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The effect of android-based education on the knowledge increase about pregnancy discomfort and anxiety reduction in pregnant women during the COVID-19 Pandemic

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ABSTRAK

Latar Belakang *Kehamilan suatu proses yang alamiah (normal) yang dialami seorang perempuan. Pada masa kehamilannya akan mengalami perubahan fisik dan psikologi. Dari perubahan yang dialami tersebut ibu hamil mengalami suatu ketidaknyaman dan perubahan perasaan baik senang, kekhawatiran dan kecemasan. Saat ini seluruh dunia sedang mengalami pandemic covid-19. Keadaan inilah yang membuat peningkatan rasa kecemasan ibu hamil dikarenakan ketidaktauan ibu tentang cara penanganan ketidaknyamanan kehamilan. Memasuki era digital 4.0 maka agar lebih mudah diakses dalam memberikan edukasi dan informasi salah satunya menggunakan android.*
Tujuan: *Untuk mengetahui pengaruh edukasi berbasis android terhadap penanganan ketidanyamanan dan penurunan kecemasan pada ibu hamil di masa pandemi Covid-19.*
Metode: *Desain menggunakan quasy experimental dengan pendekatan control group time series design. Sampel penelitian ibu hamil sejumlah 120 orang. Pengambilan sampel secara simple random sampling kemudian dibentuk menjadi 2 kelompok yaitu kelompok eksperimen dan kelompok kontrol. Instrumen yang menggunakan aplikasi android Busevid "Bumil Sehat di Masa Covid" dan kuisioner yang dirancang oleh peneliti yang telah diuji expert dan diujicobakan. Analisa data dalam penelitian menggunakan Manova dengan GLM Repeated Measures.*
Hasil: *Peningkatan pengetahuan tentang ketidaknyamanan pada kelompok android sebesar 43,77 pada post-test 1 dan 59,98 pada post-test 2 dan pada kelompok lefleat sebesar 17,18 post-test 1 dan 35,92 post-test 2. sedangkan penurunan kecemasan pada kelompok android sebesar 16,90 pada post-test 1 dan 28,65 post-test 2 sedangkan pada kelompok lefleat sebesar 4.35 post-test 1 dan 5,10 post-test 2. Didapatkan p-value 0,000 < 0,05 menunjukkan ada pengaruh edukasi berbasis android terhadap penanganan ketidaknyamanan dan penurunan kecemasan pada ibu hamil di masa pandemi Covid-19.*
Kesimpulan: *Aplikasi android dapat memberikan perubahan yang signifikan terhadap peningkatan pengetahuan tentang ketidaknyamanan dan penurunan kecemasan pada ibu hamil di masa pandemi Covid-19, sehingga android dapat dijadikan alternatif dalam memberikan manfaat positif dalam media edukasi dan promosi Kesehatan.*

KATA KUNCI*: edukasi berbasis android; kecemasan; ketidaknyamanan; ibu hamil; covid-19*

ABSTRACT

Background*: Pregnancy is a natural process experienced by a woman, during which there will be physical and psychological changes. Pregnant women may experience discomfort and change in feelings such as happy, worry and anxiety due to those changes. Currently, the whole world is suffering from the COVID-19 pandemic. This situation causes an increase*

of anxiety in pregnant women because of their ignorance about how to handle pregnancy discomfort. Entering the digital era 4.0, android can be utilized so that education and information can be more easily accessible.
***Objective**: To determine the effect of android-based education in handling discomfort and reducing anxiety in pregnant women during the Covid-19 pandemic.*
***Methods**: This research employed a quasi-experimental with a control group time-series design. There were 120 pregnant women used as samples. A simple random sampling was carried out to obtain those samples which then formed into 2 groups, namely the experimental group and the control group. The instrument used were the Busevid (Healthy Pregnant Women in the COVID-19 Period) android application and a questionnaire designed by the researchers which had been evaluated by the experts and tested. Then, the Manova with GLM repeated measures was utilized to analyze the data.*
***Results**: The increased knowledge of discomfort in the android group was 43.77 in the post-test 1 and 59.98 in the post-test 2, while the leaflet group was 17.18 in the post-test 1 and 35.92 in the post-test 2. The anxiety reduction in the android group was 16.90 in post-test 1 and 28.65 in the post-test 2, while the leaflet group was 4.35 in the post-test 1 and 5.10 in the post-test 2. The p-value was 0.000 <0.05, indicating that there was an effect of android-based education on handling discomfort and reducing anxiety in pregnant women during the Covid-19 pandemic.*
***Conclusion**: Android application can provide a significant change in increasing knowledge about discomfort and decreasing anxiety in pregnant women during the Covid-19 pandemic, so that android can be used as an alternative in providing positive benefits in education media and health promotion.*

