

Development of “No Anemia No Stunting” (Si NaNing) Modules and Application in Efforts to Prevent Stunting in Archipelago Regions

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ABSTRACT

The average prevalence of stunting toddlers in Indonesia from 2005 to 2017 is 36.4%. Incidence of stunting toddlers (short) is a major nutritional problem faced by Indonesia. Stunting cases in the Riau Islands reached 24 percent of the number of babies born in 2018. One of the causes of stunting is the lack of nutrients fulfilment during pregnancy, including anemia in pregnancy. Currently, there is no media module and application for stunting prevention health promotion. The purpose of the study was to determine the effectiveness of the "No Anemia No Stunting" (Si NaNing) application and the Si NaNing Module on stunting prevention. The study was conducted in Tanjungpinang City in May-November 2020. The research design was quasi-experimental with pre-posttest with control group design. The instrument used is a structured questionnaire. Data collection is during the pre test and post test. The population is all pregnant women in Tanjungpinang City. The sample is 30 respondents/pregnant women from Independent Practice of Midwives in Tanjungpinang City. Data analysis used Dependent T Test for the intervention group (application) and Wilcoxon for the control group (module). The results showed that there was a significant difference in knowledge (p value 0.001), attitude (p value 0.001), and motivation (p value 0.001) in pregnant women before and after being given health education using the Si NaNing application. Meanwhile, in the module group, only motivation (p value 0.000) had a significant difference.

Keywords: *anemia; attitude; knowledge, motivation; Si NaNing application; stunting*

ABSTRAK

Rata-rata prevalensi balita stunting di Indonesia 2005-2017 (36,4%). Kejadian balita stunting (pendek) merupakan masalah gizi utama yang dihadapi Indonesia. Kasus stunting di Kepulauan Riau mencapai 24 persen dari angka bayi lahir pada 2018. Salah satu penyebab stunting adalah kurangnya pemenuhan zat gizi pada masa kehamilan, diantaranya adalah anemia pada

kehamilan. Saat ini belum ada media modul dan aplikasi untuk promosi kesehatan pencegahan stunting. Tujuan penelitian untuk mengetahui efektifitas Aplikasi “No Anemia No Stunting” (Si NaNing) dan Modul si NaNing terhadap pencegahan stunting. Penelitian dilakukan di Kota Tanjungpinang bulan Mei-November 2020. Desain penelitian *quasi experiment* dengan *pre-posttest with control group design*. Instrumen yang digunakan kuesioner terstruktur. Pengumpulan data yaitu *saat pre test dan post test*. Populasi semua ibu hamil di Kota Tanjungpinang. Sampel ibu hamil di Praktik Mandiri Bidan sejumlah 30 responden di Kota Tanjungpinang. Analisis data menggunakan Dependent T Test untuk kelompok intervensi (aplikasi) dan Wilcoxon untuk kelompok kontrol (modul). Hasil menunjukkan ada perbedaan yang bermakna pada pengetahuan (nilai p 0,001), sikap (nilai p 0,001), dan motivasi (nilai p 0,001) pada ibu hamil sebelum dan sesudah diberikan pendidikan kesehatan menggunakan aplikasi Si NaNing. Sedangkan pada kelompok modul hanya motivasi (nilai p 0,000) yang memiliki perbedaan bermakna.

Kata kunci: anemia; sikap; pengetahuan, motivasi; aplikasi Si NaNing; stunting

INTRODUCTION

The incidence of short toddlers, commonly referred to as stunting, is one of the nutritional problems experienced by toddlers worldwide in Indonesia. In 2017, 22.2% or around 150.8 million children under five in the world experienced stunting. However, this figure has decreased when compared to the stunting rate in 2000, which was 32.6%. In 2017, more than half of the world's stunting children came from Asia (55%), while more than a third (39%) lived in Africa. Of the 83.6 million stunted children under five in Asia, the highest proportion came from South Asia (58.7%), and the lowest balance was in Central Asia (0.9%). Data on the prevalence of stunting under five were collected by the World Health Organization (WHO). Indonesia is the third country with the highest majority in Southeast Asia. (SEAR) (Pusdatin, 2018).

