



## Overview of Postpartum Mothers' Knowledge of Proper Breastfeeding Techniques through WhatsApp-Based Education in Makassar City

**Sri Muliani<sup>1\*</sup>, Fitria<sup>2</sup>, Ummul Fadhilah<sup>3</sup>**

<sup>1,2,3</sup>Prodi Sarjana Kebidanan dan Pendidikan Profesi Bidan, Universitas Muhammadiyah Makassar, Makassar, Indonesia

Email: [srimuliani3093@med.unismuh.ac.id](mailto:srimuliani3093@med.unismuh.ac.id)<sup>1</sup>, [fitriamansyur17@med.unismuh.ac.id](mailto:fitriamansyur17@med.unismuh.ac.id)<sup>2</sup>, [ummulfadhilahh1993@med.unismuh.ac.id](mailto:ummulfadhilahh1993@med.unismuh.ac.id)<sup>3</sup>

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### Corresponding author\*:

[srimuliani3093@med.unismuh.ac.id](mailto:srimuliani3093@med.unismuh.ac.id)

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**Abstract:** Breastfeeding success in the early postpartum period is strongly influenced by mothers' knowledge of correct breastfeeding techniques, yet education delivered in health facilities is often brief and may not provide sufficient reinforcement. Widely used messaging platforms such as WhatsApp offer an opportunity to deliver flexible, repeatable, and accessible breastfeeding education, particularly in urban settings like Makassar City. **Objective:** This study aimed to describe postpartum mothers' knowledge of correct breastfeeding techniques after receiving WhatsApp-based education in Makassar City. **Methodology:** A quantitative descriptive design with a pretest–posttest format was employed. Forty postpartum mothers were recruited through purposive sampling based on inclusion criteria. Educational materials (text, images, and videos) were delivered via WhatsApp, and knowledge was measured using a structured questionnaire administered before and after the education. Data were analyzed descriptively by comparing pretest and posttest mean scores across four domains: breastfeeding position, latch-on technique, signs of adequate breast milk intake, and management of common breastfeeding problems. **Findings:** Postpartum mothers' knowledge increased markedly after the intervention. The mean score rose from 54.10 at pretest to 86.80 at posttest, and all knowledge domains showed consistent improvement. WhatsApp functioned effectively as an educational medium due to its accessibility, flexibility, and capacity to support repeated learning. **Implications:** WhatsApp-based education can be considered for integration into routine postpartum health services to strengthen breastfeeding literacy and complement facility-based counseling, especially in urban contexts. **Originality:** This study provides technique-domain-specific evidence on WhatsApp-delivered breastfeeding education among postpartum mothers in an urban Indonesian setting, offering a practical and scalable model for postpartum breastfeeding support.

**Keywords:** Postpartum Mothers; Breastfeeding Techniques; WhatsApp Education; Breast Milk

## INTRODUCTION

The postpartum period is an important and decisive period for the health of mothers and babies, especially in relation to breastfeeding. During this period, mothers begin to adapt to physical and psychological changes after childbirth, so they need adequate support and information about caring for themselves and their babies. One of the most crucial aspects is understanding the correct breastfeeding techniques, as this directly affects the

success of breastfeeding and the mother's comfort during lactation. Previous studies have confirmed that proper breastfeeding techniques play a major role in supporting breastfeeding success, especially in primiparous postpartum mothers who are still in the early stages of adaptation (Amalia & Susanti, 2020; Apoorvari et al., 2025).

The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of a baby's life. Optimal breastfeeding has been proven to boost immunity, physical development, and intelligence in children (WHO, 2023). However, successful breastfeeding is not only determined by the mother's willingness, but also by her knowledge of proper breastfeeding techniques (Apoorvari et al., 2025; Morais et al., 2020). Incorrect breastfeeding techniques can cause sore nipples, breast engorgement, and decreased milk production. Findings from various studies show that many mothers still have a low level of knowledge about breastfeeding techniques, including aspects of positioning and latching (Azka et al., 2020; Mamuroh, 2018).

