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Android-Based Education toward the Role of Postpartum Primipara Mothers in Fulfilling the Independent Perinium Care

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ABSTRACT

Background: Educating mothers during their postpartum period could potentially help them to overcome some important phases after giving birth. The process of education is evaluated based on the mothers' knowledge about their independent self-care. Independency is an activity that is started individually and is done based on self-capability. The independency in the postpartum care is not only important to decrease the mother's mortality and morbidity rate, but it is also crucial to strengthen and improve the post-partum mother's healthy behavior during the perineal care. Providing education using Android-based application called BUBI Care could be potential to facilitate a more dynamic transfer of knowledge to the postpartum mothers.
Aims: To analyze the knowledge, skills, and independence of primipara postpartum mothers in independent perineal care before and after accessing BUBI Care app.
Research Method: employing quasi experimental research with pre-test and post-test design with control group design. The sample for this research were 19 pregnant mothers TM III (pregnancy age of ≥ 38 weeks) on each group. The treatment group was educated using BUBI Care Android app that was conducted at one of Public Health Center. The control group was educated without BUBI Care that was conducted at a Midwife Practice Clinic. The research was conducted on September to October 2020.
Study Result: According to the Wilcoxon test, there was a difference in the pre-test knowledge of the treatment and control groups with the similar median of 53 and p-value of 0.666, the treatment group showed their scores improved to 80 on the post-test

while the control group stayed at 53 with the p-value of 0.000. It means that BUBI Care app education influences the post-test. On the other hand, the perineal care skill saw a difference between the intervention and control groups. The intervention group had a mean of 70.05 and 56.68 for the control group with the p-value of 0.002 which means that there was an influence from the BUBI Care app education. Additionally, Mann Whitney test showed that the intervention group had a mean score of 78.95, but the control group only had 49.26, the total difference between the two are 29.69 with the p-value of 0.000. It can be concluded that there is a significance in difference in the independency rate from the provision of BUBI Care Android app education.

Conclusion: there is a significance effect on the intervention group in terms of Android based usage.

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

BACKGROUND

Change that happens after giving birth occurs on the psychological aspect on the first and second day where the mothers' focus is concentrated toward her-self needs, they act passively and needy. Mothers will start to become independence toward her needs until the tenth day. On week 5-6, mothers are able to bear their self responsibility. The mother's adaptation toward her role as a parent is marked by three phases, the Taking In phase is a condition where a female is dependent to her husband, family, and healthcare giver. Taking Hold phase is a condition that where a mother shows the need for attention in the forms of care, accepting information from others, and doing every care independently. Letting Go phase is a phase where she accepts her responsibility as a mother. The formulation of these adaptation stages happens horizontally and proportionately to help the physical and psychological state of the mother. Postpartum period is a crucial time for mother's health, so both the mother and the baby require a good care. Incorrect perception and attitude during the postpartum period can cause complications and risking the mother's and baby's health like bleeding, sepsis, and eclampsia which mostly occur during the first week of postpartum.

Systematical health education as well as correct guidance for self-care can assist mothers to overcome some changes during the postpartum period and preventing complications. Improving the patient's self-care skills that is based on the health education is a better way to anticipate the possibility of complications at the beginning of the postpartum. Studies conducted by Yugistyowati, Anafrin and Fitriani (Fitriani, 2019; Yugistyowati & Anafrin, 2013) who asked post section cecaria postpartum mothers about their self care deficit and ability rate reported that there is a relationship between the health education sharing given during the postpartum period and the patients' ability to care for themselves. This research is different since the respondents are pregnant mothers who are in their third trimester with the pregnancy age of ≥ 38 weeks with an Android app called "BUBI Care" as the education media that focuses on perineal care special area. The knowledge sharing was given on the first meeting which was preceded by a multiple choice pretest using BUBI Care Android app to mothers who are due in 14 days, it was continued by giving them explanations about the learning materials and then they can study independently from 14 days before the due date and until 5 days after the postpartum. The second meeting was conducted on the fifth to tenth day after the birth to conduct the posttest and observe the mothers' independency level in terms of perineal care. The education materials included electronic media (Notoatmodjo, 2012).

