



Research Article

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# The Effect of Whatsapp-Based Education on Lactation Nutrition, Proper Breastfeeding Techniques, and Exclusive Breastfeeding on Postpartum Mothers' Knowledge, Attitudes, and Practices

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**To Cite This Article:** Citrawati\*, *The Effect of Whatsapp-Based Education on Lactation Nutrition, Proper Breastfeeding Techniques, and Exclusive Breastfeeding on Postpartum Mothers' Knowledge, Attitudes, and Practices*. *Am J Biomed Sci & Res.* 2025 29(1) *AJBSR.MS.ID.003765*, DOI: [10.34297/AJBSR.2025.29.003765](https://doi.org/10.34297/AJBSR.2025.29.003765)

**Received:** 📅 November 04, 2025; **Published:** 📅 November 12, 2025

## Abstract

The postpartum period is a crucial time for mothers to provide exclusive breastfeeding to their infants. However, limited knowledge of lactation nutrition, correct breastfeeding techniques, and the benefits of exclusive breastfeeding remains a barrier to successful breastfeeding. Education delivered through traditional health facilities is often less appealing because it tends to be one-way. The use of digital media, such as WhatsApp, is considered more effective, efficient, and interactive in delivering health information to postpartum mothers. This study aimed to determine the effect of WhatsApp-based education on postpartum mothers' knowledge, attitudes, and practices regarding breastfeeding. A quasi-experimental research design with a One-Group Pretest–Posttest design was used, involving 30 postpartum mothers selected through purposive sampling. Results showed a significant increase in knowledge, attitudes, and practices after WhatsApp-based education ( $p < 0.05$ ). These findings indicate that digital media-based health education effectively improves awareness and breastfeeding practices among postpartum mothers. It is recommended that health workers utilize social media, particularly WhatsApp, as a health education tool for mothers and infants.

**Keywords:** Education, WhatsApp, Postpartum Mothers, Lactation Nutrition, Exclusive Breastfeeding

## Introduction

The postpartum period represents a critical stage for mothers to provide exclusive breastfeeding to their infants. According to the 2020 Population Census, the Maternal Mortality Rate (MMR) in Indonesia was 189 per 100,000 live births, which is close to the 2024 RPJMN target of 183 per 100,000 live births, with postnatal care coverage reaching 85.7% in 2023. This period is crucial not only for the mother's physiological recovery but also for initiating exclusive breastfeeding for her newborn. Exclusive breastfeeding

during the first six months of life is one of the key strategies to reduce infant morbidity and mortality rates, as well as to enhance nutritional status and immune system development. Additionally, breastfeeding assists the uterine involution process and can reduce the risk of postpartum hemorrhage.

However, in practice, many postpartum mothers still lack adequate knowledge regarding lactation nutrition, proper breastfeeding techniques, and the benefits of exclusive

breastfeeding. This limited understanding serves as one of the main obstacles to the success of exclusive breastfeeding programs *Nugroho*, et al. [1,2]. Optimal nutrition provided through breast milk can be hindered by improper breastfeeding techniques, which are often caused by insufficient knowledge, unsupportive attitudes, and inappropriate habits. One of the most widely used tools for obtaining information in modern society is social media, which has the potential to serve as an effective educational platform due to its accessibility and interactivity, particularly among mothers *Amalia*, et al. [3]. Digital education using platforms such as WhatsApp has been shown to be effective in increasing health awareness and knowledge.

Nevertheless, the implementation of educational programs in health services still predominantly relies on traditional face-to-face approaches, where community members visit health facilities to receive information. This conventional method is often considered less successful, as it tends to be one-way communication, resulting in low participation and limited engagement between mothers and healthcare providers [4]. Currently, WhatsApp is one of the most widely used applications globally. It enables users to exchange text messages without character limits, share images, videos, voice messages, and GPS locations, all displayed directly without the need for external links. In Indonesia, WhatsApp has been adopted extensively, making it a promising medium for digital health education. Several studies have demonstrated the effectiveness of WhatsApp in health education. For example, health education delivered via WhatsApp significantly improved the knowledge of pregnant women in Karawang [5]. Similarly, a study in Malaysia reported that WhatsApp-based educational interventions enhanced self-efficacy and breastfeeding knowledge among mothers through a combined approach of face-to-face and online learning [6]. Therefore, education delivered through WhatsApp is considered to be more effective, efficient, flexible, and practical compared to traditional educational approaches [4]. Based on these considerations, this study aims to examine the effect of WhatsApp-based education on the knowledge, attitudes, and behaviors of postpartum mothers in breastfeeding.

## Methods

This study employed a quasi-experimental design using a

one-group pretest–posttest approach. The design was applied to determine the effect of an intervention on changes occurring within a single group of research subjects by comparing measurements taken before (pretest) and after (posttest) the intervention.