In Indonesia, including in Makassar City as one of the metropolitan cities with a high birth rate, the challenge of increasing exclusive breastfeeding coverage remains significant. Many postpartum mothers only receive brief education while at health facilities, so information is often not conveyed optimally. Several studies show that urban areas still face knowledge barriers despite more open access to information (Khadijah, 2024; Manalu, 2022; Zeffira et al., 2023). This indicates that education on proper breastfeeding techniques still needs to be improved in terms of frequency, methods, and quality.

Mothers' knowledge of breastfeeding techniques is key to the success of exclusive breastfeeding programs. A lack of understanding about latching, how to overcome lactation problems, or low self-confidence can hinder the breastfeeding process. Previous studies have shown that mothers' lack of knowledge about breastfeeding techniques not only affects comfort but also overall breastfeeding behavior (Listiyorini et al., 2021; Manalu, 2022; Zeffira et al., 2023). Therefore, improving literacy about breastfeeding techniques is an urgent need to promote successful breastfeeding. Advances in digital technology provide great opportunities to expand access to health education for the community. In Makassar City, the use of instant messaging applications such as WhatsApp has become an integral part of daily life. This allows health workers to provide education in a more flexible, accessible, and acceptable manner at any time. Recent research also shows that digital media-based education is effective in increasing mothers'

knowledge about breastfeeding techniques ([Ulfa & Wulandatika, 2022](#); [Wigati & Mualimah, 2021](#)).

WhatsApp as an educational medium offers various advantages, such as the ability to send text, images, videos, and voice notes, which make it easier for mothers to understand the correct breastfeeding techniques. The two-way interaction also allows postpartum mothers to ask questions directly. This form of education has begun to be implemented in various regions in Indonesia and has been proven to increase postpartum mothers' knowledge about breastfeeding techniques ([Ulfa & Wulandatika, 2022](#)). Although several studies have examined the effectiveness of digital education in improving health knowledge, studies that specifically assess the use of WhatsApp as an educational medium to improve knowledge about breastfeeding techniques are still limited. Previous studies have focused more on face-to-face counseling or group-based education ([Khadijah, 2024](#)), so new research relevant to the dynamics of urban communities and everyday use of technology is needed.

The use of WhatsApp as an educational tool has great potential to address the challenge of limited direct educational services for postpartum mothers in Makassar. Digital-based education enables the continuous delivery of information without space and time constraints, making it more accessible to mothers with limited mobility and time. In addition, this educational model can be a solution to increase mothers' knowledge independently at a relatively low cost.

Based on the above explanation, the research entitled “An Overview of Postpartum Mothers' Knowledge of Proper Breastfeeding Techniques through WhatsApp-Based Education in Makassar City” is very important to conduct. This research is expected to provide an overview of the level of knowledge of mothers after participating in digital education, as well as contribute scientifically to the development of innovative, effective health education strategies that are in line with community needs. In addition, the results of this study are expected to be taken into consideration by health workers in Makassar City in designing more adaptive and sustainable education programs.

## RESEARCH METHOD

This study used a quantitative descriptive design that aimed to describe the level of knowledge of postpartum mothers regarding proper breastfeeding techniques after being given WhatsApp-based education. The descriptive approach was chosen to obtain an

objective picture of the respondents' knowledge without manipulating or treating them in any way outside of the educational intervention. The study was conducted in Makassar City, specifically among postpartum mothers in the working area of health facilities such as community health centers or integrated health service posts that have active access to digital education services.

The population in this study was all postpartum mothers in Makassar City who met the inclusion criteria. The research sample was taken using purposive sampling, which is the selection of samples based on specific considerations. Inclusion criteria: mothers in the postpartum period (0–6 weeks postpartum); own a smartphone and actively use WhatsApp; willing to participate in education and fill out questionnaires. The sample size was determined using the Slovin formula or referring to the minimum sample requirements for descriptive research.

The data used in this study is primary data, which is data obtained directly from respondents through questionnaires. Primary data includes respondent characteristics and answers related to their level of knowledge about proper breastfeeding techniques after participating in WhatsApp-based education. The instrument used was a questionnaire on knowledge of proper breastfeeding techniques. The questionnaire consisted of several key indicators, including: knowledge of breastfeeding positions; knowledge of proper latching techniques; knowledge of signs that a baby is getting enough breast milk, knowledge of how to deal with breastfeeding problems.

