF. Compared to traditional classical test theory approaches (i.e., EFA and CFA), Rasch analysis, a modern test theory, offers further diagnostic information about the scale. It is used in the social and health sciences to examine dimensionality, item and person separation, model fitting, and item difficulty. We examined the unidimensionality of paternal BSES-SF using principal component analysis (PCA) on standardized residuals. An observed raw score variation in data that was explained by the measures of > 50% and an eigenvalue of the first contrast of 3 showed strong unidimensionality (Fisher, 2007). We defined the item separation and person separation by the ratio of the true distribution of the measures to their measurement error that is estimated through the measurement construct. The item separation index was used to estimate the standard error units of the item distribution or separation, while the item separation index was utilized to calculate the person distribution. Satisfactory internal consistency reliability was determined by a separation index of more than 2.0 and estimated reliability of more than 0.8 (Boone et al., 2014). A Cronbach's alpha > 0.7 indicated a good internal consistency.

To determine the internal validity, we used the information-weighted as well as outlier-sensitive mean square statistics. The information-weighted mean square statistics beyond 0.7

to 1.4 indicated as misfit, which an infit MnSq value less than 0.7 were over fitting (Linacre, 1996). A significant misfit between the data and the model was indicated by an outfit MnSq value of more than 1.4 (Linacre, 1996). The person item map can explain the item difficulty on person ability. A well-targeted instrument was indicated by the mean of the item difficulty and similar either to or 1 logit below the participant's ability. The main difference between the means showed the instrument's inadequate targeting (Mallinson et al., 2004). In this study, the Item-Level Content Validity Index (I-CVIs) for all items ranged from 0.9 to 1.00, and the Scale-Level Content Validity Index/Average (S-CVI/Ave) was 0.98. These results indicated excellent content validity. The corrected item-total correlation was found to be positive, ranging from 0.7 to 0.9. The alpha reliability coefficient of the Paternal BSES-SF was 0.97, while test-retest reliability, as represented by the intraclass correlation coefficient, was 0.99.

RESULT

Participant's characteristics

The table 1 provides a comprehensive overview of the characteristics of the respondents in the study. The mean age of participants is 29.9 years, with a standard deviation of 5.9 years, indicating a relatively young demographic. In terms of education, a significant majority, 67.3% (102 respondents), have completed high school or below, while 32.7% (49 respondents) have attained a college education or higher. The religious composition is predominantly Muslim, accounting for 97.3% (146 respondents), with Christians making up only 2.7% (4 respondents). Regarding job status, 48.7% (73 respondents) are employed full-time, 14.7% (22 respondents) work part-time, and 36.7% (55 respondents) are unemployed. The wealth index shows that 55.3% (83 respondents) earn at least the minimum regional wage of Jakarta, while 44.7% (67 respondents) earn above this threshold.

In terms of parity, 44.7% (67 respondents) are primipara (first-time mothers), while 55.3% (83 respondents) are multipara (having had previous births). The type of delivery reveals that 71.3% (107 respondents) had vaginal births, while 28.7% (43 respondents) underwent cesarean sections. Skin-to-skin contact was reported by 27.3% (41 respondents), while 72.7% (109 respondents) did not have this experience. Additionally, 26.7% (40 respondents) practiced rooming-in with their infants, compared to 73.3% (110 respondents) who did not. Finally, the table highlights that the anxiety and depression levels averaging 25.9 and 9.7, respectively, while breastfeeding self-efficacy had a mean score of 50.2.

Table 1.
Respondent Characteristics (n= 150)

Variable	Mean	SD	n	%
Age	29.9	5.9		
Education				
Highschool below	49.3	7.8	101	67.3
College above	51.9	9.2	49	32.7
Religion				
Muslim	50.2	8.4	146	97.3
Christian	48.0	4.5	4	2.7
Job Status				
Full-time Job	49.6	8.6	73	48.7
Part-time Job	47.9	5.2	22	14.7
No Job	51.8	8.7	55	36.7
Wealth Index				
Minimum regional wage of Jakarta	49.0	7.0	83	55.3
	51.0	9.6	67	44.7

Maximum regional wage
of Jakarta

Parity				
Primipara	51.4	8.8	67	44.7
Multipara	49.2	7.8	83	55.3
Type of delivery				
Vaginal	48.8	7.1	107	71.3
Caesarean Section	56.6	10.2	43	28.7
Skin-to-skin contact				
Yes	50.2	8.5	41`	27.3
No	20.2	7.9	109	72.7
Rooming in				
Yes	51.8	8.4	40	26.7
No	49.6	8.3	110	73.3
Anxiety	25.9	6.2		
Depression	9.7	5.8		
Breastfeeding Self-Efficacy	50.2	8.3		

Note. SD: Standard Deviation; n: Frequency; %: Percentage.

