



A DIGITAL COMPANION FOR EXPECTANT MOTHERS: REPRODUCTIVE EDUCATION VIA A WHATSAPP GROUP TO PREPARE FOR CHILDBIRTH

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ABSTRACT

Pregnant women's readiness for childbirth needs to be strengthened through appropriate health education. Before receiving education, 39 respondents (70.9%) were categorized as unprepared, and 16 respondents (29.1%) were categorized as somewhat unprepared. This study aimed to determine the effect of reproductive health education via a WhatsApp Group on the readiness of pregnant women to face childbirth in the service area of the Gatak Community Health Center. The study used a pre-experimental design with a one-group pretest-posttest approach and was conducted from May 19 to June 8, 2026. The study sample consisted of 55 pregnant women selected using accidental sampling. Data were collected using a readiness questionnaire administered as a pretest before the intervention and a posttest after the intervention. Reproductive health education was provided via a WhatsApp Group over five days. Data were analyzed using the Wilcoxon Signed-Rank Test. The results showed that the average readiness score increased from 73.07 before the education to 99.27 after the education. After the education, 38 respondents (69.1%) were in the "ready" category, and 17 respondents (30.9%) were in the "less ready" category. The Wilcoxon test yielded a Z-value of -6.457 with $p < 0.001$. Reproductive health education via a WhatsApp Group had a significant effect on pregnant women's readiness for childbirth.

Keywords: antenatal education; childbirth readiness; pregnant woman; reproductive health education; whatsapp group

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INTRODUCTION

A pregnant woman's readiness for childbirth is a crucial aspect of preparing for the delivery process, as it encompasses her ability to understand the condition of her pregnancy, recognize signs of labor and danger signs, prepare for childbirth needs, and determine the necessary actions to take when assistance is needed (Nyirenda et al., 2025). Preparedness for childbirth is also related to birth preparedness and complication readiness, which refer to the efforts of mothers and their families to prepare for childbirth and cope with potential complications (Singh et al., 2024). Maternal education is one of the factors that can support this preparedness (Ananche & Wodajo, 2020). The results of a systematic review and meta-analysis indicate a positive association between maternal education and birth preparedness and readiness to handle complications among pregnant women (Ketema et al., 2020). Antenatal education has also been shown to improve knowledge of danger signs as well as practices related to birth preparedness and readiness to handle complications among pregnant women in low- and middle-income countries (Abdulwahab et al., 2026; Akinwaare & Oluwatosin, 2023).

A mother's readiness for childbirth is not only related to knowledge but also encompasses physical and psychological readiness, as well as birth planning (Shimpuku et al., 2019). Reproductive health education for pregnant women is the process of providing information about reproductive health and childbirth preparation that can help mothers understand what needs to be prepared before childbirth. Information regarding signs of labor, warning signs, physical and psychological

preparation, labor needs, and family support needs to be provided systematically so that mothers can better prepare themselves. In this study, the preparedness of pregnant women encompassed aspects of knowledge, psychological readiness, physical readiness, and birth planning, while reproductive health education was delivered via a WhatsApp Group in the form of text materials, posters, videos, and discussions.

Advances in communication technology offer opportunities to develop more flexible health education. WhatsApp Groups can be used as a medium for conveying information through text messages, images, and videos, as well as for two-way communication via discussions and Q&A sessions (Arifah et al., 2023). The use of this medium allows pregnant women to receive materials through the devices they use daily and provides them with the opportunity to review the information that has been provided (Amitha et al., 2024; Prihazty & Wittiarika, 2024). The use of information and media in antenatal care services is important to consider because knowledge and information media are among the factors associated with pregnant women's behavior in antenatal care (Ayuningtyas, 2020). Additionally, the coverage of antenatal care visits among pregnant women is also associated with knowledge, information media, spousal support, and support from health workers (Nurmawati & Indrawati, 2018). A systematic review of WhatsApp-based education on maternal health indicates that such interventions have the potential to improve knowledge, health behaviors, psychological well-being, and several aspects of antenatal care utilization (Djouma Nembot et al., 2025). However, the effectiveness of WhatsApp does not always yield the same results across all maternal health outcomes; therefore, its use must be tailored to the characteristics of the intervention and the objectives to be achieved.