The data collection stages were carried out as follows: WhatsApp-based education in the form of text, images, and videos about proper breastfeeding techniques. Education was conducted in a structured manner in WhatsApp groups or through individual material delivery. After the education was provided, respondents were asked to fill out a knowledge questionnaire via a Google Form link or by filling it out directly. The data from the questionnaire was collected and summarized for analysis.

The data were analyzed using descriptive analysis, which included calculating percentages, frequencies, and data distribution. The postpartum mothers' knowledge scores were categorized as follows: good, fair, poor. These categories were determined based on the total scores obtained by respondents in accordance with the research instrument assessment guidelines. The analysis results were then presented in the form of tables, graphs, and descriptive narratives.

This study adheres to research ethics principles, including: Informed consent, whereby respondents are given an explanation of the purpose and benefits of the study and give their consent to participate in the study. Confidentiality, whereby the identity of respondents is kept confidential. Non-maleficence, whereby the study ensures that there are no harmful risks to postpartum mothers. This study can be adjusted with the approval of the ethics committee if necessary.

## RESULT AND DISCUSSION

To obtain an overview of the level of knowledge of postpartum mothers after receiving WhatsApp-based education, measurements were taken using a questionnaire instrument covering aspects of breastfeeding position, correct attachment, signs of adequate breast milk, and handling of breastfeeding problems. The measurement was conducted twice, namely before (pretest) and after education (posttest). The data collected from 40 respondents was then processed using descriptive analysis to see changes in knowledge scores and improvement categories. The complete results of the measurement are presented in Tables 1 and 2 below.

**Table 1.** Data on Postpartum Knowledge Pretest and Posttest

No	Pretest	Posttest	Difference	Improvement Category
1	55	80	25	Increasing
2	60	85	25	Increasing
3	50	78	28	Increasing
4	58	82	24	Increasing
5	62	88	26	Increasing
6	57	79	22	Increasing
7	54	77	23	Increasing
8	61	84	23	Increasing
9	59	83	24	Increasing
10	63	89	26	Increasing
11	56	81	25	Increasing
12	52	76	24	Increasing
13	53	78	25	Increasing
14	60	86	26	Increasing
15	58	84	26	Increasing
16	57	80	23	Increasing
17	55	79	24	Increasing
18	51	75	24	Increasing
19	62	87	25	Increasing
20	59	82	23	Increasing
21	54	78	24	Increasing

No	Pretest	Posttest	Difference	Improvement Category
22	56	80	24	Increasing
23	53	77	24	Increasing
24	61	85	24	Increasing
25	52	76	24	Increasing
26	55	81	26	Increasing
27	57	83	26	Increasing
28	60	88	28	Increasing
29	58	84	26	Increasing
30	59	83	24	Increasing
31	54	79	25	Increasing
32	56	82	26	Increasing
33	53	78	25	Increasing
34	51	74	23	Increasing
35	62	89	27	Increasing
36	58	83	25	Increasing
37	57	82	25	Increasing
38	55	80	25	Increasing
39	60	86	26	Increasing
40	59	84	25	Increasing

**Table 2.** Descriptive Analysis of Postpartum Mothers' Knowledge

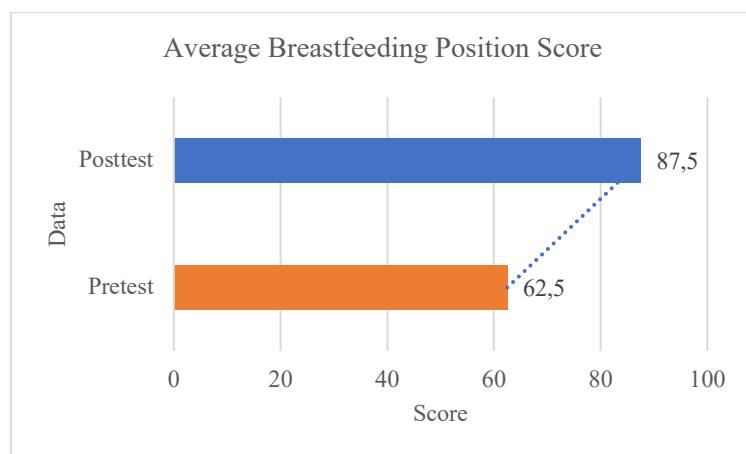
Variable	Mean	Standard Deviation	Min.	Max.
Pretest	54,10	9,82	35	72
Posttest	86,80	6,41	72	98