KEYWORD *: android-based education, anxiety, discomfort, pregnant woman, covid-19*

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INTRODUCTION

The process of pregnancy will lead to various changes ranging from physical changes and psychological changes. The hormonal change is one of the causing factors. These physical and psychological changes cause pregnancy discomfort. Every pregnant woman will go through different phases and developments as well as discomforts during pregnancy, starting from the 1st trimester, 2nd trimester and 3rd trimester. Thus, the needs of every pregnant woman are also different (1). The feeling of discomfort, anxiety, worry caused by these physical and psychological or emotional changes requires good understanding and knowledge so that pregnant women can be independent in undergoing pregnancy (2). This is exacerbated by the COVID-19 pandemic. Do not let the Covid-19 pandemic increase the maternal mortality rate (MMR) (2).

According to the data taken from WHO on September 9, 2020, the spread of Coronavirus disease 2019 (Covid-19) was recorded from 216 countries. There were 27,236,916 confirmed cases and 831,031 deaths (3). Meanwhile, in Indonesia alone on the same date, there were 200,035 confirmed cases, 8,230 deaths and 142,958 cured rates. The high number of Covid-19 patients being treated at referral hospitals greatly affected maternal and neonatal referral services (4). On March 11th, 2020, WHO declared this outbreak to be a pandemic

outbreak that spread rapidly to several countries (5). This situation also affected pregnant women who were also included in the group of patients susceptible to Covid-19 symptoms. The clinical presentation in pregnant patients with Covid-19 may be atypical with normal temperature (56%) and leukocytosis (6).

Research by Wang et al., showed that the incidence of anxiety symptoms (59%) increased above the threshold score based on a previous pre-COVID-19 cohort study assessing symptoms in pregnant women with a similar demographic profile. The results of a survey of the Chinese population at the beginning of the COVID-19 outbreak, 29% reported experiencing moderate to severe anxiety (7). The elevated levels of anxiety symptoms in this high cohort of pregnant women suggest that the psychological impact of the outbreak may be of particular concern to pregnant individuals. So that efforts are needed in providing information specifically so that pregnant women can overcome the discomfort and anxiety to create healthy conditions for the mother and baby. From research in the United States, it shows the prevalence of an increase in anxiety symptoms, in general in 2019 it was 16%. Meanwhile, based on meta-analysis, the percentage of pregnancy anxiety is 18-25% (8). Meanwhile, during the COVID-19 pandemic, there was a significant increase in anxiety in pregnant women to 59% based on a cohort study (7). The percentage of anxiety in pregnancy is increasing due to the COVID-19 pandemic.

Fear of not being able to perform an adequate Antenatal Care examination during this pandemic is a triggering factor for anxiety in pregnant women due to the emergence of various other symptoms and diseases or discomfort in pregnancy that should be normal but can become abnormal (9). During pregnancy, pregnant women still have to do prenatal care. Many efforts have been suggested and developed so that pregnant women can still conduct consultations regarding their pregnancy, such as drive throughs or via telephone and video conference. This is to reduce the risk of transmitting the virus to pregnant women (10). In addition, husband's support and husband's attitude in dealing with the COVID-19 pandemic also plays a role in the mental health of pregnant women (11). For that we need a clear information media in order to provide education. Education is very necessary in order to provide knowledge and insight to increase knowledge of pregnant women both in reducing anxiety and increasing knowledge in maintaining the health of mothers and babies during pregnancy during the COVID-19 pandemic.