The average prevalence of stunting under five in Indonesia from 2005-2017 was 36.4%. The incidence of stunting (short toddlers) is a major nutritional problem faced by Indonesia. Based on the Nutritional Status Monitoring (PSG) data for the last three years, stunting has the highest prevalence compared to other nutritional problems such as undernutrition, thinness, and obesity. The majority of stunted toddlers increased from 27.5% in 2016 to 29.6% in 2017 (Pusdatin, 2018). Riskesdas 2018 states that toddlers are very short and short by 30.8%, which has increased from 2017. In 2019 it decreased to 27.67%. The SIGIZI ePPGBM report (as of January 20, 2021) from 34 provinces shows that out of 11,499,041 children under five whose nutritional status was measured based on height for age (TB/U) there were 1,325,298 toddlers with TB/U <-2 SD or it

can be said 11.6% of toddlers are stunting (Kemenkes RI, 2020).

The Indonesian Ministry of Health's Basic Health Research (Riskesdas) stated that as many as 45 thousand children under five in the Riau Islands Province suffered from malnutrition and malnutrition throughout 2018. This number is 13 percent of the total 350 thousand children under five in the Riau Islands (Kemenkes RI, 2018). In 2019 it decreased to 5.1 percent (Dinas Kesehatan Kepulauan Riau, 2019). However, in 2020 the number of stunting cases increased again to 7.2%. (Kemenkes RI, 2020). This figure still needs to be reduced to zero or the absence of stunting. One of the efforts to prevent stunting is with adequate and adequate nutritional intake. Every pregnant woman is expected to have sufficient knowledge about nutrition for pregnant women, infants, and toddlers to prevent stunting (Kemenkes RI, 2018). The consequences of stunting include impaired body growth, metabolic disorders, impaired brain development, and affected children's intelligence. Therefore, stunting is a problem that must receive special attention. Many factors affect stunting, including birth length, family economic status, education level, and parental height. Short birth length is one of the risk factors for stunting in toddlers. Short birth length can be caused by genetic factors, namely short

parental height or lack of fulfillment of nutrients during pregnancy so that fetal growth is not optimal, which causes babies born to have short birth lengths. (Sukmawati *et al.*, 2018). The nutritional status of pregnant women greatly affects the health and development of the fetus. Body disorders in the womb can cause low birth weight. This is in accordance with the opinion that the factors that influence the occurrence of stunting include the nutritional status of the mother during pregnancy, the baby's weight status at birth, getting IMD or not, exclusive breastfeeding, complementary feeding, and parenting patterns. (Putri *et al.*, 2018). Nutritional conditions in pregnant women include chronic energy deficiency and anemia in pregnancy.

Chronic energy deficiency and anemia during pregnancy can cause mothers to give birth to babies with low birth weight (LBW). The high number of LBW is estimated to be the cause of the high incidence of stunting in Indonesia. The Indonesian government has made efforts to overcome anemia, including by giving blood-supplementing tablets (TTD) to pregnant women. (Aditianti, Permanasari and Julianti, 2015).

TTD program is expected to reduce the incidence of anemia in pregnant women in Indonesia, thereby reducing the possibility of stunting. However, the results have not been very satisfactory, as can be seen from the high prevalence rate. According to previous research, the low level of compliance in consuming iron supplements is one of the causes (Purwaningsih, Muhammad and Artaty, 2006). Health behavior in pregnant women is influenced by knowledge, enabling (enabling), which includes the availability of facilities and infrastructure or health facilities (Astuti, 2016). Therefore, it is necessary to educate pregnant women to prevent anemia by consuming blood-added tablets (TTD), during pregnancy which will indirectly increase the risk of stunting (Sukmawati *et al.*, 2018).