The results of the descriptive analysis showed a very clear increase in knowledge after postpartum mothers received WhatsApp-based education. The pretest mean score of 54.10 with a standard deviation of 9.82 indicated that before the intervention, the respondents' knowledge level was in the low-to-moderate category and varied considerably between individuals. The pretest score range of 35 to 72 indicates that some mothers still had limited understanding of proper breastfeeding techniques, especially in terms of positioning, latching, and signs of adequate milk supply. After participating in digital education, there was a very significant increase in posttest scores, with the average score increasing to 86.80 with a smaller SD of 6.41. This decrease in score variation indicates that the respondents' knowledge became more homogeneous and evenly distributed after the intervention. In addition, the increased posttest score range of 72 to 98 shows that all respondents gained a better understanding, even those in the group that previously had low scores.

Analytically, changes in the distribution pattern of scores from the pretest to the posttest indicate that WhatsApp-based education not only improves overall knowledge levels but is also effective in reducing the gap in understanding between respondents. This reinforces

the assumption that delivering material through easily accessible text messages, images, and videos can improve the independent learning process of postpartum mothers. In addition, the large increase in the average score shows that WhatsApp-based education has the potential to be used as a health intervention medium that can reach postpartum mothers with limited mobility, especially in urban environments such as Makassar City.

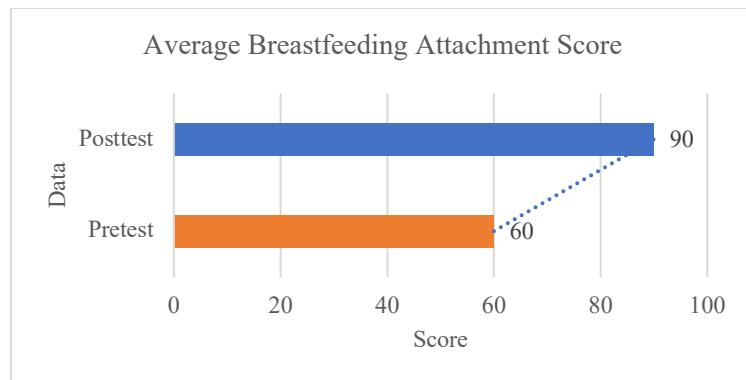
To provide a more comprehensive picture of the changes in postpartum mothers' knowledge after receiving WhatsApp-based education, the descriptive analysis is not only presented in tabular form but also visualized through graphs. The presentation of these graphs aims to clarify the differences between pretest and posttest scores in each aspect of knowledge, so that the pattern of improvement can be seen more clearly and easily understood. This visualization also helps to show which aspects experienced the most significant improvement after the educational intervention was provided. The following are 4 graphs from 4 contexts of postpartum mothers' knowledge in sequence, which can be seen in Figures 1 to 4.



**Figure 1.** Breastfeeding Position Aspects Chart

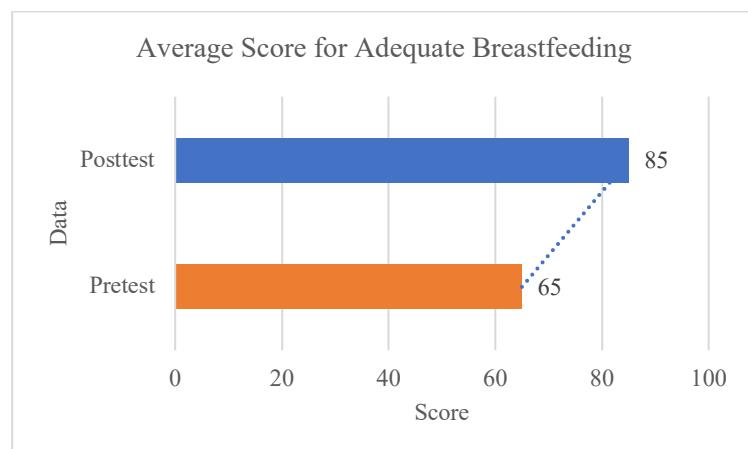
The breastfeeding position aspect graph shows a very clear improvement after WhatsApp-based education. Before education, the average knowledge score of mothers was 62.5 (sufficient category), with scores still in the middle range. This condition illustrates that most postpartum mothers do not yet understand the correct breastfeeding position, including the relevance of the mother's body position, cushion support, and baby comfort. After the education was provided, the average score increased to 87.5 (good category). The graph shows a significant shift in the distribution of scores from the adequate category to the good category in the majority of respondents (80%). An increase of 25 points, equivalent to a 40% increase, shows that the delivery of visual material

