



EFFECTIVENESS OF “SI BUMIL APPLICATION” IN REDUCING ANXIETY OF PREGNANT WOMEN IN THE THIRTY-TRIMESTER

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ABSTRACT

Anxiety on time pregnancy impact negative to labor, health mentally Mother postpartum, And health baby Provision of web-based facilities via mobile phones and the internet can help reduce anxiety and stress in pregnant women. The “Si Bumil application” is expected to be a health education medium for pregnant women in reducing the anxiety they experience. The purpose of this study was to determine the effectiveness of the Si Bumil application in reducing anxiety in pregnant women in the third trimester. Method: A pretest-posttest control group approach was used in this quasi-experimental investigation. At PMB Padang City, 44 pregnant women in their third trimester participated in the study. The sampling technique was *accidental sampling*. The sample was divided into two groups, namely the intervention group with educational provision using the Si Bumil application and the control group with educational provision using power point media. Pregnant women's anxiety was assessed using the *Hamilton Anxiety Scale* (HARS) questionnaire. Statistical test using *Independent t-test*. According to the findings, for pregnant women in the intervention group, the average score of anxiety was 27.40 ± 3.17 , whereas for those in the control group, the average score was 26.36 ± 2.85 . After the intervention, the average score of anxiety of pregnant women in the intervention group was 19.13 ± 3.97 and in the control group 24.86 ± 2.62 . The average score of anxiety of pregnancy after the intervention was compared between the intervention group and the control group, it was found that the level of anxiety experienced by pregnant women in both groups had decreased. However, the level of anxiety experienced by pregnant women in the intervention group showed a bigger drop than the control group. The results of the test of the difference in stress scores of the two groups showed that there was a significant difference ($p = 0.000$). This study indicated that coordinating Web-based education is an effective technique for reducing anxiety among pregnant women. As a result, it is advised that this Web-based method "si bumil application" be deployed to pregnant women in health care.

Keywords: anxiety; pregnant women; si bumil application

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INTRODUCTION

Pregnancy is a natural process that causes physiological and psychological changes. Increased hormone levels not only affect the mother's physical condition but can also have an impact on her psychological condition. Physiological changes in the hormonal system that occur during pregnancy will trigger *mood swings*, which are emotional conditions that often change. In addition, psychological problems that often attack pregnant women are anxiety. Pregnant women experience anxiety, which is an emotional response to their worries about their health and the health of their fetus, the continuation of their pregnancy, giving birth, the postpartum period, and when they have fulfilled the role of mother (Murdayah et al., 2021).

Anxiety on time pregnancy impact negative to labor, health mentally Mother postpartum, And health baby (Rwakarema et al., 2015) . Anxiety Which No resolved increase risk the occurrence of postpartum depression and its impact on health and baby welfare, as well as child development (Carlson et al., 2024) The highest prevalence of pregnancy-specific anxiety occurs during the third trimester of pregnancy (Madhavanprabhakaran et al., 2015). Between

11.4% and 63.3% of pregnant women worldwide suffer from anxiety. According to reports, the frequency can reach up to 26% in Nigeria, 44.9% in Benin, 15.2% in South Africa, and 25% in Tanzania, among other places in Africa. The pooled prevalence of prenatal symptoms over all trimesters was 34.4% in low-to-middle-income countries and 19.4% in high-income countries, according to a meta-analysis done to determine the prevalence of maternal anxiety worldwide (Abegaz et al., 2022; Bedaso et al., 2021; Soto-Balbuena et al., 2018). Data Ministry The 2020 Republic of Indonesia Health Survey shows that the prevalence of pregnant women who experience anxiety around 43.3% and who is experiencing anxiety in face labor There is around 48.7% (Kemenkes RI, 2021), especially in West Sumatra, is still limited. There is no definite data showing the prevalence of antenatal anxiety.

Anxiety that occurs during pregnancy can negatively affect the mother, fetus, newborn and child in the antenatal period. The effects of this anxiety can increase the likelihood of maternal antenatal depression, preeclampsia, longer labor, and an increase in the number of unplanned cesarean deliveries. In addition, anxiety also acts as a risk factor for various fetal mental development problems, such as intrauterine growth limitations, decreased blood flow to the placenta, impaired fetal neurodevelopment, low birth weight, and premature birth (Abahussain et al., 2022; Abegaz et al., 2022; Luo et al., 2022). Third-trimester pregnant women who are unable to let go of their fear and worry before giving birth can generate high levels of catecholamine hormones, often known as stress hormones, which can lead to more painful labor, longer labor, and tension during the actual labor process (Handayani, 2017). Both the mother and the fetus will suffer if pregnancy anxiety is not treated as soon as feasible. The effect on the mother causes uterine contractions, which can lead to depression, miscarriage, and an early birth (Novitasari, Mochtar, 2019). As many as 30.5 % of pregnant women were diagnosed with anxiety disorders. Anxiety disorders included 47.7% with pregnancy adjustment disorder, 40.6% with generalized anxiety disorder and 11.7% with specific phobia (towards childbirth) (Shariatpanahi et al., 2023).

