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The Effect of Online Infant Care Education and Postpartum Counseling Based on Meleis's Transition Theory on Mothers' Self-Esteem and Infant Health: A Randomized Controlled Trial

Fatma Şule Bilgiç[1] | Gülçin Bozkurt[2]

[1]Faculty of Health Sciences, Department of Midwifery, Çanakkale Onsekiz Mart University, Istanbul, Turkey | [2]Faculty of Health Sciences, Department of Midwifery, Istanbul University-Cerrahpaşa, Istanbul, Turkey

Correspondence: Fatma Şule Bilgiç (sulebilgicc@outlook.com)

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ABSTRACT

The aim of this research was to assess the effects of online infant care education and postnatal counseling, based on Meleis's transition theory, on maternal self-esteem and infant health. The randomized controlled trial was conducted between November 2022 and May 2023 with 102 mothers and their infants, $n = 52$ in the intervention and $n = 50$ in the control. The intervention group received training across two sessions between 32 and 38 weeks of gestation and counseling support for 3 months postbirth. The control group was shared with additional educational materials in PDF format in addition to their usual care. In the intervention group, the subdimension and total score mean of the Karitane Parental Self-Confidence Scale during pregnancy, postpartum, first, second, and third months were higher than the control group ($p = 0.001$). The proportion of exclusive breastfeeding in the third month was higher in the intervention group than in the control group ($p = 0.001$). Newborn nurses' care on Meleis' transition theory will increase the quality of care and newborn health. In our study, Meleis's transition theory provides a strong foundation for understanding mothers' psychological and physical transitions in the postpartum period.

Trial Registration: NCT05812833

1 | Introduction

From the first minute after birth, the organs and systems of the newborn undergo efforts to adapt to the external environment. In the initial months of life, the growth and development of infants occur rapidly, necessitating continuous care. During this period, mothers need to acquire knowledge in baby care and bolster their self-confidence (Güneş and Işık 2023). Factors influencing baby health, growth, and development encompass heredity, environment, culture, sociocultural status, breastfeeding, preparation for motherhood, and maternal self-confidence (Duman and Gölbaşı 2023; Sevınç and Celasin 2023).

A confident mother is more adept at caring for her child and can allocate more time (Yılmaz and Oskay 2021). Bandura defines parenting confidence as the belief in one's ability to organize and execute tasks related to parenting a child (Barimani et al. 2017a). Maternal self-confidence can vary individually and situationally (Usui, Haruna, and Shimpuku 2020; Shafiei et al. 2019). A mother's lack of knowledge regarding baby care,

Summary

- Online education and counseling have enhanced mothers' self-esteem, strengthening the mother–infant relationship.
- Melelis's Transition Theory provides a strong foundation for understanding mothers' psychological and physical transitions postpartum, positively impacting both maternal self-confidence and infant health.
- Mothers in the intervention group had higher rates of exclusive breastfeeding, and their babies were less frequently hospitalized.

support for growth and development, as well as understanding the baby's behavior and potential illnesses can contribute to anxiety and diminished self-confidence. Mothers lacking information may experience heightened concerns about breastfeeding and postpartum care (Shafiei et al. 2019; Şayık and Örsal 2019).

Evidence suggests that education received during pregnancy positively influences the baby's health (Nawabi et al. 2021). Research indicates that mothers often lack sufficient information and counseling due to deficiencies in preventive services (Meleis 2010). Malpractices by mothers in baby care and a lack of knowledge may lead to delays in the early diagnosis and treatment of infants, adversely affecting baby health. It is imperative to provide mothers with training on baby care, the protection of baby health, and common issues in infancy, commencing from the prenatal period (Pontoppidan et al. 2019). Education and counseling interventions have proven effective in preparing mothers for baby care and parenthood. Online training programs are easily accessible and cost-effective, among other benefits (Sawyer et al. 2017; Korkut and İnal 2023). Additionally, it is asserted that counseling provided to mothers in the postpartum period enhances the effectiveness of education and plays a vital role in safeguarding infant health (Korkut and İnal 2023; Lee et al. 2018).

Meleis emphasized that her primary goal is to help people achieve healthy outcomes while navigating life transitions. In this context, she defines nursing as both a science and an art that facilitates the health and well-being of individuals and communities during transitional periods (Barimani et al. 2017a). For a woman transitioning to motherhood, it is essential to identify supportive factors that may aid her during this process and strengthen them. She should also be assisted in recognizing and eliminating potential hindering factors. Meleis's transition theory provides a theoretical framework for understanding and addressing the psychological, emotional, and physical challenges individuals face during significant life changes. The theory specifically highlights the challenges encountered during transitions, especially those involving changes in identity, roles, and relationships, all of which impact personal development and social contexts. Within this framework, online baby care education and postpartum counseling align with Meleis's transition theory in several key aspects (Meleis 2010).

The theory offers a solid foundation for understanding the important turning points individuals experience during transitions. Postpartum motherhood, in particular, requires major identity and role changes, making it essential to have a theoretical framework to better address the challenges mothers face during this period. Transition theory offers a scientific basis for understanding how factors such as information and social support can help mothers cope with this challenging process (Barimani et al. 2017a). With this theory, we can examine mothers' experiences during the transition process in more depth and develop effective intervention methods. The aim of this research was to assess the effects of online infant care education and postnatal counseling, based on Meleis's transition theory, on maternal self-esteem and infant health. The hypotheses of this study were as follows:

H1. *The Karitane Parent Self-Confidence Scale scores of the mothers who were given online baby care training and postpartum counseling were higher than the control group.*

H2. *Babies of mothers who received online babysitting training and postpartum counseling were less likely to get sick than the control group.*

H3. *The hospital admission frequency of mothers receiving online baby care training and postpartum counseling was lower than that of the control group.*

2 | Method

The registration, recruitment, follow-up, and analysis processes of the study were reported in accordance with the CONSORT 2018 guidelines (Grant et al. 2018) (Figure 1).

