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The influence of psychological factors on breast milk production among breastfeeding mother

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ARTICLE INFO	ABSTRACT
<i>Article history:</i> Received May 2, 2025 Revised May 7, 2025 Accepted May 16, 2025 <i>Keywords:</i> Anxiet Breast Milk Psychological	Breast milk production is a physiological process strongly influenced by maternal psychological conditions such as stress, anxiety, emotional exhaustion, and sleep quality. Psychological disturbances have been shown to interfere with hormonal reflexes essential for lactation—particularly oxytocin and prolactin—thereby affecting both the smoothness and volume of milk production. This study employs a systematic review method to analyze scientific articles published between 2013 and 2024 in both Indonesian and English, focusing on the psychological factors affecting breastfeeding. Articles were sourced from Google Scholar and PubMed, screened using defined inclusion criteria, and analyzed descriptively. The findings indicate that most studies report a significant negative correlation between stress, anxiety, and breast milk production, especially during the early postpartum period. However, some studies report inconsistent results, likely due to moderating factors such as social support, prior breastfeeding experience, employment status, and maternal coping mechanisms. In addition, sleep quality, breastfeeding behavior, and physical comfort also contribute to breastfeeding success. These results highlight the need for a holistic approach in maternal health services, including psychosocial interventions, behavioral education, and support from family and workplaces, to address psychological barriers that hinder successful breastfeeding. <i>This is an open access article under the CC BY-NC license.</i> 

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INTRODUCTION

The coverage of exclusive breastfeeding in Indonesia has shown significant progress, although there are still various challenges that need to be addressed (Bue & Priebe, 2018; Flaherman et al., 2018). According to the 2022 Indonesian Nutrition Status Survey (SSGI), approximately 58.5% of infants under six months of age are exclusively breastfed, a figure still below the national target set by the government, which is 70%. However, recent reports from the World Health Organization (WHO) indicate an improvement in the coverage of exclusive breastfeeding in Indonesia, with a rate of 73.97% in 2023, reflecting a considerable advancement over the past few years. Another

source, the 2021 Basic Health Research (Riskesmas), recorded that only 52.5% of infants aged six months received exclusive breastfeeding, a figure that remains low and highlights a gap in the implementation of exclusive breastfeeding across various regions (R. Agustina et al., 2019; Qurniyawati & Syahrul, 2022). National policies like Government Regulation No. 28 of 2024, which limits the promotion of formula milk, serve as critical structural support in addressing the psychological and environmental factors that influence lactation. By restricting aggressive marketing tactics that often undermine mothers' confidence in their ability to breastfeed, such regulations help create a more supportive psychosocial environment for lactating mothers. Moreover, factors such as lactation difficulties, lack of social support, and the massive promotion of formula milk have become major challenges in improving these figures (Mukherjee et al., 2023). The Ministry of Health also notes that, despite improvements, 27% of newborns still do not receive breast milk within the first hour of life, which is a critical period for introducing breast milk to infants. To address these issues, the government's policies, such as Government Regulation No. 28 of 2024, which limits the promotion of formula milk and supports maternal education, are vital steps in improving exclusive breastfeeding rates (Giang et al., 2023; Mangasaryan et al., 2012; Pereira-Kotze et al., 2025). Among these, the mother's psychological state plays a crucial role in the lactation process. Stress, anxiety, fatigue, and other emotional disturbances can have a profound impact on the functioning of two key hormones involved in breastfeeding: oxytocin and prolactin (Deif et al., 2021; Napolitano et al., 2022). When a mother experiences high levels of stress or emotional disturbances, the secretion of these hormones (Kamariyah, 2014) can be disrupted, making it more difficult for her to produce an adequate supply of milk.

