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The Effect Of Pregnancy App Use On Childbirth Preparedness Among Primigravid Women

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Abstract

Background : Primigravida women often experience anxiety and have limited experience in preparing for childbirth . Pregnancy applications can serve as accessible , interactive , and continuous educational media to improve maternal knowledge and childbirth preparedness. Objective : To analyze the effect of pregnancy application use on childbirth preparedness among primigravida pregnant women. Methods : This study used a quasi-experimental design with a pretest-posttest control group approach . The sample consisted of 60 primigravida pregnant women divided into intervention and control groups , with 30 respondents in each group . The intervention group received pregnancy education through a mobile application for four weeks , while the control group received routine antenatal care . Childbirth preparedness was measured using a questionnaire covering physical and psychological preparation , knowledge of danger signs , selection of delivery place , transportation , birth companion , financial preparation , and delivery equipment . Data were analyzed using paired and independent t- tests or alternative tests according to data distribution. Results : Before the intervention , most respondents in both groups had moderate childbirth preparedness . After using the application , the mean preparedness score in the intervention group increased from 62.40 to 84.70, while the control group increased from 63.10 to 69.20. The analysis showed a significant difference in score improvement between the intervention and control groups , with $p<0.001$ Conclusion : Pregnancy application use significantly improves childbirth preparedness among primigravida pregnant women . Pregnancy applications can be integrated into antenatal care as a support educational medium to strengthen childbirth preparation and monitoring .

Keywords : Pregnancy Application, Childbirth Preparedness, Primigravida, Antenatal Education, MHealth .

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1. Introduction

A first pregnancy is a crucial phase often accompanied by physical, psychological, and social changes. Primigravida pregnant women have no previous experience with pregnancy and childbirth, which may contribute to uncertainty, fear of childbirth, and challenges in preparing for delivery. Adequate antenatal education can help primigravida women improve their knowledge, self-efficacy, and preparedness for childbirth (Athinaidou et al., 2024; Zaman et al., 2025).

Childbirth preparedness refers to the ability of mothers and families to prepare for the physical, psychological, social, financial, and logistical needs associated with childbirth. This preparation includes determining the place of delivery, identifying a health-care provider and birth companion, arranging transportation and financial resources, preparing potential blood donors and maternal and infant supplies, and understanding signs of labor and pregnancy danger signs. Comprehensive antenatal care and education are important components in supporting women to prepare for a positive pregnancy and childbirth experience (World Health Organization, 2016; Zaman et al., 2025).

Antenatal education plays an important role in improving maternal knowledge and skills in preparing for childbirth. However, education provided during routine antenatal visits may be limited by consultation time and may not continuously meet the information needs of pregnant women. Evidence indicates that structured antenatal education can contribute to improved maternal self-efficacy, reduced fear of childbirth, and better birth preparedness, particularly among primiparous women (Athinaidou et al., 2024; Zaman et al., 2025).

Advances in smartphone technology provide opportunities to expand access to maternal health education through pregnancy applications. These applications can provide gestational-age-specific information, antenatal care reminders, symptom and danger-sign information, relaxation exercises, preparation checklists, and birth-planning guidance. Evidence from systematic reviews indicates that mHealth interventions can support maternal health care, improve health-related knowledge and behaviors, and provide continuous access to pregnancy-related information (Ameyaw et al., 2024; Habibi et al., 2024; Small et al., 2024).

Research on the use of pregnancy applications has also demonstrated potential benefits for maternal preparedness and pregnancy-related outcomes. The Android-based My Midwife application was reported to improve the readiness of pregnant women to give birth, while studies of other pregnancy applications have demonstrated benefits in supporting prenatal health behaviors and maternal psychological well-being (Savitri et al., 2023; Jo et al., 2025; Nurdilan & Öztürk, 2026). In addition, evidence from Indonesia

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indicates that mobile health interventions can support continuity of midwifery care and provide pregnant women with accessible health information during pregnancy (Rahmawati & Rahmadani, 2024).

Based on this description, the use of pregnancy applications is considered a promising educational strategy for improving childbirth readiness among primigravida pregnant women. Digital interventions can provide structured and continuous access to pregnancy and childbirth information while complementing routine antenatal care. Therefore, this study aims to analyze the effect of pregnancy application use on childbirth readiness among primigravida pregnant women (Ameyaw et al., 2024; Wang et al., 2025)..

2. Research Methods

This study employed a quasi-experimental design with a pretest-posttest with control group approach and was conducted from January to March 2026 in the working area of a community health center. The study involved 60 primigravida pregnant women receiving antenatal care, selected through purposive sampling and divided equally into intervention and control groups (30 participants each). Inclusion criteria were primigravida pregnancy, gestational age of 20–32 weeks, ownership of an Android smartphone, ability to understand Indonesian, and willingness to complete the study, while exclusion criteria included pregnancy complications requiring intensive care, communication or cognitive disorders, incomplete participation, and intensive use of other pregnancy education applications. The independent variable was pregnancy application use, and the dependent variable was childbirth readiness, assessed using a questionnaire covering knowledge of labor, danger signs, delivery planning, logistical preparation, and psychological readiness.

The intervention group used the application for four weeks, which provided information on pregnancy changes, childbirth preparation, labor and danger signs, relaxation exercises, antenatal reminders, birth planning, and emergency services, whereas the control group received standard antenatal care. Univariate analysis was used to describe participant characteristics and study variables, while bivariate analysis assessed differences in childbirth readiness scores before and after the intervention and changes between groups. Normally distributed data were analyzed using paired t-test and independent t-test, while non-normally distributed data were analyzed using Wilcoxon and Mann–Whitney tests, with statistical significance set at $\alpha=0.05$.