One common strategy to help prevent or reduce pregnancy complications and adverse birth outcomes due to mental illness is to provide strong social support for pregnant women and regular and regular check-ups for pregnant women (Dunkel Schetter et al., 2022; Hutahaeon & Wahyu, 2021; Shapovalova et al., 2022; Tussey et al., 2015). In addition to these strategies in this digital era, digital support can also be done with structured steps. The development of applications that can be given to pregnant women is provided to provide periodic information. Research on patients using mobile apps to obtain health information. Health providers and educators can also use apps designed for patients to assist in patient education (Shapovalova et al., 2022). Pregnant women should have access to web-based resources via the internet and mobile devices to help them feel less stressed and anxious. (Ansariniaki et al., 2021; Lunde et al., 2017). Research on anxiety in pregnant women based on the Web "sibumil" has never been studied before, but research has been done to detect the risk of preeclampsia (Preis et al., 2020) and independent detection of pregnancy risk (Nugraha et al., 2023). The purpose of this study was to determine the "Effectiveness of the " *Si Bumil Application* " in Reducing Anxiety in Pregnant Women in the 3rd Trimester at PMB Padang City".

METHOD

The type of research is a *quasi-experimental study* with a pretest-posttest control group design, which is a research design involving two randomly selected groups, given a pretest, and then the results are compared. In this design, both groups are first given an initial test with the same test. Then the intervention group is given special treatment, namely providing education to reduce anxiety using the "Sibumil application", while the control group is given treatment in the form of providing material using power point media. After being given treatment, both groups are tested with the same test as the final test (posttest), then the results

of the two final tests are compared. The population of this study was all pregnant women in the third trimester at PMB Padang city . In this study, the sample selection was in accordance with the inclusion and exclusion criteria of the study, namely pregnant women in the third trimester, having an android cellphone, having no history of congenital diseases during pregnancy such as hypertension, diabetes mellitus, kidney and asthma, willing to follow the research procedure until completion, not experiencing psychosocial disorders. A total of 44 research samples were obtained by *accidental sampling* , then the samples were divided into two groups, to determine the intervention and control groups, the researcher conducted a lottery . In the intervention group, the anxiety reduction education class was evaluated after the 10th day of application use. Two groups conducted anxiety measures before to and during the educational intervention. The measurement instrument uses HARS (Hamilton Anxiety Scale). The questionnaire consists of 14 questions related to symptoms and anxiety disorders in pregnant women. To assess the validity of anxiety in pregnant women, it is 0.431 and Cronbach's alpha reliability is 0.79.

RESULT

Table 1.
Respondent characteristics (n= 44)

Characteristics	Intervention Group (n = 22)		Control Group (n = 22)		Homogeneity test
	f	%	f	%	
Maternal Age					
a. At risk (> 35 years)	5	22,72	3	13,64	0,063
b. Not at risk (20-35 years)	17	77,28	19	86,36	
Education					
a. Higher education	16	72,72	14	63,64	0,316
b. Lower education	6	27,28	8	36,36	
Employment					
a. Employed	9	40,91	7	54,55	0,077
b. Unemployed	13	59,09	15	45,45	
Parity					
a. Primigravida	13	59,09	15	68,18	0,102
b. Multigravida	9	40,91	7	31,82	

Table 1, the characteristics of pregnant women in the intervention group reveal that the majority (77.28%) of respondents are not at risk in terms of age, the majority (72.72%) have a higher level of education, the majority (59.09%) of respondents were unemployed and the majority (59.09%) were primigravida mothers. In the control group, the results showed that most (86.36%) respondents also do not have age-related risks, most (63.64%) have a higher level of education, more than half (54.55%) of respondents were employed and most (68.18%) is a primigravida mother.