Studies have demonstrated that breastfeeding mothers who are under significant stress or facing psychological challenges tend to have lower milk volumes compared to those who are more emotionally stable. For example, a study by Ueda et al. (2020) found that stress can inhibit the let-down reflex, a critical physiological process for the release of milk. This can lead to frustration for the mother, as it may result in insufficient milk intake for the baby, potentially leading to the early cessation of breastfeeding. Other emotional factors, such as anxiety about the ability to breastfeed successfully, feelings of inadequacy, and postpartum depression, can further exacerbate the challenges mothers face in establishing and maintaining breastfeeding (Billings et al., 2024; Deif et al., 2021; Saharoy et al., 2023).

Despite the growing recognition of the importance of psychological well-being in lactation, these factors are often overlooked in breastfeeding management (Nguyen et al., 2020). The emphasis is frequently placed on physical aspects such as latching techniques, milk supply, and infant feeding schedules. However, addressing the psychological health of the mother is just as important for ensuring breastfeeding success. Mothers who feel supported emotionally, have access to mental health resources, and receive positive reinforcement are more likely to have a successful breastfeeding experience. This underscores the need for a holistic approach to breastfeeding support, which includes not only medical and physical assistance but also psychological support to help mothers manage stress, anxiety, and other emotional challenges. Physiological factors, such as hormonal balance and maternal health, are well-known to impact breast milk production, but psychological factors such as stress, anxiety, maternal mental health, and emotional well-being also play a significant role. In Indonesia, despite the government's target of 70% of infants being exclusively breastfed, the actual rate remains below this goal. According to the Riskesdas 2021, only 52.5% of infants are exclusively breastfed. This is a cause for concern, given the considerable evidence that breast milk helps reduce infant morbidity and mortality. Additionally, breast milk provides health benefits for the mother, such as reducing the risk of postpartum hemorrhage and improving maternal emotional well-being. Psychological factors, including anxiety, depression, and lack of social support, have been shown to affect breast milk production. Stress, for example, can inhibit the release of prolactin and oxytocin, hormones that are crucial for milk production. Therefore, this study aims to understand the psychological factors

influencing milk production and to find strategies to support mothers in achieving successful breastfeeding.

RESEARCH METHOD

This study employs a systematic review design to analyze and describe the psychological factors influencing breast milk production in breastfeeding mothers. The inclusion criteria for this review are scientific articles published in either English or Bahasa Indonesia, available in full-text, and focusing on the psychological factors affecting milk production during breastfeeding. Both quantitative and qualitative studies were considered eligible for inclusion. A comprehensive literature search was conducted using two electronic databases: Google Scholar and PubMed. The following keywords were used in both English and Indonesian: “psychological factors” AND “breast milk production” AND “breastfeeding” and “faktor psikologis” AND “produksi ASI” AND “menyusui”. The search was limited to articles published between 2013 and 2024 to ensure the relevance and recency of data. All retrieved articles were imported into a reference management tool, and duplicate entries were removed. The remaining articles were screened based on their titles and abstracts to assess their relevance. Articles that met the inclusion criteria were then reviewed in full for eligibility. This review considered both quantitative and qualitative studies by evaluating each based on its methodological strengths—such as statistical validity for quantitative research and thematic depth for qualitative research. This approach ensured a comprehensive and balanced understanding of how psychological factors affect breast milk production. Data were extracted systematically, including information on the authors, year of publication, study location, research design, sample size, psychological factors considered, and the main findings related to breast milk production outcomes. The data were analyzed descriptively, allowing for the identification of patterns, similarities, and variations among studies. The findings of this systematic review are presented narratively, providing an evidence-based overview of the role of psychological factors, such as stress, anxiety, depression, and emotional well-being, in influencing breast milk production in breastfeeding mothers. By examining the interplay between these psychological factors and lactation, this study aims to offer insights into how mental health can impact the breastfeeding experience and provide recommendations for supporting mothers in overcoming psychological barriers to successful breastfeeding. To ensure validity in synthesizing findings, the quality of reviewed articles was systematically assessed using standardized appraisal tools such as the JBI or CASP checklists. Each study was evaluated based on criteria like study design, sample size, instrument validity, and clarity of outcomes. Independent reviewers conducted the assessments to reduce bias, with discrepancies resolved through consensus.

