ORIGINAL ARTICLE

DOI: 10.4274/gulhane.galenos.2025.04864
Gulhane Med J

How prenatal attachment relates to breastfeeding self-efficacy in mothers during the transition to motherhood: a descriptive study

Emine Bayrak Aykan[1], Fatma Dinç[2], Dilek Yıldız[3]

[1]*Hacettepe University Faculty of Nursing, Ankara, Türkiye*
[2]*Bartın University Faculty of Health Sciences, Department of Nursing, Bartın, Türkiye*
[3]*University of Health Sciences Türkiye, Gülhane Faculty of Nursing, Ankara, Türkiye*

Cite this article as: Bayrak Aykan E, Dinç F, Yıldız D. How prenatal attachment relates to breastfeeding self-efficacy in mothers during the transition to motherhood: a descriptive study. *Gulhane Med J.* [Epub Ahead of Print]

Date submitted:
26.05.2025
Date accepted:
19.09.2025
Epub:
13.11.2025

Corresponding Author:
Emine Bayrak Aykan, Asst. Prof.
Hacettepe University, Faculty of Nursing, Ankara, Türkiye
eminebayrak2012@gmail.com

ORCID:
orcid.org/0000-0002-3167-5591

Keywords: Prenatal attachment, breastfeeding self-efficacy, parenthood, prenatal care, nursing, pediatric nursing

ABSTRACT

Aims: Prenatal attachment and breastfeeding self-efficacy are two important psychosocial factors that influence the health of mothers and infants. These factors play a pivotal role in shaping maternal caregiving behaviors during the transition to motherhood. This study aimed to examine the relationship between prenatal attachment and breastfeeding self-efficacy among mothers during the transition to motherhood.

Methods: A descriptive study design was used to examine the experiences of mothers during the transition to motherhood. The participants included were mothers aged 18 years and older who were in any trimester of the prenatal period and without communication impairments. To ensure the safety of the participants and data integrity, individuals with high-risk pregnancies or diagnosed psychiatric disorders were excluded from the study. The primary outcomes were the levels of prenatal attachment and prenatal breastfeeding self-efficacy. The secondary outcome was the relationship between prenatal attachment and prenatal breastfeeding self-efficacy. Both outcomes were assessed using the Prenatal Attachment Scale and the Prenatal Breastfeeding Self-Efficacy Scale.

Results: A total of 306 mothers during the transition to motherhood were included in the study (mean age: 28.4±5.2 years). The mean prenatal breastfeeding self-efficacy score was 86.27±6.52, which indicated a high level of self-efficacy among the mothers. The mean prenatal attachment score was 93.19±4.84. Prenatal attachment explained 29.8% of the variance in breastfeeding self-efficacy (R^2=0.298, p<0.001), demonstrating a significant positive association between these variables.

Conclusions: Prenatal attachment is significantly related to breastfeeding self-efficacy in mothers during the transition to motherhood.

Introduction

The prenatal period is a critical window of physical and psychological transformation that profoundly influences maternal health and the development of infants (1). Prenatal attachment serves as the foundational emotional bond that shapes maternal identity and supports positive postnatal interactions. It is defined as the emotional connection a mother develops with her fetus in the prenatal period and encompasses affectionate feelings, thoughts, and behaviors such as talking to the fetus, naming it, stroking the abdomen, and preparing for childbirth (1,2-8). Prenatal attachment is essential for establishing initial cognitive (recognizing the fetus as an individual and attributing personality), emotional (forming a bond), and behavioral (interacting and role-playing) relationships between the mother

and fetus (2-5). Positive prenatal attachment supports maternal psychological adaptation and the development of maternal identity and improves the interaction between the mother and the infant after childbirth (1,6,9). Moreover, stronger prenatal attachment is associated with lower prenatal anxiety and depression, contributing to better mental health outcomes of the mother (1,10). Early formation of this bond is also crucial for postnatal interaction and the mother's willingness to breastfeed (2,7).