2.1 | Study Design and Setting

This randomized controlled study took place from November 2022 to May 2023 at a baby-friendly public hospital in Istanbul. Around 90% of the population is Turkish, but the hospital extends its services to individuals from a range of ethnicities, such as Syrians, Turkmens, Iranians, and Uzbeks. Syrians, who make up a significant proportion of the immigrant population in the area, are entitled to free healthcare services at this hospital, as well as other Ministry of Health facilities. There is no racial or ethnic bias in the care and treatment provided. The region where the hospital is located is at a low socioeconomic level compared to the province in general.

2.2 | Study Sample

The sample size for the study was determined using the GPower (Version 3.1.7) program and Cohen's standard effect sizes. In a previous study examining the effects of a parental adaptation support program on parental self-efficacy perceptions (with the intervention group's self-efficacy mean score of 73.5 ± 3.2 and the control group's score of 69.9 ± 4.85), a significant effect size of 0.88 (large/wide effect) was identified (Kaya and Şahin 2018). According to this result, with a 5% alpha error rate and 95% power, a minimum of 37 prospective mothers in each group, totaling 74 prospective mothers,

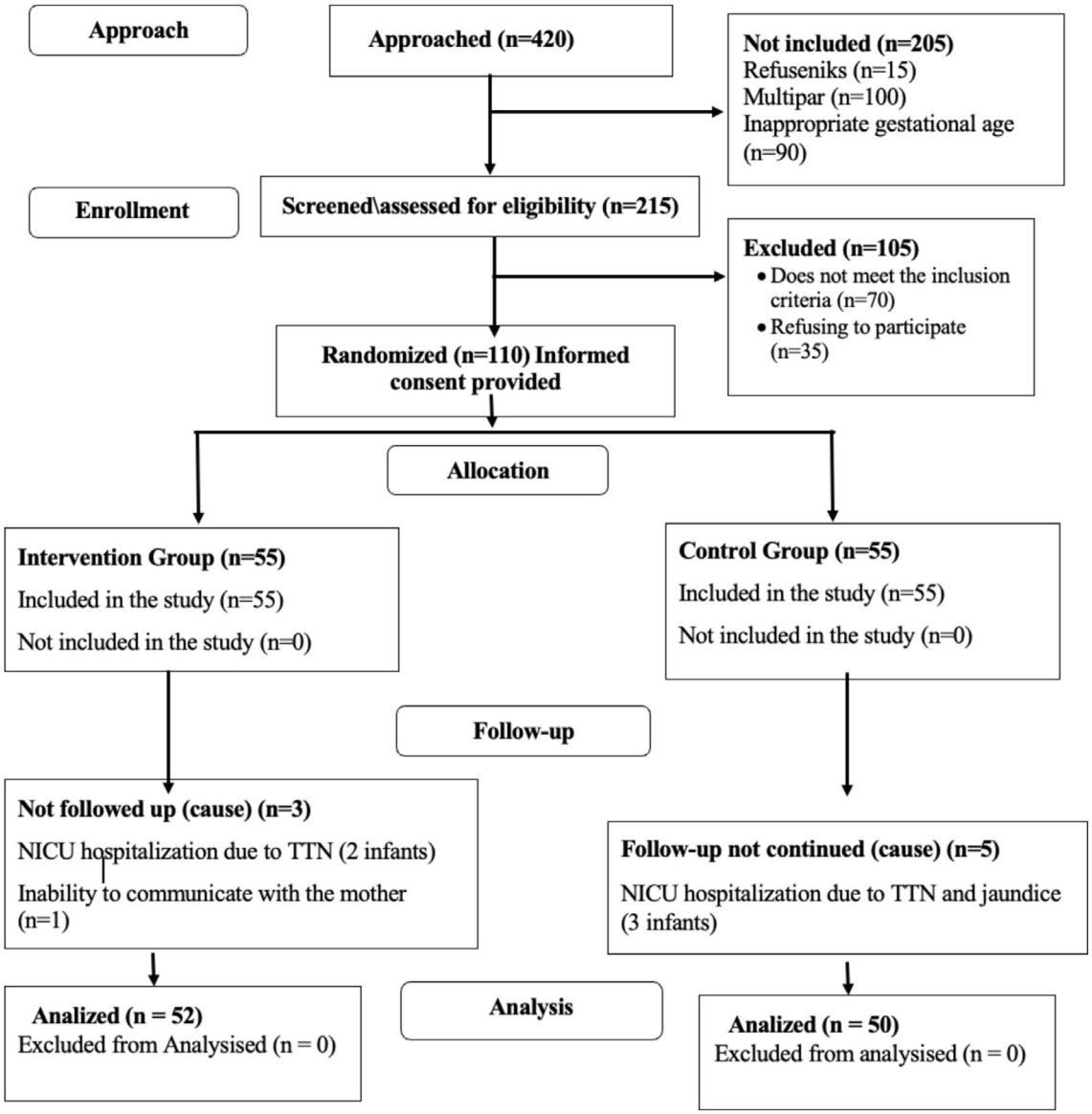

FIGURE 1 | Flow Diagram of the Study (CONSORT 2018).

was determined to be necessary. Considering the potential for sample losses over time, the study was conducted with 110 individuals, 55 in the intervention group and 55 in the control group.

Women were eligible to participate if they were ≥18 years old, primiparous, had a singleton pregnancy, at 32–38 weeks of pregnancy were literate, did not attend education classes, and had a smartphone and internet connection. Their baby had to be aged 37–42 weeks gestation at birth, weigh 2.500–4.000 g at birth, and have an Apgar score of ≥7, babies discharged with the mother.

Criteria for exclusion from the research: the mother has communication problems (e.g., problems with speech and understanding), the mother has a chronic disease (e.g., Diabetes mellitus, heart, psychiatric diseases) and has problems with breastfeeding (e.g., cleft palate and lip, mastitis), Mothers and babies with intrauterine developmental delay (IUGR) or genetic disease (e.g., Down, Turner, Klineferter) in newborns and do not attend training sessions.