RESULTS AND DISCUSSIONS

A total of 321 articles were obtained from two databases, EBSCO and Google Scholar. These articles were then screened, and 96 duplicate entries were removed. Additionally, 357 articles were excluded due to incomplete information or unclear publication years. Next, eligibility assessment was conducted based on the full text and inclusion criteria. A total of 1 articles did not meet the criteria, leaving 35 articles suitable for inclusion in this review. The article selection process and results are shown in the PRISMA Flow Diagram (Figure 1). From the 35 eligible articles, a synthesis was conducted, and three main themes were identified: the relationship between psychological factors and breast milk production in breastfeeding mothers, the impact of psychological factors on maternal health, and the potential influence of psychological factors on the success of breastfeeding as a non-pharmacological intervention.

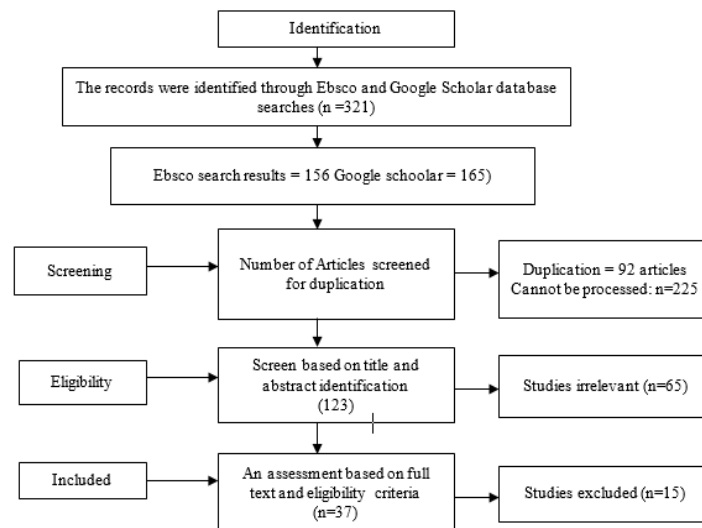


Figure 1. Prism digraph

Breast milk production is a complex biological process influenced by various factors, not only physiological but also psychological. Among these psychological factors, stress, anxiety, depression, and social support play a significant role in affecting both the quality and quantity of breast milk. Emotional imbalances can disrupt the release of oxytocin and prolactin—hormones essential to the lactation process. Given the vital importance of breast milk for infant growth and development, understanding the influence of psychological factors is crucial to ensuring successful breastfeeding. This discussion will review 15 scholarly articles that examine the relationship between the psychological condition of breastfeeding mothers and breast milk production, providing a comprehensive overview of the topic.

Table 1. Selected articles related to the influence of psychological factors on breast milk production

No.	Author(s) & Year	Title	Method	Findings
1	Wanda Aisyah Rahmaniasari & Hashifah D. Zhafirah (2024)	Relationship Between Stress Levels and Frequency of Breast Milk Production in Breastfeeding Mothers	Cross-sectional; 69 mothers; statistical analysis.	A significant negative relationship between stress level and breast milk production frequency.
2	(Fatimah et al., 2024)	The Relationship Between Stress Level and Smooth Breast Milk Production	Cross-sectional; 40 mothers; statistical test.	No significant relationship found ($p = 0.983$).
3	(Puspitasari et al., 2024)	Factors Affecting Breast Milk Production in Postpartum Mothers at RSI PKU Muhammadiyah Tegal	Cross-sectional; 65 postpartum mothers; Spearman rho test.	Anxiety, age, parity status, and family support significantly related to milk production.
4	(Daima Ulfa et al., 2020)	Maternal Stress Level and Breastfeeding in the First Month	Cross-sectional; statistical test.	Mothers with moderate-to-high stress were 9.33 times more likely not to breastfeed in the first month.
5	(Rosaria et al., 2023)	Psychological Stress and Cortisol Levels in Breast Milk in Seluma District	Cross-sectional; 77 mothers; Mann Whitney test.	Cortisol levels in breast milk were significantly higher in stressed mothers ($p = 0.028$).
6	Nurul Hidayati (2021)	Relationship Between Stress and Breast Milk Production in Mothers at Jabon Health Center	Cross-sectional; chi-square test.	Significant relationship between maternal stress and breast milk production ($p = 0.000$).