Breastfeeding self-efficacy reflects a mother's confidence and emotional readiness, directly affecting breastfeeding success and the well-being of infants (8). Rooted in Bandura's self-efficacy theory, breastfeeding self-efficacy encompasses a mother's belief in her ability to breastfeed successfully, her emotional preparedness, and strategies to overcome breastfeeding challenges (7,11-14). Breastfeeding is not just a biological function but also a relational act that strengthens the emotional bond between mothers and their infants during the transition to motherhood (7). This sense of efficacy significantly influences both the initiation and duration of breastfeeding; mothers with higher self-efficacy are more likely to persist through difficulties, whereas those with lower confidence tend to discontinue breastfeeding prematurely (15). Moreover, high breastfeeding self-efficacy is associated with greater maternal satisfaction and a lower risk of early breastfeeding cessation (12,15,16). Improving prenatal attachment and breastfeeding self-efficacy benefits not only individual mother-infant dyads but also broader public health outcomes by fostering healthy family bonds (8,16-19).

Supporting prenatal attachment and breastfeeding self-efficacy during the prenatal period positively affects the biological and emotional well-being of mothers and infants, facilitates the development of maternal identity, and contributes to successful breastfeeding outcomes (8,16-19). This period involves not only physical changes but also a transformative journey toward motherhood, during which strengthening the emotional bond with the infant and increasing confidence in breastfeeding help mothers internalize their caregiving roles (1,3,8,9,16). Such psychosocial preparation is essential for mother-infant bonding and nurturing, enabling healthcare professionals, including pediatric nurses, to provide holistic, family-centered care. Studies have shown a positive relationship between prenatal attachment and breastfeeding self-efficacy; mothers with strong emotional bonds to their fetuses internalize their maternal role more effectively, increasing their confidence and motivation in breastfeeding (13,18). Therefore, prenatal attachment improves the self-efficacy of breastfeeding by fostering maternal identity and emotional readiness, both of which strongly promote breastfeeding and the well-being of the mother and infant (7,9,10).

Although several studies have independently examined prenatal attachment (1,10,18) and prenatal breastfeeding self-efficacy (13), a notable gap remains in the literature regarding the interplay between these two essential components during the transition to motherhood. Addressing this relationship is crucial, as it may provide valuable insights into the emotional bonding and caregiving processes that shape maternal experiences throughout the prenatal period. Therefore, the aim of this study was to examine the levels of prenatal attachment and prenatal breastfeeding self-efficacy among mothers during the transition to motherhood and to investigate the relationship between these two variables.

Methods

Study design, setting, and participants

This descriptive study was conducted at the antenatal clinic of a maternity and child hospital located in the Western Black Sea region of Türkiye between June 2022 and June 2023. The hospital offers a comprehensive range of maternal and child health services, including antenatal care, breastfeeding and lactation counseling, delivery units, neonatal intensive care, pediatric surgery, and general pediatric services. This makes it a suitable setting for assessing the experiences of mothers during the transition to motherhood from a multidisciplinary perspective, including pediatric nursing.

A non-probability convenience sampling method was used to recruit eligible mothers during the transition to motherhood. This method involves selecting mothers during the transition to motherhood based on their availability and willingness rather than through random sampling. The sample size was determined to be 306 participants using the known population sample formula, which is based on a population of 1,500 individuals who applied within one year (20). Initially, 333 individuals meeting the preliminary eligibility criteria were screened. Of these, 16 individuals were excluded for not meeting the inclusion criteria, and 11 individuals declined to participate. Consequently, the final sample consisted of 306 women in the prenatal period.

This study included women who were in the transition to motherhood, aged 18 years or older, had no communication difficulties, and were in the prenatal period. All individuals voluntarily participated in this study. To ensure participant safety and maintain data integrity, individuals with high-risk conditions during the prenatal period or who were diagnosed with psychiatric disorders were excluded from the study.

Instruments

Parental information form

This form was developed by researchers based on relevant studies (19,21,22). It consists of eight questions addressing socio-demographic characteristics (e.g., age, education status, employment) and maternal information, including the number of previous children, whether the pregnancy was

planned, pregnancy status (such as normal pregnancy versus pregnancy under treatment), preparation for motherhood, and participation in educational sessions related to motherhood and breastfeeding.

