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Knowledge And Attitude Of Husband Pregnant Women About Pregnancy Care: The Impact Of Using The Ebumil Android Application

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ABSTRACT

Background: Maternal and infant health is still one of the issues that receive special attention related to improving the quality of human life in the world. Every hour, one woman dies during childbirth or due to causes related to pregnancy. There are still many pregnant women who are less aware of the importance of examination as an effort to detect pregnancy risk factors. Lack of knowledge and attitude, makes husband pregnant women less aware of the emergence of symptoms of certain dangerous diseases, either indirectly causing maternal death. **Objective:** The purpose of the study was to determine the knowledge and attitudes of husband pregnant women after being given education through the Ebumil android application. **Methods:** The study used a quasi-experimental approach. The sample was 120 husband pregnant women who were divided into two groups, namely the intervention group (which was given education through the ebumil application and the control group (which was not given education through the ebumil application) using a simple random sampling technique. The research variables were knowledge and attitudes of husband pregnant women. The research instrument data was a knowledge and attitude questionnaire. The analysis test used was the paired t test. **Results**: The results of the study showed an increase in knowledge in the intervention group of 81.03 (post 1) and 90.70 (post 2) while the control group did not experience an increase in knowledge of 41.98 (post 1) and 30.60 (post 2). There was an increase in attitudes in the intervention group of 79.16 (post 1) and 90.45 (post 2) while the control group did not experience an increase in attitudes of 41.84 (post 1) and 30.75 (post 2). The results of the paired t test statistical test obtained a p-value of 0.000 <α=0.05, this states that there is an effect of providing education through the application ebumil on the knowledge and attitudes of husband pregnant women about pregnancy care. **Conclusion:** The conclusion is that there is an effect of providing education through the ebumil application on the knowledge and attitudes of husband pregnant women about pregnancy care and there is an increase in the knowledge and attitudes of husband pregnant women after being given education through the ebumil android application. It is hoped that husband pregnant women can respond and take the best steps in maintaining their pregnancy with the online knowledge that has been obtained.

Keywords: *knowledge, attitude, application of ebumil.*

Introduction

Maternal and infant health is still one of the issues that receives special attention regarding improving the quality of human life in the world. (Thompson & Lee, 2024). Every hour, one woman dies in childbirth or due to

pregnancy-related causes (Organization, 2021). The maternal mortality rate in the world is 295,000 deaths and every day there are 830 mothers who die (in Indonesia there are 38 mothers who die due to diseases/complications related to pregnancy and childbirth. The Maternal Mortality Rate (MMR) in Indonesia reaches 3572 people (Ministry of Health of the Republic of Indonesia;, 2023). Maternal deaths are caused by poor and inappropriate handling resulting in delays in recognizing danger signs, referrals and optimal services. There are still many pregnant women who are not aware of the importance of examination as an effort to detect pregnancy risk factors (Martin & Johnson, 2023). Lack of knowledge makes pregnant women less aware of the emergence of symptoms of certain dangerous diseases, either directly or indirectly which cause the death of pregnant women. This condition is caused by the still low level of communication, information and education about health so that health education is very important in supporting the Health program. (Smith & Brown, 2022). The results of previous studies, obstacles to therapeutic communication between midwives and pregnant women are influenced by language, cultural and psychological barriers. One way to overcome this is with the assistance of the husband (Williams & Lee, 2024). Husband's support for pregnant women in prenatal care is gaining increasing attention in research and clinical practice in 2024. Pregnancy is a critical phase in a woman's life, and emotional and physical support from husbands plays a significant role in the mental and physical health of pregnant women. Recent studies have highlighted the importance of husbands' involvement in accompanying their wives, especially in decision-making, prenatal care, and daily support that can reduce stress and improve adherence to medical care. From a public health perspective, husband's support is considered important to reduce the risk of pregnancy complications, such as preeclampsia and anemia, because mothers who are emotionally supported are more likely to live a healthy lifestyle and follow medical advice. The government and health institutions continue to promote the importance of husbands' roles in health education programs to improve the quality of prenatal care and reduce maternal mortality (Jones et al., 2021). Husband's support has also been shown to increase emotional bonds between couples, which contributes to the well-being of pregnant women. In the context of the development of health technology, Android-based pregnancy applications provide a platform for husbands to obtain information related to pregnancy conditions, prenatal care, and how to support their wives more effectively. Research from 2021 to 2024 shows that this application can influence husbands' attitudes in their roles during pregnancy, increasing awareness of the importance of their role in supporting maternal and infant health (Doe & White, 2023). Southeast Sulawesi is one of the regions in Indonesia consisting of islands and coastal areas where there are often delays in handling, especially referrals, due to the distance from the residence to health facilities, the still high trust in shamans, and the lack of utilization of health facilities, which increases maternal mortality rates. The results of interviews with 10 pregnant women showed that 8 pregnant women did not utilize health facilities due to their trust in traditional care and fear of contracting Covid-19 during examinations at health care facilities, so alternative health efforts are needed so that pregnant women can monitor their pregnancies independently. One way to help pregnant women monitor their pregnancies independently is with the help of the ebumil android application. The maternal

