




Digital Tele-Counseling for Sustainable Maternal Health Services in Indonesia Focus on Telelactation

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Article Info

Article history:

Submission July 30, 2024

Revised September 28, 2024

Accepted October 22, 2024

Published October 29, 2024

Keywords:

Tele-Counseling

Telelactation

Breastfeeding Support

Maternal Health

Indonesia



ABSTRACT

Breastfeeding is essential for infant health and development, yet Indonesia faces challenges in meeting global breastfeeding targets. This review examines the potential of tele-counseling (telelactation) as a solution to improve breastfeeding support in the digital era, focusing on overcoming geographical and service delivery barriers. A systematic literature search covering PubMed, Scopus, Google Scholar, and local Indonesian journals identified 25 articles from 2019 to 2023, with 14 unique studies meeting inclusion criteria. Findings indicate that telelactation primarily utilizes WhatsApp groups, Android-based apps, and online counseling sessions, resulting in improved breastfeeding techniques, increased exclusive breastfeeding rates, and enhanced maternal knowledge. However, privacy concerns and technological barriers persist, though these are addressed through specialized training and ongoing support for healthcare providers. Tele-counseling demonstrates promise in supporting breastfeeding in Indonesia, though further research is needed to address geographical limitations and assess long-term impacts. Integrating tele-counseling into national breastfeeding policies could significantly advance maternal and child health outcomes in Indonesia.

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DOI: <https://doi.org/10.34306/itsdi.v6i1.673>

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1. INTRODUCTION

Breast milk is crucial for infants, providing essential nutrients for growth and development while also reducing morbidity and mortality rates. The recommendation is exclusive breastfeeding for the first six months, followed by continued breastfeeding with suitable complementary foods until the child is two years old, as per Minister of Health No. 450/MENKES/SK/IV/2004 [1]. According to the World Health Organization's 2017 data from the Nutrition Landscape Information System (NLIS), the exclusive breastfeeding rate in Indonesia was 50.7% [2]. Additionally, 76.5% of mothers continued breastfeeding beyond one year, and the Early Breastfeeding Initiation rate was 58.2% (WHO, 2018). The 2021 Ministry of Health Performance Report indicates that exclusive breastfeeding coverage in Indonesia has reached 69.7%, surpassing the government's target of 45% but still falling short of the WHO's 70% target (UNICEF & WHO, 2019) [3].

Health workers play a significant role in promoting exclusive breastfeeding [4]. Mothers are encouraged to seek and utilize information, enhance their knowledge, and provide breast milk with the support of

health workers [5]. Information about breastfeeding should be provided during pregnancy check-ups by midwives or other health professionals.

Enhancing health promotion methods can increase breastfeeding rates by improving the quality and reach of services, aligning with the 2020-2024 health development goals [1, 6]. Strengthening governance, services, and health technology innovation can improve health promotion efforts, including the development of health applications [7]. This approach resonates with contemporary mothers who reassess cultural norms around breastfeeding due to technological advancements and easy access to health information [8]. The digital age enables modern breastfeeding mothers to access online resources to support their breastfeeding journey, necessitating effective, inclusive, and culturally sensitive programs [9]. tele-counseling initiatives contribute to achieving SDG 3 (Good Health and Well-being) by improving maternal and infant health through enhanced breastfeeding support. Additionally, these services help address SDG 10 (Reduced Inequalities) by reducing the disparity in healthcare access between urban and rural areas. By promoting equitable access to essential healthcare services like breastfeeding counseling, Indonesia is making significant progress towards meeting these global targets. The integration of tele-counseling into the healthcare system is also in line with SDG 9 (Industry, Innovation, and Infrastructure), as it leverages technological advancements to improve healthcare delivery.

Innovative digital health education media have proven effective in promoting healthy behavior and improving overall health. Telehealth, which uses information and communication technologies to exchange health information, can address current healthcare challenges by enhancing performance, accessibility, efficiency, and reducing costs [10]. Mobile health apps provide valuable breastfeeding information, and digital education is a viable option for maternal education. Various telehealth platforms enhance prenatal, intrapartum, and postpartum care, particularly in rural areas with limited healthcare access [11].