Prenatal Breastfeeding Self-Efficacy Scale (PBSES)

This scale was developed by Wells et al. (2006) and consists of 20 items. It assesses various breastfeeding-related situations, such as obtaining information and support about breastfeeding during the prenatal period, managing planning-related concerns, preparing expressed milk for others to feed the infant, breastfeeding and discussing it in the presence of others, and deciding to breastfeed despite others' disapproval. The responses are rated on a five-point Likert scale ranging from 1 (not at all confident) to 5 (completely confident). The total score ranges from 20 to 100, with no specific cut-off point; higher scores indicate greater breastfeeding self-efficacy. The scale includes four sub-dimensions. The Turkish adaptation and validation of the scale were conducted by Uyar and Uzar (2018). In the Turkish version, the scale comprises 19 items, with total scores ranging from 19 to 95. Cronbach's alpha coefficient for the Turkish version was reported as 0.86 (23). In this study, Cronbach's alpha was calculated as 0.79, indicating acceptable internal consistency.

Prenatal Attachment Scale (PAS)

This scale was developed by Kurnaz and Türkmen Çevik (24). It comprises 33 items divided into three sub-groups: curiosity, excitement, and planning (13 items); acceptance and enthusiasm (9 items); and hope (11 items). Each item offers three response options: "strongly agree", "partially agree", and "strongly disagree". Individuals scoring high on the scale are considered to have a high level of prenatal attachment. The total possible score ranges from 33 to 99. Cronbach's alpha coefficients for the scale range between 0.88 and 0.94 (24). In this study, Cronbach's alpha was calculated as 0.79.

Data collection

In this study, a non-probability convenience sampling method was used to recruit eligible mothers during the transition to motherhood. All individuals who met the inclusion criteria were invited to participate after the study purpose was explained and written informed consent had been obtained. The data were collected through face-to-face interviews using data collection forms, with each session lasting about 15 minutes. During the interviews, mothers transitioning to motherhood completed the forms under the supervision of the same researcher throughout the data collection process. They were encouraged to ask questions and received clarifications when needed. The data were collected in a private room in the antenatal outpatient clinic while the mothers waited for their appointments, ensuring privacy throughout the process.

Outcomes

The primary outcomes of this study were the levels of prenatal attachment and prenatal breastfeeding self-efficacy among mothers during the transition to motherhood.

The secondary outcome was the relationship between prenatal attachment and prenatal breastfeeding self-efficacy.

Ethical considerations

Ethical approval for the study was obtained from the Bartın University Social and Human Sciences Ethics Committee of a university (reference no: 2022-SBB-0156; date: 12.05.2022). Written permission was obtained from the institution, and consent was obtained from the owners of the scales used in data collection via email correspondence. Before completing the data collection forms, information about the study was provided to mothers during their transition to motherhood, and participation was voluntary. Written informed consent was obtained from each participant. The study was conducted following the principles of the Declaration of Helsinki. Mothers were free to withdraw from the study at any time without any consequences.

Statistical Analysis

The data were analysed using SPSS Statistics for Windows, version 22.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics, including frequency, percentage, mean, standard deviation, median, and minimum and maximum values, were calculated. Normality was assumed for variables with skewness and kurtosis coefficients within the ±1.5 range (25). The relationships between the scores of the mothers on the Prenatal Breastfeeding Self-Efficacy Scale (PBSES) and the Prenatal Attachment Scale (PAS) were examined by conducting Pearson's correlation analysis. Simple linear regression analysis was performed to evaluate the effect of prenatal attachment on prenatal breastfeeding self-efficacy. A 95% confidence level was applied, with statistical significance set at $p<0.05$.

Results

In this study, 72.9% of mothers were 25-34 years old, with the majority (34.0%) holding a bachelor's degree or higher. About 55.2% of mothers were unemployed. Among them, 60.1% had experienced only one childbirth, and 82.4% reported their pregnancies as planned. Most mothers (43.8%) were in the second trimester, and 7.2% of pregnancies occurred through medical intervention. Additionally, 53.6% of the mothers received breastfeeding education (Table 1).

