

Needs analysis of breastfeeding support applications

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ARTICLE INFO

Article history:

Received June 18, 2025

Revised Aug 28, 2025

Accepted Sep 6, 2025

Keywords:

Analysis
Breast-Feed
Supporting Applications

ABSTRACT

The WHO recommends exclusive breastfeeding for the first six months and continued breastfeeding until two years of age or beyond. However, many inhibiting factors remain, such as limited knowledge, lack of support from family and healthcare professionals, and psychological and social barriers that impact breastfeeding success. This study aims to analyze the need for breastfeeding support apps among mothers. This is a qualitative study with an exploratory descriptive approach. In-depth interviews were conducted with 10 mothers who have breastfed and healthcare professionals, with questions related to mothers' personal experiences while breastfeeding, information sources used, information needs, needs for breastfeeding education apps, expectations and suggestions. The results of this study identified five themes: physical and emotional challenges in breastfeeding, the need for practical and specific information, trust in information sources, preferences for digital educational media, and expectations for educational apps. Through this study, it can be concluded that mothers need support from all parties, including healthcare professionals, with short video and visual educational media aligned to support breastfeeding practices.

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INTRODUCTION

Breastfeeding is one of the most effective health interventions in improving child survival, growth and development (Demsia Simbolon, 2019),(Aguszulkia & Nurvinanda, 2020). The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life, followed by complementary feeding and continued breastfeeding until the age of two years or beyond (Khotimah et al., 2024),(Sudargo & Kusmayanti, 2023). Although the benefits of breastfeeding have been widely proven, exclusive breastfeeding rates in many countries, including Indonesia, remain below global targets. Various factors such as limited knowledge, lack of support from families and health workers, and psychological and social barriers contribute to breastfeeding success (Mawaddah, 2022),(Ila Sari, Yuswo Yani, & Puji Suryantini, 2025).

Advances in digital technology, particularly mobile health (m-health), have opened up new opportunities to support breastfeeding practices. Smartphone-based applications can provide accurate information, facilitate interactive communication, and monitor breastfeeding progress in real time (Solihin, Sos, Kom, & Abdullah, 2023),(Wibowo et al., 2024)However, many apps in circulation have not undergone an evidence-based development process and rarely consider the cultural context and specific needs of users. Previous research has shown that apps designed with user involvement from the early stages of development have higher levels of acceptance and effectiveness (Naufal, 2024),(Rosaldy, Az-Zahra, & Wardani, 2024).

Various studies in the last five years have shown that mobile health (m-health)-based applications have the potential to be educational and support media for breastfeeding mothers, although their effectiveness varies (Sagala, 2024),(Pattah, 2023. tested Mother's Milk Messaging™, a combination of an app and text messaging, and found increased user engagement and ease of access to information, although the impact on breastfeeding duration was not yet significant. In the specific context of mothers with gestational diabetes mellitus (Park, Kwak, & Lee, 2022) developed the Mellitus App, which provides infant growth monitoring, breastfeeding education, and a discussion forum, which is considered useful in preventing complications and supporting maternal-child health, especially during the period of social restrictions due to COVID-19 (Doan et al., 2023).

A study in Vietnam emphasized the importance of co-designing apps with end-users. The BeBo app was developed to increase breastfeeding initiation and duration through culturally tailored educational content. On the other hand, the study (Lewkowitz et al., 2020) found that the Breastfeeding Friend (BFF) app, although rated by users as the best source of information at six weeks postpartum, did not show an increase in breastfeeding rates above baseline levels in a group of low-income primiparous mothers. Analysis of features and quality by (Dinour & Pole, 2022) revealed that many breastfeeding apps on the market do not meet content quality standards, particularly regarding information accuracy and interactive engagement (Metin & Baltacı, 2024).

Showed that video-based educational interventions integrated into digital platforms can improve breastfeeding self-efficacy in primigravida mothers. Meanwhile, a qualitative study by Putri et al. (2025) highlighted that positive user experiences with the Mommy-Be app were closely related to ease of use, content relevance, and the presence of social interaction support features. Overall, these findings indicate that the success of breastfeeding apps is influenced by content relevance, ease of navigation, interactive support, and user engagement from the design stage. However, large-scale controlled trials are still needed to assess long-term effectiveness, particularly in vulnerable populations and across cultural contexts (Ghaddafi & SE, 2025),(Mandowa, 2022).