Table 2.
Mean Anxiety Level of Pregnant Women before and after Intervention in the Intervention and Control Groups (n=44)

Variable	Intervention Group (n = 22)			Control group (n= 22)		
	Mean	SD	Min-Max	Mean	SD	Min-Max
Pre test	27,41	3,17	22 – 34	26,36	2,85	21 – 32
Post test	19,14	3,97	12-26	24,86	2,62	20 – 30

Table 2. The average anxiety score of pregnant women in the intervention group before using the "Sibumil Application" was 27.41 ± 3.17 which reflects moderate anxiety, with a minimum score of 22 and a maximum score of 34. And after using the "Sibumil Application" the average maternal anxiety score amounting to 19.14 ± 3.97 which reflects mild anxiety, with a minimum score of 12 and a maximum score of 26. In contrast the control group, before giving the material using power point, the mean maternal anxiety score was 26.36 ± 2.85 , which reflects moderate anxiety, with a minimum score of 21 and a maximum score of 32.

And after giving the material using power point, the mean maternal anxiety score was 24.86 ± 2.62 with a minimum score of 20 and a maximum score of 30.

Table 3.

Differences in Anxiety Levels in Pregnant Women Before and After Use of "Sibumil Application" Intervention and Control Group (n=44)

Group	Anxiety	n	Mean	SD	SE	p value
Intervention	Pre Test	22	27,41	3,17	0,68	0,000
	Post test	22	19,14	3,97	0,85	
	Difference		8,27	2,49	0,53	
Control	Pre Test	22	26,36	2,85	0,61	0,102
	Post test	22	24,86	2,62	0,55	
	Difference		1,50	1,99	0,43	

Table 3 shows the differences in anxiety levels in the intervention group before and after intervention. In the intervention group, the average anxiety level before the intervention was 27.41 ± 3.17 , and after the intervention it decreased significantly to 19.14 ± 3.97 , with a difference of 8.27 ± 2.49 and a p value of 0.000. showed a statistically significant reduction in anxiety levels. In the control group, the average anxiety level before the intervention was 26.36 ± 2.85 and after the intervention 24.86 ± 2.62 with a difference of 1.50 ± 1.99 and a p value of 0.102 indicating there was no significant change in anxiety levels.

Table 4.

The Effectiveness of the “ Si Bumil Application ” in Reducing Anxiety in Pregnant Women

Group	n	Mean	SD	pvalue
Intervention	22	8.27	2.49	0,000
Control	22	1.50	1.99	

Table 4 illustrates that the comparison of the average post-intervention pregnancy anxiety ratings between the intervention and control groups revealed a decrease in the level of anxiety of pregnant women in both groups; however, the level of anxiety in the intervention group showed a bigger drop. The independent t-test showed a statistically significant difference where the p value was obtained at 0.000 (p value <0.05).

DISCUSSION

The results of the study showed that the average anxiety scores of pregnant women in the intervention and control groups before using the sibumil application were 24.41 ± 3.17 and 26.36 ± 2.85 , respectively, which indicated a moderate level of anxiety. This is in accordance with several studies which found that the average anxiety score of third trimester pregnant women was generally in the medium category before receiving health information and education. Based on a meta-analysis, anxiety in pregnant women occurs during the prenatal period (Dennis et al., 2017) In line with other research, research in Iran said that 14.1% of pregnant women experienced anxiety about giving birth (Shariatpanahi et al., 2023). The high rate of maternal anxiety is caused by several factors, including age, education, employment status and parity (Nursyifah et al., 2023; Shariatpanahi et al., 2023). This research found that the majority of respondents (81.81%) were in the 20-35 year age range, this age is the reproductive age of pregnant women and the age considered safest for pregnancy and childbirth. In this age range, women's physical condition is in prime condition, whereas after the age of 35, some women are classified as having high-risk pregnancies for congenital abnormalities and complications during childbirth. (Purwandari et al., 2018).

Apart from that, maternal parity also influences maternal anxiety levels, this study found that the majority of respondents (63.64%) were primigravida mothers. For primigravida mothers, pregnancy is the first experience, so the third trimester often feels more anxious because it is getting closer to the birthing process. They tend to feel anxious, restless and afraid of childbirth, because ignorance can be a factor causing anxiety. Meanwhile, multigravida mothers may experience anxiety related to previous pregnancy experiences. The employment

status factor also influences the mother's level of anxiety facing childbirth, this research found that the majority of respondents (63.63%) were not working (housewives). In this study, mothers felt anxious about the family's financial condition before giving birth. They worry about how to manage family finances if there is a decrease in income or additional expenses during labor and recovery. Meanwhile, working mothers are anxious because they have limited time to prepare for childbirth, both physically and mentally. They find it difficult to take childbirth preparation classes or make other preparations. In addition, high work demands leading up to childbirth can increase stress and anxiety levels, because mothers feel burdened by unfinished work or worry about leaving work for a long time.