The need for more targeted reproductive health education is evident from the baseline status of the respondents in this study. Of the 55 pregnant women who participated, 39 respondents (70.9%) were categorised as “not ready” and 16 respondents (29.1%) were categorised as “less ready” before receiving reproductive health education via the WhatsApp Group. The average readiness score before the intervention was 73.07. These data indicate that the majority of respondents were not yet in the “ready” category for childbirth, highlighting the need for systematic information regarding reproductive health and childbirth preparation. This baseline condition serves as a crucial foundation for evaluating the use of WhatsApp Groups as a flexible educational medium for providing information to pregnant women.

Previous studies have shown that antenatal education can support birth preparedness and readiness to handle complications (Ketema et al., 2020), while WhatsApp-based education has the potential to support various aspects of maternal health (Djouma Nembot et al., 2026). Nevertheless, research on the use of digital media still shows variation based on the type of intervention, duration of education delivery, content, and measured outcomes. The originality of this study lies in the structured delivery of reproductive health education via a WhatsApp Group over five days, using materials such as educational texts, digital posters, educational videos, as well as discussions and Q&A sessions, followed by measuring changes in pregnant women's readiness before and after the intervention. This study specifically assesses pregnant women's readiness for childbirth as an outcome—rather than merely knowledge or the utilization of antenatal services—and was conducted among pregnant women in the service area of the Gatak Community Health Center using a one-group pretest-posttest design. Thus, this study focuses on the use of WhatsApp Groups as a medium for reproductive health education to support pregnant women's readiness for childbirth. The purpose of this study was to determine the effect of reproductive health education via WhatsApp Groups on pregnant women's readiness for childbirth in the service area of the Gatak Community Health Center.

METHOD

This study employed a quantitative method with a pre-experimental design and a one-group pretest-posttest design. The study was conducted on a single group of respondents without a control group, measuring the readiness of pregnant women before and after receiving reproductive health education via a WhatsApp Group. The study design consisted of a pretest, the delivery of the reproductive health education intervention via a WhatsApp Group, and a posttest. The intervention was delivered using digital media, including educational text messages, digital posters, educational videos, as well as discussions and Q&A sessions.

The study was conducted from May 19 to June 8, 2026, in the service area of the Gatak Community Health Center (Puskesmas), Sukoharjo Regency, Central Java. The study population consisted of all pregnant women in the service area of the Gatak Community Health Center, totaling 64 pregnant women. The study sample was obtained using accidental sampling, in which respondents were selected based on pregnant women encountered by the researchers who met the predetermined criteria. The sample size was determined using the Slovin formula, yielding a calculated value of 55.17; the sample size was therefore rounded to 55 respondents. Inclusion criteria included pregnant women residing within the service area of the Gatak Community Health Center who owned a smartphone and had an active WhatsApp account. Exclusion criteria included pregnant women who did not have or did not bring their Maternal and Child Health (KIA) Book, as well as those who did not undergo routine antenatal care (ANC) with a minimum of four visits during their pregnancy.

The research variables consist of independent and dependent variables. The independent variable is reproductive health education delivered via a WhatsApp Group in the form of text materials, posters, videos, and discussions. The dependent variable is pregnant women's readiness for childbirth, which encompasses physical, psychological, emotional, and social readiness, as well as knowledge. Reproductive health education was provided over five days, with each session lasting approximately 15–30 minutes. Readiness was assessed before the intervention via a pretest and after the entire educational series was completed via a posttest. The instrument used to measure pregnant women's readiness was a childbirth readiness questionnaire administered before and after the intervention. The questionnaire consisted of 25 statements on a Likert scale covering aspects of physical, psychological, emotional, social, and knowledge-based readiness.

Data collection was conducted in several stages. Respondents who met the criteria were given an explanation of the study's objectives and procedures and then provided their consent via an informed consent form. Next, respondents completed the pretest questionnaire to assess their readiness level before receiving the education. Afterward, respondents participated in reproductive health education via a WhatsApp Group according to the predetermined materials and schedule over five days. After the entire education series was completed, respondents filled out a posttest questionnaire to assess changes in their readiness levels following the intervention. The collected data were then checked for completeness (editing), coded, and entered into statistical software for data processing.