In this study, respondents first completed a pretest to assess their levels of knowledge, attitude, and behavior related to lactation nutrition, proper breastfeeding techniques, and exclusive breastfeeding. The intervention was then implemented in the form of education delivered via the WhatsApp platform for a duration of 28 days. Upon completion of the intervention, respondents were administered a posttest using the same instrument to identify any improvements in knowledge, attitudes, and behaviors.

The research was conducted in the working area of Kassi-Kassi Community Health Center, Makassar City, South Sulawesi Province. The population consisted of all postpartum mothers residing in this area during the period of August–September 2025. A total of 30 postpartum mothers who met the inclusion criteria were selected as participants. The inclusion criteria were as follows: mothers with infants aged 0–40 days, owning an active mobile phone with the WhatsApp application installed, and willing to participate voluntarily by signing an informed consent form. The sampling technique used was purposive sampling, which involves selecting participants based on predetermined considerations and criteria relevant to the research objectives.

## Results

Based on the study findings, the demographic characteristics revealed that the largest proportion of postpartum mothers were aged 26–30 years, accounting for 14 participants (46.7%), indicating that most respondents were within the reproductive age range. Meanwhile, the smallest proportion was found in the 41–45-year age group, consisting of 1 participant (3.3%). Regarding educational attainment, the highest proportion of respondents had completed senior high school education, totaling 14 participants (46.7%), whereas the lowest level of education was elementary school, with only 1 participant (3.3%). This finding suggests that most postpartum mothers had a secondary level of education, which implies adequate literacy and comprehension skills to understand the educational materials provided (Table 1).

**Table 1:** Distribution of Respondents by Age.

Age (years)	n	%
16–20	2	6.7
21–25	5	16.7
26–30	14	46.7
31–35	6	20
36–40	2	6.7
41–45	1	3.3
Total	30	100

As presented in Table 1, the largest proportion of respondents belonged to the 26–30-year age group (46.7%), while the smallest

proportion was found in the 41–45-year age group (3.3%) (Table 2).

**Table 2:** Distribution of Respondents by Educational Level.

Education Level	n	%
Elementary School	1	3.3
Junior High School	5	16.7
Senior High School	14	46.7
Diploma/Bachelor/Master	10	33.3
Total	30	100

As shown in Table 2, most respondents had completed senior high school (46.7%), while the smallest number had only completed elementary school (3.3%) (Table 3).

before and after the intervention (educational sessions, leaflets, and educational videos). Before the intervention, most respondents had poor knowledge (66.7%), whereas after the intervention, the majority demonstrated good knowledge (83.3%) (Table 4).

Table 3 shows the univariate analysis of knowledge levels

**Table 3:** Frequency Distribution of Respondents' Knowledge Levels.

Knowledge Level	Pre-test (f)	%	Post-test (f)	%
Poor	20	66.7	5	16.7
Good	10	33.3	25	83.3
Total	30	100	30	100

**Table 4:** Frequency Distribution of Respondents' Attitudes.

Category	Pre-test (f)	%	Post-test (f)	%
Negative	25	83.3	2	6.7
Positive	5	16.7	28	93.3
Total	30	100	30	100

As illustrated in Table 4, before the intervention, most respondents (83.3%) displayed a negative attitude toward breastfeeding-related behaviors. However, after the intervention,

almost all respondents (93.3%) exhibited a positive attitude (Table 5).

**Table 5:** Frequency Distribution of Respondents' Behavioral Levels.

Category	Pre-test (f)	%	Post-test (f)	%
Poor	28	93.3	3	10
Good	2	6.7	27	90
Total	30	100	30	100

Table 5 indicates that prior to the intervention, most respondents (93.3%) demonstrated poor breastfeeding-related behaviors. After the intervention, the majority (90.0%) exhibited good behavioral practices, indicating substantial behavioral improvement following education through WhatsApp (Table 6).

As shown in Table 6, the bivariate analysis using the McNemar test revealed significant differences between pre-test and post-test results for all three variables ( $p < 0.05$ ). This indicates that the educational intervention was effective in improving the knowledge, attitudes, and behaviors of postpartum mothers

**Table 6:** Bivariate Analysis (McNemar Test).

Variable	p-value (McNemar Test)
Knowledge	0.000 (< 0.05)
Attitude	0.001 (< 0.05)
Behavior	0.002 (< 0.05)

## Discussion

Based on the findings of this study, the majority of postpartum mothers were within the age group of 26–30 years (46.7%) and had completed senior high school (46.7%). This age range represents early adulthood, a productive period in which individuals possess optimal cognitive ability to process information and adopt health-related behavioral changes. According to *Notoatmodjo* [7], productive age influences one's comprehension and thinking capacity, allowing postpartum mothers to better absorb newly provided knowledge. Furthermore, most of the participants had at least a secondary-level education, which facilitated understanding of the educational materials. Education is considered a predisposing factor in *Lawrence Green's* (1980) [8] Health Behavior Theory, playing a crucial role in shaping knowledge, attitudes, and behaviors.