Over the past five years, research in Indonesia has shown a positive trend in the use of mobile health-based applications to support breastfeeding practices (Elvina & Suryantar, 2022) developed the Smart Busui application and reported a significant increase in mothers' knowledge about exclusive breastfeeding after an Android-based educational intervention. Similar results were found by (Virgian, 2023) through the ASI-Q Breastfeeding application, which was designed to facilitate access to information and monitor breastfeeding practices in community health centers (Puskesmas) work areas. In addition to focusing on mothers, the study (Budianto & Handayani, 2017) The Ayah ASI application emphasizes the importance of father involvement as a key supporter of the success of exclusive breastfeeding. Meanwhile (Syam et al., 2025). In the community service program, the Mommy-Be application was utilized as a means of education and support for breastfeeding mothers, which received positive responses regarding ease of use and relevance of the content.

RESEARCH METHOD

This study used a qualitative approach with an exploratory descriptive design to deeply explore user needs for a breastfeeding support application. This design was chosen because it is

appropriate for understanding the perceptions, experiences, and expectations of breastfeeding mothers and other stakeholders regarding the features and functions of the application. Participants consisted of [number of participants] people including breastfeeding mothers, midwives, and other health workers at [research location]. Inclusion criteria included: (1) mothers with babies aged 0–12 months, (2) willingness to participate in interviews, and (3) ability to use smartphones. A purposive sampling technique was used to ensure diversity of participant characteristics. Data were collected through in-depth interviews using a semi-structured interview guide. Questions were designed to explore breastfeeding experiences, challenges faced, and expectations for a breastfeeding support application. Interviews were conducted face-to-face and/or online, lasting 30–60 minutes, and recorded using an audio device with the participants' consent. Transcript data were analyzed using thematic analysis based on the steps of Braun and Clarke (2006), which include: (1) familiarization with the data, (2) initial coding, (3) theme search, (4) theme review, (5) defining and naming themes, and (6) report preparation. Data validity was maintained through member checking and peer debriefing. This study has received ethical approval from the Mahardika Ethics Commission with number No.228/KEPK.ITEKESMA/VI/2025. All participants were given an explanation of the research objectives and procedures and signed a written consent form. The confidentiality of participant identities was maintained by using an anonymous code on all transcripts and research reports.

RESULTS AND DISCUSSIONS

Based on the results of in-depth interview analysis with 10 breastfeeding mothers, five themes were found that describe their experiences, challenges, and needs related to the breastfeeding process as well as their hopes for supporting educational media.

Physical and Emotional Challenges of Breastfeeding

Most respondents described breastfeeding as both a joy and a physical and emotional burden. Common physical challenges included sore nipples, fatigue from nighttime feedings, and sleep deprivation from staying up late. Furthermore, some mothers experienced baby blues and a lack of self-confidence, especially with their first child. For example, "My first child was a challenge... soreness, baby blues, and a lack of self-confidence" (ATW, 35 years old) and "Full pumping, pumping between 12 and 5 am was hard..." (Fifi, 33 years old).

Fatigue, sleep disturbances, pain (e.g., sore nipples), and emotional symptoms such as baby blues are consistent with longitudinal research findings showing maternal sleep quality and quantity decline in the first 6 months postpartum, correlating with psychological well-being and breastfeeding self-efficacy.(McLean, Trude, & Lancaster, 2025)Structured breastfeeding support can improve the achievement of exclusive breastfeeding, while specific management of nipple pain is more effective than general management (Aldin et al., 2023).

Previous breastfeeding difficulties represent an existential breastfeeding trauma in a woman's life, which creates fear of breastfeeding in the future and a longing to breastfeed that affects breastfeeding success (Palmér, 2019).

Practical and Specific Information Needs

Respondents indicated a high need for immediately applicable technical information, such as breastfeeding positions, proper attachment, pumping techniques, and ways to increase milk production. Some mothers also needed information on nutrition for breastfeeding mothers and preparing for breastfeeding later in pregnancy, as expressed by: "How to properly attach, breast milk boosters..." (Restiani, 24) and "Preparing for breastfeeding later in pregnancy" (RR, 40).