The use of smartphone in Indonesia is predicted to rise, in 2016 there were 65.2 million users, while in 2017 the number of users increased to 74.9 and in 2018 it rose to 83.5 million and in 2019 it reached 92 million users (Mirzaee, Khadijeh, Ghadikolaee, Oladi, et al., 2015). These postpartum mothers have and can operate the smartphone well. The BUBI Care app contains materials like perineal care that is aimed at helping postpartum mothers to care for themselves independently with their own capabilities, raising their self esteem (Mbombi et al., 2017). There is a need for caring that can be done, like having empathy, showing concern and providing care with competent capabilities, providing a sense of security and comfort that can help provide opportunities to encourage mothers becoming independent in performing confident and positive perineal care. These components can help improve the patient's personal hygiene behavior (Eliyanti, 2017; Tulas & Prety, 2017; Wendari & Febri, 2013).

Success in conducting education based on the BUBI Care app for perineal care can be achieved through increasing knowledge and skills which leads to independence (nursalam, 2015; sukmarani, 2018; wibowo, 2017). The quasi experiment will be

conducted using the BUBI Care smartphone app, before it is used, a validation test was conducted by three experts: question validator expert scored the app 95% very suitable, materials validator expert scored 88,33% very suitable, Media/IT validator expert scored BUBI Care 85% very suitable. To use BUBI Care, there are some steps that should be taken, in the first stage, there is a respondent's log in menu, where they get into the BUBI Care app. This feature is intended to assist the researchers to access the respondents' identity. The second menu is the knowledge test, where users will have to answer a questionnaire consisting of 5 questions about perineal care with response choices which is true or false by ticking on the choice that is considered to be appropriate (Meiliawati, 2018).

The results of the questionnaire will be presented in the form of score draft, so researchers can directly understand and compare the knowledge level of mothers in getting the information from the BUBI Care app (Marculino & Eryjosy, 2016). Third, the tutorial videos that were embedded to the materials about the perineal care also contains images. Fourth, the observation sheet to measure user's skills. It is a digital observation sheet to measure the level of mother's skill in practicing the steps in the perineal care. Fifth, the observation sheet to measure the mother's independence level in practicing the steps in perineal care. The presence of smartphone has become a basic need for people as a media for daily communication, it serves as a tool to operate various apps that help them work as well as a media to save data, it eases researchers in conducting the education using the Android-app-based education, BUBI Care. Users can learn the materials about perineal care multiple times, while carrying the device everywhere.

OBJECTIVE

The main objective of this study was to analyze the effect of Android-app-based education using BUBI Care for the treatment group and not using the application for the control group toward the role of primipara mothers in fulfilling their postpartum care independently at Kelayan Timur Public Health Center and Mrs. NM's Independent Midwife Practice Clinic. The specific objective of this study was to find out the result of the difference between primipara postpartum mothers' knowledge before and after being educated in fulfilling their perineal care independently to the treated group using BUBI Care app and not using the app for the control group. To find out the difference in skills between primipara postpartum mothers after being educated in terms of fulfilling their perineal care independently on the treated group using the BUBI Care app and not using for the control group. To find out the difference on the level of independency for primipara postpartum mothers after being educated about fulfilling their perineal care independently for the treated group using BUBI Care app and not using for the control group.

METHODS

This research employed quasi experimental method with pretest-posttest with control group design that consisted of treated group who were educated using the Android-app-based media BUBI Care, while the control group who were not given the treatment. This method is taken in order to see the difference in knowledge, skills, and independence among postpartum mothers in practicing their perineal care before the pretest and after the posttest both in the treated and control groups.

