

# The Effect of Android-Based Health Education on the Autonomy of Mothers in the Fulfillment of Care in Pospartum Primipara

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## **Abstract**

**Background:** *The importance of providing education during the postpartum period may help mothers successfully pass through several important phases after delivering a birth. A Serious complication may occur if a mother fails to cope with the unexpected situation. Therefore, equipping mothers with sufficient knowledge and skills of self care is essential to avoid any risks that may happen during postpartum. Lack of knowledge and skills are two major problems that mothers usually face when doing self care. To tackle the problems, we have created an android based application called BUBI Care to facilitate a more dynamic transfer of knowledge to mothers.*

**Research Method:** *This type of research is a quasi experimental research (quasi-research) with a pretest-posttest design with a control group design. The research sample used in this study were 19 TM III pregnant women (gestational age  $\geq 38$  weeks) as many as 19 people in the treatment group and 19 people in the control group, which were in accordance with the inclusion criteria of the researcher, with the time the study was carried out from September to October 2020.. Data were collected through pretest and*

*posttest using digital questionnaires and digital observation sheets. Data were analyzed using the Wilcoxon and testthe Mann Whitney test.*

*Research Results: the findings indicated that there was a difference in the level of autonomy between the intervention group and the comparator group. The groups consist of respondents with breast care. The intervention group showed a mean score of 81.37 whereas the comparator group showed a mean score of 56.05, with a total of score difference 25.32. Furthermore, there was also a score difference between the intervention group of perineum care and its comparator group. The intervention group obtained a mean value of 78.95 while its comparator obtained a mean score of 49.26 with a total of score difference 29.69. An experiment on mothers who did postpartum exercises also showed a different mean score between the intervention and the comparator group. The intervention group obtained a mean score of 74.63 whereas the comparator group obtained a mean score of 50.53 with a total of score difference 24.01 points. In conclusion, there is a significant influence on the intervention groups in terms of the use of the android based health application.*

*Conclusion: the study indicated that there was a difference in the level of knowledge gained by the intervention group before and after being trained about the use of the apps. However, this did not happen to the comparator group. On the other hand, both of the intervention and the comparator groups experienced the improvement of self care skills and the level of autonomy after being trained.*

*Keywords: BUBI Care, knowledge, skills, independence.*

## **Background**

Postpartum period is an important period for a mother after a birth delivery. Thus, extra care for the mother and the baby is essential. Mised perceptions and behavior during

this period may harm mother's and baby's health (1). Complications such as bleeding, sepsis, and eclampsia often occur in the first week of the postpartum (2). Systematically delivered health education and the appropriate assistance for self care may help mothers deal with several changes in postpartum period and prevent any complications. The improvement of health education based self care skills for the patients can be a better way of tackling any possible complications in the early postpartum. Other studies report that (3) (4) that there is a correlation between the delivery of health education during postpartum and patient's self care ability.

The implementation of an effective self-care for mothers starts from providing knowledge, assessing skills, and drawing conclusions about the level of patient's autonomy. There are various forms of presenting information, such as printing media and electronic media (5). Smartphones are adaptively developed communication tools. The number of smartphone users continues to increase. This opens up opportunities for use to create an innovative Android-based education system, so that the achievement of knowledge transfer becomes more dynamic. Smartphone users in Indonesia are predicted to increase. In 2016 there were around 65.2 millions while in 2017, the number of users increased by 74.9 million users. This number continued to increase in 2018 where there were 83.5 million users and in 2019 it reached 92 million users (6). The presence of smartphones has made easier for us to present more visually innovative information.

Visually presented information would enhance the clarity of the objectives of demonstration. Self competence, self-confidence, and a minimum of stress are gained through exercises or demonstrations of postpartum care in the early postpartum phase (7). There are 3 components of caring needs that can be fulfilled independently in this study, namely postpartum exercise, perineum care and breast care. These 3 components may help improve personal hygiene behavior (8) (9) (10). Success in educating postpartum exercise,

perineum care, and breast care can be achieved through the improvement of patients' knowledge (11) (12) (13).