The government carried out an effort to stop the spread of the virus with the "5M" program: washing hands, wearing masks, maintaining distance, staying away from crowds, and reducing mobilization (2). Information can be easily spread and accessed through several means, one of which is android. It is a Linux-based operating system designed for a touch screen mobile devices such as smartphones. Android-based learning or educational media has several advantages, for instance it has an attractive design of display be it in terms of color, font, image, and animation. It is also considered as an effective educational media compared to the others, especially during the Covid-19 pandemic where face-to-face activities between people is restricted. Without having to meet face-to-face and only by using an application on Android, one can already obtain educational information (12).

The program to increase the knowledge of pregnant women aims to support the reduction of MMR in Indonesia by carrying out early screening on the risks in maternal services through detailed, clear and easily accessible information. During the Covid-19 period, based on a preliminary study, 44 (86.27%) of 50 pregnant women in Sleman Regency experienced an increase of

anxiety. One of these concerns was how to handle the pregnancy discomfort independently because all activities were limited and they could not visit the health facilities freely. Because with an ever-increasing thoughts, it will also trigger a sense of excessive worry.

Online-based education is one of the alternatives that can be applied during the COVID-19 period. This is in line with a study conducted by C.M. Isabella & F.H. Prabandari which showed that there was an influence of online education on the knowledge and attitudes of pregnant women in maternal and neonatal services during the Covid-19 period (13). This android application in the digital 4.0 era can have a positive impact on providing detailed and clear sources of information so that information can be easily obtained and seems always close to them. Therefore, pregnant women can find out how to handle pregnancy discomfort and reducing anxiety during the Covid-19 pandemic.

MATERIALS AND METHODS

This research employed a quasi-experimental with a control group time series design (14). It was carried out in 2021 and 120 pregnant women with the inclusion criteria of being pregnant in trimesters 1, 2, 3, having no history of congenital disease, agreeing to the consent sheet and being randomized if it gets an odd number to the control group and if it gets an even number it becomes the experimental group at the Independent Midwifery Practice (PMB) or Community Health Center (Puskesmas) in the Sleman Regency, Yogyakarta were chosen as samples. A simple random sampling was utilized as the sampling method. Those samples were then divided into two groups, namely the control group and the experimental group. The education was given to the control group through leaflet, while the experimental group was given through android. The android application was designed together with the IT team and had been evaluated by experts and tested. This *Busevid* application has 3 main features: pregnancy examination such as Gestational Age and Estimated Day of Delivery (EDD), pregnancy education, and consultation. Thus, it's easier for pregnant women to obtain information on how to handle discomfort and anxiety during pregnancy. The instrument utilized for measuring the knowledge and anxiety level was a questionnaire which had been tested by 3 teams of experts in the field of midwifery, health promotion and media experts. This research had also passed the Ethical Clerence (EC) process at Institute of Health Science Guna Bangsa, Yogyakarta. From each group, pre-test and post-test were assessed to measure the knowledge of pregnancy discomfort and the decrease in anxiety levels of pregnant women. The measurements were carried out after educational interventions were provided for 1 month and it was done regularly once a month for 2 times. The processed data was normal so that the data analysis was carried out using the Manova with GLM Repeated Measures.

RESULTS AND DISCUSSION

This research produces an educational media in the form of android-based application known as *Busevid* which is an application for pregnant women to check their pregnancy such as Gestational Age and Estimated Date of Delivery (EDD) as well as education about pregnancy for android devices. The result of the study is shown in the following table 1.