The population for this research was 40 third trimester pregnant mothers with the pregnancy age of more than 38 weeks. The number of the sample was consulted to the Isaac and Michael tables with 5% as the margin of error which resulted in 19 people

for each group. The sample was chosen using a non probability sampling called purposive sampling which a sample is taken based on certain considerations and predetermined criteria. The inclusivity criteria are the third trimester primigravida pregnant mothers with the pregnancy age of more than 38 weeks, having Android smartphone, can read and write, willing to be a respondent, residing in the place of the study, ≤ 35 year old, and finishing a series of the research steps (Approach & Community-based, 2019).

The devices that were used contained BUBI Care Android app that has respondent's log in menu as the first stage for the respondents to get into the BUBI Care app. This feature was intended to ease the researchers to access the respondents' identity. The figure is as follows:

Figure 1. Respondent's Log In Flow

Second stage: A digital questionnaire to measure the knowledge. In BUBI Care app, the user will get the knowledge test menu. The questionnaire will test the knowledge by only selecting either false or true. This test consists of 5 questions about perineal care. The result of this test will be presented in form of score draft, so the researchers can understand and compare the level of mothers' understanding in absorbing the information from the BUBI Care Android app in absorbing information from the BUBI Care android application media. The figure is as follows:

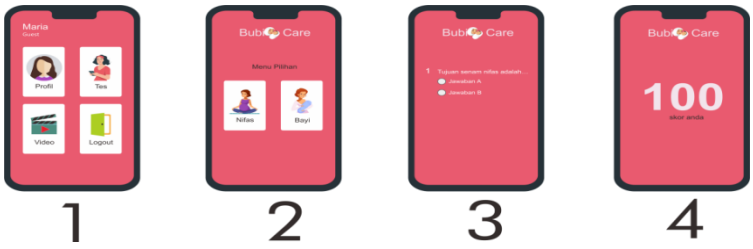

Figure 2. Knowledge Test In The Pretest Stage Flow

According to Arikunto (2013), the scoring standard that is implemented in the system is: Good: if > 76 %, Sufficient: if 60-75 %, Poor: if <60%.

Third stage: The tutorial videos that are embedded in the BUBI Care app about perineal care This figure shows the responden't log in and skill observation flow:

Figure 3. Respondent's Log In Flow

This stage observes the level of skills. The next option menu in BUBI Care app is the observation sheet to measure the skills. It is aimed to measure the level of mother's skills in practicing the stages in perineal care from the tutorials.

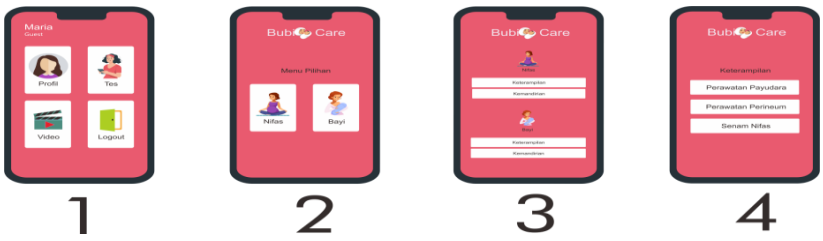

Figure 4. Skill Observation Flow

The scoring standard that is implemented in the system in which is in accordance with the number of criteria according to (nursalam, 2015) is: Highly Skilled : if 76-100%, Moderately Skilled : if 56-75%, Low Skilled : ≤ 56 %.

Fourth stage: The observation sheet to measure mother's independency. The next option menu in the BUBI Care app is the Observation sheet to measure independency in practicing the perineal care which can be seen from the figure below:

Figure 5. Observation Sheet To Measure Independency

To measure independency, the system is set to use the independency level categories (Saryono, 2011) which is: Category 1: Independent (81-100%), Category 2: Slightly dependent (61-80%), Category 3: Moderately dependent (41-60%), Category 4: Highly dependent (21-40%), Category 5: Fully dependent (0-20%). The result of analysis using Wilcoxon test is a nonparametric test which is used to measure the difference between the average of two paired sample groups (dependent) or not to analyze the observed paired data whether they are different or not. The method that was used in this research was pre-posttest design that see the difference of primipara postpartum mothers' knowledge in terms of independent perineal care before and after getting BUBI Care appin the treatment group and not getting the app in the control group. Mann whitney test which is a nonparametric test was used to measure the difference in median of two free groups if the data scale of the dependent variable is ordinal or interval/ratio but is not normally distributed. The data analysis in this research was intended to analyze the difference of median between primipara postpartum mothers' skill level in independence perineal care after they have been given BUBI Care app, and have not been given the app for the control group.

