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The Influence of Web-Based Lactation Psychoeducation on Mothers' Attitudes Toward Breastfeeding

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ABSTRACT: A mother's attitude is a key factor in the success of breastfeeding. Web-based lactation psychoeducation offers a flexible and easily accessible educational alternative during the postpartum period. This study aimed to analyze changes in mothers' attitudes toward breastfeeding following their participation in a web-based lactation psychoeducation program. A quantitative, quasi-experimental, one-group pretest–posttest design was employed. The study was conducted over three months within the working area of a community health center (Puskesmas) in Surabaya, involving 179 postpartum mothers selected via purposive sampling. The intervention, delivered over seven days, consisted of short, web-based video content covering the benefits of breastfeeding, breastfeeding techniques, management of breastfeeding challenges, family support, maternal nutrition, and common myths and facts about breastfeeding. Daily reminders were sent via WhatsApp. Mothers' attitudes were assessed before and after the intervention using the Iowa Infant Feeding Attitude Scale (IIFAS). Data were analyzed through univariate and bivariate methods, utilizing a paired t-test with a significance level of 5%. The majority of respondents were aged 20–35 (72.6%), multiparous (55.9%), had a secondary education (57.5%), and were homemakers (62.6%). The proportion of mothers with a positive attitude toward breastfeeding increased from 29.6% before the intervention to 88.3% afterward. The mean attitude score rose from 59.80 ± 7.50 to 70.20 ± 6.80, representing a mean difference of 10.40 points ($p < 0.001$). Web-based lactation psychoeducation effectively fostered a more positive attitude among mothers toward breastfeeding, suggesting its potential as a supportive educational approach for postpartum mothers. However, a design lacking a control group limits causal conclusions, so further research involving a comparison group is necessary.

1. INTRODUCTION

Breast milk is the primary source of nutrition that supports an infant's growth and development, especially during the first six months of life. It is recommended to provide exclusive breastfeeding for the first six months, followed by continued breastfeeding alongside complementary foods until the age of two years or older [1,2]. However, the success of breastfeeding is not determined solely by the availability of breast milk; it also depends on a mother's ability to understand her infant's needs, employ correct breastfeeding techniques, address lactation challenges, and maintain consistent breastfeeding practices. Consequently, a mother's attitude toward breastfeeding is a crucial aspect that must be considered in efforts to improve breastfeeding success.

A mother's attitude toward breastfeeding is shaped by the interplay of various factors, including her knowledge, breastfeeding self-efficacy (confidence in her own ability to breastfeed), past breastfeeding experiences, psychological state, and the support she receives from her family and healthcare professionals. Even a mother who is well-informed about the benefits of breast milk may struggle to breastfeed effectively if she encounters obstacles—such as the perception that her milk supply is insufficient, pain during nursing, difficulties with latching, fatigue, anxiety, or a lack of support from her environment. This highlights the fact that lactation education must go beyond the mere provision of information; it should also focus on strengthening a mother's psychological readiness, self-confidence, problem-solving skills, and overall motivation to breastfeed.

One approach that can be developed is lactation psychoeducation—a method that combines the provision of information and educational guidance with psychological support to help mothers navigate the breastfeeding process. This approach may cover topics such as the benefits of breast milk, the physiology of lactation, breastfeeding techniques, recognizing signs of adequate milk intake, managing breastfeeding challenges, stress management, and strengthening a mother's confidence in sustaining breastfeeding. Such an approach is vital because a mother's decision to continue or cease breastfeeding is influenced not only by her knowledge but also by her perceptions, emotions, past experiences, and her capacity to overcome obstacles encountered while breastfeeding.

Advancements in information technology have created opportunities to deliver lactation psychoeducation through web-based platforms. These platforms allow mothers to access educational materials flexibly, review information as needed, and receive support without the constant need for in-person visits to healthcare facilities. If designed interactively, web-based psychoeducation can incorporate demonstration videos, written resources, comprehension assessments, guides for addressing breastfeeding difficulties, and channels for communication or consultation with healthcare professionals. Consequently, a web-based approach has the potential to broaden access to education while fostering continuous learning throughout the breastfeeding period.