Based on the questionnaire analysis carried out, the symptoms of anxiety disorders that respondents often experienced were sleep disorders (84.09%) where respondents experienced restless sleep, difficulty sleeping, had nightmares and frequently woke up at night. This research also found other anxiety disorders encountered in the form of tension (54.54%) and fear (65.9%). Fear of intense pain during childbirth is a common thing experienced by mothers. Pregnant women often feel anxious about the birth experience, including extreme pain, unfamiliar medical procedures, or uncertainty about how the birth will progress. The study's findings revealed a statistically significant difference in reducing anxiety in pregnant women in the third trimester compared to the anxiety scores in the control group. Lack of sufficient knowledge and information is one of the causes of stress and anxiety in patients. Individual and group counseling and education methods have proven effective in reducing stress and anxiety during pregnancy (Mojahed et al., 2021). Prenatal education courses provide mother's an opportunity to address errors and misinformation about pregnancy, labor, and postpartum issues that can create anxiety, while also lowering mental stress by expanding their awareness of the pregnant process (Mojahed et al., 2021).

After being given intervention in each group, it was found that the anxiety level of pregnant women decreased. The anxiety level in the intervention group was 19.14 ± 3.97 with a minimum score of 12 and a maximum of 26, while in the control group it was 24.86 ± 2.62 with a minimum score. 20 and a maximum of 30. This research proves that there is a significant influence between the anxiety level of pregnant women and the use of pregnant women's applications with a p value of 0.000 (intervention group) while the control group received information about anxiety with Power point media has no significant effect on the anxiety level of pregnant women with a p value of 0.102. Web-based health education is one of the most effective ways to alleviate pregnant anxiety and provide high satisfaction scores compared to conventional health education delivery (Kim & Kang, 2019). The use of mHealth has the potential to improve the psychosocial health of pregnant women (Kim & Kang, 2019). Pregnant women may benefit from interventions delivered online to help manage anxiety symptoms, as long as they have access to online contact with health professionals or a community of peers. In addition, they are more likely to be motivated to complete interventions that are deemed appropriate to their needs and conditions (Ahmadian et al., 2020; Sakamoto et al., 2022). Jayanti and Mayasari's research on health education using mobile applications is effective in reducing anxiety levels in pregnant women. Digitally delivered interventions are a potential solution to overcome barriers to accessing treatment for perinatal mental health disorders (Ahmadian et al., 2020). Mobile applications have the potential to positively influence health behaviors and health outcomes (Evans et al., 2022; Jayanti & Mayasari, 2020; Nouri et al., 2018).

The difference in anxiety levels of pregnant women before and after being given the intervention was 8.27 ± 2.99 in the intervention group and 1.50 ± 1.99 in the control group with a significance value of 0.000. This shows that the sbumil application is effective in reducing the anxiety level of pregnant women in the third trimester when facing childbirth.

This research is in line with Hwang & Jo showed that there was a significant difference between the reduction in the final stress score of the group that used the application compared to the group that did not use the application (Bricker et al., 2014). The use of smartphones is very popular, unlimited online learning and time are opportunities to increase knowledge. Increasing media in pregnant women based on the web increases satisfaction in pregnant women (F. Rahimi, Ahmadi M, Rosta F, Majd HA, Valiani MJSP, 2014). Jallo et al's research also found that using stress management applications can reduce anxiety scores felt by pregnant women. There was a significant reduction in stress scores before and after using stress management applications (Hwang & Jo, 2019).

Researchers found that pregnant women who obtained information through application media using Android understood the material provided better than pregnant women who obtained information via Power Point, this was because through the application media mothers could open and repeat the material in the application directly. independence so that mothers previously forgot about health information, especially anxiety about facing childbirth. Apart from that, the application can provide access to information anytime and anywhere, which allows pregnant women to study according to their free time. Compared to mothers who obtain information via power points, mothers can only memorize the material given during counseling. PowerPoint does not allow pregnant women to interact directly with learning materials like those in the application. Pregnant women who received health education through applications had lower levels of anxiety compared to those who only received information via PowerPoint. This is due to the greater interactivity, accessibility, personalization of information and support offered by the applications. In contrast, PowerPoint tends to be more limited in this regard and may not provide the same experience in reducing pregnant women's anxiety.

CONCLUSION

The Sibumil application has been shown to lessen the anxiety levels of pregnant women in their third trimester. More than half of pregnant women who use the Sibumil application rate it as good or very good for health education. Pregnant mothers and midwives are encouraged to use the sibumil application as a health education tool to alleviate pregnancy-related anxiety. Mobile applications can serve as a health teaching tool for pregnant women.

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