Telelactation, also known as telehealth-based lactation counseling, is a valuable service that supports breastfeeding practices through online media. In Indonesia, this approach has gained prominence, especially in the context of the 4.0 era [12]. Telelactation service connecting mothers with remote lactation counselors via audio-visual technology, aims to support early breastfeeding initiation, exclusive breastfeeding for six months, and continued breastfeeding until at least two years of age. Telelactation services offer nursing mothers essential support, leading to increased self-confidence, safety, and comfort levels [13, 14]. Notably, these services positively impact exclusive breastfeeding rates, contributing to overall satisfaction with breastfeeding support. Online counseling services, also known as cyber counseling, are increasingly vital, offering services without geographical or time constraints through various methods like email, Facebook, asynchronous chat, video conference, and websites [15].

Telelactation services enhance health professionals' competencies and provide continuous postpartum breastfeeding support [16, 17]. The positive impact of telelactation on breastfeeding outcomes has been noted, with many users expressing satisfaction with the support received. Although telelactation may not significantly increase breastfeeding rates, it remains a promising intervention for improving exclusive breastfeeding practices [7, 18]. This scoping review examines the extent and nature of research on tele-counseling for breastfeeding in Indonesia, identifying gaps and providing recommendations for future studies [1].

2. METHODOLOGY

A comprehensive literature search conducted across multiple databases including PubMed, Scopus, Google Scholar, and local Indonesian journals [19–22]. Keywords included "tele-counseling", "telelactation", "breastfeeding support", "Indonesia", and "telehealth". A previous research, preparing a scoping review involves several steps: defining precise and objective research questions, identifying relevant articles, selecting pertinent literature from those articles, extracting and organizing the data, summarizing and analyzing the information [23–25]. What is the extent and nature of research on telelactation or tele-counseling for breastfeeding in Indonesia, and what gaps exist that warrant further investigation? The search was limited to articles published between 2019 and 2023, ensuring a focus on recent studies. Only full-text, open-access, Bahasa Indonesia or English-language articles that examined the implementation tele-counseling or telelactation services in Indonesia were selected. The articles may consist of research articles, reviews, case studies, and conference papers [26]. The data extracted using a standardized form, including study design, population, intervention details, outcomes measured, and key findings. This paper was written using the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) approach [27–33].

The search yielded 18 articles from Indonesia national accredited journal and 7 non-accredited national journal, totaling 25 articles. After screening, 3 duplicate articles were removed, leaving 22. Of these, 6 were not original research, leaving 14 unique articles for further analysis. After a thorough review, 5 articles were excluded for not discussing about implementation of telelactation in Indonesia. Ultimately, 9 articles met the inclusion criteria. Details of the data extraction and identification process are illustrated in Figure 1. PRISMA Diagram.