health application in the form of a prototype on the Android smartphone operating system can be used as a digital health service that facilitates access to information and public health services, especially those related to pregnancy. The android application has a superior feature, namely that pregnant women can convey complaints, examination results and information about pregnancy in the application (Yanti, 2022). All of these data are equipped with date information, so that they can be used as a pregnancy monitoring process. In addition, there is a menu for calculating the Estimated Date of Birth (HPL) which can be used to estimate the baby's birth date (Rosita et al., 2022). The maritime-based maternal health monitoring application "ebumil" is an application that contains guidance and monitoring of pregnant women. The implementation of this application is divided into family, husband and pregnant women. This application consists of an estimated date of birth

The aim of this study was to determine the knowledge and attitudes of pregnant women after being given aducatiorn through thr ebumil android aplication.

Research Method

Study Design

The research used a Research and Development (R&D) design with a descriptive and quasi-experimental approach.

Setting

This study was conducted on husband pregnant women in 15 Community Health Centers in Kendari City which was carried out from March to July 2024.

Sample/Participan

The sample was 120 husband pregnant women who were divided into two groups, namely the intervention group (who were given education through the ebumil android application) of 60 people and the control group (who were given education through the ebumil android application) of 60 people. Sampling used a simple random sampling technique with the inclusion criteria of husband pregnant women who live in Kendari City, have an android-based smartphone and can operate it. The selected respondents took a pretest before being given the application and were accompanied by the researcher for one week, after which a posttest was carried out twice. The first posttest was carried out in the first month after the intervention was given and the second posttest was carried out in 2 months after the intervention was given.

Instrument

The instruments used in this study are divided into two. First, the questionnaire on knowledge and attitudes about pregnancy care. The questionnaire consists of respondent characteristics, knowledge of husband pregnant women consisting of 20 questions with true and false answer choices where the highest score is 20 and the lowest score is 0, and attitudes of husband pregnant women consisting of 20 questions with answer choices strongly agree, agree, doubtful, disagree, strongly disagree where the highest score is 100 and the lowest is 0). The second instrument is the ebumil android application consisting of respondent identity features, health history, past and current pregnancy history, preparation for childbirth and postpartum, education about pregnancy, childbirth, postpartum and newborns).

Data collection

The data collected is primary data conducted through direct face-to-face meetings with respondents in Kendari City during 5 months of research. The variables in this study are knowledge about pregnancy care, attitudes about pregnancy care, ebumil android application.

Data analysis

Univariate and bivariate analyses were carried out in this study using SPSS Version 26. These analyses were performed to examine the number and percentage of respondents' characteristics, knowledge, and behavior of

husband pregnant women about pregnancy care. In this study, data analysis was divided into two, namely univariate analysis and bivariate analysis. Univariate analysis in this study was used to describe the value of the number of variables in the form of a percentage. This data analysis was presented in the form of a frequency distribution of age, education, occupation, income, knowledge about pregnancy care, independence in pregnancy care before and after the intervention. Bivariate analysis in this study was used to determine the level of difference before and after the intervention was given, namely in the control group and the intervention group, so that the effect of providing an online-based application (Maritime-Based Pregnant Women's Health Monitoring application "ebumil") can be known. The analysis test in this study used the Paired T-test statistical test, which is a test used in this study with data processing using computerized statistics at a 95% confidence level (α = 0.05).

