

# THE ROLE OF MOBILE APPLICATIONS IN ENHANCING POSTPARTUM MOTHER'S KNOWLEDGE ABOUT POSTNATAL CARE: A SCOPING REVIEW

Fitriana Yuni Permana Sari<sup>1\*</sup>, Paulina Fonseca de Carvalho<sup>2</sup>, Viana Remiciadas Soares dos Reis<sup>3</sup>, Rovica Probowati<sup>4</sup>

Duta Bangsa University<sup>1,4</sup>, Instituto Superior Cristal Dili Timor Leste<sup>2,3</sup>

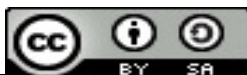
\*Correspondence Email: [fitrianyps@gmail.com](mailto:fitrianyps@gmail.com)

## ABSTRACT

*The high rate of postpartum maternal mortality due to health complications is a serious problem that requires innovative solutions. This research aims to explore the role of mobile applications in increasing the knowledge of postpartum mothers and identify the characteristics of effective educational applications. The method used was a Scoping Review with a population of postpartum mothers, using primary research articles in Indonesian and English from 2015-2025 in the Google Scholar and PubMed databases. Results show that apps such as Aponjon, BIDANKU, and Breast Milk Mother significantly improve mothers' knowledge, practices, and self-efficacy through voice messages, texts, and content tailored to the postpartum stage. Characteristics of effective apps include regular communication, personalization of content, focus on maternal and neonatal care, and high interactivity. In conclusion, mobile applications are a potential educational medium to significantly increase the knowledge of postpartum mothers and must be part of the national maternal health strategy to reduce maternal mortality.*

## KEYWORDS

postpartum mother, mobile app, knowledge



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## INTRODUCTION

The digital era has opened new opportunities to improve healthcare services, especially during the postpartum period, which is a critical time for the health of mothers and babies. A serious problem is the high maternal mortality rate after childbirth, which is largely caused by complications such as severe bleeding, infection, and high blood pressure during pregnancy. According to World Health Organization (WHO) 2023, the global maternal mortality rate stands at 197 per 100,000 live births, far from the Sustainable Development Goals (SDGs) target of below 70 per 100,000 live births by 2030. In

Indonesia, the maternal mortality rate in 2020 was recorded at 230 per 100,000 live births, down from 305 per 100,000 in 2015 but still below the global target. Every day, nearly 800 women die from preventable causes related to pregnancy and childbirth, indicating that this is a very serious and urgent issue that needs to be addressed.

High mortality rates have become a major concern for governments and various international institutions, prompting the use of digital technology as part of national strategies to improve the quality of maternal health services (Badan Pusat Statistik, 2023). Postpartum mothers need adequate educational support and health services to avoid complications and reduce the risk of death. Research shows that conventional services still have limitations in providing adequate education, so responsive and accessible technological innovations such as mobile applications are needed.

On the management perspective side, mobile applications appear to offer great potential due to their affordability, personalization, and ability to provide continuous and interactive health education (Syairaji, S., et.al., 2024). However, their distribution must consider content quality, increased user engagement, and information accuracy in accordance with health standards. Effective management requires collaboration between health workers, application developers, and policymakers so that the developed applications can provide maximum benefits and be integrated into the national maternal health care system. Given the above background, this scoping review is necessary to map scientific evidence related to the role of mobile applications in improving postpartum mothers' knowledge.

## RESEARCH METHOD

This study uses the Scoping Review method, with the research object is postpartum mothers (mothers after giving birth) who use mobile applications as a medium of education to increase their knowledge about postpartum care. This study involved several stages, with the first stage being the determination of Research Questions (RQ). RQ 1 is, how do mobile applications play a role in improving the knowledge of postpartum mothers? RQ 2: What are the characteristics of mobile applications used for postpartum education? The inclusion criteria for this study included population (postpartum mothers), concept (use of mobile applications), context (postpartum care), study type (primary/original research articles), language (English/Indonesian), and publication period (last 10 years). The second stage involved identifying articles using the keywords “postpartum mothers”, “mobile applications”, and “knowledge.” The filter was set for the period 2015-2025. Two databases were used, namely Google Scholar and PubMed. The third stage was to determine the inclusion criteria using the PCC table, as shown below:

Table 1. PCC

No	Criteria	Inclusion	Exclusion
1	Population	postpartum mother (physiological)	father, health workers, or other irrelevant groups.
2	Concept	the use of mobile applications as an educational medium with a focus on increasing mothers' knowledge about postpartum care	non-digital interventions such as conventional face-to-face education or other media outside of mobile applications.
3	Context	Postpartum or postnatal care that takes place in various health settings such as homes, clinics, and health facilities, with articles in Indonesian and English in the form of primary studies	Literature that is incomplete or has restricted access and therefore cannot be analyzed is excluded.