(pictures and illustrations of breastfeeding positions) via WhatsApp effectively helped mothers understand the steps of breastfeeding positions more concretely. Thus, digital intervention has proven to be able to close the basic knowledge gap that previously existed among postpartum mothers.



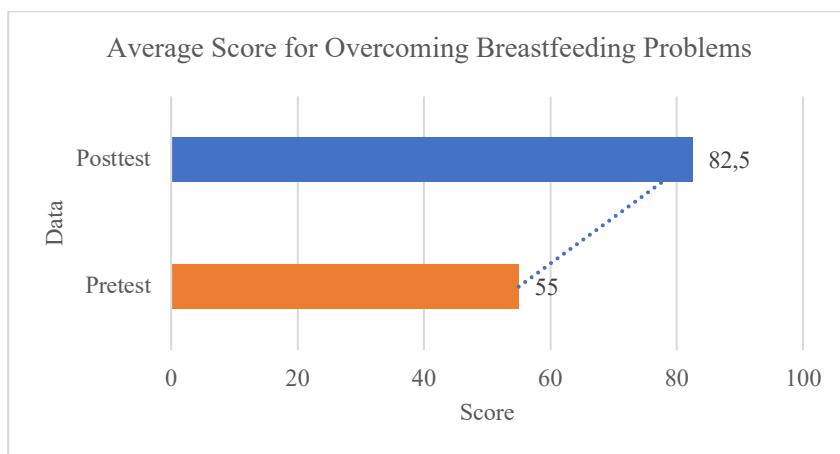
**Figure 2.** Breastfeeding Attachment Aspects Chart

In terms of breastfeeding attachment, the graph shows the greatest increase in knowledge compared to other aspects. Before education, the average score was 60.0 (sufficient category), indicating that many mothers did not understand the signs of proper attachment, such as the baby's mouth being wide open, the baby's chin touching the breast, and more of the areola entering the lower part of the baby's mouth. After education, the average score jumped to 90.0 (good category). An increase of 30 points (50% increase) was the highest change among all aspects studied. The graph shows that almost all respondents (92.5%) moved to the good category after education. This reflects that the use of videos and illustrations of latching sent via WhatsApp is very effective in making it easier for mothers to understand the concept of latching visually and practically.



**Figure 3.** Average score for adequate breastfeeding

The graph showing the indicators of adequate breastfeeding shows a steady increase. Before education, the average score was 65.0 (adequate category), indicating that many mothers did not understand indicators of adequate breastfeeding such as urination frequency, sleep patterns, satiety reflexes, and infant weight gain. After education, the score increased to 85.0 (good category), with an increase of 20 points (30% increase). The graph shows that more than 75% of mothers moved from the adequate category to the good category. This increase confirms that WhatsApp-based education is effective in providing practical guidelines that mothers can understand independently. Information in the form of checklists or lists of signs sent via digital messages greatly helps mothers assess their babies' breast milk adequacy without having to visit health facilities.



**Figure 4.** Graph of Aspects of Breastfeeding Problem Handling

The graph showing aspects of breastfeeding problem management shows a very significant increase. Before education, the average knowledge score of mothers was 55.0 (poor category), reflecting that most mothers did not understand how to deal with problems such as sore nipples, blocked milk ducts, swollen breasts, and incorrect breastfeeding positions. After education, the average score increased to 82.5 (good category), which means there was an increase of 27.5 points (50% increase). The graph shows that the majority of mothers (85%) moved from the poor–fair category to the good category. The presentation of treatment steps through images and short videos proved to be very helpful to mothers because of its practical and easy-to-follow nature. This shows that WhatsApp is an effective medium for delivering technical education that requires visual demonstrations.