Association between paternal characteristics with BSE score

The table 2 illustrates the association between various paternal characteristics and breastfeeding self-efficacy (BSE) scores, shedding light on how these factors may influence fathers' confidence in supporting breastfeeding. The mean BSE score for age is 0.032, with a p-value of 0.702, indicating no significant relationship between age and breastfeeding self-efficacy. In terms of religion, Muslim respondents have a mean BSE score of 50.2 (SD = 8.4), while Christian respondents have a mean score of 48.0 (SD = 4.6); however, the p-value of 0.178 suggests that this difference is not statistically significant. Regarding education, fathers with a high school education or below have a mean BSE score of 49.3 (SD = 7.7), while those with a college education or above have a mean score of 51.9 (SD = 9.2), with a p-value of 0.023 indicating a significant association. Job status shows that full-time employed fathers have a mean score of 49.6 (SD = 8.6), part-time employed fathers have 47.9 (SD = 5.2), and those with no job have a mean score of 51.8 (SD = 8.7), but the p-value of 0.121 indicates no significant difference. The wealth index reveals that fathers earning below the minimum regional wage of Jakarta have a mean BSE score of 49.1 (SD = 7.0), while those earning at or above the minimum wage have a mean score of 51.6 (SD = 9.6), with a p-value of 0.065 suggesting no significant association.

In terms of parity, primipara fathers have a mean score of 51.4 (SD = 8.8) compared to multipara fathers at 49.2 (SD = 7.8), with a p-value of 0.096 indicating no significant difference. The type of delivery shows a significant association, with vaginal delivery fathers having a mean BSE score of 48.8 (SD = 7.1) and those with a cesarean section scoring 56.6 (SD = 10.2), with a p-value of 0.001. Skin-to-skin contact does not show a significant association, as the mean scores are 50.2 (SD = 8.5) for those who practiced it and 20.2 (SD = 7.9) for those who did not, with a p-value of 0.967. Lastly, rooming-in practices yield a mean score of 51.8 (SD = 8.4) for those who roomed in and 49.6 (SD = 8.3) for those who did not, with a p-value of 0.162. Anxiety and depression scores also show significant associations with p-values of 0.033 and 0.074, respectively, indicating that mental health factors may influence breastfeeding self-efficacy.

Table 2.
Association between paternal characteristics with BSE score

Variable	Breastfeeding Self-Efficacy			
	Mean	SD	r/t/F	p-value
Age			0.032	0.702
Religion				
Muslim	50.2	8.4	0.5	0.178
Christian	48.0	4.6		
Education				
Highschool below	49.3	7.7	-1.9	0.023
College above	51.9	9.2		
Job status				
Full time	49.6	8.6		
Part time	47.9	5.2	2.1	0.121
No job	51.8	8.7		
Wealth Index				
< Minimum regional wage of Jakarta	49.1	7.0	-1.9	0.165
>= Minimum regional wage of Jakarta	51.6	9.6		
Parity				
Primipara	51.4	8.8	1.7	0.196
Multipara	49.2	7.8		
Type of delivery				
Vaginal	48.8	7.1	-3.3	0.001
Caesarean Section	56.6	10.2		
Skin-to-skin contact				
Yes	50.2	8.5	-0.4	0.967
No	20.2	7.9		
Rooming in				
Yes	51.8	8.4	-1.4	0.162
No	49.6	8.3		
Anxiety			-0.2	0.033
Depression			0.2	0.074

Note. SD: Standard deviation; r: Correlation; t: t-test; F: F-test

Factor Associated with Paternal Breastfeeding Self-Efficacy

The table presents the findings from a multiple linear regression analysis that explores the factors influencing paternal breastfeeding self-efficacy. The results indicate that the type of delivery significantly impacts self-efficacy, with vaginal delivery showing a strong positive association, reflected by an unstandardized B coefficient of 5.2 and a standardized B of 0.3. The 95% confidence interval (CI) for this variable ranges from 2.4 to 7.9, and the p-value is highly significant at 0.000. In contrast, the analysis for caesarean section does not provide a specific coefficient in the table. Additionally, education level plays a role, with fathers who have completed high school or below showing an unstandardized B of 3.4 and a standardized B of 0.2, indicating a positive association with self-efficacy, supported by a p-value of 0.015. The analysis also considers parity, anxiety, and depression, with anxiety showing a negative association (unstandardized B of -0.2, $p = 0.038$) and depression also negatively impacting self-efficacy (unstandardized B of -0.3, $p = 0.021$). These findings highlight the importance of delivery type and educational background in enhancing paternal breastfeeding self-efficacy, while also indicating that mental health factors such as anxiety and depression may detract from it.