2.3 | Randomization

The researcher visited the hospital 3 days a week between 08:00 and 17:00 and reached 420 pregnant women. Of these, 310 were excluded because they did not meet the inclusion criteria of the study. A total of 110 women agreed to participate. The 110 women who agreed to participate in the study and met the sample selection criteria were randomly assigned to two groups at the randomization site with equal numbers of women in either the intervention or control groups. The participants in each group were determined by assigning a number based on the order of application in the randomization. The randomization determined which group would be the intervention or control group by drawing lots. The group number assigned during the randomization determined which participant would be in which group. Randomization followed a simple method. Three participants from the intervention group were excluded after their babies were diagnosed with transient tachypnea of the newborn (TTN) and required NICU care. Similarly, five babies from the control

group were admitted to the NICU due to TTN and jaundice. The study was completed with 102 mothers and their babies: 52 in the intervention group and 50 in the control group. Post hoc power analysis after data collection confirmed that the sample power was 95% and ensured that the sample size was adequate (Figure 1).

2.4 | Procedure

All mothers participating in the study received routine care for baby care during the postpartum and predischarge periods. In the country where the study was conducted, approximately 10 min of breastfeeding training and 5 min of baby diaper cleaning training are provided as part of routine care. This training is delivered by the midwife or nurse on duty at the clinic.

2.4.1 | Intervention Group

Mothers in the intervention group received a tailored training program during the prenatal period, which was delivered in two online sessions.

2.4.1.1 | First Session. This session aimed to educate mothers on the importance and benefits of breastfeeding, proper breastfeeding techniques, steps for expressing milk, signs indicating sufficient milk supply, common breastfeeding issues and coping strategies, the importance of baby health monitoring, newborn screenings, vaccinations, and the importance of communication between mothers and babies. The session also covered topics such as the structure and benefits of breast milk, reasons for expressing milk, and how to store expressed milk. PowerPoint presentations, breast and baby models, and milk pumps were used during the session. It lasted approximately 40 min. At the end of the session, participants were asked to write a letter to their babies and select a lullaby.

2.4.1.2 | Second Session. The second session focused on providing mothers with the skills needed for baby care. It covered topics such as baby clothing and care products, diaper cleaning and rash care, baby bathing, baby massage, baby safety, the features of a baby room, sleep hygiene, and measures to prevent falls and accidents. Additionally, common issues like fever, nasal congestion, vomiting, thrush, gas pain, and crying were addressed, along with potential solutions. Various tools, including baby bath materials, baby care items, baby models, cloth, and cotton, were used. The content was delivered through a PowerPoint presentation, and each practice was explained step-by-step by the researcher. Two instructional videos (18 min total) on baby bathing and massage were also shown to participants.

Throughout the study, the researcher maintained weekly contact with the mothers to address any concerns, and the mothers were encouraged to reach out at any time for support. The counseling sessions primarily focused on baby feeding, breastfeeding, diaper care, nasal congestion, and crying (see Supporting Information).

2.4.2 | Control Group

The control group received routine care and were sent educational content in PDF format via WhatsApp to their smartphones. No additional educational or counseling interventions were provided to this group.

2.5 | Measurement

Data collection form: A questionnaire was used to collect data on the descriptive characteristics of the participants and the newborns. The first section of the form included basic sociodemographic and obstetric data on mothers and babies, such as educational status, delivery method, gestational age, and descriptive information on the baby's gender, birth weight, and length.

Baby follow-up form: The researchers developed the baby follow-up form. Experts were consulted to assess the validity of the follow-up form (Sevınç and Celasin 2023; Shafiei et al. 2019; Şayık and Örsal 2019). They were asked to review the measurement technique and items and make their judgments on whether they were suitable for the measurement process. The baby follow-up form, which received approval from expert opinion, included data on the babies' height, weight, problems encountered (e.g., vomiting, fever, thrush, diaper rash), colic, breastfeeding problems, and hospitalizations.

Karitane Parental Self-Confidence Scale (KPSCS): The mothers' self-confidence in parenting and baby care was assessed using the KPSCS. The scale consists of two subdimensions (baby care and parental role) consisting of 14 items. The first 10 items in the scale constitute the Baby Care subdimension, while items 11, 12, 13, and 14 constitute the Parental Role subdimension. The scores obtained from the scale vary between 0 and 42, with higher scores indicating higher parental self-confidence. The Cronbach's alpha value of the scale adapted to Turkish by Yılmaz and Oskay4 was found to be 0.93. In this study, the Cronbach's alpha value was found to be 0.83.

2.6 | Data Collection

The first investigator collected the data. The first interview with the participants at 32–38 weeks of gestation was conducted in the pregnant follow-up outpatient clinic. After the participants in both groups signed the informed consent form, the introductory information and the parents' self-confidence were evaluated. All newborns in the study groups underwent assessments on the first postpartum day, the first month, and the second day after birth. Health and growth were evaluated up to the third month. Furthermore, the Karitane Parent Self-Confidence Scale was administered to the mothers.

2.7 | Data Analysis

SPSS software was used to analyze the data. The normality assumption was evaluated using the Kolmogorov–Smirnov test. To compare quantitative data with non-normal distribution

between two independent groups, the Mann–Whitney *U* test was applied. Differences in categorical variables were assessed using the Chi-square test. If the expected count in any cell was below 5, Fisher's exact test was used. A p-value of less than 0.05 was considered statistically significant.

2.8 | Ethic Statement

Approval for the study was obtained from the Institutional Review Board (IRB) of XXX Training and Research Hospital in 2022 (IRB Protocol Number: December 21, 222–2022). The study has been registered in the Clinical Trials.gov PRS system with the identifier NCT05812833.