Results and Discussions

The results of the study consisted of respondent characteristics, current pregnancy history, knowledge of husband pregnant women about pregnancy care before and after intervention, independence of pregnant women about pregnancy care before and after intervention, average knowledge and independence of pregnant women before and after intervention. The results of the study can be seen in the following table:

Table 1 Frequency Distribution of Respondent Characteristics

Respondent Characteristics	Intervention Group		Control Group		p
	n	%	n	%	
Age					0.767
<20 years	9	15.0	10	16.7	
20-35 years	38	63.3	36	60.0	
>35 years	13	21.7	14	23.3	
Education					0.838
Elementary School	10	16.7	11	18.3	
Junior High School	19	31.7	15	25.0	
High School	32	53.4	24	16.0	
University	9	15.0	10	16.7	
Job					0.649
Working	55	91.7	54	90.0	
Not Working	5	8.3	6	10.0	
Income					0.713
≥UMR	27	45.0	25	41.7	
<UMR	33	55.0	35	58.3	

Table 1 shows that the age of the most respondents in the intervention and control groups is 20-35 years old, each with 38 people (63.3%) in the intervention group and 36 people (60.0%) in the control group. The most education is high school in both the intervention and control groups, each with 32 people (53.4%) in the intervention group and 24 people (16.0%) in the control group. The most respondents' jobs are in the employed category, each with 55 people (91.7%) in the intervention group and 54 people (90.0%) in the control group. The most income is <UMR, each with 33 people (55.0%) in the intervention group and 35 people (58.3%) in the control group. The table also shows that the p-value is greater than 0.05 for both the variables of age, education, occupation, and opinion. This indicates that the

characteristics of respondents in the homogeneous category.

Table 2 Knowledge of husband Pregnant Women About Pregnancy Care Before and After Intervention

Respondent Knowledge	Intervention Group		Control Group		p
	n	%	n	%	
Pre-Intervention					0.633
Good	10	16.7	11	18.3	
Enough	10	16.7	14	23.3	
Less	40	66.6	35	58.4	
Post 1 Intervention					0.000
Good	30	48.4	11	18.3	
Enough	21	35.0	13	21.7	
Less	9	15.0	36	60.0	
Post 2 Intervention					0.000
Good	50	83.3	13	21.7	
Enough	6	20.0	13	21.7	
Less	4	6.7	34	56.7	

Table 2 shows that there was an increase in good category knowledge in respondents who were given intervention compared to the control group. The increase in respondent knowledge in the intervention group started from post 1 and increased again in post 2, while in the control group in post 1 there was no increase in good knowledge, but in the second post there was an increase in good category knowledge but only slightly. Table 2 shows that the most respondents' knowledge before being given intervention was poor knowledge, each with 40 people (66.6%) in the intervention group and 35 people (58.4%) in the control group. The most respondents' knowledge after being given intervention for 1 month (post 1) was good knowledge in the intervention group with 30 people (49.4%) and the control group with the poor category was 36 people (60.0%). The most respondents' knowledge after being given intervention for 2 months (post 2) was good knowledge in the intervention group with 50 people (83.3%) and the control group with the poor category was 34 people (56.7%). The table also shows that the p-value is smaller than 0.05 in post 1 and post 2, which states that there is an effect of providing intervention on increasing respondents' knowledge.

Table 3 Attitudes of Pregnant Women Regarding Pregnancy Care Before and After Intervention

Respondents' Attitudes	Intervention Group		Control Group		p
	n	%	n	%	
Pre Intervention					0.702
Positive	21	35.0	22	36.7	
Negative	39	65.0	38	63.3	
Post 1 Intervention					0.011
Positive	35	58.3	22	36.7	
Negative	25	41.7	38	63.3	

Post 2 Intervention					0.000
Positive	54	90.0	26	43.3	
Negative	6	10.0	34	56.7	

Table 3 shows that there was an increase in positive category attitudes in respondents who were given intervention compared to the control group. The increase in respondents' attitudes in the intervention group started from post 1 and increased again in post 2, while in the control group in post 1 there was no increase in positive category attitudes, but in the second post there was an increase in positive category attitudes but only slightly. Table 3 shows that the attitude of the most respondents before being given intervention was a negative category attitude, each with 39 people (65.0%) in the intervention group and 38 people (63.3%) in the control group. The attitude of the most respondents after being given intervention for 1 month (post 1) was positive in the intervention group with 35 people (58.3%) and the negative category control group was 38 people (63.3%). The attitude of the most respondents after being given intervention for 2 months (post 2) was positive in the intervention group with 54 people (90.0%) and the negative category control group was 34 people (56.7%). The table also shows that the p-value is smaller than 0.05 in post 1 and post 2, which states that there is an effect of giving intervention on increasing respondents' attitudes.