Table 3.
Multiple linear regression of paternal breastfeeding self-efficacy

Variable	Unstandardized B	Standardized B	95% CI	p-value
Type of delivery				
Vaginal	5.2	0.3	2.4-7.9	0.000
Caesarean Section				
Education				
Hightschool below	3.4	0.2	0.7-6.1	0.015
College above				
Anxiety	-0.2	-0.2		0.038
Depression	-0.3	-0.2	-0.04 - (-0.5)	0.021

Note. Predictors in the model: Constant, Type of Delivery, Anxiety, Depression, Education, Parity; CI: Confident Interval.

DISCUSSION

The findings from the analysis underscore a significant positive association between vaginal delivery and paternal breastfeeding self-efficacy. This suggests that fathers whose partners experience vaginal delivery may possess a greater sense of confidence in their ability to support breastfeeding practices (Mahesh et al., 2018). One possible explanation for this association could be the immediate bonding opportunities that often accompany vaginal births, such as skin-to-skin contact, which has been shown to enhance paternal involvement and support for breastfeeding (Chen et al., 2017). Additionally, the physiological and emotional experiences associated with vaginal delivery may foster a more supportive environment for breastfeeding, as fathers may feel more engaged and connected to their newborns (Nickerson et al., 2012).

The findings of this study highlight the significant role that education level plays in shaping paternal breastfeeding self-efficacy. This suggests that educational background may influence fathers' understanding of breastfeeding, their perceived roles, and their ability to engage effectively in the breastfeeding process (Brown & Davies, 2014). One possible explanation for this association is that fathers with higher educational attainment may have greater access to information and resources related to breastfeeding, which can enhance their confidence and involvement (Hosking et al., 2025). Additionally, educated fathers may be more likely to seek out support and engage in discussions about breastfeeding, further reinforcing their self-efficacy and ability to contribute positively to the breastfeeding experience.

Moreover, the positive association observed in this study underscores the importance of targeted educational interventions aimed at fathers, particularly those with lower educational backgrounds. By providing accessible information and resources about breastfeeding, healthcare providers can empower fathers to take an active role in supporting their partners and promoting successful breastfeeding practices (Ngoenthong et al., 2023). This empowerment can lead to improved breastfeeding outcomes, as fathers who feel confident in their ability to support breastfeeding are more likely to engage in behaviors that facilitate breastfeeding success, such as assisting with latching, providing emotional support, and helping to create a conducive environment for breastfeeding.

The results of this study reveal a notable negative association between anxiety and breastfeeding self-efficacy among fathers. Higher levels of anxiety can undermine a father's confidence in his ability to support breastfeeding, potentially leading to feelings of inadequacy and stress during the breastfeeding process (Wilde, 2021). This relationship underscores the importance of addressing mental health and emotional well-being in fathers, as anxiety may hinder their engagement and support in breastfeeding practices (Nourizadeh et al., 2023). Interventions aimed at reducing anxiety, such as counseling or support groups,

could enhance fathers' self-efficacy and, in turn, contribute to a more supportive environment for breastfeeding mothers. By fostering a positive mindset, fathers may be better equipped to navigate the challenges of breastfeeding, ultimately benefiting both the mother and child.

The findings of this study indicate a significant negative association between depression and breastfeeding self-efficacy among fathers. Fathers experiencing higher levels of depression may struggle with feelings of inadequacy and low motivation, which can adversely affect their confidence in supporting breastfeeding practices (Nath et al., 2016). This relationship highlights the critical need for mental health support for fathers, as untreated depression can not only impact their well-being but also diminish their ability to engage positively in the breastfeeding process. Addressing paternal mental health through targeted interventions may enhance self-efficacy and ultimately improve breastfeeding outcomes for both mothers and infants.

CONCLUSION

In conclusion, the analysis highlights a significant positive association between vaginal delivery and paternal breastfeeding self-efficacy, suggesting that fathers whose partners undergo vaginal births are likely to feel more confident in their ability to support breastfeeding practices. This increased self-efficacy may stem from the immediate bonding opportunities, such as skin-to-skin contact, that are facilitated by vaginal deliveries. These findings emphasize the importance of promoting supportive environments for fathers during the perinatal period, as enhancing paternal involvement can contribute to more successful breastfeeding outcomes. Future interventions should focus on fostering these bonding experiences to further empower fathers in their roles as supporters of breastfeeding.

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