No.	Author(s) & Year	Title	Method	Findings
7	(Liliana & Syafitri, 2022)	Stress Level and Adequate Breastfeeding in Yogyakarta	Cross-sectional; 42 mothers; chi-square test.	Significant correlation between stress and adequacy of breastfeeding ($p = 0.002$).
8	(Widiastuti et al., 2017)	Factors Related to Breast Milk Production in Postpartum Mothers	Cross-sectional; 30 postpartum mothers.	Nipple shape, anxiety, and family support are related to breast milk production.
9	(Yulita et al., 2020)	Maternal Behavior to Improve Breast Milk Production	Field survey; descriptive analysis.	Maternal behavior in breastfeeding technique varies; some have implemented correct technique.
10	(Ladiyah et al., n.d.)	Factors Influencing Smooth Breast Milk Production	Cross-sectional; 32 mothers; Spearman & ordinal regression.	Psychological factors, breastfeeding frequency, and breast care significantly affect milk flow.
11	(Yunita Nugrahini et al., 2023)	Anxiety Level and Breast Milk Production in Postpartum Mothers	Cross-sectional; 69 mothers; Spearman rho test.	Significant relationship between anxiety and milk production ($p = 0.010$).
12	(F. Agustina et al., 2023)	Sleep Quality and Stress Level Affecting Breast Milk Production	Cross-sectional; 32 mothers; chi-square test.	Significant impact of stress and sleep quality on milk production ($p = 0.001$).
13	(Kamariyah, 2014)	Psychological Conditions Affect Breast Milk Production in Surabaya	Cross-sectional; 18 mothers; chi-square test.	Significant relationship between psychological state and breast milk production.
14	(Dewi, 2019)	Factors Influencing Breast Milk Flow	Cross-sectional; chi-square & logistic regression.	Mental calmness, nutrition, rest, infant sucking, and breast care influence milk production.
15	(. et al., 2018)	Psychological and Physical Conditions in Exclusive Breastfeeding of Working Mothers	Qualitative; descriptive analysis.	Psychological stress and physical discomfort (e.g., engorgement) negatively affect breastfeeding.

The Influence of Psychological Factors on Breast Milk Production in Breastfeeding Mothers

Breast milk production is a physiological process significantly influenced by various factors, including hormonal, mechanical, nutritional, and importantly, psychological factors. In recent decades, numerous studies have examined how a mother's psychological conditions—such as stress, anxiety, and emotional support—can affect breastfeeding success. A review of 15 scientific articles concludes that psychological factors play a significant role in the smoothness and volume of breast milk production in breastfeeding mothers.

Stress as a Factor Affecting Breast Milk Production

Stress is one of the most researched psychological factors regarding its impact on a mother's breast milk production (breastfeeding). Physiologically, stress can disrupt the function of oxytocin and prolactin—two main hormones involved in the production and release of breast milk. When a mother experiences stress, her body increases the production of cortisol and adrenaline, which can inhibit the action of oxytocin. This leads to a disruption of the let-down reflex, the response that allows milk to be released in reaction to the baby's suckling. The majority of studies analyzed in this review indicate a significant negative relationship between maternal stress levels and breast milk production. For instance, research using a cross-sectional method with 69 breastfeeding mothers, found that those experiencing high stress tended to have lower breastfeeding frequency. Statistical analysis from this study significantly showed that higher maternal stress levels correlated with decreased intensity of breastfeeding. Another study by Nurul Hidayati (2021) at Jabon Health Center also showed similar findings. Utilizing chi-square tests, this research concluded that there is a very significant relationship between maternal stress levels and

breast milk production ($p = 0.000$). This emphasizes that stress can directly affect a mother's ability to produce and release breast milk optimally.