RESULTS

1. Respondents' Characteristics

This research was conducted in two locations which are Kelayan Timur Public Health Center and Mrs. Neneng M's Independent Midwife Practice Clinic, in which the respondents' characteristics analysis is as shown in the table below:

Tabel 1. Frequency distribution of respondent's characteristics from the treatment and control groups at Kelayan Timur Public Health Center and Mrs. NM's Independent Midwife Practice Clinic

Respondents' Characteristics	Treatment Group		Control Group	
	n	%	N	%
Age				
< 20	2	11	4	21
20-25	9	47	12	63
26-30	4	21	3	16
31-35	4	21	0	0
Total	19	100	19	100
Education				
Elementary	1	5	0	0
Junior High School	1	5	2	11
Senior High School	16	85	17	89
Bachelor Degree	1	5	0	0
Total	19	100	19	100
Occupation				
HOUSEWIFE	17	90	17	90
PRIVATE SECTOR	1	5	2	10
TEACHER	1	5	0	0
Total	19	100	19	100

Note : Primary Data 2020

According to the respondents' frequency analysis, the majority was on the age range of 20-25 years old which accounts for 47% in the treatment group and 63% in the control group. In level of respondents' education, mostly graduated from Senior High School which was 85% or the treatment group and 89% of the control group. Meanwhile, mostly they work as Housewives which accounts for 90% of both groups.

2. Knowledge

a. Difference analysis on the respondents' knowledge before and after being educated through BUBI Care app for the treatment group and not given the app for the control group can be seen in the table below:

Table 2. Respondents' knowledge difference before and after they have given the BUBI Care app for the treatment group at Kelayan Timur Public Health Center and Mrs. Neneng M's Independent Midwife Practice Clinic

Group	*Pretest* Knowledge		*Posttest* Knowledge		Difference	*P Value*
	Mean	Median (MinMax)	Mean	Median (Min-Max)	Mean post-pre	
Treatment	50.16	53(27-73)	77.58	80(49-93)	27.42	.000

Control	51.21	53(27-67)	55.11	53(33-80)	3.9	.071

According to the *Wilcoxon* test, before being educated using Android-based BUBI Care app, it is found out that 19 respondents have the mean value of 50.16 with 27 as the lowest score and 73 as the highest score. However, after being educated using BUBI Care app, there is an improvement with the Mean of 77.58 with 49 as the lowest score and 93 as the highest score. This result shows that there is a significant difference in the terms of knowledge increase before and after beging educated using Android-based BUBI Care app about perineal care with the p-Value of 0.000 (<0.005). Meanwhile, on control group without application, the mean value before is 51.21 with 27 as the lowest score and 67 as the highest score, and after they have been educated it rises to 53 with the lowest score of 33 and highest score of 80. This result shows that there is not any difference in the improvement of knowledge before and after they have been educated about perineal care with the p-value of 0.071(> 0.005).

The analysis of respondents' skill difference for the treatment and control groups in doing perineal care. According to Mann whitney test, it is found out that the treatment group have the mean of 75.05 and median of 78 in perineal care skill, 44 is the lowest score and 89 is the highest. On the other hand, the control group have the mean score of 56.68 with the median of 56, with the lowest score of 22 and highest score of 78. The results indicate the p-value of 0.002 (<0.05) which means that there is a difference in the perineal care skills when the education was given through BUBI Care Android app compared to when it was educated to the control group without the app.

b. Frequency analysis of respondent's independency in perineal care on the treatment group at Kelayan Timur Public Health Center and the Control Group can be seen as follows:

Table 3. Frequency distribution of the respondent's independency in perineal care on the treatment group at Kelayan Timur Public Health Center and Control Group at Mrs. Neneng M's Independent Midwife Practice Clinic

Category	Perineal Care Independency			
	Treatment Group		Control Group	
	n	%	n	%
Independent	9	47	2	11
Slightly Dependent	8	42	4	21
Moderately Dependent	2	11	6	31
Highly Dependent	0	0	7	37
Fully Dependent	0	0	0	0
Total	19	100	19	100

Note: Primary Data, 2020

The result of the frequency distribution analysis on the mother's independency in perineal care on the treatment group is, 47% is independent, 42% slightly dependent, 11% dependent. Meanwhile, the control group is 37% highly dependent, and 37 % moderately dependent, and only 11 % is independent. After the Mann whitney test was done on the treatment group, the

mean score is 78.95 with the median of 78, lowest score of 56, and highest score of 94; however on the control group the mean score is 49.26 with the median of 44 and the lowest score of 22 and highest score of 83. This result shows that the p value is 0.000 (< 0.05) which indicates that there is a difference in the level of independence on perineal care between treatment group who were educated using BUBI Care Android app compared to the independence level on the control group who did not use the app.

DISCUSSION

1. The effect of BUBI Care Android-based education toward the Knowledge of Primipara mothers regarding the perineal care toward the primipara postpartum mother's independence

Knowledge is the result of knowing, and this happens when someone senses to a certain object. Sensing happens through human's five senses, which are sight, hearing, smelling, tasting, and touching. Most of human knowledge is gathered through eyes and ears. Knowledge or cognitive is an important domain to shape somebody's behavior (know), comprehension, application, analysis, synthesis, evaluation (Notoatmodjo, 2012). From these six stages, this research will only get to the third stage which is application, application is defined as an ability to use materials that have been learned on a real situation or condition in which the respondents get the skills to do perineal care after they have been educated using Android-based BUBI Care. Knowledge on the treatment group before and after received education using Android-bases BUBI Care show a significant difference with the p-value of 0.000 (<0.005) because BUBI Care app can increase the passion and learning interest, easing the educators in explaining the materials in a more interesting and interactive way, prioritizing the excellence of user experience and user interface that contain audio and video-based information about perineal care (Ghiasvand, 2017). On the other hand, the control group who did not access the app do not show any difference in before and after they educated with the p-value of 0.072 (> 0.05). Knowledge has an integral part to shape one's behavior and self esteem (Mubarak, 2012). Respondents' knowledge, behavior, and self esteem about perineal care will be great assets to them (Zhang, 2018). Knowledge can be influenced by some factors. In this research, researchers analyzed the respondents' characteristics, which are education, as a factor where most of the respondents graduated from Senior High School 85% and Bachelor Degree 5% on the treatment group and 89% on the control group. As graduates from Senior High School, they have experienced how to get knowledge through education. Their learning experiences will shape them to extend their knowledge and skills and they can improve their decision making (Rohim, 2017). It cannot be denied that the higher one's education level, the higher they will absorb the information in which will result on the more knowledge they will get. On the other hand, if one's education level is low, it will hinder their attitude development toward receiving new information and values (Notoatmodjo, 2012). The result of research that was done by Purwati shows that the level of knowledge is influenced by education, the higher the education, the

better the level of knowledge (Zhang & Yongwen, 2018). The correct video-based health education and delivery through online videos show the improvement on the users' attitude toward the improvement of health (Bahrami, 2013), and show an interest in the use of digitally based media (Ghiasvand, 2017).