A systematic review and meta-analysis of 32 studies involving 9,514 participants found that internet-based interventions can improve mothers' knowledge, attitudes, and confidence regarding breastfeeding, and have a positive impact on exclusive breastfeeding rates during the initial period and the months following childbirth. [3]. These findings suggest that the use of digital technology can serve as a strategy to strengthen breastfeeding education and support, although its effectiveness remains influenced by the characteristics of the intervention and the quality of its implementation.

These findings align with a systematic review and meta-analysis on remote breastfeeding support and education. The research indicates that remote support has the potential to reduce the risk of discontinuing exclusive breastfeeding three months postpartum, although the certainty of the evidence is considered low, and the results are inconsistent across the entire observation period [4]. This demonstrates that digital technology can support the continuation of breastfeeding; however, its effectiveness cannot be assumed to be the same across all types of interventions. Therefore, the development of web-based programs must take into account the content, the intensity of education provided, the individual needs of the mothers, and the accompanying professional support.

Experimental research also indicates that online education can influence psychological aspects related to self-efficacy, attitudes, breastfeeding challenges, breastfeeding frequency, and postpartum depression [4–8]. These findings reinforce the premise that technology-based education can be used to support mothers' readiness and confidence in breastfeeding. However, an increase in self-efficacy or motivation is not necessarily synonymous with a change in actual behavior; therefore, the actual practice of breastfeeding still needs to be assessed directly.

Although research on digital breastfeeding education continues to evolve, there remains a need to evaluate interventions that specifically integrate lactation-related content with psychological empowerment for mothers, delivered via web-based platforms. Due to variations in media, educational content, participant characteristics, the timing of interventions, and the outcomes measured, existing research cannot yet definitively establish the effectiveness of specific web-based psychoeducational approaches on maternal attitudes toward breastfeeding. Furthermore, gains in knowledge and self-confidence must be distinguished from actual changes in breastfeeding practices—such as the correct application of breastfeeding techniques, the frequency of feedings, feeding on demand, and the sustained practice of exclusive breastfeeding. Given this context, this study is essential to evaluate whether educational interventions that combine knowledge-based and psychological components can effectively shift maternal attitudes toward breastfeeding. The findings are expected to inform the development of digital

lactation education strategies that are more accessible, structured, and tailored to the needs of mothers, while also providing valuable insights for midwives and healthcare professionals to support successful breastfeeding.

2. MATERIALS AND METHODS

2.1 Study Material

This study is a quantitative research project employing a quasi-experimental design—specifically, a pretest-posttest single-group design. This design is used to measure changes in mothers' attitudes toward breastfeeding before and after an intervention in the form of web-based lactation psychoeducation. The study was conducted within the working area of a community health center (Puskesmas) in the city of Surabaya over a period of 3 months.

2.2 Sample Collection

The population for this study consists of all postpartum mothers who visited community health centers (Puskesmas) in the city of Surabaya during the study period. The sample comprises 179 respondents, selected using a purposive sampling technique based on established inclusion and exclusion criteria. Inclusion criteria include mothers in the first to seventh day postpartum, those with access to and the ability to use a device with an internet connection, and those willing to participate as respondents by signing an informed consent form. Conversely, exclusion criteria include mothers with medical conditions that hinder breastfeeding, as well as respondents who failed to complete the pretest or posttest questionnaires.

2.3 Extraction Procedure

In this study, lactation psychoeducation was provided through web-based materials accessible online, supplemented by daily reminders or quotes sent via WhatsApp for seven consecutive days—from the first to the seventh day postpartum. Respondent access and engagement with the program were tracked via platform usage logs. The psychoeducational content covered the benefits of breast milk and exclusive breastfeeding, proper breastfeeding techniques and positions, strategies for addressing common breastfeeding challenges, the importance of family support for successful breastfeeding, the nutritional needs of nursing mothers, and common myths versus facts regarding breastfeeding. All materials were presented as short videos, accessible via the web platform, to facilitate the mothers' ability to obtain information and engage with the content independently during the postpartum period.