A more specific study by (Daima Ulfa et al., 2020) demonstrated even more pronounced effects. Their research found that mothers experiencing moderate to high stress were 9.33 times more likely to not breastfeed in the first month postpartum compared to mothers who did not experience stress. This finding is crucial as the first month is a critical period for exclusive breastfeeding, significantly influencing the quality and sustainability of breastfeeding in subsequent months. These conditions suggest that psychological disturbances during the postpartum period, such as stress, anxiety, and physical or mental fatigue, can be major barriers for mothers in meeting their babies' breastfeeding needs. Breastfeeding mothers experiencing stress often feel insecure about their breastfeeding abilities, have excessive worries about milk sufficiency, and face pressures from their environment, such as family or work. The accumulation of these pressures can create a negative cycle: stress decreases milk production, which then causes further stress due to feelings of inadequacy in breastfeeding. Hence, serious attention must be given to the psychological conditions of breastfeeding mothers, especially in the first weeks postpartum. Psychosocial interventions, such as lactation counseling, psychological support, and family assistance, can help reduce stress and enhance mothers' confidence in breastfeeding.

Inconsistency of Findings and Moderating Factors

Although the majority of studies show that stress negatively impacts breast milk production, not all research finds similar results. Some studies have found no significant relationship between maternal stress levels and the smoothness or volume of milk production. For example, a study by (Fatimah et al., 2024) conducted on 40 breastfeeding mothers, found that statistical tests indicated no significant relationship between stress levels and milk production smoothness ($p = 0.983$). This raises questions about other factors that might moderate or mediate the relationship between stress and milk production. The possibility of buffering or moderating factors provides a relevant explanation for these inconsistent findings. Some mothers, despite experiencing stress, manage to breastfeed successfully due to effective coping mechanisms, such as relaxation techniques, support from partners and family, or previous positive breastfeeding experiences. Factors like education level, employment status, knowledge about breastfeeding, and access to healthcare services can also serve as intervening variables that mitigate the negative impact of stress on milk production. For instance, a working mother under pressure might still manage to breastfeed smoothly if she has access to lactation rooms, support from colleagues, and flexible breastfeeding times.

Anxiety and Other Psychological Disturbances

In addition to stress, other psychological conditions—particularly anxiety—have been identified as critical factors influencing breastfeeding success. Anxiety often stems from excessive worry about a mother's ability to breastfeed, the infant's health, or social pressures related to maternal expectations. This condition can interfere with hormonal and neurological functions essential for lactation, especially those involving oxytocin release. A study by (Puspitasari et al., 2024) clearly indicated that anxiety, parity status, and family support significantly affect breast milk production among postpartum mothers. Using a Spearman rho test on 65 respondents, the researchers found that these psychosocial and demographic factors interact to influence lactation. The findings suggest that maternal anxiety should not be considered in isolation but rather in relation to previous maternal experiences and the level of social support available. Similarly, (Yunita Nugrahini et al., 2023) et al. (2023) found a statistically significant correlation between maternal anxiety and breast milk production ($p = 0.010$) in their study of 69 mothers. This supports the notion that various psychological states—not limited to chronic stress—may impact the endocrine processes and oxytocin reflexes that govern breastfeeding physiology. From a physiological perspective, anxiety activates the sympathetic nervous system, which can suppress

parasympathetic activity—responsible for calming bodily functions and promoting milk ejection reflexes. As a result, oxytocin secretion may be hindered, making milk release more difficult, even if the baby latches and sucks effectively.

Cortisol Levels and Breast Milk Production

To further understand the biological mechanisms underlying psychological influence, some studies have explored physiological biomarkers, such as cortisol levels in breast milk. A noteworthy study by (Rosaria et al., 2023) employed a cross-sectional design involving 77 mothers and found significantly higher cortisol levels in the milk of stressed mothers ($p = 0.028$). The research used the Mann-Whitney test to establish this association. Cortisol, commonly known as the "stress hormone," is secreted by the adrenal glands in response to both emotional and physical stress. Elevated cortisol levels are known to suppress immune function and interfere with smooth muscle relaxation, including the ducts responsible for milk flow (lactiferous ducts). This directly impacts the let-down reflex, an essential physiological process that allows milk to be ejected from the breast.