The need for technical guidance on attachment, positioning, and pumping techniques is supported by a meta-analysis that found breastfeeding self-efficacy to be a strong predictor of exclusive breastfeeding (Brockway et al., 2023). Structured antenatal education can improve maternal readiness for breastfeeding (Ingram et al., 2024). The need for breastfeeding information

is not only important for antenatal mothers but also for postpartum mothers. Thirteen studies reported that more than 80% of mothers successfully resumed breastfeeding after receiving relactation support. (Amat Camacho, Von Schreeb, Della Corte, & Kolokotroni, 2023).

Trust in Information Sources

Several mothers stated that information online was often inaccurate or inappropriate for their circumstances. They wanted credible and relevant sources of information and highlighted the lack of systematic education from health workers or community health workers. For example, "There are never any community health workers who provide breastfeeding education" (Esti Nur Janah, 34) and "Information online is not always accurate" (Rizki Yulianti, 33).

This skepticism about online information is relevant to studies showing widespread misinformation on social media regarding breastfeeding (Bridges et al., 2024). The lack of education from health workers/cadres indicates the need for official channels and professional support (WHO, 2022).

Digital Educational Media Preferences

Nearly all respondents preferred educational media in the form of short videos, engaging visuals, and light, easy-to-understand material. For example: "Visually engaging with lots of pictures or videos" (RR, 40 years old) and "Demonstration videos, light, easy-to-access material" (Y, 48 years old).

In practice, breastfeeding support provided by nurses and midwives most often includes home visits, telephone communication, and follow-up activities (Couto et al., 2025). However, mothers' preference for short, visual videos aligns with controlled trials showing that video-based education improves breastfeeding self-efficacy and practices (Han et al., 2024). mHealth applications have also been shown to be effective in supporting exclusive breastfeeding (Dalton et al., 2023). For example, the Breastfeeding mobile application includes various components to support breastfeeding practices in mothers with gestational diabetes mellitus, including: infant growth monitoring, breastfeeding history recording, information related to the mother's gestational diabetes, educational materials on breastfeeding, demonstration videos of breastfeeding techniques and breast massage, breastfeeding success stories, a message board, a frequently asked questions (FAQ) section, and links to breastfeeding education centers.

Expectations for Educational Applications

Mothers expect apps that are easy to use, free, interactive, and accessible to everyone. Expected features include breastfeeding education, tips for boosting breast milk production, direct consultations with counselors, and psychological support. For example, "The app should be easy to use and educational" (Rizki Yulianti, 33) and "There should be direct consultations with breastfeeding counselors" (ATW, 35). The expectation that apps be free, easy to use, and interactive aligns with the development of digital interventions that combine modular content and live consultation features. Apps with user-friendly designs can improve knowledge and duration of exclusive breastfeeding, especially among working mothers (Foti et al., 2023; Tsai et al., 2024).

CONCLUSION

This study shows that mothers face physical and emotional challenges during breastfeeding, such as fatigue, nipple pain, and psychological distress that can lower self-confidence. Mothers also have a high need for practical and specific information, particularly regarding breastfeeding techniques, breast pumping, and nutrition for breastfeeding mothers. These findings underscore the importance of credible and relevant information sources, given that many mothers still doubt the accuracy of online information and the lack of systematic education from health professionals. Most mothers expressed a preference for digital educational media in the form of short videos, engaging visuals, and easy-to-understand materials. Their expectations for educational apps

include ease of use, free access, consultations with lactation counselors, and psychological support. Therefore, the results of this study underscore the urgency of developing interactive, evidence-based breastfeeding support apps tailored to the needs and cultural context of mothers in Indonesia. Further research should focus on field trials, usability evaluation, and effectiveness testing to ensure the app's sustainability and scalability in maternal and child health services.

ACKNOWLEDGEMENTS

The research team would like to thank the Directorate of Research, Technology and Community Service (DRTPM), as this article is one of the outputs of the 2025 research funding grant.

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