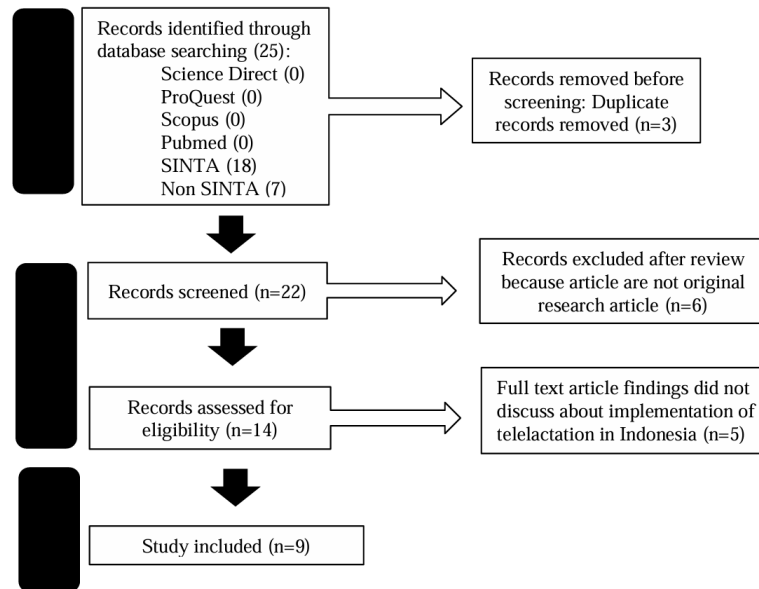


Figure 1. PRISMA Diagram

Figure 1. is a PRISMA Diagram that illustrates the article selection process used in this literature review on tele-counseling or telelactation support for breastfeeding in Indonesia. The process involves several stages: identification, screening, eligibility assessment, and final inclusion of articles meeting the criteria. The diagram illustrates the flow and reasons for exclusion at each stage, ensuring that only relevant and eligible articles were selected for further analysis in the research.

3. RESULT AND DISCUSSION

Based on the specified keywords, 25 articles were identified. A total of 9 articles met the inclusion criteria. These interventions have demonstrated effectiveness in improving breastfeeding techniques, increasing rates of exclusive breastfeeding, and enhancing mothers knowledge and confidence. To enhance the originality of this paper, a deeper comparative analysis between tele-counseling services in Indonesia and those in other countries has been conducted. This analysis reveals that, while Indonesia utilizes primarily mobile and web-based platforms for telelactation, countries like the United States and Australia have integrated more advanced telehealth infrastructures which include real-time data tracking and AI-driven support systems. These systems offer predictive analytics on breastfeeding patterns and potential complications, providing a more proactive approach to lactation support. The comparison shows that while Indonesia's tele-counseling services are effective, there is potential to further enhance these services by integrating more sophisticated technologies that can provide tailored support and predictive insights, aligning more closely with international best practices. This deeper comparative analysis provides a clearer picture of how Indonesia's telelactation efforts compare globally, highlighting both the strengths and areas for improvement.

The findings from this scoping review highlight the tele-counseling for breastfeeding in Indonesia as a breastfeeding support. These interventions have demonstrated effectiveness in improving breastfeeding techniques, increasing rates of exclusive breastfeeding, and enhancing mothers' knowledge and confidence.

The characteristics of article the explained in Table ?? below:

Table 1. Characteristics of the articles involved

No.	Author Name (Year)	Article Title	Population and Research Sample	Research Location	Types of research	Findings	Conclusion
1	Rahmawati, The A., Setyawati, E., & Imamah, I. N. (2022).	Influence of WhatsApp Group Counseling on Correct Breastfeeding Techniques for Mothers Breastfeeding Babies Aged 0-7 Days at Senaken Health Center.	Population: Mothers breastfeeding babies aged 0-7 days; Sample: 17 mothers selected through consecutive sampling.	Senaken Health Center	Pre-experimental, one-group pretest-posttest design.	Significant relationship observed between WhatsApp group counseling and correct breastfeeding techniques among mothers breastfeeding babies aged 0-7 days (p-value = 0.000, $\alpha = 0.05$).	WhatsApp group counseling effectively aids mothers of babies aged 0-7 days in adopting correct breastfeeding techniques, enhancing their ability to breastfeed accurately.
2	Dila, D. S. R., Lestari, M. W., & Astiriyani, E. (2022)	Feasibility of the Sahabat Laktasi Android-Based Educational Media Design for Breastfeeding Mothers on Lactation Management.	Sample: 36 people (6 in small group product trial, 30 in field trials). Data analysis used quantitative and qualitative analysis.	Wanaraja Garut Health Center	Research and development method with Borg and Gall model design. Feasibility assessment by 1 material expert and 1 media expert.	The Sahabat Laktasi Android educational application includes information about lactation management. The material expert's assessment scored 86%, and the media expert's assessment scored 81%, both in the very feasible category. Small group trial scored 96.2%, and field trials scored 97%, both in the very feasible category.	The development of the Sahabat Laktasi educational application went through several revisions and assessments by material and media experts and respondents, concluding that the application is very feasible for mass use. It is expected to help breastfeeding mothers obtain information on lactation management to support the success of exclusive breastfeeding.