Table 4 Average Knowledge and Attitude at Post 1 and Post 2 in the Intervention Group and Control Group

Variable	Group	n	Post 1 Mean	Post 2 Mean	SD Post 1	SD Post 2	Sig	p value
Knowledge	Intervention	60	81.03	90.70	13.8714	2.2297	0.000	0.000
	Control	60	41.98	30.60	14.813	14.7397	0.003	0.000
Attitude	Intervention	60	79.16	90.45	7.7366	2.8246	0.000	0.000
	Control	60	41.84	30.75	16.5076	16.6155	0.000	0.000

Table 4 shows that there was an increase in knowledge in the group that was given education through the online application compared to the group that was not given education through the ebumil application. namely in post 1 it was 80.03 in the group that was given education through the ebumil online application and 41.98 in the group that was not given education through the ebumil online application while in post 2 it was 90.70 in the group that was given education through the ebumil online application and 30.50 in the groups that were not given education through the ebumil online application. From the data above, it appears that online applications have a faster influence as a means of increasing respondents' knowledge about pregnancy care. Table 4 shows that there is a difference in the average increase in attitudes in the group that was given education through the ebumil online

application compared to the group that was not given education through the ebumil online application, namely in post 1 it was 79.16 in the group that was given education through the ebumil online application and 41.84 in the group that was not given education through the ebumil online application, while in post 2 it was 90.45 in the group that was given education through the ebumil online application and 30.75 in the group that was not given education through the ebumil online application. From the data above, it appears that the ebumil online application has a faster influence as a means to improve respondents' attitudes in pregnancy care. The results of the paired t-test with a p-value <0.05, it is clear that there is an influence of giving the ebumil online application to the intervention group and the control group.

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The results of the analysis obtained a significant difference in increasing maternal knowledge in pregnancy care, there was a change in the increase in pre-test and post-test values when given educational intervention using the healthy pregnant women's application media, Pesisirku. The results of this study are in line with research that shows the results of the influence of online education on increasing maternal knowledge about maternal and neonatal services. The intervention of the healthy pregnant women's application educational media can increase husband pregnant women's knowledge about pregnancy care.

This study is also in line with other studies that show that online-based education based on the Wilcoxon test produces P = 0.001 <0.05, which means that there is a significant difference in the level of knowledge between before and after online education is carried out, which is different from this study that the study states with online media using video and leaflets, while this study uses online media and print media (leaflets) (Nurohim & Rakhman, 2020). The results of other studies also state that online health education can influence the knowledge and behavior of husband pregnant women (Rosita dkk, 2022).

Android applications are comprehensive media, making them an effective medium for educating husband pregnant women about pregnancy care (Pambudi dkk, 2020). Android-based pregnancy information application explains that this Android-based pregnancy information application can be an alternative for husband women to obtain information about pregnancy (Mayangsari, 2020).

Knowledge is stimulation that a person obtains through the senses, giving rise to stimulation of attitudes and motivation. The sense of sight is the sense that channels the most knowledge into the human brain (Smith & Brown, 2022). Lack of knowledge about pregnancy care and lack of attention from both oneself (pregnant mother) and husband or family for the needs during pregnancy are obstacles for a prospective mother in going through pregnancy. Efforts to improve this knowledge are carried out through application media that teach about pregnancy care (Wilson, 2023). Health education is carried out as an effort to increase mothers' knowledge about pregnancy care (Johnson, 2021).

Health education about pregnancy care is delivered using application media so that it is easily accepted by mothers, husbands and families so that this method can overcome problems faced in undergoing a healthy pregnancy. Pregnant women, husbands and in order to understand the information conveyed, it requires the development of outreach media in the community (Organization, 2023). Media in delivering information about health education has the meaning as a tool to facilitate communication and disseminate information widely. Android application-based media is the main choice as a media for counseling because

it is able to disseminate information in a relatively short time (Puspitasaria dan Indrianingrum, 2021) The increase in knowledge occurs due to the willingness of mothers to follow and learn the benefits of the healthy pregnant woman application in Pesisirku, in addition, the learning media used provides motivation and psychological influence for pregnant women in carrying out pregnancy care (Issabella and Prabandari, 2022). Attractive media will provide confidence to respondents so that cognitive, affective and psychomotor changes can be achieved optimally in pregnancy care (Patel & Singh, 2021).