Data analysis was conducted using univariate and bivariate methods. Univariate analysis was used to describe the characteristics of the respondents and the distribution of readiness levels among pregnant women before and after receiving the education. Bivariate analysis was conducted to determine differences in readiness levels among pregnant women before and after the intervention. A normality test was performed on the pretest and posttest scores using the Shapiro-Wilk test. If the data were normally distributed, a Paired Sample T-Test would have been used; however, since the data were not normally distributed, the *Wilcoxon Signed-Rank Test* was employed. Based on the results of the analysis, the data were not normally distributed; therefore, the *Wilcoxon Signed-Rank Test* was used to determine differences in the readiness levels of pregnant women before and after

receiving reproductive health education via a WhatsApp Group. Decision-making was based on a p-value ≤ 0.05 .

RESULT

This study involved 55 pregnant women in the service area of the Gatak Community Health Center. Respondent characteristics included age, educational level, occupation, parity, and gestational age. These characteristics provide an overview of the respondents who participated in reproductive health education via a WhatsApp Group. Based on the study results, the majority of respondents were in the 20–35 age group, totaling 47 respondents (85.5%); 43 respondents (78.2%) had a high school or vocational school education; 44 respondents (80.0%) worked in the private sector; 36 respondents (65.5%) were primiparous; and 29 respondents (52.7%) were in their second trimester. The distribution of respondent characteristics is presented in Table 1.

Table 1.
Respondent characteristics (n = 55)

Respondent characteristics	f	%
Age		
<20 years	2	3.6
20–35 years	47	85.5
>35 years	6	10.9
Education		
Junior High School	2	3.6
High School/Vocational High School	43	78.2
Higher Education	10	18.2
Employment		
Private-sector employee	44	80.0
Civil Servant	7	12.7
Self-employed	4	7.3
Parity		
Primiparous	36	65.5
Multiparous	16	29.1
Grand multiparous	3	5.5
Gestational Age		
First Trimester	6	10.9
Second Trimester	29	52.7
Third Trimester	20	36.4

The predominance of respondents aged 20–35 years indicates that the majority of respondents fall within the reproductive age group. For this age group, reproductive health education can be provided systematically by tailoring the information to the needs of mothers during pregnancy. In terms of education, the majority of respondents have a high school or vocational high school education. Educational level can influence a person's ability to receive and understand health information, but education is not the only factor determining understanding of the information provided. Delivering education using simple language, systematic materials, and easily accessible media remains essential so that health information can be understood by pregnant women with varying educational backgrounds.

The majority of respondents work as private-sector employees. This circumstance was a key consideration in selecting the educational medium, as WhatsApp Groups allow information to be delivered digitally without requiring respondents to attend in-person sessions at specific times. The materials can also be reviewed later, providing flexibility for pregnant women in accessing the information.

Based on parity, the majority of respondents were primiparous, totaling 36 respondents (65.5%). The predominance of primiparous respondents indicates that most of these women had no prior childbirth experience. This fact was taken into account when providing education on the labor process, signs of labor, danger signs, labor preparation, and necessary support. However, parity

does not automatically determine a mother's readiness to face childbirth, as readiness can also be influenced by knowledge, psychological condition, family support, access to health services, and the sources of information obtained.

Based on gestational age, the majority of respondents were in the second trimester (29 respondents, 52.7%), followed by the third trimester (20 respondents, 36.4%) and the first trimester (6 respondents, 10.9%). This situation provides an opportunity to deliver childbirth preparation education at an earlier stage, allowing mothers time to understand the information and prepare for their delivery needs.

The results of measuring pregnant women's readiness before and after receiving reproductive health education via a WhatsApp Group showed a shift in the distribution of readiness categories. Before receiving the education, 39 respondents (70.9%) were in the "not ready" category and 16 respondents (29.1%) were in the "somewhat ready" category. No respondents were in the "ready" category. After receiving the education, no respondents were in the "not ready" category, while 17 respondents (30.9%) were in the "somewhat ready" category and 38 respondents (69.1%) were in the "ready" category.

Table 2.
Readiness of Pregnant Women Before and After Education

Readiness of Pregnant Women	Pretest n (%)	Posttest n (%)
Not Prepared	39 (70.9)	0 (0.0)
Partially Prepared	16 (29.1)	17 (30.9)
Ready	0 (0.0)	38 (69.1)
Total	55 (100.0)	55 (100.0)
Mean	73.07	99.27
Standard deviation	3.736	5.031
Median	71.00	101.00
Minimum	68	82
Maximum	83	105

Table 2 shows an increase in the preparedness of pregnant women after receiving reproductive health education through a WhatsApp Group. The mean score increased from 73.07 to 99.27. The median increased from 71.00 to 101.00, while the minimum score increased from 68 to 82 and the maximum score increased from 83 to 105. These changes indicate that respondents' preparedness scores were generally higher after receiving the education. The increase in readiness may be related to the structured delivery of materials over five days via educational texts, digital posters, videos, as well as discussions and Q&A sessions. Delivering information through various media formats provided respondents with the opportunity to receive information gradually and review the materials provided. Interactions within the WhatsApp Group also allowed respondents to seek clarification on material they did not fully understand. Before analyzing the differences in readiness scores, a normality test was conducted on the pretest and posttest data. The results of the normality test are presented in Table 3.