To this end, all stages of this health education were examined in an experiment using BUBI Care application.

## Research Method

This is a quasi experimental research with a pretest and a posttest design for the controlled groups. The research was conducted at a Public Health Centre in Kelayan Timur, Banjarmasin for the intervention group and the clinic of Mrs. NM for the comparator group. Averagely speaking, there are 20 people in this world. The research was conducted from 15 September 2020 until 31 October 2020. The number of samples used in this study were 19 people for the intervention group and 19 people for the control (comparator) group. The sampling technique used is a non-probability sampling technique with a purposive sampling approach (14). The instrument in this study was the BUBI Care application.

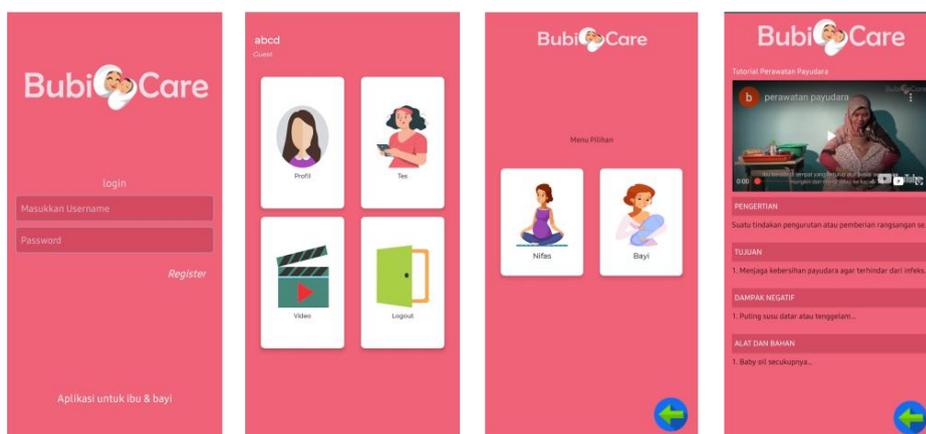


Figure s1. Aplikasi BUBI Care

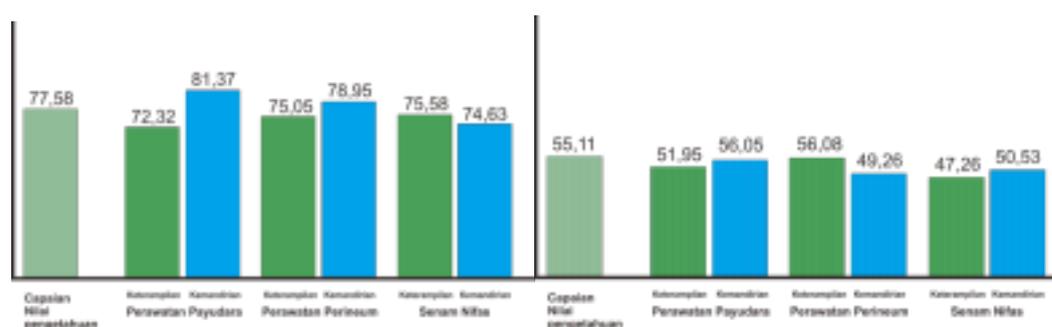
## Research Results

### 1. Characteristics of Respondents by Age, Education and Occupation Table 1.

#### Characteristics of Respondents

Characteristics of respondent		The intervention group		The controlled (the comparator) group	
		n	%	n	%
Age	High risk				
	< 20	2	11	4	21
	No risk				
	20-25	9	47	12	63
	26-30	4	21	3	16
	31-35	4	21	0	0
Total		19	100	19	100
Education	Low				
	Elementary school	1	5	0	0
	Junior high school	1	5	2	11
	University				
	Senior high school	16	85	17	89
	Undergraduate	1	5	0	0
Total		19	100	19	100
Jobs	Housewife	17	90	17	90
	Self employment	1	5	2	10
	State employee	1	5	0	0
	Total	19	100	19	100