The mean total scores of the PBSES and the PAS were compared based on socio-demographic characteristics (Table 2). Statistically significant differences were observed in the mean scores across age groups, income levels, and pregnancy status ($p<0.05$). Additionally, a significant difference was found

Table 1. Socio-demographic and obstetric characteristics of mothers during the transition to motherhood (n=306)

		n	%
Age (years)	18-24	47	15.3
	25-34	223	72.9
	35-44	36	11.8
Educational level	Primary school	17	5.6
	Secondary school	69	22.5
	High school	94	30.7
	Associate degree	22	7.2
	Bachelor's degree and above	104	34.0
Employment status	Employed	137	44.8
	Unemployed	169	55.2
Number of births	Single birth	184	60.1
	Multiple birth	122	39.9
Planned/desired nature of pregnancy	Yes	252	82.4
	No	54	17.6
Pregnancy status	Naturally	284	92.8
	Medical treatment	22	7.2
Prenatal period	First trimester	61	19.9
	Second trimester	134	43.8
	Third trimester	111	36.3
Breastfeeding education status	Yes	164	53.6
	No	142	46.4

in the mean PAS score depending on whether the pregnancy was planned ($p<0.05$).

The mean total scores of the PBSES and the PAS, along with the relationships between these scores among mothers, are presented in Table 3. The mean total scores for both the PBSES (86.27±6.52) and the PAS (93.19±4.84) were high. The results of the Pearson correlation analysis revealed a significant positive correlation between the total PBSES score and the PAS score ($r=0.546$, $p<0.001$).

The relationships between prenatal attachment and prenatal breastfeeding self-efficacy are presented in Table 4. Prenatal attachment was significantly associated with prenatal breastfeeding self-efficacy ($p<0.001$). Prenatal attachment accounted for 29.8% of the variance in prenatal breastfeeding self-efficacy scores (adjusted $R^2=0.298$) and was associated with an increase in prenatal breastfeeding self-efficacy.

Discussion

This study demonstrated that mothers transitioning to motherhood had high levels of prenatal attachment and prenatal breastfeeding self-efficacy. Importantly, prenatal attachment was significantly associated with breastfeeding self-efficacy. These findings highlight the critical role of maternal-infant bonding in supporting breastfeeding confidence and underscore the importance of nurses, particularly pediatric nurses, in promoting maternal and infant well-being during the transition to motherhood.

The evaluation of prenatal attachment helps nurses manage the care process, providing early and healthy interaction data between the mother and the infant (2). While studies have reported that the number of births does not directly affect prenatal attachment (8), it has also been reported that during the transition to motherhood (i.e., first-time mothers), women have higher total prenatal attachment scores (2,26-28). Research findings on the effect of maternal education level on prenatal attachment are inconsistent; certain studies have found minimal influence (8,29), whereas others have shown a positive correlation between education level and attachment score (18,30,31). In this study, no proportional increase in attachment scores was found with maternal education, nor was there an inverse relationship with the number of births. These findings align with studies indicating that maternal education level and parity do not directly affect prenatal attachment. In contrast, this study revealed that prenatal attachment scores decreased as maternal age increased. While other studies suggest that maternal age has a limited effect on prenatal attachment (29), studies also report, consistent with our findings, a decrease in attachment scores with increasing age (30,32), possibly due to a decrease in focus on the parenting process in older mothers. Regarding income level, the literature presents mixed

Table 2. Comparison of scale scores according to socio-demographic characteristics (n=306)