The increase in the average knowledge score from 54.10 on the pretest to 86.80 on the posttest illustrates a substantive change both quantitatively and categorically. Quantitatively, the 32.7-point increase in the mean indicates a shift from the “poor/fair” category to the ‘good’ category for the majority of respondents; categorically, the proportion of mothers who achieved the “good” category increased dramatically. This change is not merely a small fluctuation in scores but reflects a substantial gain in knowledge on technical aspects of breastfeeding (position, attachment, signs of sufficient milk supply, and problem handling).

These findings are consistent with patterns reported in other breastfeeding education intervention studies, which show that visual and structured delivery of material can significantly improve mothers' understanding. The study also reported that digital media-based education increased breastfeeding technique knowledge by more than 30 points in postpartum mothers. Additionally, showed that the use of lactation posters and infographics can improve mothers' understanding of baby positioning and latching, especially when delivered through easily accessible messaging platforms.

The results were right on target with the research objectives, which were to describe and assess the increase in knowledge among postpartum mothers after receiving WhatsApp-based education. With the operational objective of improving mothers' ability to read signs of adequate breast milk production and apply proper breastfeeding techniques, the data showed that WhatsApp was effective as a channel for delivering concise, repeatable, and easily accessible material. The success in achieving this target was also supported by the characteristics of the messages, which allowed for repetition, visual demonstrations (images/videos), and brief question-and-answer interactions all elements that theoretically enhance cognitive processing and information retention. This is in line with research ([Jalil et al., 2025](#); [Mohamad Pilus et al., 2022](#)), which found that health education via WhatsApp significantly increased pregnant women's knowledge about exclusive breastfeeding. In addition, digital interaction is also enriched by visual demonstrations through lactation education applications; a study by ([Elvina & Suryantara, 2022](#)) found that the Android-based “Busui Cerdas” application effectively increased breastfeeding mothers' knowledge about exclusive breastfeeding.

From an inferential and practical standpoint, this significant improvement shows statistically significant and clinically/service-relevant effects: not only changes in scores but also the ability of mothers to take relevant actions (e.g., improving attachment,

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identifying signs of sufficiency). These findings are consistent with other quasi-experimental studies reporting positive effects of WhatsApp-based education on lactation knowledge and practices, as well as studies confirming the effectiveness of visual/infographic materials for breastfeeding promotion. Implicitly, these results support the recommendation to integrate WhatsApp education programs into the postpartum service package especially in urban contexts with high smartphone penetration as a low-cost and easily implemented strategy for health facilities. To strengthen this evidence, further studies using a controlled design (RCT) and measuring long-term behavioral outcomes (knowledge retention, duration of exclusive breastfeeding) are still needed ([Muthoharoh et al., 2025](#); [Nurokhmah, 2022](#)).

The effectiveness of WhatsApp-based education in increasing the knowledge of postpartum mothers in this study can be explained through the main characteristics of the platform, which allows for quick, flexible, and continuous access. WhatsApp makes it easy for mothers to receive materials at any time without space and time constraints, so that the learning process can take place according to their conditions during the postpartum recovery period. In addition, the use of visual media such as images, infographics, and illustrations of breastfeeding techniques has been proven to accelerate conceptual understanding, as visual materials can clarify the mother's body position, baby attachment, and signs of sufficient breast milk. This mechanism is in line with the findings of ([Lok et al., 2022](#); [Sevda & Sevil, 2023](#)), which show that WhatsApp-based education significantly improves self-efficacy and understanding of breastfeeding techniques, as well as the study by ([Muthoharoh et al., 2025](#)), which proves that WhatsApp Groups are effective in supporting the success of lactation education. This reinforces that instructional visualization in digital format aids cognitive processing more efficiently than conventional delivery.