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3. Results And Discussion

a. Result

Tabel 1. Respondent Characteristics

Characteristics	Intervention n (%)	Control n (%)
Age 20–24 years	14 (46.7)	13 (43.3)
Age 25–29 years	12 (40.0)	13 (43.3)
Age ≥30 years	4 (13.3)	4 (13.4)
Primary/secondary education	18 (60.0)	19 (63.3)
Higher education	12 (40.0)	11 (36.7)
Gestational age 20–26 weeks	16 (53.3)	15 (50.0)
Gestational age 27–32 weeks	14 (46.7)	15 (50.0)

The characteristics of respondents in the intervention and control groups were relatively balanced. Most respondents were aged 20–29 years, had primary or secondary education, and were 20–26 weeks pregnant.

Tabel 2. Childbirth Readiness Before and After Intervention

Group	Before intervention Mean±SD	After intervention Mean±SD	Change
Intervention	62.40±8.15	84.70±6.22	22.30
Control	63.10±7.84	69.20±7.35	6.10

The average birth readiness score in the intervention group increased by 22.30 points, while the control group experienced an increase of 6.10 points.

Tabel 3. Childbirth Readiness Categories

Readiness category	Intervention before n (%)	Intervention after n (%)	Control before n (%)	Control after n (%)
Good	5 (16.7)	25 (83.3)	6 (20.0)	12 (40.0)
Currently	18 (60.0)	5 (16.7)	17 (56.7)	15 (50.0)
Not enough	7 (23.3)	0 (0.0)	7 (23.3)	3 (10.0)

After using the app, the majority of respondents in the intervention group were in the good category of childbirth preparedness. In the control group, there was also an increase in the good category, but the proportion was lower.

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Tabel 3. Analysis of the Effect of Pregnancy Apps

Analysis	p-value
Difference in scores before and after in the intervention group	<0.001
Difference in scores before and after in the control group	0.002
Difference in change in scores between the two groups	<0.001

The results of the analysis show that the use of pregnancy applications has a significant effect on increasing readiness for childbirth in primigravida pregnant women.

b. Discussion

The results showed that the use of a pregnancy application significantly improved childbirth readiness among primigravida pregnant women, with greater improvement observed in the intervention group than in the control group. This finding suggests that pregnancy applications can serve as supplementary educational tools by providing mothers with flexible and repeated access to pregnancy and childbirth information (Savitri et al., 2023; Ameyaw et al., 2024). Primigravida women may require structured information because they have no previous experience with childbirth. Educational materials delivered through applications can help mothers understand pregnancy changes, recognize signs of labor and danger signs, and prepare for childbirth systematically (Athinaidou et al., 2024; Zaman et al., 2025).

Pregnancy applications also allow information to be delivered according to gestational age, while features such as antenatal reminders, childbirth checklists, and birth planning may help mothers translate knowledge into practical preparation. The availability, usability, and quality of content are important factors in determining the effectiveness of pregnancy applications (Habibi et al., 2024; Nissen et al., 2024). The findings are consistent with previous research showing that Android-based education can improve childbirth readiness among pregnant women and that mHealth interventions can support maternal knowledge, health behaviors, and continuity of care during pregnancy (Savitri et al., 2023; Small et al., 2024; Rahmawati & Rahmadani, 2024).

Digital interventions may also support psychological preparedness by providing clear information about childbirth, relaxation techniques, and emergency warning signs, thereby helping reduce uncertainty and improving maternal confidence (Lau et al., 2024; Nurdilan & Öztürk, 2026). However, pregnancy applications should complement rather than replace direct antenatal care, as professional assessment remains essential for identifying maternal and fetal conditions that require clinical management (World Health Organization, 2016; Ameyaw et al., 2024).

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Effective implementation is also influenced by digital literacy, content quality, regular application use, family support, and guidance from health professionals; therefore, integration with midwife-led counseling and routine antenatal services remains important (Asadollahi et al., 2025; Ameyaw et al., 2024). This study has several limitations, including dependence on smartphone ownership and internet access, limited control over participants' adherence to application use, potential subjectivity from self-reported questionnaire responses, a relatively short intervention period, and a small sample from a single setting, which may limit the generalizability of the findings. In conclusion, the use of pregnancy applications significantly improves childbirth readiness among primigravida pregnant women by supporting knowledge, physical and psychological preparation, and structured birth planning.

Pregnancy applications are therefore recommended as supplementary media for antenatal education, with community health centers encouraged to integrate digital education into routine antenatal services. Pregnant women should use the application regularly while continuing routine antenatal check-ups, and families are encouraged to participate in childbirth preparation. Future studies should involve larger samples, longer intervention periods, and additional outcomes such as maternal anxiety and childbirth outcomes (Wang et al., 2025; Zaman et al., 2025)..

4. Conclusion

The use of pregnancy applications significantly improves childbirth readiness among primigravida pregnant women by enhancing knowledge, physical and psychological preparedness, and structured preparation for childbirth needs. Therefore, health workers are encouraged to use pregnancy applications as supplementary media for antenatal education, while community health centers should integrate digital education programs into routine antenatal services. Pregnant women are encouraged to use the application regularly while continuing routine antenatal check-ups, and husbands and family members should actively access relevant information to provide support during childbirth preparation. Future studies should involve larger samples, longer intervention periods, and additional outcomes such as anxiety and childbirth outcomes.

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