Characteristics	n	Prenatal breastfeeding self-efficacy level			Prenatal attachment level		
		Mean	SD	Median (IQR)	Mean	SD	Median (IQR)
Age (years)							
18-24	47	89.30	5.27		95.65	3.58	
25-34	223	85.37	6.46		92.76	4.83	
35-44	36	87.89	7.01		92.66	5.44	
		F=8.713; p<0.00[1a.c]			F=7.481 p<0.001[a.b]		
Educational level							
Primary school	17	90.18	4.94		94.05	4.08	
Secondary school	69	86.33	5.67		93.39	4.75	
High school	94	85.95	6.65		93.27	4.61	
Associate degree	22	87.73	6.62		94.77	4.81	
Bachelor's degree and above	104	85.57	6.97		92.52	5.17	
		F=2.190; p=0.070			F=1.251; p=0.290		
Income status							
Income more than expenses	93	85.08	7.11	84.00 (79.50-92.50)	92.17	5.12	92.00 (88.00-97.00)
Income equals expense	156	87.49	6.06	88.00 (82.25-93.00)	94.01	4.51	95.00 (91.00-98.00)
Income less than expenses	57	84.86	6.20	84.00 (80.00-90.00)	92.64	4.93	93.00 (89.50-97.50)
		X^2=10.916; p=0.004[d.e]			X^2=8.646; p=0.013[f]		
Number of birth							
Single birth	184	85.80	6.81		93.08	4.95	
Multiple birth	122	86.97	6.03		93.36	4.67	
		t=-1.567; p=0.118			t=-0.498; p=0.619		
Planned/desired nature of pregnancy							
Yes	252	86.42	6.63		93.55	4.76	
No	54	85.56	6.02		91.55	4.91	
		t=0.940; p=0.350			t=2.780; p=0.006		
Pregnancy status							
Naturally	284	86.00	6.42		92.95	4.84	
Medical treatment	22	89.73	6.95		96.36	3.52	
		t=-2.605; p=0.010			t=-4.236; p<0.001		
Breastfeeding education status							
Yes	164	86.00	6.45		93.26	4.57	
No	142	86.58	6.61		93.11	5.14	
		t=-0.771; p=0.441			t=0.267; p=0.789		

IQR: Interquartile range, SD: Standard deviation, F: One way ANOVA test, X^2: Kruskal-Wallis test, t: Student's t-test, p<0.05 was considered significant. [a]:Comparison between age groups 18-24 and 25-34, [b]:Comparison between age groups 18-24 and 35-44, [c]: Comparison between age groups 25-34 and 35-44, [d]:Comparison between income more than expenses and income equal to expenses, [e]:Comparison between income equal to expenses and income less than expenses, [f]:Comparison between income more than expenses and income equal to expenses

Table 3. Relationship between prenatal breastfeeding self-efficacy and prenatal attachment in mothers during the transition to motherhood (n=306)

Scale scores (possible score range)	Mean ± SD	Min (score)	Max (score)
Prenatal breastfeeding self-efficacy (19-95)	86.27±6.52	71.00	95.00
Prenatal attachment (33-99)	93.19±4.84	79.00	99.00

Scales	Prenatal attachment level	
	r	p
Prenatal breastfeeding self-efficacy level	0.546	**0.001**

SD: Standard deviation, Min: Minimum, Max: Maximum, r: Pearson correlation analysis

Table 4. How prenatal attachment relates to breastfeeding self-efficacy in individuals in the transition to motherhood (n=306)

Independent variable	B	Standard error	β	t	p	F	Model (p)	Adjusted R^2
Constant	17.711	6.048	-	2.928	**0.004**	128.831	**<0.001**	0.298
Prenatal attachment	0.736	0.065	0.546	11.350	**0.001**			

B: Unstandardized coefficient, β: Standardized coefficient, t: t-value, p: P-value; F: F-value, Model (p): Significance of the model, Adjusted R^2: Adjusted coefficient of determination

findings, including slight effects on prenatal attachment (29), positive correlations with higher income (33), and no significant relationship (18). In this study, mothers with a moderate income level had the highest prenatal attachment scores, indicating that attachment may vary with socio-economic conditions. Whether pregnancy was planned was also a significant factor. The literature presents conflicting results, including studies that report no significant relationship between pregnancy planning and attachment (18,34) and those that demonstrate significantly higher attachment scores in planned pregnancies (28,30). This study supports the latter finding, reflecting more positive thoughts and emotions toward the infant among mothers with planned pregnancies. Regarding the mode of conception, the literature presents mixed findings: certain studies suggest no significant of natural versus assisted reproductive technology conception on attachment (35), whereas others report higher prenatal attachment scores among mothers who conceived through treatment (27). Similarly, this study found higher scores among mothers who conceived through assisted reproductive treatments, which may be explained by the emotional investment and greater expectations associated with the parenting journey in such cases.