The **Table 1** shows that based on the age category, respondents aged > 20 years become the majority both in the control group and in the experimental group with 52 people (86.7%) and 49 people (81.7%) respectively. Based on the education category, high school level of education become the majority both in the control group and in the experimental group, with 35 people (58.3%) and 34 people (56.7%) respectively. Based on the occupation category,

Table 1. Characteristics of respondents

Characteristics	Leaflet Control Group		Android Experiment Group		X^2
	(f)	(%)	(f)	(%)	
Age					
>18-20 years	6	10	7	11,7	
>20-35 years	52	86,7	49	81,7	0,003
>35 years	2	3,3	4	6,7	
Education					
Primary School	1	1,7	1	1.7	
Junior High	6	10	4	6,7	0,000
Senior High	35	58,3	34	56,7	
University	18	30	21	35	
Occupation					
Housewife	17	28,3	20	33,3	
Private employee	15	25	15	25	0,021
Civil servant	8	13,3	7	11.7	
Others	20	33,3	18	30	
Gravidarum					
Primigravida	25	41,7	34	56,7	
Secundigravida	27	45,0	17	28,3	0,002
Multigravida	8	13,3	9	15	

Source: Primary Data Processing, 2021

the majority of respondents in the control group has other jobs (such as factory workers, entrepreneurs, traders, housemaids) or as many as 20 people (33.3%), while housewives become the majority in the experimental group or as many as 20 people (33.3%). Based on the pregnancy status, secundigravida becomes the majority in the control group consisting of 27 people (45%), while primigravida becomes the majority in the experimental group with 34 people (56.7%). The data on the characteristics of age, education, occupation and gravidarum show p-values of (0.003), (0.000), (0.021) and (0.002) respectively. It indicates that there is a relationship between age, education, occupation and gravidarum on knowledge and anxiety.

There are six levels of knowledge: know, comprehension, application, analysis, synthesis, and evaluation. Then, factors that influence knowledge are including age, education, and occupation. Along with the increasing age, there will be mental and psychological change to become more mature. Meanwhile, the higher the level of education, the easier and more open it is for someone to receive information. Work affects one's knowledge due to a supportive work environment and time availability to be able to access information (15).

The status of gravidarum will also affect the knowledge of pregnant women. Mothers with primigravida status who have no previous experience of pregnancy will tend to have high anxiety, while those with secondary or multi gravida status have low anxiety and even have no anxiety at all. This statement is in line with the research carried out by Marta et al., which shows that there was a significant relationship with the anxiety level of women in their third trimester of pregnancy as proven by P value 0.001 < 0.05 (16).

Renny & Fitria's also found that there is a relationship between the anxiety level and knowledge of pregnant women and the antenatal care visits during the Covid-19 pandemic. Counseling and social support are needed to overcome anxiety by asking pregnant women to seek correct and reliable information and not to believe in hoax (17). This is in accordance with Detty's research showing that there is a relationship between knowledge and anxiety levels in primigravida pregnancies with a p-value of 0.002. The results of this study indicate that respondents with high knowledge tend to have lower levels of anxiety (18). This study is similar to that conducted by Laela & Wahyuni with p-value = 0.000, which means that there is a decrease in maternal anxiety during pregnancy during the COVID-19 pandemic after the thought-stopping therapy was given (19). However, Islamia et al., found different result. The level of anxiety does not depend on the previous labor experience, but is very dependent on the pregnant women's level of knowledge about the Covid-19 virus and how to handle and prevent it (20).

Table 2 shows that the level of knowledge about pregnancy discomfort of all respondents both in the control group and the experimental group before the education (pre-test) was given

Table 2. Respondents' knowledge and anxiety levels before and after the education

Variable	Leaflet Control Group		Android Experiment Group		X^2
	(n)	(%)	(n)	(%)	
Knowledge_Pre					
Good	0	0	0	0	
Fair	0	0	0	0	0,000
Poor	60	100	60	100	
Knowledge _Post1					
Good	0	0	16	26,7	
Fair	2	3,3	23	38,3	0,000
Poor	58	96,7	21	35	
Knowledge _Post2					
Good	4	6,7	40	66,7	
Fair	23	38,3	18	30	0,000
Poor	33	55	2	3,3	
Anxiety_Pre					
No Anxiety	0	0	0	0	
Mild Anxiety	13	21,7	4	6,7	0,018
Moderate Anxiety	47	78,3	56	93,3	
Severe Anxiety	0	0	0	0	
Anxiety _Post1					
No Anxiety	0	0	19	31,7	
Mild Anxiety	33	55	39	65	0,000
Moderate Anxiety	27	45	2	3,3	
Severe Anxiety	0	0	0	0	
Anxiety _Post2					
No Anxiety	0	0	54	90	
Mild Anxiety	35	58,3	6	10	0,000
Moderate Anxiety	25	41,7	0	0	
Severe Anxiety	0	0	0	0	