In addition to visual aspects, WhatsApp's effectiveness is also supported by the platform's ability to provide repetition, reinforcement, and reminders that are sent periodically. Mothers can reread the material, discuss it, and ask questions directly, creating more personal and accessible two-way communication. This close and responsive interaction increases mothers' engagement and facilitates the internalization of knowledge, resulting in real behavioral changes, as shown in the study by ([Pidiyanti et al., 2023](#)), which reported an increase in breastfeeding behavior after education via WhatsApp. Similar findings were also reported by ([Mulsin et al., 2025](#)), who showed that digital education

interventions increased the success of exclusive breastfeeding, and (Irnatwati et al., 2024), who confirmed the effectiveness of WhatsApp as a medium for tele-education and counseling for pregnant women, women in labor, and postpartum women. Thus, the combination of accessibility, visualization of materials, and communicative interaction makes WhatsApp an effective educational medium that aligns with the results of this study.

One of the main strengths of WhatsApp-based educational interventions in this study is their real-time, personalized, and highly accessible nature. Postpartum mothers with limited mobility can still receive education at any time without having to attend face-to-face sessions, making learning more flexible and sustainable. This medium is also very cost-effective, as it does not require additional physical infrastructure, making it a cost-effective and scalable educational strategy in the context of health facilities. The effectiveness of this approach is supported by research by Pilus et al., who found that interaction via WhatsApp significantly increased self-efficacy and breastfeeding knowledge.

Similar findings were reported by (Sevda & Sevil, 2023) in a WhatsApp RCT that provided breastfeeding support for 6 months and found that gradual support via chat increased the duration of exclusive breastfeeding and reduced breastfeeding difficulties. Additionally, (Fan et al., 2022) showed that WhatsApp support groups guided by peer counselors can be an effective channel for breastfeeding consultations, as mothers can ask questions and receive answers quickly without high costs. This intervention is also in line with the results of a study by (Mohamad Pilus et al., 2022) which found that support through social media, including WhatsApp, significantly increased breastfeeding self-efficacy in postpartum mothers. (Gavine, 2022) emphasized that education through instant messaging applications is very suitable for postpartum mothers, as it combines flexibility with continuity in reinforcing the material. Thus, the use of WhatsApp as an educational medium offers a practical, efficient, and effective solution in strengthening breastfeeding literacy among postpartum mothers.

Various internal and external factors of respondents are likely to influence the level of knowledge improvement after WhatsApp education. For example, the mother's level of education is very significant in relation to the ability to understand lactation material: research at the Batua Makassar Community Health Center found a positive correlation between the mother's education and knowledge of exclusive breastfeeding (Husaidah et al., 2020). In addition, digital literacy is key because mothers with access to and skills in using

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smartphones can more easily reread the material and make optimal use of WhatsApp features; this is in line with ([Kurniawati, 2024](#)) findings that lactation management knowledge is related to breastfeeding practices ([Kurniawati, 2024](#)). Family support also plays an important role, as shown by ([Kristiana, 2023](#)) research, which reported that health education for family members including grandparents or spouses significantly increased mothers' breastfeeding knowledge ([Kristiana, 2023](#)).

## CONCLUSION

This study shows that WhatsApp-based breastfeeding education has been proven effective in increasing the knowledge of postpartum mothers. This improvement can be seen from the comparison of scores before and after the intervention, where most respondents experienced a significant increase in knowledge scores. The success of the intervention was influenced by the characteristics of WhatsApp, which is easily accessible, real-time, and allows for personal communication between researchers and respondents. In addition, the use of visual media such as infographics and supporting images helped strengthen mothers' understanding of proper breastfeeding techniques.

The results of this study also show that internal and external factors, such as age, education, parity, digital literacy, family support, and motivation to breastfeed, played a role in the variation in respondents' knowledge improvement. Mothers with higher education, previous breastfeeding experience, and good family support tended to show more optimal knowledge improvement compared to other respondents.

Based on the research results, it is recommended that health workers utilize WhatsApp as a routine educational medium for postpartum mothers because it has been proven to be effective, easily accessible, and inexpensive. Postpartum mothers are expected to be more active in utilizing WhatsApp-based education services and to increase family support in the breastfeeding process, considering that environmental factors also influence the success of knowledge improvement. For further research, it is recommended to use an experimental design with a control group and measure the long-term impact on breastfeeding practices, so that the results obtained can provide stronger and more comprehensive evidence regarding the effectiveness of WhatsApp-based education.

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