2.4 Analytical Methods

The research data were analyzed to determine changes in mothers' attitudes toward breastfeeding following their participation in a web-based lactation psychoeducation program. The study employed a one-group pretest–posttest design, in which measurements were taken from the same group of respondents both before and after the intervention. Data were collected via an online questionnaire completed by 179 postpartum mothers at the beginning of the study (pretest) and again after they had undergone the seven-day intervention (posttest). Prior to analysis, the data were checked for completeness and consistency, followed by coding, scoring, and tabulation. Attitudes toward breastfeeding were measured using the Iowa Infant Feeding Attitude Scale (IIFAS)—an instrument developed specifically to assess mothers' attitudes toward infant feeding methods, with a particular focus on breastfeeding [9,10]. The research results show a Cronbach's alpha value of 0.87. In the validity test using Pearson correlation (r) with a threshold of 0.5, 16 items were found to be valid, while one item—item number 17—was removed. These findings support the use of the adapted instrument for assessing mothers' attitudes toward breastfeeding within the Indonesian population [10]. This instrument has the potential to be used for evaluating changes in mothers' attitudes before and after a web-based lactation psychoeducation intervention. Measurements are taken prior to the intervention (pretest) and seven days following the intervention (posttest). Respondent characteristics—such as maternal age, parity, education, occupation, breastfeeding experience, and family support—are collected to describe the sample and to serve as covariates.

2.5 Statistical Analysis

Statistical analysis was conducted using both univariate and bivariate methods. Univariate analysis was employed to describe the characteristics of the respondents and the distribution of mothers' attitude scores toward breastfeeding, both before and after the intervention. Categorical data are presented as frequencies and percentages, while numerical data are expressed as means and standard deviations, as the data met the assumption of a normal distribution. Bivariate analysis was performed using a paired t-test to determine the difference in the mean attitude scores of mothers between the pre-intervention (pretest) and

post-intervention (posttest) measurements within the same group of respondents. Prior to the paired t-test, the normality of the differences between the pretest and posttest scores was assessed to ensure the assumption of normality was satisfied. The results indicated that the score differences were normally distributed, justifying the use of a paired t-test to analyze the difference between the means of the two measurements. The analysis results are presented in terms of the mean, standard deviation, mean difference, t-value, degrees of freedom, and p-value. The level of statistical significance was set at 5% ($p < 0.05$). A statistically significant difference indicates a change in the mothers' attitude scores following their participation in the web-based lactation psychoeducation. However, as this study did not include a control group, such changes cannot be exclusively attributed to the intervention without considering the potential influence of other factors during the study period.

3. RESULTS AND DISCUSSION

3.1 Result

Table 1. Frequency Distribution of Respondent Characteristics (N = 179)

Respondent Characteristics	Frequency (n=179)	Percentage (%)	Mean ± SD
Age (years)			28,4 ± 5,7
< 20 years	21	11,7	
20 – 35 years	130	72,6	
> 35 years	28	15,6	
Parity			1,7 ± 0,9
Primipara	79	44,1	
Multipara	100	55,9	
Education			12,8 ± 2,7
Primary	28	15,6	
Secondary	103	57,5	
Higher	48	26,8	
Occupation			-
Homemaker	112	62,6	
Employed	67	37,4	
Internet Access (hours/day)			3,4 ± 1,6
Low (<2 hours/day)	43	24,0	
Moderate (2–4 hours/day)	92	51,4	
High (>4 hours/day)	44	24,6	
Exclusive Breastfeeding Experience			-
Never breastfed	79	44,1	
Did not practice exclusive breastfeeding	51	28,5	
Practiced exclusive breastfeeding	49	27,4	
Mode of Delivery			-
Spontaneous/vaginal delivery	128	71,5	
Cesarean section (CS)	51	28,5	
Activity/Mobilization Pattern			1,8 ± 0,7
Limited (mostly bed rest)	68	38,0	
Moderate (light activity, limited mobilization)	79	44,1	
Good (independent mobilization without complaints)	32	17,9	