3 | Results

The mean age of mothers in the intervention group was 26.35 ± 3.71 years, compared to 26.88 ± 4.14 years in the control group. The gestational age for mothers in the intervention group was 39.03 ± 1.02 weeks, while for those in the control group, it was 38.78 ± 1.21 weeks. Within the first 24 h after birth, the average birth weight of babies in the intervention group was 3295.61 ± 357.06 g, with an average birth length of 50.75 ± 2.26 cm. In the control group, the babies' birth weight was 3306.40 ± 334.22 g, and their birth length was 50.66 ± 1.92 cm. In terms of education, 48.1% of mothers in the intervention group and 48% of mothers in the control group had a university degree or higher. Regarding delivery methods, 63.5% of mothers in the intervention group and 58% of mothers in the control group had cesarean sections. As for the gender distribution of the infants, 51.9% of babies in the intervention group were female, compared to 39% in the control group. No significant differences were found in the baseline characteristics between the intervention and control groups ($p > 0.05$; Table 1).

The mean total KPSCS score for mothers in the intervention group was 22.90 ± 4.49 during pregnancy, 24.58 ± 3.77 in the first 24 h after birth, 33.96 ± 2.64 in the first month, 35.92 ± 2.51 in the second month, and 37.09 ± 1.75 in the third month. For the control group, the mean total KPSCS score was 33.72 ± 3.04 during pregnancy, 27.67 ± 1.88 in the first 24 h after birth, 29.50 ± 2.68 in the first month, 31.42 ± 4.37 in the second month, and 32.02 ± 4.14 in the third month. The total KPSCS scores, as well as the baby care and parenting subdimensions, were significantly higher in the intervention group compared to the control group at all time points (pregnancy, postpartum, and at 1, 2, and 3 months). The differences in repeated measurements between the intervention and control groups were statistically significant ($p < 0.000$; Table 2).

In the postnatal period, 96.2% of infants in the intervention group were exclusively breastfed, compared to 52% in the control group. In the first month, 100% of infants in the intervention group were exclusively breastfed, while 50% of infants in the control group were. In the second month, 98.1% of infants in the intervention group were exclusively breastfed, compared to 56% in the control group. By the third month, 96.2% of infants in the intervention group were exclusively breastfed, while only 50% in the control group received exclusive breastfeeding. It was observed that infants in the intervention group were exclusively breastfed at a significantly higher rate in the first, second, and third months compared to those in the control group ($p = 0.000$; Table 3).

It was found that babies in the intervention group experienced fewer issues with gas/colic, diaper rash, thrush, fever (37.5°C and above), nasal congestion, and vomiting during the first, second, and third months after birth, compared to those in the control group. A statistically significant difference was observed between the intervention and control groups in the first, second, and third months for all common health problems, except for vomiting ($p < 0.05$; Table 4).

In the postnatal period, all babies in the intervention group continued their routine health screening follow-ups. In the control group, all babies participated in routine health screenings after birth, with participation rates of 96% in the first month, 86% in the second month, and 84% in the third month. A statistically significant difference in participation between the intervention and control groups was observed in the second and third months ($p < 0.05$; Table 5).

It was found that the most common diagnosis leading to hospitalization in both the intervention and control groups was upper respiratory tract infection. A statistically significant difference was observed in the hospitalization rates between the two groups in the first and third months.

($p < 0.05$; Table 5).

4 | Discussion

The aim of this research was to assess the effects of online infant care education and postnatal counseling, based on Meleis's transition theory, on maternal self-esteem and infant health. Online education initiated during pregnancy and counseling for up to 3 months postpartum was associated with mothers' confidence in parenting and caring for their babies, resulting in better baby health.

Mothers are the people who will support the development of babies, meet their basic needs, and provide care (Yılmaz-Bursa and Aksoy 2023). Mothers are more novice and anxious, especially in their first babies (Yıldız and Boyacı 2019). The mother needs to gain knowledge and skills to fulfil her responsibilities and care for herself and her baby. Motherhood is a transitional process in which developmental behaviors and attitudes change (Dol et al. 2020). Women's adaptation to pregnancy and perception of motherhood; personal experience, cultural level, readiness for motherhood, attitudes of the family, risky situations experienced in previous pregnancies, number of children, social support systems, baby care knowledge, and self-confidence (Yıldız and Boyacı 2019; Durmaz, Gün Kakaşçı, and Başar 2021).

Mothers with high self-confidence who fully accept their role as caregivers are more effective in caring for their babies. A systematic review highlighted that baby care training plays a key role in preparing mothers for their new role and enhancing their confidence in providing appropriate care for their babies

TABLE 1 | Distribution and comparison of sociodemographic and obstetric characteristics of mothers and babies according to groups ($N = 102$).

Variables	Intervention group ($n = 52$)		Control group ($n = 50$)		Test value	p
	Mean ± SD[a]	(Min–max)	Mean ± SD[a]	(Min–max)		
Mother age	26.35 ± 3.71	19–35	26.88 ± 4.14	19.00–35.00	1249.50[b]	0.734
Gestation age (week)	39.03 ± 1.02	37.00–41.00	38.78 ± 1.21	37.00–41.00	1126.00[b]	0.225
Birth height (cm)	50.75 ± 2.26	42.00–54.00	50.66 ± 1.92	47.00–57.00	1113.00[b]	0.203
Birth weight (g)	3295.61 ± 357.06	2500.00–4000.00	3306.40 ± 334.22	2500.00–4000.00	11283.00[b]	0.909
	n	%	*n*	%		
Mother education status						
Primary school	11	21.2	10	20.0	0.290[c]	0.986
High School	16	30.8	16	32.0		
University and above	25	48.1	24	48.0		
Mother working status						
Working	14	26.9	22	44.0	3.255[c]	0.071
Not working	38	73.1	28	56.0		
Revenue status						
Income less than expense	13	25.0	15	30.0	0.437[c]	0.804
Income equals expense	26	50.0	22	44.0		
Income is more than expense	13	25.0	13	26.0		
Family type						
Nuclear	46	88.5	40	80.0	1.380[c]	0.240
Wide	6	11.5	10	20.0		
Type of birth						
Cesearian	33	63.5	29	58.0	0.319[c]	0.102
Vaginal birth	19	36.5	21	42.0		
Sex of the baby						
Girl	27	51.9	17	34.0	3.338[c]	0.68
Boy	25	48.1	33	66.0		

[a]Standard deviation.
[b]Mann–Whitney *U* test.
[c]Chi-square test.