### 2. knowledge, skills & autonomy in the group



### **3. The Effect of Android-Based Health Education on Knowledge of Primiparous**

#### **Mothers regarding their autonomy in Postpartum Care**

Results of the knowledge test stage for the intervention group shows a significant difference was obtained through the Wilcoxon Test with a P Value of 0.000. At the pretest stage, the treatment group got the test results with a good knowledge category of 0%, but after being given treatment (education based on Android / BUBI Care) at the time of the post test, the test results in the intervention group increased to 63%. The increase in knowledge score occurred after health education was provided (15) (16). It can be understood that systematic delivery of health education strengthens the quality of knowledge attainment (17). The factors that affect a person's knowledge include age, education, and occupation (18). Those factors can determine whether the information is easy to absorb or not. Age, education and occupation can help primiparous postpartum mothers understand the information about the urgency of self care during postpartum (19) (20).

The scope of discussion includes the function of BUBI Care educational platform, which contains videos, to meet the needs for knowledge of postpartum mothers. Three previous studies discussing about video-based health education and presenting proper health education through online videos indicate the improvement of users' behavior towards the instructions in health improvement (21), and show an interest in the use of digital-based media (22).

The availability of media such as BUBI Care platform has statistically impacted on changes in postpartum mothers' knowledge. The application of technology in education, especially postpartum care, facilitates the development of systematic care practices, risk prevention, increased knowledge, increased self-confidence and increased motivation

(23).

In controlled group, the results of the pre-test was 0%, but after post-test the the controlled group was able to reach an increase by 5%. The statistical test used in the Wilcoxon test noted that the control group obtained a mean value of 51.21 at the pretest stage and the score was obtained with an increase of only 3.9 points to 55.11. The P value in the controled group was 0.071, meaning that there was no difference before and after being trained to use the apps. There are two methods of gaining knowledge, namely conventional methods, including personal experience, thinking, tradition to experimentation (5). The intervention group that was given training on how to use BUBI Care application was far more technically ready than its comparator group. The results of the study indicated that women who had passed prenatal education obtained higher scores in quality of life and physical health dimensions compared to the comparator group (24).

The differencess in achievement are also due to the differences in interventions (25). The intervention group that used BUBI Care has measurable and predictable value achievements.

#### **4. The Influence of Android-Based Health Education on the Autonomy of Primiparous Mothers in doing self care during Postpartum Period**

Based on the results of knowledge test, which was carried out using Wilcoxon Experiment with P value 0,000, there was a significant difference between the intervention and the comparator groups. At the pretest, the intervention group showed an increase in the score of knowledge test by 63%. This is because the group was given an intervention of how to use the BUBI Care apps. The knowledge transfer resulted in the increase in knowledge test score.

Skills are the application of knowledge so that a person's skill level is related to the level of knowledge (26). Education given in the early postpartum phase was effective (27). Skills of postpartum care by applying appropriate treatment techniques are theoretically a critical success factor in maintaining the physiological and psychological conditions of the postpartum mothers. In accordance with the research stages, the intervention group was given the introduction, knowledge testing, explaining the flow of information access until they were asked to perform perineal care, breast care and postpartum exercise independently. The duration of time given to study in the intervention group was D-14 labor to H + 5 delivery. Meanwhile, the controlled group was not given any media in the range of D-14 labor to H + 5 delivery.