Table 3.
Distribution of Readiness Scores Among Pregnant Women

Variable	Statistic	<i>p</i>	Distribution
Pretest	0.875	<0.001	Not normal
Posttest	0.729	<0.001	Not normal

Table 3, the results of the normality test using the Shapiro-Wilk test showed *p*-values for the pretest and posttest scores of <0.001, respectively. These values are less than 0.05, indicating that the data are not normally distributed. Therefore, the analysis of differences in pregnant women's readiness before and after receiving education was conducted using the Wilcoxon Signed-Rank Test.

Table 4.
Readiness Scores of Pregnant Women Before and After Education

Readiness of Pregnant Women	Mean	Z	p
Pretest	73.07	-6.457	<0.001
Posttest	99.27		

The results of the Wilcoxon Signed-Rank Test show a Z-value of -6.457 with $p < 0.001$. Since this p-value is less than 0.05, there is a statistically significant difference in the readiness of pregnant women before and after receiving reproductive health education via a WhatsApp Group. All 55 respondents showed an increase in their readiness scores; none experienced a decrease or remained at the same level. The average increase of 26.20 points indicates a substantial change in readiness following the intervention. This change is also evident in the shift in categories: the majority of respondents were in the “not ready” category before the intervention, whereas the majority were in the “ready” category after the intervention. These results suggest that providing structured information via a WhatsApp Group can support an increase in pregnant women’s readiness to face childbirth.

DISCUSSION

Reproductive health education via WhatsApp Groups offers several advantages in the learning process. Materials can be delivered in stages, combined with text, posters, and videos, and can be accessed again by participants. Discussions and Q&A sessions also facilitate two-way communication, allowing for clarification of information that has not been fully understood (Schnitman et al., 2022). These conditions can help mothers obtain information regarding signs of labor, danger signs, labor preparations, and things that need to be prepared before labor.

The results of this study are consistent with those of (Budiarti et al., 2025), which showed that antenatal education can improve knowledge regarding danger signs as well as birth preparedness and readiness to handle complications. WhatsApp-based education has also been reported to have the potential to improve maternal knowledge, health behaviors, psychological well-being, and certain aspects of antenatal care utilization (Djouma Nembot et al., 2026). Thus, the use of digital media can serve as an alternative to complement educational provision during pregnancy.

However, the effectiveness of WhatsApp-based education does not always yield the same results across all maternal health outcomes. Research on app-based antenatal education in Indonesia indicates that digital interventions can improve certain aspects of pregnant women’s health behaviors but do not show significant differences in birth preparedness and complication readiness (Ariyani et al., 2022). Differences in previous research findings may be related to variations in respondent characteristics, educational materials, intervention duration and intensity, comparison methods, and the instruments used to measure outcomes. Therefore, the improvement in preparedness observed in this study should be understood within the context of a five-day reproductive health education intervention via a WhatsApp Group for pregnant women in the service area of the Gatak Community Health Center.

Overall, the study results indicate that reproductive health education via a WhatsApp Group influences pregnant women’s readiness for childbirth. This is evidenced by changes in readiness categories, an increase in the average score from 73.07 to 99.27, and the results of the Wilcoxon test with $p < 0.001$. WhatsApp Groups can serve as a supportive medium for providing reproductive health education to pregnant women because they allow for the delivery of information in a flexible, gradual, and interactive manner.

CONCLUSION

Reproductive health education via a WhatsApp Group has a significant effect on pregnant women’s readiness for childbirth in the service area of the Gatak Community Health Center. The increase in readiness scores following the intervention indicates that WhatsApp Groups can be used as a

supportive medium for providing reproductive health education and childbirth preparation to pregnant women. However, this study has limitations, including the use of a one-group pretest-posttest design without a control group, a relatively short intervention duration of five days, and accidental sampling, which may limit the generalizability of the findings.

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