(Şayık and Örsal 2019). In their study, Dol et al. (Dol et al. 2020) reported that a postpartum mobile support application enhanced mothers' self-efficacy and lowered their anxiety levels. There was no study explaining the effect of online remote baby care training and postpartum remote counseling support on mothers' self-confidence and baby health. According to the results of repeated measurements (first, second, and third months) made in the study group, it was seen that online baby care training and postpartum counseling given to mothers during pregnancy increased mothers' self-confidence in parenting and baby care. These results suggest that online education and counseling are effective in increasing mothers' self-confidence.

Adequate growth, development, and health can be supported by exclusive breastfeeding, especially during the first 6 months. Breastfeeding is closely linked to the health of the baby (Durmaz, Gün Kakaşçı, and Başar 2021; World Health Organization 2021). Evidence suggests that breastfeeding education during pregnancy and postnatal counseling is effective in increasing the rates of exclusive breastfeeding. (Dukuzumuremyi et al. 2020; Mohammed et al. 2023) The effect of breastfeeding support via WhatsApp on breastfeeding was explored by Korkut Öksüz and Inal (Korkut and İnal 2023). Flax et al. (Flax et al. 2022) examined the effects of remote support methods on breastfeeding at 6 and 24 weeks postpartum in Nigeria. Their findings, along with those of Korkut Öksüz and İnal (Korkut and İnal 2023), revealed that WhatsApp support led to increased exclusive breastfeeding durations. Our study is the first in Turkey to explore the impact of online baby care training and postpartum remote counseling on breastfeeding. In our study group, mothers who received both online training and counseling had significantly higher exclusive breastfeeding rates than those in the control group.

TABLE 2 | Comparison of Karitane Parent Self-Confidence Scale subdimensions and total scores by groups ($N = 102$).

	Intervention group ($n = 52$)		Control group ($n = 50$)			
Impressions	**Mean ± SD[a]**	**(Min–max)**	**Mean ± SD[a]**	**(Min–max)**	**Test**	***p***
KPSCS total score						
Pregnancy (1)	22.90 ± 4.49	13.00–33.00	33.72 ± 3.04	29.00–39.00	984.500[b]	**0.034***
Postpartum (2)	24.58 ± 3.77	14.00–32.00	27.67 ± 1.88	29.50–32.00	314.500[b]	**0.000***
Month 1 (3)	33.96 ± 2.64	29.00–39.00	29.50 ± 2.68	23.00–35.00	328.500[b]	**0.000***
Month 2 (4)	35.92 ± 2.51	30.00–40.00	31.42 ± 4.37	22.00–40.00	517.000[b]	**0.000***
Month 3 (5)	37.09 ± 1.75	33.00–40.00	32.02 ± 4.14	22.00–40.00	391.000[b]	**0.000***
Test	116.437[c]		154.295[c]			
p	**0.000**		**0.000**			
Benferroni	**1 < 2; 1 < 3; 1 < 4; 1 < 5; 2 < 5; 3 < 4; 3 < 5; 4 < 5**		**1 < 3; 1 < 4; 1 < 5; 2 < 3; 2 < 4; 2 < 5**			
Baby care subdimension						
Pregnancy (1)	17.01 ± 3.64	5.00–23.00	18.30 ± 3.86	4.00–23.00	996.000[b]	**0.041***
Postpartum (2)	25.32 ± 2.73	19.00–30.00	21.16 ± 4.45	10.00–30.00	570.500[b]	**0.000***
Month 1 (3)	25.65 ± 2.15	21.00–30.00	23.70 ± 2.88	16.00–29.00	792.500[b]	**0.001***
Month 2 (4)	27.21 ± 1.90	19.00–30.00	23.68 ± 3.12	19.00–30.00	517.000[b]	**0.000***
Month 3 (5)	28.01 ± 1.68	21.00–30.00	24.00 ± 3.04	19.00–30.00	391.000[b]	**0.000***
Test	84.018[c]		124.426[c]			
p	**0.000**		**0.000**			
Benferroni	**1 < 2; 1 < 3; 1 < 4; 1 < 5; 2 < 3; 2 < 4; 2 < 5; 3 < 4; 3 < 5; 4 < 5**		**1 < 2; 1 < 3; 1 < 4; 1 < 5; 2 < 3; 2 < 4; 2 < 5**			
Parental role subdimension						
Pregnancy (1)	5.88 ± 1.91	2.00–10.00	6.28 ± 1.95	3.00–10.00	1145.000[b]	0.294*
Postpartum (2)	10.03 ± 1.18	8.00–12.00	8.24 ± 1.92	4.00–12.00	568.000[b]	**0.000***
Month 1 (3)	8.30 ± 1.09	6.00–10.00	5.80 ± 2.33	0.00–9.00	427.000[b]	**0.000***
Month 2 (4)	8.71 ± 1.19	6.00–11.00	7.74 ± 1.71	3.00–11.00	860.000[b]	**0.003***
Month 3 (5)	9.07 ± 0.76	8.00–11.00	8.02 ± 1.54	5.00–11.00	773.500[b]	**0.000***
Test	52.196[c]		63.121[c]			
p	**0.000**		**0.000**			
Benferroni	**1 < 2; 1 < 3; 1 < 4; 1 < 5; 2 > 3; 2 > 4; 3 < 5**		**1 < 2; 1 > 3; 1 < 4; 1 < 5; 2 > 3**			

Note: Bold values were statistically significant values with $p < 0.05$.
Abbreviation: KPSCS, Karitane Parent Self-Confidence Scale.
[a]Standard deviation.
[b]Mann–Whitney *U*.
[c]Analysis of variance in repetitive measures.
*$p < 0.05$.