The fourth stage was screening using the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) flowchart, and the screening results are as follows:

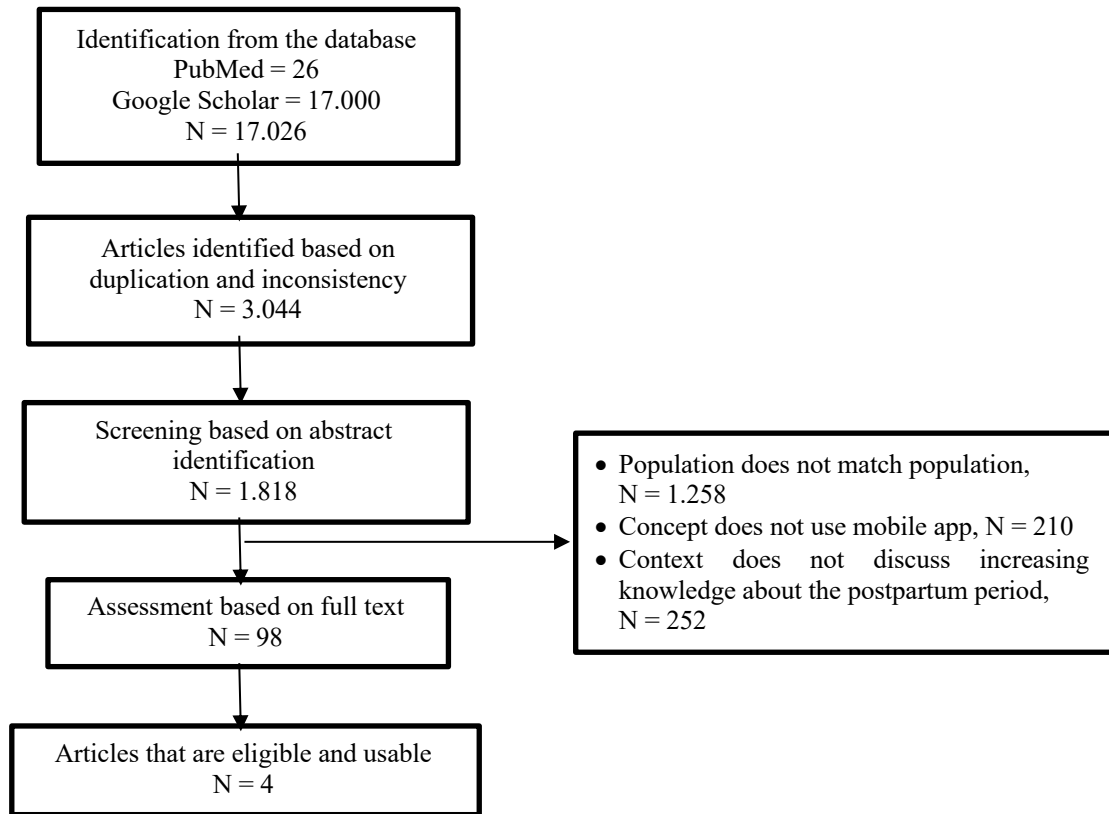


Figure 1. PRISMA Screening

## RESULT AND DISCUSSION

This scoping review identifies improvements in postpartum mothers' knowledge through mobile apps. A total of 4 articles were selected and underwent the PRISMA screening process. The following are the results of the data extraction that can be used:

Table 1. Summary of the Articles

No	Research Title, Author, Year, Journal	Population/Sample, Concept, Context	Statistical Results
1	<ul style="list-style-type: none"> <li>Does mHealth Voice Messaging work for improving knowledge and practice of maternal and newborn healthcare?</li> <li>Mahbub Elahi Chowdhury, Shafayatul Islam Shiblee, Heidi E. Jones</li> <li>2019, BMC Medical Informatics and Decision Making</li> </ul>	<ul style="list-style-type: none"> <li>Postpartum mothers (1-52 weeks)</li> <li>Mobile app: Aponjon MNH</li> <li>Knowledge of postpartum care</li> </ul>	Women reporting at least 6 months of using Aponjon were approximately 3 times as likely as the nonusers to score high on both maternal healthcare knowledge questions and related practices
2	<ul style="list-style-type: none"> <li>Mothers' experiences with mHealth intervention for postnatal care utilization in Nigeria: a qualitative study</li> </ul>	<ul style="list-style-type: none"> <li>Postpartum Mother (20 semi-structur)</li> <li>Mobile app: mHealth by SMS</li> </ul>	From the analysis using N-Vivo several themes were obtained. Two themes that are relevant and related to knowledge are:

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|---|--|--|
| <ul style="list-style-type: none"> <li>• Aanuoluwapo Omobolanle Olajubu, Boluwaji Reuben Fajemilehin, Temitope Oluwafemi Olajubu</li> <li>• 2022, BMC Pregnancy and Childbirth</li> </ul>   | <ul style="list-style-type: none"> <li>(till 6 weeks postpartum)</li> <li>• Knowledge of self-care and the recommended postnatal care services</li> </ul>  | <ul style="list-style-type: none"> <li>• The benefits gained from messages about pregnancy and childbirth in hospital (Knowledge about self-care).</li> <li>• Facilitate utilization of postnatal services (Knowledge of recommended postnatal care services)</li> </ul> |
| <p>3</p> <ul style="list-style-type: none"> <li>• Pengaruh Penerapan Aplikasi “Bidanku” Terhadap Peningkatan Pengetahuan dan Efikasi Diri Ibu Nifas</li> <li>• Farhati, Yulia Ulfa Fatimah, Chris Sriyanti</li> <li>• 2023, Jurnal Riset Kesehatan Poltekkes Depkes bandung Vol 15 No 2</li> </ul>  | <ul style="list-style-type: none"> <li>• Postpartum mothers (30 intervention – 30 control)</li> <li>• Mobile app: BIDANKU</li> <li>• Increasing knowledge and self-efficacy of postpartum mothers</li> </ul> | <p>The results of the research analysis showed that there was a significant difference in the knowledge and self-efficacy of postpartum mothers between the control and treatment groups with a p value &lt;0.05.</p>  |
| <p>4</p> <ul style="list-style-type: none"> <li>• Effectiveness of “Breast Milk Mother” Mobile Applications to Increase Knowledge and Attitude about Breast Feeding, Time to Release Breast Milk, and Adequacy of Breast Milk for Infants</li> <li>• Nana Usnawati, Astin Nur Hanifah</li> <li>• 2025, Iranian Journal of Nursing and Midwifery Research, Vol 30 Issue 2</li> </ul> | <ul style="list-style-type: none"> <li>• Postpartum mothers (50 intervention-50 control)</li> <li>• Mobile app: Breast Milk Mother</li> <li>• Knowledge, attitude, and timing of breastfeeding</li> </ul>    | <p>The Wilcoxon test showed that in both groups, significant improvements in knowledge and attitudes were observed post treatment (Z = -6.10, p &lt; 0.001 for the intervention group and Z = -5.66, p &lt; 0.001 for the control group)</p>                             |

Discussion of the results of research data extraction related to the use of mobile applications in increasing knowledge among postpartum mothers shows significance. The Aponjon application that sends voice messages is supported by a good usage pattern of receiving and listening carefully to at least 3 messages per month indicating that mothers who use the application for at least 6 months are three times more likely to have good maternal health knowledge and practices than non-users (Chowdhury et.al., 2019). A qualitative study in Nigeria by Olajubu et al. (2022) who used SMS as a medium for postpartum education found important themes related to increasing mothers' understanding of self-care and the use of postnatal services, because the messages received helped strengthen knowledge and recommended practices. Apart from that, local research using the BIDANKU application by Farhati et al. (2023) showed a significant increase in the knowledge and self-efficacy of post-intervention mothers. A study by Usnawati and Hanifah (2025) with the Breast Milk Mother application also reported an increase in mothers' knowledge and attitudes towards breastfeeding, including understanding the timing of release and the adequacy of breast milk.

The key characteristics of the mobile applications used in the research above include communication medium, content customization, message frequency, content focus, and interactivity. The communication medium used varies, such as voice messages on Aponjon, text messages on SMS and graphic-based and interactive applications on BIDANKU and Breast Milk Mother. Content is compiled and adapted to the stages of the postpartum period so that it is relevant to the needs of mothers during that period. The frequency of sending messages regularly is twice a week or up to six weeks postpartum. The main focus of content includes knowledge about maternal and infant care, self-care, utilization of postpartum health services, and breastfeeding attitudes and practices. The application is easy to access, interactive, user-friendly, and provides comprehensive information and

support through special features that are relevant as the main support system during the postpartum period.

## CONCLUSION

Mobile applications play a very important role as an educational medium for postpartum mothers by significantly increasing knowledge and practice of maternal and infant health, ease of access and content tailored to time and needs. Effective apps generally send voice or text messages regularly and consistently, personalize content according to the postpartum stage, and focus on strengthening knowledge and motivation for self-care practices. In addition, this application is easy to access, interactive, and provides comprehensive support not only to mothers, but also families and health workers as part of an important support system during the postpartum period. Studies show that digital education through applications such as Aponjon, mHealth, Bidanku, and Breast Milk Mother significantly improves mothers' knowledge, attitudes, behavior, and self-efficacy, and has the potential to reduce the risk of postnatal complications

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