Evaluating prenatal breastfeeding self-efficacy is a critical component in supporting mothers during the transition to motherhood, benefiting both the mothers and the nurses who guide them through this process (21). The mean prenatal breastfeeding self-efficacy score in this study (86.3) reflects a high level of confidence, aligning with previous research findings. While existing literature often suggests that breastfeeding self-efficacy increases with maternal age (36,37), this study found higher self-efficacy scores among mothers who were under the age of 25 and those aged 35 and above during the transition to motherhood. These results may be influenced by factors such as the enthusiasm of first-time motherhood, accumulated life experience, and prior positive breastfeeding experiences.

The relationship between income level and prenatal breastfeeding self-efficacy has been reported inconsistently in the literature. While some studies have associated higher socio-economic status with more favorable breastfeeding outcomes (13,36,37), others have identified an inverse relationship, with greater self-efficacy observed among low-income mothers (38). In the present study, lower-income was associated with higher prenatal breastfeeding self-efficacy. This finding may reflect several factors: increased motivation to breastfeed due to financial constraints, limited access to alternative feeding options, the perception of breastfeeding as a more economical choice, and stronger familial or community support networks that encourage breastfeeding. Cultural beliefs and targeted breastfeeding promotion programs for low-income populations may also contribute to enhanced maternal confidence and commitment to breastfeeding (7,12,13,17). These factors, including “financial constraints, limited alternative feeding options, cultural and community support, and the perception of breastfeeding as an economical choice”, help explain why lower-income mothers might report higher prenatal breastfeeding self-efficacy. Overall, the findings highlight that the association between income and breastfeeding self-efficacy is complex and influenced by contextual, psychosocial, and environmental variables that require further investigation.

A moderate positive correlation was identified between prenatal attachment and breastfeeding self-efficacy, which is consistent with previous studies reporting different degrees of association (13,22,39). This finding highlights the importance of the mother-infant bond in shaping breastfeeding outcomes. Prompt initiation and continued breastfeeding after birth are essential for the health and well-being of mothers and infants (38). The results of this study suggest that prenatal attachment is a strong predictor of breastfeeding self-efficacy, reinforcing the need for pediatric nurses and other healthcare professionals to actively foster prenatal bonding to support positive parenting and breastfeeding experiences among mothers during the transition to motherhood.

The strength of this study lies in its contribution to the limited body of research on prenatal attachment and prenatal breastfeeding self-efficacy among mothers during the transition to motherhood. The findings provide valuable scientific insights into prenatal attachment and prenatal breastfeeding self-efficacy. However, the study has several limitations. First, a convenience sampling method was used. Second, the results are based on self-reported data from mothers at a single hospital, which may limit the generalizability of our findings. Additionally, including women at various stages of the prenatal period (first, second, or third trimester) constitutes another limitation, as the specific trimester may affect prenatal attachment and breastfeeding self-efficacy. This variability might have influenced the findings

of the study. Future studies can benefit from focusing on a more homogeneous sample in terms of the prenatal stage to gain a clearer understanding of these concepts.

Conclusion

This study demonstrated that prenatal attachment significantly influences breastfeeding self-efficacy among mothers during the transition to motherhood. Strengthening prenatal attachment can enhance maternal confidence, breastfeeding success, and mother–infant bonding. Pediatric nurses and midwives should collaborate in antenatal care to provide education and counseling programs that promote prenatal attachment and breastfeeding self-efficacy. Future studies with larger and more homogeneous samples are recommended to confirm and extend these findings.

Ethics

Ethics Committee Approval: Ethical approval for the study was obtained from the Bartın University Social and Human Sciences Ethics Committee of a university (reference no: 2022-SBB-0156; date: 12.05.2022).

Informed Consent: All individuals who met the inclusion criteria were invited to participate after the study purpose was explained and written informed consent had been obtained.

Footnotes

Authorship Contributions

Concept: E.B.A., F.D., D.Y., Design: E.B.A., F.D., D.Y., Data Collection or Processing: E.B.A., F.D., Analysis or Interpretation: E.B.A., F.D., Literature Search: E.B.A., F.D., Writing: E.B.A., F.D., DY.

Conflict of Interest: The authors declared no conflict of interest.

Financial Disclosure: The authors declared that this study received no financial support.

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