Based on Table 1, among the 179 respondents, the majority were aged 20–35 years (72.6%), were multiparous (55.9%), had a secondary education (57.5%), and were homemakers (62.6%). The mean age of the respondents was 28.4 ± 5.7 years, with an average duration of formal education of 12.8 ± 2.7 years. Most respondents had a moderate level of internet access (51.4%), had no prior breastfeeding experience (44.1%), and had given birth via a spontaneous vaginal delivery (71.5%). Regarding activity and mobilization patterns, the majority of respondents fell into the moderate category (44.1%), with a mean score of 1.8 ± 0.7. In general, these characteristics describe the profile of postpartum mothers who received a web-based lactation psychoeducation intervention.

Table 2. Categories of Mothers' Attitudes Toward Breastfeeding Before and After the Intervention

Category	Pre-test (n, %)	Post-test (n, %)
Positive	53 (29,6%)	158 (88,3%)
Negative	126 (70,4%)	21 (11,7%)
Total	179 (100%)	179 (100%)
Mean ± SD	59,80 ± 7,50	70,20 ± 6,80
p-value	p < 0,001	

Based on Table 2, the proportion of mothers with a positive attitude toward breastfeeding increased from 29.6% in the pre-test to 88.3% in the post-test, while the proportion with a negative attitude decreased from 70.4% to 11.7%. The mean attitude score increased from 59.80 ± 7.50 to 70.20 ± 6.80, with a p-value of < 0.001. These results indicate an improvement in mothers' positive attitudes toward breastfeeding following a web-based lactation psychoeducation intervention.

3.2 Discussion

The study results indicate that the proportion of mothers with a positive attitude toward breastfeeding increased from 29.6% in the pretest to 88.3% in the posttest. Conversely, the proportion of mothers with a negative attitude decreased from 70.4% to 11.7%. The mean attitude score also increased from 59.80 ± 7.50 to 70.20 ± 6.80, with a mean difference of 10.40 points and a p-value < 0.001. These findings demonstrate a statistically significant difference in attitude scores before and after the provision of web-based lactation psychoeducation. However, as the study employed a single-group design without a control group, it cannot be definitively concluded that these changes were solely the result of the intervention.

Such changes can be explained through the process of attitude formation, which is influenced by knowledge, experience, beliefs, and the social environment. Psychoeducation provides structured information, enabling mothers to understand the benefits of breast milk, breastfeeding techniques, how to address breastfeeding challenges, and the importance of family support. The WHO recommends breastfeeding counseling from pregnancy through the postpartum period, with ongoing support that can be delivered remotely, depending on the service context. This approach aims to help mothers build the skills, competence, and self-confidence needed for breastfeeding [11,12].

This shift in attitude should be understood by taking into account the characteristics of the respondents. The majority of the mothers are between 20 and 35 years old (72.6%)—an adult age group with the potential to receive and utilize health information. Furthermore, most respondents have a secondary education (57.5%) and spend 2–4 hours per day using the internet (51.4%). Theoretically, this combination of characteristics may support the reception of digital educational materials, although the level of education and the duration of internet access do not, in themselves, prove digital literacy skills or a full understanding of the material [13–15]. On the other hand, 24.0% of respondents have internet access for less than two hours per day; therefore, ease of access, video duration, and the use of simple language must be taken into account when developing interventions.

The proportion of multiparous women, reaching 55.9%, is also a significant characteristic. Among the respondents, 27.4% had experience with exclusive breastfeeding, 28.5% had breastfed but did not practice exclusive breastfeeding, and 44.1% had never breastfed. Multiparous mothers may possess prior breastfeeding experience that could shape their attitudes—either positively, through successful experiences, or negatively, due to difficulties encountered while breastfeeding. Meanwhile, mothers who have never breastfed may require foundational information and more intensive support. Consequently, the psychoeducational material provided to all respondents has the potential to address these varying informational needs; however, differences in responses based on parity and breastfeeding experience require specific examination and cannot be inferred from descriptive data alone..