Source: Primary Data Processing, 2021

is poor. The respondents' level of knowledge about pregnancy discomfort after being given education (post-test 1) is still poor in the control group with 58 people (96.7%) in total. While in the experimental group, 23 respondents (38.3%) had fair knowledge about pregnancy discomfort. In post-test 2, 33 respondents (55%) still have poor knowledge about pregnancy discomfort in the control group. While in the experimental group, 40 respondents (66.7%) have a good level of knowledge about pregnancy discomfort.

Based on the data above, we can see that the majority of respondents' anxiety levels before being given the education (pre-test) are moderate, which is found in 47 respondents (78.3%) in the control group and 56 respondents (93.3%) in the experimental group. The respondents' anxiety levels after being given the education (post-test 1) are mild, with 33 respondents (55%) in the control group and 39 respondents (65%) in the experimental group. In post-test 2, most respondents have mild anxiety levels in the control group which is found in 35 respondents (58.3%). In contrast, in the experimental group, 54 respondents (90%) have no anxiety about pregnancy.

Categorical data processing shows that android-based educational media can be utilized to accelerate knowledge increase and anxiety decrease. Android is a medium of information that is always close to people, and most people use it in carrying out their daily activities. This fact is in line with research conducted by Rizky et al., which states that android is one of the educational media that can lead a significant increase in knowledge from an average score of 64.29 to 76.10 (21).

Table 3. The average knowledge increase in post-test 1 and post-test 2 in the android group and the leaflet group

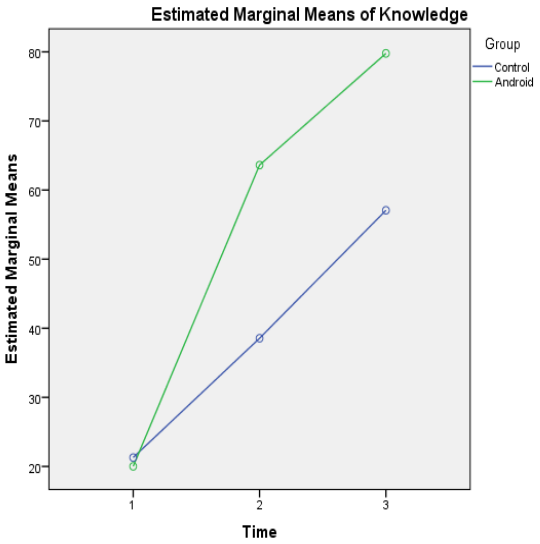
Group	N	Post1	P-value	Post2	P-value
		Mean±SD		Mean (SD)	
Leaflet	60	17.18± 11.51	0,028	35.92± 11.18	0,023
Android	60	43.77± 14.31	0,000	59.98± 14.50	0,000

Source: Primary Data Processing, 2021

Based on **Table 3,** we can see that the average knowledge level of the android group in post-test 1 increases by 43.77, and in post-test 2 increases by 59.98. This result indicates an intensification in knowledge in post-test 1 and post-test 2 in the android group. While in the leaflet group, respondents' knowledge in post-test 1 increases by 17.18, and in post-test 2 increases by 35.92. This also demonstrates a knowledge development in post-test 1 and post-test 2 in the leaflet group. From the data presented, the P-values are 0.000 for android media and 0.023 for leaflet media, and the P-value is <0.05. Therefore, it can be confirmed

that there is an influence of android-based and leaflets educations on the knowledge of pregnant women about pregnancy discomfort.