Social Support and Maternal Behavior

Beyond internal psychological factors, several studies emphasize the importance of external support systems and maternal behavior in influencing breastfeeding outcomes. (Widiastuti et al., 2017) found that nipple shape, anxiety levels, and family support were associated with successful breastfeeding. This highlights how physical attributes and emotional encouragement can significantly affect milk production. Meanwhile, (Yulita et al., 2020) et al. (2020) reported that maternal How can the results of this review provide recommendations for future researchers in designing longitudinal studies that evaluate the long-term impact of psychological disorders on breastfeeding success? behavior—particularly the use of correct breastfeeding techniques, such as proper positioning and latching—plays a key role in maintaining milk flow. Improper technique can lead to inefficient milk removal, which decreases breast stimulation and thus reduces milk supply. Conversely, correct practices can enhance milk production even under psychological distress (Ladiyah et al., n.d.) also emphasized that psychological factors, breastfeeding frequency, and breast care practices are significant contributors to smooth milk flow. Their findings suggest that behavioral education interventions can complement psychological support strategies, offering a comprehensive approach to promoting successful breastfeeding. These studies collectively reinforce the idea that breastfeeding success is not determined by psychological status alone but is also heavily influenced by behavioral practices and support systems. Educational initiatives that focus on technique, hygiene, and emotional support can significantly enhance lactation outcomes.

CONCLUSION

The evidence presented in this review clearly demonstrates that psychological factors play a pivotal role in determining the success of breast milk production among breastfeeding mothers. Stress and anxiety—two of the most frequently studied psychological conditions—have been shown to negatively affect the hormonal processes necessary for lactation, particularly by disrupting oxytocin and prolactin activity. This disruption can interfere with the let-down reflex, which is essential for the effective release of milk. The majority of studies reviewed support a significant negative relationship between maternal psychological distress and milk production, highlighting the vulnerability of breastfeeding mothers during the postpartum period. Elevated stress and anxiety levels not only affect hormonal balance but are also associated with decreased breastfeeding frequency and early cessation of exclusive breastfeeding. In particular, the first month postpartum appears to be a critical period, during which psychological disturbances can have long-lasting impacts on breastfeeding outcomes. However, it is also important to note the inconsistencies among some findings, suggesting that not all mothers respond to stress in the same way. The presence of moderating factors—such as coping mechanisms, maternal education,

previous breastfeeding experience, social and familial support, and workplace accommodations – can significantly buffer the negative effects of psychological stress. These protective factors highlight the importance of a holistic and individualized approach to maternal care. Moreover, other psychological and physiological aspects—including anxiety, sleep quality, physical discomfort, and maternal behavior—further influence the success of breastfeeding. Poor sleep, inadequate breastfeeding techniques, and lack of emotional support can intensify stress and impede lactation. Conversely, behavioral interventions and support systems, including counseling, family involvement, and workplace flexibility, have been shown to improve outcomes. The results of this review highlight the complex and multifactorial relationship between psychological factors and breastfeeding success, offering a strong foundation for future longitudinal research. Researchers are encouraged to design studies that track mothers from pregnancy through the first year postpartum, allowing for a deeper understanding of how stress, anxiety, depression, and sleep disturbances evolve over time and affect lactation outcomes. Future studies should incorporate repeated measurements of psychological states alongside objective indicators of milk production (e.g., infant weight gain, milk volume, feeding frequency) to assess causality and long-term effects. Including moderating variables—such as social support, maternal coping strategies, and workplace policies—will also help identify protective factors that can inform targeted interventions. Additionally, using mixed-method approaches will provide both statistical trends and rich contextual insights, ensuring a more comprehensive picture of maternal mental health and breastfeeding trajectories.

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