It can be said that online education and postpartum remote counseling support are effective only in maintaining breastfeeding.

In infants during the first trimester, various issues such as gas, diaper rash, thrush, vomiting, nasal congestion, and high fever are frequently observed. Calışkan and Bayat (Çalışkan and Bayat 2011) found that colic, thrush, diaper rash, and cough were the most prevalent problems in infants aged 0–11 months. Within the study group, it was observed that online baby care training provided to mothers during pregnancy, along with postpartum counseling for infants, reduced issues such as gas, thrush, diaper rash, and nasal congestion. Online training

TABLE 3 | Comparison of babies' feeding patterns by groups ($N = 102$).

Variables	Intervention group ($n = 52$)		Control group ($n = 50$)		Test	p
	n	%	n	%		
Baby's diet						
Postpartum						
Only breast milk	50	96.2	26	52.0	26.165[a]	**0.000**
Breast milk+formula	2	3.8	24	48.0		
Month 1						
Only breast milk	52	100	25	50.0	38.829[b]	**0.000**
Anne sütü+mama	0	0	21	42.0		
Mama	0	0	4	8.0		
Month 2						
Only breast milk	51	98.1	28	56.0	27.371[b]	**0.000**
Breast milk+formula	1	1.9	17	34.0		
Formula	0	0	5	10.0		
Month 3						
Only breast milk	50	96.2	25	50.0	29.720[b]	**0.000**
Breast milk+formula	2	3.8	16	32.0		
Formula	0	0	9	18.0		

Note: Bold values were statistically significant values with $p < 0.05$.
[a]Chi-square test.
[b]Fisher exact test.

methods are not only capable of reaching a large audience but are also cost-effective. These methods are believed to be effective in providing training and counseling for mothers.

When postpartum health professional support is insufficient, babies are more frequently admitted to emergency departments (Barimani et al. 2017b). Ladley et al. (Ladley et al. 2018) found that giving educational texts to mothers reduced the number of emergency department admissions and increased the quality of care. The study group determined that the mothers who were given online baby care training and postpartum counseling during pregnancy had fewer hospital admissions in the first and third months. In addition, it was determined that they took their babies for routine monitoring at a higher rate in the second and third months. It can be said that online baby care training and counseling services provided to mothers reduce hospital admissions and increase the frequency of routine follow-ups of babies.

5 | Conclusion

Online education initiated during pregnancy and counseling for up to 3 months postpartum was associated with mothers' confidence in parenting and caring for their babies, resulting in better baby health. Online babysitting training and counseling can be considered an alternative to standard care, especially when face-to-face support is unavailable.

In our study, Meleis's transition theory provides a strong foundation for understanding mothers' psychological and physical transitions in the postpartum period. Online baby care education and postpartum counseling help mothers manage this transition in a healthier way, thus boosting their self-confidence and improving the health of their babies. Such supportive education and counseling services help mothers cope with the challenges they face, helping them complete the transition in a more positive and healthy way.

6 | Relevance for Clinical Practice

The contributions of this study to the clinic are by using education and counseling programs based on Meleis's transition theory. Nurses can better understand the psychological and physical transitions of mothers after birth and provide appropriate care. This can help mothers adapt more healthily to their postpartum processes, thus improving both maternal and infant health.

Nurses can increase mothers' self-esteem and strengthen the mother–infant bond by providing online education and counseling support in the pre- and postpartum period. Routine implementation of such programs in the clinic can be an effective way to ensure that mothers access accurate information and apply the correct care methods. While monitoring the health of babies, they can observe the frequency of hospital visits and health

TABLE 4 | Distribution and comparison of common problems in infants by groups ($N = 102$).

Problems	Intervention group ($n = 52$)		Control group ($n = 50$)		Test değeri	*p*
	n	%	*n*	%		
Gas/colic						
Postpartum						
Yes	25	48.1	21	42.0	7.486[a]	**0.006***
No	27	51.9	29	58.0		
Month 1						
Yes	5	9.6	37	74.0	43.625[a]	**0.000***
No	47	90.4	13	26.0		
Month 2						
Yes	5	9.6	24	48.0	18.457[a]	**0.000***
No	47	90.4	26	52.0		
Month 3						
Yes	4	7.7	22	44.0	17.692[a]	**0.000***
No	48	92.3	28	56.0		
Diaper rash						
Postpartum						
Yes	0	0	0	0	—	—
No	52	100	50	100		
Month 1						
Yes	6	115	25	50.00	7.451[a]	**0.006***
No	46	88.5	25	50.00		
Month 2						
Yes	1	1.9	18	36.00	19.528[a]	**0.000***
No	51	98.1	32	64.00		
Month 3						
Yes	1	1.9	9	18.00	17.824[a]	**0.006***
No	51	98.1	41	82.00		
Canker						
Postpartum						
Yes	0	0	0	0	—	—
No	52	100	50	100		
Month 1						
Yes	1	1.9	21	42.00	24.202[a]	**0.000***
No	51	98.1	29	58.00		
Month 2						
Yes	2	3.8	14	28.00	11.244[a]	**0.001***
No	50	96.2	36	72.00		
Month 3						
Yes	1	1.9	5	10.00	2.974[b]	0.109
No	51	98.1	45	90.00		

(Continues)

TABLE 4 | (Continued)