From the results of the study, we can conclude that there is a change in the level of knowledge of pregnant women about pregnancy discomfort before and after the education. The significant difference between the android group and the leaflet group is in post-test 1 to post-test 2. There is a more substantial increase on knowledge in the group using android than the group using leaflets. The results of the analysis are presented in the analysis graph as follows:



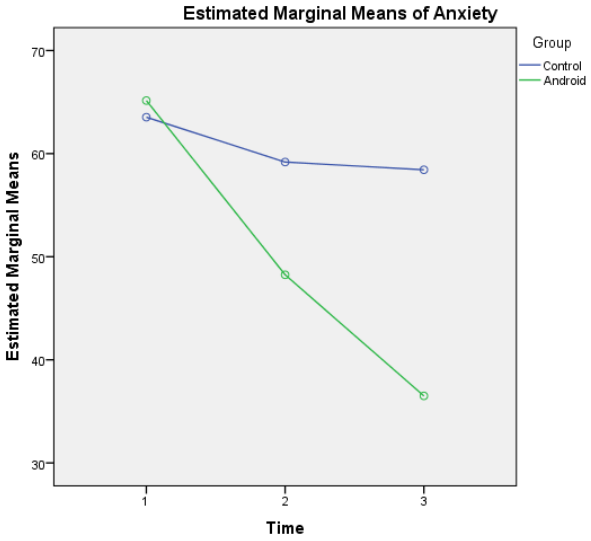
This analysis proves that the effect of android-based education can increase the knowledge of pregnant women about pregnancy discomfort. The results of this study are also supported by previous research. Research conducted by Fachrudin shows that android-based nutrition education media is better than websites and other media. There are positive changes in elementary school children's knowledge, attitudes, and practices after they were given android-based nutrition education (22).

Based on **Table 4**, we can see that the average anxiety level in the android group in post-test 1 decreases by 16.90, and post-test 2 decreases by 28.65. This indicates a decrease in anxiety in post-test 1 and post-test 2 in the android group. Meanwhile, the average in the leaflet group in post-test 1 decreases by 4.35 and in post-test 2 decreases by 5.10. There is also a decrease in anxiety in post-test 1 and post-test 2 in the leaflet group. From the data above, the P-value of 0.000 is obtained for android media and 0.031 for leaflet media making the P-value <0.05. Hence, we can conclude that there is an effect of android-based and leaflets educations on reducing anxiety in pregnant women. The significant difference between the android group and the leaflet group from post-test 1 to post-test 2 is that the android group shows a more substantial reduction in anxiety than the leaflet group. The results of the analysis is shown in the analysis graph as follows:

Table 4. The average anxiety decrease in post-test 1 and post-test 2 in the android group and the leaflet group

Group	N	1st month Mean±SD	P-value	2nd month Mean±SD	P-value
Leaflet	60	-4.35± 3.37	0,035	-5.10± 6.14	0,031
Android	60	-16.90± 5.83	0,000	28.65± 6.16	0,000

Source: Primary Data Processing, 2021



DISCUSSION

Another study conducted by Irawan & Saurina explains that an android-based nutrition

consultation application could help people conduct nutrition consultations directly with nutritionists without being hindered by distance and time (23). This is very convenient when applied during a pandemic. The same thing is shown in the research conducted by Destiana. The research elaborates those smartphones or android cellphones can be used appropriately in maximizing teachers' professional efforts in the learning process (24). Similar research by Rizky demonstrates that android is one of the applications and educational media that can influence a person in increasing adolescent knowledge on preventing anemia from an early age (21).

In the era of the industrial revolution 4.0, people are required to keep up with the changing practice, which is the development of digital technology as a means of communication. Advances in information and communication technology have made it easier for people to obtain information. The boundaries of information have disappeared so that people are able to find out what is happening around them. The rapid development of technology has given rise to a new communication medium: the internet media (25). Internet is one of the features provided smartphones so that smartphones can be used like computers. Currently, smartphones have become a necessity for modern society to communicate. Smartphone users come from various backgrounds, such as private employees, homemakers, civil servants, and students. One of the advantages of a smartphone is that it is easy to carry anywhere and people more secure because it is easy to get information from smartphones (19).

This fact is supported by research conducted by Eva et al., which shows that *Si Bulan Merah* Android application was successfully introduced. The material provided in the application has proven to be effective and efficient in helping users take early treatment measures to reduce dysmenorrhea (26). Another study conducted by Irawan, B. N. & Saurina, N., explains that an Android-based nutrition consultation application could help people conduct nutrition consultations directly with nutritionists without being disadvantaged by distance and time. This is very convenient to use during the pandemic (23).