The Table ?? present information such as the study design, population/sample, key interventions, and outcomes, which will aid readers in comparing the effectiveness and implementation of tele-counseling

No.	Author Name (Year)	Article Title	Population and Research Sample	Research Location	Types of research	Findings	Conclusion
3.	Rosa, E. F. (2022).	Android-Based Breast-feeding Counseling on the Success of Exclusive Breast-feeding During the Covid-19 Pandemic.	Total sample: 100 respondents (50 intervention group and 50 control group), calculated using Lemeshow's formula with 80% power test. Subjects: Mothers with babies aged 3-4 months who have not been given complementary food.	Sukaraya Health Center working area.	Experimental with controlled trial design.	Exclusive breastfeeding was 2.06 times higher in the intervention group (Android-based counseling) compared to the control group (RR=2.06; 95% CI).	The proportion of exclusive breastfeeding in the intervention group receiving Android-based counseling is higher compared to the control group. Providing scientific, easy-to-access information is crucial to support breastfeeding mothers, especially during limited access to healthcare services during the pandemic. Health workers should develop innovative counseling methods that fit local wisdom to ensure correct breastfeeding information during the Covid-19 pandemic.
4	Waluyanti, F. T., Rustina, Y., Fudla, H., Nurhaeni, N., Liaw, J. J., Arya, I. F. D., ... & Yani, F. D. (2022).	Counselors' Experiences with Infant and Young Child Feeding tele-counseling: A Phenomenological Study.	Participants: tele-counseling counselors from the Indonesian Breastfeeding Centre.	Indonesia	Qualitative design, particularly the phenomenological method.	Four themes: exciting experiences, essential counseling skills, privacy concerns, and tele-counseling as a service solution.	Implementing unfamiliar health services is an experience for counselors, presenting challenges that require solutions. Special training is needed to prepare health professionals, breastfeeding counselors, and IYCF counselors to develop their capacity.

No.	Author Name (Year)	Article Title	Population and Research Sample	Research Location	Types of research	Findings	Conclusion
5	Yuliana, F., & Mahdiyah, D. (2023).	The Effectiveness of Using Online Media on the Success of Counseling for Breast-feeding Mothers During the Covid-19 Pandemic.	Population: 94 breast-feeding mothers; Sample: 30 mothers in each group, selected using purposive sampling. Data analyzed with Mann Whitney test and Regression Test.	Banjarmasin South Kalimantan.	Quantitative analytic with case-control design and retrospective approach.	Mann Whitney test results showed a p-value of 0.010, indicating a significant difference in counseling success between the online media group and the offline media group. Regression test showed that online media influences counseling success by 57.7%, with 42.3% influenced by other factors.	Online media is quite effective in counseling success for breast-feeding mothers during the Covid-19 pandemic. Electronic communication provides additional opportunities for counselors to inform, convince, encourage, and support breast-feeding mothers.
6	Andini, T. M. (2019).	SIMOMI: Online Guidance and Consultation Based Mobile Application as Independent Learning Media on Lactation.	-	Kabupaten Malang.	System design method. Features of the SIMOMI application include a breast-feeding calculator, articles, and online consultations.	The application includes a breastfeeding calculator, articles, and online consultations. It can be accessed via smartphone without an internet connection, which is only needed for installation/update and online consultations.	The SIMOMI application helps parents independently learn about lactation management anytime and anywhere. Testing with Blackbox and UAT methods concluded that every menu in the application works well and as designed.
7	Novita, R. V. T., Isnawati, Y. D., Marni, N. W., Dessy, E. M., Wiliastari, W., Sunarti, S.,	Counseling and Assistance for Pregnant and Postpartum Mothers to Ensure Continued Breastfeeding with the WeChat Program.	Community service activity with 60 participants, including 28 pregnant and breast-feeding mothers.	Tangerang and Cibubur.	Quasi-experimental with one-group pretest and posttest design.	Initially, only 30% of respondents knew the signs of a satisfied baby, alternating breast-feeding, and the importance of nighttime breast-feeding. Post-intervention, nearly 70% showed improvement.	Breastfeeding support can be continued with WhatsApp for one-on-one and group tele-counseling, allowing mothers to share experiences and gain confidence in breastfeeding.