Problems	Intervention group ($n=52$)		Control group ($n=50$)		Test değeri	p
	n	%	n	%		
Fever (37.5°C and above)						
Postpartum						
Yes	0	0	0	0	—	—
No	52	100	50	100		
Month 1						
Yes	2	3.8	0	0	1.962[b]	0.161
No	50	96.2	50	100		
Month 2						
Yes	3	5.8	6	12.00	1.230[b]	0.267
No	49	94.2	44	88.00		
Month 3						
Yes	8	15.4	5	10.00	0.665[a]	0.415
No	44	84.6	45	90.00		
Nasal congestion						
Postpartum						
Yes	9	17.3	13	26.00	1.138[a]	0.286
No	43	82.7	37	74.00		
Month 1						
Yes	1	1.9	28	56.00	36.633[a]	**0.000***
No	51	98.1	22	44.00		
Month 2						
Yes	3	5.8	12	24.00	6.754[a]	**0.009***
No	49	94.2	38	76.00		
Month 3						
Yes	3	5.8	12	24.00	5.987[a]	**0.010***
No	49	94.2	38	76.00		
Vomiting						
Postpartum						
Yes	37	71.2	37	74.00	0.104[a]	0.747
No	15	28.8	13	26.00		
Month 1						
Yes	21	40.4	21	42.00	0.027[a]	0.868
No	31	59.6	29	58.00		
Month 2						
Yes	5	9.6	8	16.00	0.934[a]	0.334
No	47	90.4	42	84.00		
Month 3						
Yes	8	15.4	6	12.00	0.247[a]	0.619
No	44	84.6	44	88.00		

Note: Bold values were statistically significant values with $p < 0.05$.
[a]Chi-square test.
[b]Fisher exact test.
*$p < 0.05$.

TABLE 5 | Comparison of the reasons for routine follow-up and hospital admission of infants according to groups ($N = 102$).

Variables	Intervention group ($n = 52$)		Control group ($n = 50$)		Test	p
	n	%	n	%		
Routine baby health monitoring						
Postpartum						
Yes	52	100	50	100	—	—
No	—	—	—	—		
Month 1						
Yes	52	100	48	96.0	2.122[b]	0.145
No	—	—	2	4.0		
Month 2						
Yes	52	100	43	86.0	7.740[b]	**0.001***
No	—	—	7	14.0		
Month 3						
Yes	52	100	44	84.0	7.816[b]	**0.001***
No	—	—	6	16.0		
Reasons for admission to the hospital						
Month 1						
No	48	92.3	24	48.0	27.690[a]	**0.000***
URTI	4	7.7	8	16.0		
Colic	—	—	9	18.0		
Cry	—	—	6	12.0		
Nasal congestion	—	—	3	9.0		
Month 2						
No	40	76.9	33	66.0	3.537[b]	0.324
URTI	5	9.6	8	16.0		
Colic	4	7.7	8	16.0		
Cry	3	5.8	1	2.0		
Month 3						
No	42	80.8	33	66.0	8.066[b]	**0.027***
URTI	10	19.2	10	20.0		
Colic	0	0	6	12.0		
Cry	0	0	1	2.0		

Note: Bold values were statistically significant values with $p < 0.05$.
Abbreviation: URTI, upper respiratory tract infection.
[a]Chi-square test.
[b]Fisher exact.
*$p < 0.05$.

problems of babies, especially in the postpartum period. The decreased hospital visits observed in the intervention group can allow nurses to develop early diagnosis and intervention skills. This can increase the effectiveness of early intervention strategies in infant health care.

In addition to understanding the psychological transitions of mothers, this study also shows practical results for infant health. Nurses can increase the quality of family-centered care by organizing trainings not only for mothers but also for family members. Ensuring that families are conscious and effective in baby

care can improve general health outcomes. Nurses can reinforce mothers' self-confidence by providing guidance to mothers to increase their self-esteem in the postpartum period. This can also help mothers cope with psychological problems such as postpartum depression. Supportive care, especially for mothers giving birth for the first time, can strengthen bonding processes.

As a result, this study can encourage nurses to adopt a more holistic and individualized approach to mother–baby care and can also contribute to the more widespread use of training and counseling programs in clinical practice to improve health outcomes.

Author Contributions

Fatma Şule Bilgiç: conceptualization, investigation, writing – original draft, methodology, validation, visualization, formal analysis, software, data curation, resources. **Gülçin Bozkurt:** conceptualization, investigation, writing – review and editing, project administration, supervision.

Ethics Statement

Approval for the study was obtained from the Institutional Review Board (IRB) of Sağlık Bilimleri University Haseki Training and Research Hospital in 2022 (IRB Protocol Number: December 21, 222–2022). The study has been registered in the ClinicalTrials.gov PRS system with the identifier NCT05812833.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data may be shared when requested from the responsible author for valid reasons.

References

Barimani, M., A. Vikström, M. Rosander, K. Forslund Frykedal, and A. Berlin. 2017a. "Facilitating and Inhibiting Factors in Transition to Parenthood–Ways in Which Health Professionals Can Support Parents." *Scandinavian Journal of Caring Sciences* 31, no. 3: 537–546.

Barimani, M., A. Vikstrom, M. Rosander, K. Forslund Frykedal, and A. Berlin. 2017b. "Facilitating and Inhibiting Factors in Transition to Parenthood-Ways in Which Health Professionals Can Support Parents." *Scandinavian Journal of Caring Sciences* 31, no. 3: 537–546.

Çalışkan, Z. I., and M. Bayat. 2011. "Mothers' Baby Care Practices and Influencing Factors: A Cappadocia Example." *Anatolian Journal of Nursing and Health Sciences* 14, no. 2: 23–30.

Dol, J., B. Richardson, G. T. Murphy, M. Aston, D. McMillan, and M. Campbell-Yeo. 2020. "Impact of Mobile Health Interventions During the Perinatal Period on Maternal Psychosocial Outcomes: A Systematic Review." *JBI Evidence Synthesis* 18, no. 1: 30–55.

Dukuzumuremyi, J. P. C., K. Acheampong, J. Abesig, and J. Luo. 2020. "Knowledge, Attitude, and Practice of Exclusive Breastfeeding Among Mothers in East Africa: A Systematic Review." *International Breastfeeding Journal* 15: 1–17.