The COVID-19 pandemic has changed people's lives around the world. All aspects of life are affected by COVID-19. Human activities have temporarily stopped and social restrictions have been made, including the limitation face-to-face meetings. Human activities such as working, studying, conducting economic activities and accessing health services are limited. Therefore, people take advantage of Android smartphones to carry out these activities. Android smartphones are proven to be effective for use in communication, learning, and delivering information. Its growing use is following the circular of the Minister of Health No. SE MENKES HK. 0201/ MENKES /303 /2020 concerning the implementation of health services through the use of information and communication technology in the context of preventing the spread of Corona Virus Disease 2019 (COVID-19). This is one of the government's efforts to prevent the spread of COVID-19. Jauharil's research explains that smartphones as learning media are very influential in teaching and learning process during the pandemic and they are very effective as distance learning media (27).

Based Android in increasing knowledge about pregnancy discomfort and decreasing anxiety seems to decrease faster than in the control group (lefleat). This is because Android is software that can be accessed through individual mobile phones, Android is also close to individuals and every day we are always with the media. So that with proximity and often used in accessing information quickly it will stimulate one's mind to more easily remember so that

it can trigger understanding within a person. This process is in accordance with Anderson's theory, namely from the stages of remembering, understanding, applying, analyzing, evaluating and making (28).

Busevid based android, it makes it easier for people to access or open information related to the discomfort experienced by pregnant women in trimesters 1, 2 and 3. The data in this study shows that the level of knowledge will affect a person's level of anxiety. Android media can be used as a health education media so as to encourage pregnant women to learn and understand about health conditions during pregnancy during this pandemic. Because considering the existence of social distance so that this busevid android application can be useful for pregnant women. Android can also be equipped with interesting images so that it stimulates the release of the hormone endoprine, dopamine, serotonin as the hormone of happiness. This happiness hormone makes the atmosphere of pregnant women happy, comfortable and not anxious. With an attractive and easily accessible appearance, mothers will not worry about their pregnancy during the COVID-19 pandemic. Pregnant women can also do simple treatment independently when they are experiencing pregnancy complaints, discomfort and anxiety. This is also in accordance with Sunil's research that through the use of android can increase the quality of life in people with type 2 diabetes mellitus (29). Research according to Julia also explains that using android can provide efficient distribution of health and clinical information in providing care and through this android can provide information about early pregnancy which will increase the mother's confidence and reduce anxiety (30).

During the COVID-19 pandemic, people are required to comply with the health protocol advised by the government, including washing hands, wearing masks, maintaining distance, staying away from crowds, and reducing mobility. The existence of android smartphone applications makes it easier and faster to find information. Pregnant women will be well assisted in overcoming discomfort in pregnancy and reducing anxiety during pregnancy by reading the material provided in android smartphones. Thus, pregnant women can always take notice of their needs and independently apply procedures required during pregnancy. If not in an emergency, pregnant women can act independently in maintaining their healthy pregnancy at home until the time of delivery. Yossi's research states that the most effective learning process during the COVID-19 pandemic is online learning with supporting tools or mobile devices such as smartphones or androids, computers, laptops, and tablets (31). Online-based education will affect the knowledge and attitudes of pregnant women in meeting maternal needs (13).

CONCLUSION AND RECOMMENDATION

The use of the *Busevid* (Healthy Pregnant Women in the COVID-19 Period) Android Application is very beneficial in assisting pregnant women when experiencing discomfort and anxiety during pregnancy. This android application also influences knowledge increase and anxiety decrease of pregnant women during the COVID-19 pandemic. With the android application, pregnant women can also feel calmer and safer during their pregnancy in this COVID-19 period. In the android group there was a faster change in knowledge about pregnancy discomfort and its management of 59.98 when compared to the control group lefleat 35.92 while the decrease in anxiety in the android group was 28.65 while in the lefleat group it was 5.10 in the post-test 2.

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