Based on the results of statistical tests using the Mann Whitney test, the mean scores obtained by the intervention group after being observed were breast care 72.32, perineal care 75.05 and postpartum exercise 75.58. This mean values indicate that the percentage of skill level achievement contained in the operational definition table is in the high and medium skill category. The results of the observation of skills in the intervention group in terms of the literature aspect show that the factor affecting skills is knowledge. Significant changes through the Wilcoxon Test with a P Value of 0.000 on the knowledge test are statistically in line with the increase in the score care skills. Having clarity on the actions to be carried out certainly makes it easier for postpartum mothers to implement the stages of actions correctly. The achievement of competence was greatly assisted by the increased exercises or demonstrations of postpartum care in the early stage postpartum (28).

In the control group, statistical tests using the Mann Whitney test noted the mean value of breast care of 51.95, perineal care of 56.68, and postpartum exercise of 47.26. This low achievement was again associated with the low level of knowledge attained by the mother with a P value of 0.071. As it is seen in the knowledge analysis, the test

results in the pre-test stage showed a score of 0% in the good knowledge category, but at the time of the post-test, the test results in the controlled group only reached 5%. In terms of knowledge attainment, the modalities in implementing postnatal care skills are not fulfilled. The controlled group was also dominated by respondents from senior high school education background (89%). The majority of respondents' job category in the controlled group was housewives (90%). Theoretically, age, education, and occupation affect the level of understanding, ability to understand the information, and experiences. In addition, the presence of media or technology also affects knowledge in determining healthy behavior (29).

The achievement of the intervention group, namely the average value of breast care was 20% higher than the comparator group, the average value of perineal care was 18% higher than the comparator group and the postpartum exercise average score was 28% higher than the comparator group.

The statistical analysis result of Mann Whitney test, which was calculated by comparing between the intervention group and the controlled group, concludes that the intervention group was statistically better than the controlled one. This means that the better the level of knowledge of the postpartum mother, the better the self care skills the mother possess.

## **5. The Effect of Android-Based Health Education on the Autonomy of Primiparous Mother in the Fulfillment of Postpartum Care**

There are 5 levels of independence, namely independent, mild dependence, moderate dependence, heavy dependence and total dependence. Of these 5 levels, we can easily determine the level of independence shown by postpartum mothers. This level of independence determines the level of independence even though it does not reach 100 percent.

In the intervention group, using the Mann Whitney test, the mean values obtained were; breast care of 81.37, perineal care of 78.95 and postpartum exercise of 74.63. Conversely, in the controlled group, the mean scores were breast care of 56.05, perineal care of 49.26 and postpartum exercise of 50.53.

The differences in mean scores between the two groups cannot be separated from the audio visual media presenting information regarding knowledge, attitudes, and behavior (30). By introducing the BUBI Care application to the intervention group, consisting of perineal care, breast care, and postpartum exercise, it may help mothers improve their self care skills so that they can do it independently. Post-partum mothers would more easily apply the knowledge they get so that there is no difficulty in implementing the stages one by one. The high percentage of achievement of knowledge and skills in this intervention group provides an opportunity to achieve the level of independence for the independent category. Good values of knowledge and skills are certainly followed by good values of independence. This is inseparable from the effect of the treatment given to postpartum mothers to determine what action to take. The theory states, the factors that affect the independence of postpartum mothers in taking action, one of which is the knowledge factor (31). Therefore, it can be concluded that the media increasing knowledge helps to achieve skills and independence for postpartum self-care.

## **Conclusions**

1. There are differences in the level of knowledge of primiparous postpartum mothers before and after being given education through the BUBI Care application in fulfilling postpartum care independently.
2. There is no difference in the level of knowledge of primiparous postpartum mothers before and after the knowledge test was given or not given.
3. There are differences in the skill level of primiparous postpartum mothers after being given

the BUBI Care application both in the intervention group and the comparator group in fulfilling postpartum care independently.

4. There is a difference in the level of independence of primiparous postpartum mothers after being given the BUBI Care application both in the treatment group and the comparator group in fulfilling postpartum care independently. In conclusion, the  $H_0$  is accepted, means that there is an effect of providing android-based health education on the role of primiparous postpartum mothers in fulfilling postpartum care independently.

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