Duman, F. N., and Z. Gölbaşı. 2023. "The Effects of the Increasing Cesarean Delivery Rate on Mother-Baby Health and Strategies to Reduce Cesarean Deliveries." *Turkish Journal of Family Medicine and Primary Care* 17, no. 1: 188–194.

Durmaz, A., Ç. Gün Kakaşçı, and F. Başar. 2021. "The Relationship of Postpartum Maternal Attachment and Mothers' Happiness Levels With Sociodemographic and Obstetric Characteristics: A Cross-Sectional Study." *Turkiye Klinikleri Journal of Nursing Sciences* 13, no. 4: 795–804.

Flax, V. L., A. Ipadeola, C. H. Schnefke, et al. 2022. "Breastfeeding Inter-Personal Communication, Mobile Phone Support, and Mass Media Messaging Increase Exclusive Breastfeeding at 6 and 24 Weeks Among Clients of Private Health Facilities in Lagos, Nigeria." *Journal of Nutrition* 152, no. 5: 1316–1326. https://doi.org/10.1093/jn/nxab450.

Grant, S., E. Mayo-Wilson, P. Montgomery, et al. 2018. "CONSORT-SPI 2018 Explanation and Elaboration: Guidance for Reporting Social and Psychological Intervention Trials." *Trials* 19, no. 1: 1–18.

Güneş, E., and C. Işık. 2023. "Factors Affecting Maternal-Paternal Attachment and Midwifery Approaches." *Journal of Public Health Research* 5, no. 1: 89–95.

Kaya, C. E., and N. H. Şahin. 2018. "The Effects of Parental Adaptation Support Program on Parental Self-Efficacy Perceptions in Pregnant Women." *Samsun Journal of Health Sciences* 2: 61–82.

Korkut, S., and S. İnal. 2023. "Continuous Lactation Support Provided Through the Whatsapp Messaging Application: A Randomized Controlled Trial." *Journal of Human Lactation* 39: 666–678.

Ladley, A., A. W. Hieger, J. Arthur, and M. Broom. 2018. "Educational Text Messages Decreased Emergency Department Utilization Among Baby Caregivers: A Randomized Trial." *Academic Pediatrics* 18: 636–641.

Lee, E., K. Kirkland, C. Miranda-Julian, and R. Greene. 2018. "Reducing Maltreatment Recurrence Through Home Visitation: A Promising Intervention for Child Welfare Involved Families." *Child Abuse & Neglect* 86: 55–66.

Meleis, A. 2010. *Transitions Theory: Middle Range and Situation Spesific Theories in Nursing Research and Practices*. New York: Springer Publishing Company.

Mohammed, S., E. L. Webb, C. Calvert, et al. 2023. "Effects of Exclusive Breastfeeding on Educational Attainment and Longitudinal Trajectories of Grade Progression Among Children in a 13-Year Follow-Up Study in Malawi." *Scientific Reports* 13, no. 1: 11413.

Nawabi, F., A. Alayli, F. Krebs, et al. 2021. "Health Literacy Among Pregnant Women in a Lifestyle Intervention Trial: Protocol for an Explorative Study on the Role of Health Literacy in the Perinatal Health Service Setting." *BMJ Open* 11, no. 7: e047377. https://doi.org/10.1136/bmjopen-2020-047377.

Pontoppidan, M., S. B. Andrade, I. H. Kristensen, and E. L. Mortensen. 2019. "Maternal Confidence After Birth in Atrisk and Not-At-Risk Mothers: Internal and External Validity of the Danish Version of the Karitane Parenting Confidence Scale (KPCS)." *Journal of Patient-Reported Outcomes* 3: 33.

Sawyer, M. G., C. E. Reece, K. Bowering, et al. 2017. "Nurse-Moderated Internet-Based Support for New Mothers: Non-Inferiority, Randomized Controlled Trial." *Journal of Medical Internet Research* 19, no. 7: e258. https://doi.org/10.2196/jmir.6839.

Şayık, D., and Ö. Örsal. 2019. "Parents' Self-Confidence in Baby Care and Influencing Factors in Turkey: A Systematic Review." *Osmangazi Medical Journal* 41, no. 4: 434–447.

Sevınç, H. Y., and N. Ş. Celasin. 2023. "Are the Traditional Baby Care Practices of Mothers Different in the World and in Turkey?" *Göbeklitepe Journal of Health Sciences* 6, no. 12: 1–11.

Shafiei, T., H. L. McLachlan, J. M. Nicholson, S. Hay, M. Newton, and H. Grimes. 2019. "Exploring the Effect of the 'Growing Together' Parenting Education Kit on Early Parenting-Study Protocol for a Cluster Randomised Controlled Trial." *BioMed Research International* 7: 1–11.

Usui, Y., M. Haruna, and Y. Shimpuku. 2020. "Validity and Reliability of the Karitane Parenting Confidence Scale Among Japanese Mothers." *Nursing & Health Sciences* 22: 205–211.

World Health Organization. 2021. "Baby and Young Child Feding." https://www.who.int/news-room/fact-sheets/detail/baby-and-young-child-feeding.

Yıldız, H., and B. Boyacı. 2019. "Mothers' Knowledge Levels About Pre-Discharge Neonatal Care, Their Needs and Related Factors in the Postpartum Period." *Mersin University Journal of Health Sciences* 12, no. 1: 1–10.

Yılmaz, B., and Ü. Oskay. 2021. "Karitane Parent Self-Confidence Scale: Turkish Validity and Reliability Study." *Cukurova Medical Journal* 46: 801–813.

Yılmaz-Bursa, Ö. Ü. G., and A. B. Aksoy. 2023. "Investigation of Parental Self-Regulation Competencies of Mothers With 0-1 Year Old Babies According to Some Variables." *Kalem International Journal of Education and Human Sciences* 13, no. 24: 257–275.

Supporting Information

Additional supporting information can be found online in the Supporting Information section.