The results related to knowledge showed that, before the intervention, most postpartum mothers had a low level of knowledge (66.7%), which increased to a good level (83.3%) after receiving the educational intervention. The McNemar test yielded a p-value of 0.001 ( $p < 0.05$ ), indicating a significant difference between pretest and posttest knowledge levels. This improvement demonstrates that health education effectively enhances mothers' knowledge during the postpartum period. This finding supports *Notoatmodjo's*, [9] assertion that knowledge is the result of sensory experiences, particularly through hearing and vision. Knowledge improvement occurs when mothers receive clear, relevant, and easily understood information during educational activities. Therefore, the intervention successfully improved mothers' understanding of lactation nutrition, exclusive breastfeeding, and proper breastfeeding techniques. This result aligns with the findings of *Sari, et al.* [10] and *Rahmawati* [11], who reported that health education significantly increased postpartum mothers' knowledge regarding self-care and breastfeeding practices.

Before the intervention, many postpartum mothers exhibited less favorable attitudes toward implementing nutritional improvements, practicing proper breastfeeding techniques, and providing exclusive breastfeeding for six months. However, after receiving the educational program, their attitudes shifted positively, reflecting greater motivation to improve nutrition during lactation, correct breastfeeding practices, and a stronger commitment to exclusive breastfeeding. According to *Azwar* [12], attitude is an individual's emotional and cognitive response to

a particular stimulus, shaped by beliefs and feelings. Education plays an essential role in attitude formation by providing logical reasoning and perceived benefits, thereby increasing confidence in the importance of health education. This finding is consistent with *Wahyuni* [13], who found that midwifery counseling improved positive attitudes among postpartum mothers toward breast care. Positive attitudes arise as a result of enhanced understanding and awareness following the receipt of accurate information.

Behavior reflects the integration of one's knowledge and attitudes. Before the intervention, many postpartum mothers did not practice correct breastfeeding techniques, failed to maintain proper nutrition during lactation, and paid little attention to the importance of exclusive breastfeeding. After the educational intervention, most respondents began demonstrating appropriate behaviors consistent with the educational materials provided. According to *Notoatmodjo* [7], health behavior is influenced by three main domains: knowledge, Attitude, and Practice (KAP). Adequate knowledge fosters positive attitudes, which subsequently lead to healthy behaviors. In this study, the improvement in mothers' behavior was attributed to increased knowledge and attitude change following the educational intervention. These findings support *Green's* [8] Precede-Proceed Model, which states that behavior is influenced by predisposing factors (knowledge and attitudes), enabling factors (facilities and resources), and reinforcing factors (support from health workers and family). The educational intervention in this study functioned as a predisposing factor, strengthening knowledge and fostering positive behavioral change.

Overall, this study demonstrated a consistent relationship between improved knowledge, attitudes, and behaviors among postpartum mothers after the educational intervention. Mothers with higher knowledge levels tended to display more positive attitudes and healthier behaviors. This finding corresponds with *Bloom's* [14-23] taxonomy, which outlines that health behavior change begins in the cognitive domain (knowledge), followed by the affective domain (attitude), and ultimately manifests in the psychomotor domain (action or behavior). This sequential process was clearly observed in the results, where increased knowledge through education led to subsequent improvements in attitudes and behaviors.

Therefore, this study concludes that educational interventions employing a health promotion approach significantly influence

improvements in knowledge, foster the formation of positive attitudes, and promote healthier behavioral changes among postpartum mothers.

## Conclusion and Recommendations

The findings of this study demonstrated a significant difference between pre-test and post-test scores ( $p < 0.05$ ), indicating that WhatsApp-based education was effective in improving postpartum mothers' knowledge, attitudes, and behaviors related to breastfeeding. Health education that employs interactive, communicative, and audience-tailored methods has proven to be an effective strategy for enhancing the health quality of both mothers and their infants. Midwives are encouraged to adopt this educational approach as a routine activity in community health centers (puskesmas). Furthermore, this method can be integrated into educational curricula as a learning resource in health education and health promotion courses, particularly in applying effective health education techniques for postpartum mothers. Future studies are recommended to employ a controlled group design and conduct long-term follow-up measurements to assess the sustainability of behavioral changes resulting from digital health education interventions.

## Acknowledgement

None.

## Conflict of Interest

None.

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