2. The effect of Android Based Education toward the skills in perineal care in Primipara postpartum mothers

   Skill is the ability to make use of thought, reasoning, idea, and creativity in doing, changing, or making something into more meaningful so it results into a value from that work (Nur, 2020). The education that was provided to the respondents are about perineal care. Perineal care is an effort to fulfil the need of comfortability by keeping the healthiness of the area between thighs that is between the anus and vagina for the women who have delivered so they will not get infections (Mirzaee, Khadijeh, Ghadikolaee, & Shakeri., 2015). The ability in the treatment group in doing the perineal care is shown with the mean score of 75.05 and median score of 78, where the lowest score is 44 and the highest score is 89. The median score of 78 is considered as highly skilled since the standard is 76-100%, the criteria is met since they have good memory to remember the materials that was given through BUBI Care Android app. This is due to the BUBI Care Android app-based education includes the media by design category that has been planned to become a learning so the education is set to the goals that will be aimed to ease the respondents in understanding the materials or the skills. The competencies reached were evaluated on the fifth day after the delivery and the mothers were assisted with early postpartum training improvements or caring demonstration (Yuniar, 2016). Factors that affect skills are knowledge, education, experience, environment and facility, habit, culture, and age (Notoatmodjo, 2012). Meanwhile, the control group have the mean score of 56.68 with the median of 56, the lowest score is 22 and the highest score is 78. According to the median of 56, it fulfils the standard of 56-75%, on the control group who did not use media or BUBI Care (Komariah, 2018). This is not yet achieving the individual skill in the learning of perineal care skills (Asmuji & Indriyani, 2016). The result of Mann whitney test shows the p-value of 0.002 (<0.005) means that there is a difference in the perineal care between the Android-based BUBI Care app toward the education without BUBI Care. The use of learning/education media acts as the source of learning. Here lies the activeness, as the distributor, conveyor, connector, and so on, can improve the attention toward the materials given. Every person has the inhibitory nerve cell, a special cell in their nerve system that releases some incoming sensations (Burapasikarin et al., 2020). This inhibitory nerve can focus its attention to the stimulus that it considers interesting and releases other stimuli (Zhang & Yongwen, 2018). Knowing what they want to do surely ease the respondents to apply the care stages correctly (Yuniar, 2016).

3. The Effect of Android-Based Education using BUBI Care toward the Primipara mothers' independency in doing the perineal care.

Independency is an activity that starts individually and is done according to one's capability. The postpartum period is the time to revocer the health, both physically or psychologically. Independency in self care during postpartum period is important so that the health recovery is achieved early because by stimulating exercises the dopamine adrenaline hormone is released in increasing the energy to do activities (Missiriya, 2016; Tulas & Prety, 2017). There are five stages in independency that can be done according to one's independent ability including slight dependency, moderate dependency, heavy dependency, and full dependency (Zhang & Yongwen, 2018). In this research, after the treatment group have been educated about the perineal care using the BUBI Care app and the control group have not been educated without the app, an evaluation on their knowledge, skill, and independency in doing the perennial care was done. The analysis of the Mann whitney test reveals that the treatment group with the median of 78 can be categorized into slightly dependent with the standard of 61-80% which means that the respondents are able to independently do the perineal care. Knowledge and skill factors after they have been treated become the positive triggers that affects themselves to become independent. It shows that the Android-based education app BUBI Care can influence the independency. The independency that was achieved lies on the knowledge and age factors because the more a mother is not on her risky age, the more independent she cares for herself (Tara Shah, 2016). On the control group, the median is 44 which is in category 3 or moderately dependent with the standard of 41-60%. The control group was influenced by several factors such as knowledge, age, culture, motivation, mother's experience, principal beliefs, and fatigue level (Mbombi et al., 2017). The test reveals that the p value is 0.000 (<0.05) which shows that there is a difference in the perineal care independency on the treatment group with Android app education using BUBI Care compared to the control group who did not use the app (Komariah, 2018). BUBI Care acts as the educator assistant in making the educational material delivery clearer and help respondents to understand the knowledge, skills, and independency (Yuniar, 2016).

CONCLUSION

It is discovered that there is a difference on the level of knowledge, skills, and independency of the primipara postpartum mothers after they have been educated about the perineal care independently on the treatment group using the BUBI Care app compared to the control group

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