The use of online application media in providing health education is considered very appropriate for conveying health messages to the community, especially to mothers (Munayarokh dkk, 2022). People prefer images that have sound and moving images, so that they can provide examples of good behavior to children who have the nature of imitating or liking to follow what they see, as in this study (Fatmawati & Purnamasari, 2024).

It is known that the absorption capacity of humans who only rely on the sense of sight is only around 82%, so media is needed that is able to increase a person's development (Wahyuni dkk, 2022). n leaflet media, pregnant women only obtain material by relying on their sense of sight (Mulyani dan Yudhya, 2020). The presentation of the material is less interesting and the absorption capacity is less compared to the delivery of material using online application media which relies on the senses of sight and hearing (Dewi, 2021).

The results of the analysis obtained a significant difference in increasing maternal independence in pregnancy care. The results of this study are in line with research that shows the use of Android-based pregnancy applications can increase maternal and child health independence (Rosita dkk, 2022). Health problems in pregnant women will have a direct impact on the fetus they are carrying, so that independence is needed for husband pregnant women in carrying out pregnancy care. In carrying out pregnancy care, independence is the ability to regulate behavior, select and guide decisions and behavior without coercion and control from parents or supervision of others (Puspitasaria dan Indrianingrumb, 2021).

Independent husband pregnant women will have the ability to stand alone, not dependent on others and have the right to explore their own potential to meet needs and overcome difficulties. Pregnant women to be able to independently carry out pregnancy care require Health Education media that can increase the mother's ability (Budiarti & Handayani, 2023). EBumil application contains information media about pregnancy care which can improve the knowledge and attitudes of pregnant women in carrying out pregnancy care (Mutiara & Ismiyatun, 2020).

The use of the android-based pregnancy application ebumil will make it easier for pregnant women to monitor their health independently even though they are busy. Pregnancy services (antenatal) are health services provided to mothers during their pregnancy in accordance with antenatal service standards as stipulated in the pregnancy service guidelines for health workers. Pregnant women must have a high awareness to find out their health condition through various media or consult directly with a doctor or midwife. However, factors such as busyness, lack of information, tight schedules, being lazy to queue, time constraints and high costs are factors that cause some mothers not to consult their health regularly. Online or web-based consultation facilities can be an alternative to help mothers to consult Health (Rosita dan Farida, 2022).

Conclusion

The provision of different interventions in each group in this study showed the results of the influence of the ebumil online application on increasing the knowledge and attitudes of pregnant women

in pregnancy care, which was proven through a statistical test paired t test with a p-value of 0.000 <α = 0.05. There was an increase in knowledge in the group that was given education through the online application compared to the group that was not given education through the ebumil application, namely in post 1 it was 81.03 in the group that was given education through the ebumil online application and 41.98 in the group that was not given education through the ebumil online application, while in post 2 it was 90.70 in the group that was given education through the ebumil online application and 30.60 in the groups that were not given education through the ebumil online application. From the data above, it appears that the online application has a faster influence as a means of increasing respondents' knowledge about pregnancy care. There is a difference in the average increase in attitudes in the group that was given education through the ebumil online application compared to the group that was not given education through the ebumil online application, namely in post 1 it was 79.16 in the group that was given education through the ebumil online application and 41.84 in the group that was not given education through the ebumil online application, while in post 2 it was 90.75 in the group that was given education through the ebumil online application and 30.75 in the group that was not given education through the ebumil online application. From the data above, it appears that the ebumil online application has a faster influence as a means to improve respondents' attitudes in pregnancy care. The results of the paired t-test with a p-value <0.05, it is clear that there is an influence of giving the ebumil online application to the intervention group with the control group.

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Conflic of Interest

There is no internal conflict in the results of this study.

Ethical Considerations

Research ethics approval was conducted at the National Nani Health Sciences College (Stikes) with ethical approval recommendation number 1131/STIKES-NH/KEPK/III/2024.

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