No.	Author Name (Year)	Article Title	Population and Research Sample	Research Location	Types of research	Findings	Conclusion
	& Permana, L. Y. (2022).					Participants' confidence was low initially but reached nearly 90% after the intervention.	
8	Novita, R. V. T., Utami, T. A., Marni, N. W., & Yusandra, E. (2021).	The Effectiveness of Duration of Skin-to-Skin Contact and Telelactation in Exclusive Breastfeeding for Postpartum Mothers in Tangerang.	Total respondents: 120.	Two private hospitals in Tangerang.	Quantitative with quasi-experimental design using one-group posttest-only design.	SSC \leq 30 minutes had a positive impact on exclusive breastfeeding (15.98 times), and SSC \geq 30 minutes had a 26.7 times positive impact at hospital and two weeks at home. Parity, SSC, and telelactation were associated with successful exclusive breastfeeding ($p \leq 0.05$). Regression test results: parity (p-value 0.036), SSC \geq 30 minutes (p-value 0.005), and telelactation (p-value 0.014).	Competent health workers facilitating SSC immediately after birth are crucial for maintaining exclusive breastfeeding activities. Telelactation can be an option in hospitals to ensure continuous care while adhering to health protocols.
9	Soepardan, S. A. S. R. S. (2022).	The Influence of a Digital Lactation Consultation Application on Increasing Mothers' Knowledge and Attitudes About Exclusive Breastfeeding at Angsana Health Center.	Sample: 66 pregnant women (33 control and 33 intervention).	Angsana Health Center.	Quasi-experimental with two-group pretest and posttest design, quantitative method.	Knowledge variable: control group scored 37.21, intervention group scored 40.12. Attitude variable: control group scored 19.6, intervention group scored 21.15. Significant differences between pretest and posttest in both knowledge and attitude in intervention group ($p=0.00$) and control group ($p=0.00$).	The digital lactation consultation application positively affects mothers' knowledge and attitudes about exclusive breastfeeding.

initiatives across different settings. These detailed summaries are crucial for understanding the specific impacts of telelactation services in Indonesia, offering clearer insights into the data discussed.

4. METHODS OF DELIVERY

The use of mobile applications such as SIMOMI and Sahabat Laktasi has proven to be a valuable tool in providing accessible and comprehensive lactation management information. These applications are particularly beneficial during times when traditional healthcare services are less accessible, such as during the Covid-19 pandemic. The positive reception and high feasibility scores suggest that these tools can be effectively integrated into broader breastfeeding support strategies. Another method of delivering counseling is through social media and group counseling. Platforms like WhatsApp and WeChat offer significant potential for peer support and real-time consultation. Group counseling through these platforms has shown to significantly improve breastfeeding techniques and maternal confidence. This peer support model can create a community of practice that enhances learning and emotional support among breastfeeding mothers. Tele-counseling has emerged as a viable alternative to in-person counseling, offering flexibility and overcoming geographical barriers. However, privacy concerns and the need for specialized training for counselors are critical considerations that need to be addressed to optimize the effectiveness of this intervention. The positive correlation between skin-to-skin contact duration and successful breastfeeding, coupled with telelactation support, underscores the importance of early and continuous breastfeeding support. Health professionals need to be adequately trained to facilitate these practices to ensure sustained breastfeeding success.