Another relevant characteristic is that the majority of respondents are homemakers (62.6%) and gave birth spontaneously or via the vaginal route (71.5%). A total of 28.5% of respondents underwent a cesarean section), while 38.0% experienced limited activity or mobility during the postpartum period. These postpartum conditions and restricted mobility may affect a mother's comfort in accessing in-person services [16–21]. In this context, web-based education has the potential to serve as a complementary resource, allowing mothers to access information without needing to travel to a healthcare facility. However,

digital media cannot replace in-person examinations or assistance from healthcare professionals in cases where a mother experiences pain, latching difficulties, or other breastfeeding-related issues.

These findings are consistent with a systematic review and meta-analysis that included 32 studies with a total of 9,514 participants. The review reported that internet-based breastfeeding interventions were associated with improved scores for breastfeeding attitudes, with a pooled effect size—expressed as a standardized mean difference (SMD)—of 0.56 (95% CI 0.17–0.95; $p = 0.004$) following sensitivity analysis [3]. Internet-based interventions have also shown benefits regarding knowledge, breastfeeding self-confidence, and exclusive breastfeeding rates during specific periods [22]. Nevertheless, the variation in interventions and the heterogeneity across studies need to be considered when comparing results.

These findings are also relevant to a 2022 systematic review on remote breastfeeding support and education, which found low-quality evidence that such support may reduce the risk of discontinuing exclusive breastfeeding by three months of age; however, the benefits were not consistent throughout the entire follow-up period [4]. This confirms that the success of a digital intervention depends on the type of support, duration, service context, and the needs of the mother.

A study found that a mother's age and education are associated with her attitudes toward breastfeeding, whereas parity and employment status do not show a significant association [23]. These findings serve as a reminder that sociodemographic characteristics do not necessarily exert the same influence across all populations. Consequently, the observed increase in the proportion of positive attitudes in this study cannot be directly attributed to specific factors such as age, education, occupation, parity, or internet access without further analysis of these relationships or subgroup-specific examinations.

Overall, these results support the potential of web-based lactation psychoeducation as an educational approach for postpartum mothers. Structured content, flexible access, and material tailored to mothers' needs may facilitate the development of a positive attitude toward breastfeeding. However, as this study employed a single-group design without a control group, other factors—such as prior breastfeeding experience, family support, counseling from healthcare professionals, and natural changes occurring during the postpartum period—may also have contributed to the observed shifts in scores. Further research incorporating a comparison group, direct measurement of breastfeeding behaviors, and longer-term follow-up is necessary to confirm the effectiveness of the intervention and the sustainability of these attitudinal changes.

4. CONCLUSION

Web-based lactation psychoeducation demonstrated a shift in mothers' attitudes toward breastfeeding, moving in a more positive direction following the intervention. These findings suggest that digital education has the potential to serve as a supplementary resource for lactation education among postpartum mothers. However, as this study employed a single-group design without a control group, further research using a more robust study design is required to confirm the intervention's effectiveness, while also accounting for other factors that may influence mothers' attitudes toward breastfeeding.

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AUTHOR CONTRIBUTIONS

Dewi, UM: Conceptualization, Investigation, Writing, Review & Editing

Windarti, Y: Methodology, Writing, Review & Editing

Nerisafitra, P: Data Curation, Formal Analysis, Writing, Review & Editing.

Nisa, F: Supervision, Writing, Review & Editing.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICS STATEMENT

The study was conducted following approval from the Health Research Ethics Committee of Universitas Nahdlatul Ulama Surabaya (reference number 0158/EC/KEPK/UNUSA/2024). All respondents were provided with an explanation regarding the study's objectives, procedures, benefits, potential discomforts, data confidentiality, and their right to withdraw at any time without affecting the healthcare services they receive. The identities of the respondents were kept confidential, and the research data were used solely for scientific purposes. The intervention did not replace routine clinical care; mothers experiencing breastfeeding difficulties or medical conditions requiring attention were referred to healthcare professionals as needed.

DATA AVAILABILITY STATEMENT

Data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to applicable ethical and confidentiality requirements. The data are not publicly available in order to protect the privacy and confidentiality of the research participants.

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