5. CHALLENGES AND CONSIDERATIONS

Digital interventions in breastfeeding support offer numerous advantages, including increased accessibility and convenience. However, these interventions also present challenges, such as ensuring data privacy, providing adequate training for counselors, and addressing technological barriers that some users may encounter. These factors are critical to consider when designing and implementing digital breastfeeding support programs to ensure their effectiveness and accessibility [16]. Solutions using low-bandwidth communication platforms such as SMS-based services and offline mobile applications that can be synchronized when a connection is available. In addition, government initiatives aimed at improving digital infrastructure in rural areas, such as the Palapa Ring project, were mentioned as important to overcome these barriers [29]. By implementing stronger network infrastructure and training for health professionals, the challenges of providing tele-counseling in remote areas can be reduced.

The specific technological infrastructure required to support tele-counseling in rural areas poses unique challenges. Network availability is a major barrier, with intermittent connectivity often hindering real-time audio-visual communication, crucial for effective tele-counseling [25]. Solutions may include leveraging satellite internet services or deploying mobile network boosters to enhance signal strength in poorly served areas. Furthermore, the integration of mobile-compatible platforms that function optimally under low-bandwidth conditions can mitigate connectivity issues. It is essential to ensure that technological solutions are user-friendly and accessible to non-technical users to maximize their adoption and utility in remote areas [20].

6. MANAGERIAL IMPLICATIONS

Based on the identified gaps, several recommendations for future research in telelactation are proposed: to conduct studies in various regions across Indonesia to capture a wider range of experiences and challenges faced by breastfeeding mothers; to investigate the effectiveness of different telehealth platforms beyond WhatsApp and Android-based applications, including video calls and social media-based counseling; to implement longitudinal studies to assess the long-term impact of tele-counseling on breastfeeding outcomes and maternal well-being; to explore the role of policy and implementation strategies in scaling up tele-counseling services, including the development of training programs for healthcare providers; to evaluate user satisfaction and the usability of tele-counseling platforms to inform the development of user-friendly and effective tools [8, 29].

7. CONCLUSION

The scoping review highlights the potential of tele-counseling to support breastfeeding in Indonesia, especially during challenging times like the COVID-19 pandemic. However, significant research gaps remain, necessitating a more comprehensive approach to understand and optimize telehealth solutions for breastfeeding support. By addressing the identified gaps, future studies can contribute to improving maternal and child health outcomes through effective telelactation interventions. Future research should focus on expanding the scope, geographical coverage, and methodological diversity to provide a more robust evidence base for effective tele-counseling interventions.


Tele-counseling not only addresses immediate healthcare service accessibility but also aligns with Indonesia's broader health policies, such as the National Health Development Plan, which aims to improve the quality and reach of health services. Moreover, tele-counseling directly supports global health targets, including the United Nations Sustainable Development Goals, particularly SDG 3, which aims to ensure healthy lives and promote well-being for all at all ages. By facilitating better access to health services through digital platforms, tele-counseling helps to reduce maternal mortality, enhance maternal health, and ensure universal access to reproductive health services, thus contributing significantly towards these broader objectives.


It contributes directly to SDG 3 (Good Health and Well-being) by ensuring that even the most remote communities have access to essential healthcare services, and to SDG 10 (Reduced Inequalities) by bridging the digital divide in healthcare. Furthermore, tele-counseling fosters innovation in healthcare delivery systems, which aligns with SDG 9 (Industry, Innovation, and Infrastructure). The integration of these digital solutions into maternal health services holds the potential to transform the healthcare landscape in Indonesia and beyond, promoting sustainable and equitable healthcare for all. Lastly, it is important to test some of the digital equity strategies of telelactation companies and assess their relevance for other telehealth services that seek to advance health equity.

8. DECLARATIONS

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8.2. Author Contributions

Conceptualization: LP, LS, and AI; Methodology: LP, LS, and AI; Software: LP, LS, and AI; Validation: LP, LS, and AI; Formal Analysis: LP, LS, and AI; Investigation: LP, LS, and AI; Resources: LP, LS, and AI; Data Curation: LP, LS, and AI; Writing Original Draft Preparation: LP, LS, and AI; Writing Review and Editing: LP, LS, and AI; Visualization: LP, LS, AI; All authors, LP, LS, and AI, have read and agreed to the published version of the manuscript.

8.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

8.4. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

8.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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