Prevention of stunting has been carried out by the government. Still, the conditions of the covid 19 pandemic and some restrictions must be made to break the chain of the spread of the covid 19 virus. This restriction also applies to antenatal visits for pregnant women, thus limiting access to regular meetings. Directly between health workers and pregnant women (Kementrian Kesehatan Republik Indonesia, 2020). This causes the health education provided by health workers to pregnant women to be not optimal. Therefore, health education to

provide information to pregnant women requires modifications and innovations to convey the necessary information, including details on stunting prevention. Accurate, precise, and up-to-date information is increasingly needed along with the rapid development of information technology. This encourages the public and agencies to take advantage of this information technology (Leonita and Jalinus, 2018). Based on the literature study, it is shown that the internet, smartphones, applications, and social media contribute positively to the achievement of the goals of health promotion so that health professionals are expected to be able to collaborate and integrate them with health promotion strategies. The digital era, known as the 4.0 era, makes people and patients rely more on the internet and digital applications than doctors as a source of health care information (Melinda *et al.*, 2018). Currently, applications and social media are not only accessed using a browser on the desktop but can also be accessed on tablets or smartphones (Leonita and Jalinus, 2018). The results of a survey on smartphone ownership in Indonesia based on social class, it was found that 48.3% of the upper class, 23.1% of the upper middle class, 9.2% of the middle class, and 3.7% of the lower class had more than one smartphone.

(Damayanti, Fuad Wirakusumah and Anwar, 2018).

Based on a preliminary study conducted on January 7, 2021, at the Puskesmas and Independent Practice Midwives in Tanjungpinang City, 20 respondents obtained the following information: 100% of respondents have smartphones equipped with internet facilities. 100% of respondents have never received information about stunting, anemia, or iron tablets and have not had a reminder of iron tablets consumption from an application. Based on this background, researchers are interested in developing the "No Anemia No Stunting" (Si NaNing) Module and Application and conducting research on the effectiveness of module-based health education and applications on knowledge about stunting and anemia as well as attitudes and motivations of pregnant women to consume iron tablets during pregnancy and prevent stunting, with the research title "Module Development and Application of "No Anemia No Stunting" (Si NaNing) in Stunting Prevention Efforts in the archipelago".

This Si NaNing Module and Application was created with the aim of health education regarding stunting and anemia prevention. The application contains

information about stunting, the causes of stunting, how to prevent iron deficiency anemia stunting in pregnant women and how to prevent it, reminders to drink blood-boosting tablets, quizzes about stunting and anemia in pregnancy, and is equipped with a link group consultation regarding stunting and anemia. , which will later be managed by the admin, namely researchers and other materials that are packaged based on books on stunting and program guidelines for administering and monitoring blood-supplementing tablets for pregnant women, books on Maternal and Child Health, and other sources. The same, but not equipped with quizzes, reminders, and link group consultations.

METHOD

The research design was quasi-experimental with a pre-posttest with a control group design. In this study, there are two groups, namely the treatment group and the control group, who will be given a questionnaire before and after the intervention. The treatment group was given intervention in the "No Anemia No Stunting" application (Si NaNing), while the control group received an intervention in the form of the Si Naning Module. Health education was conducted once in each group. Before being given health education, knowledge, attitudes, and motivation were

measured using a pre-test questionnaire. Changes in knowledge, attitudes, and encouragement were observed by measuring again after seven days using the same questionnaire sheet (post-test). The study was conducted in Tanjungpinang from January to December 2021. The population in this study were all pregnant women in the second and third trimesters in Tanjungpinang City. The sample for each group was 30 people. The research was conducted in four Midwives' Independent Practices in Tanjungpinang City. The sampling technique is simple random sampling because the population is homogeneous.

The instrument used in the data collection process is a structured questionnaire prepared by the researcher herself and tested for validity and reliability. The parametric tests used were dependent Samples T-Test for the intervention group (application) and Wilcoxon test for the

control group (module). This research has received ethical approval by the Health Research Ethics Commission of Stikes Patria Husada Blitar No 06/PHB/KEPK/31/10.21.

RESULTS AND DISCUSSION

Table 1. Characteristics of Respondents

Variable	Module		Aplication	
	n	%	n	%
Education				
High	3	10	19	63
Low	27	90	11	37
Profession				
Work	2	6	11	37
Not working	28	94	19	63

Based on Table 1, it can be seen that the majority (90%) of education in the module group is low, and the majority (63%) of education in the application group is high. The majority of respondents in the module group (94%) are not working. This is the same as the application group, where the majority (63%) of the respondents do not work.

Table 2. Differences between Module and Application Increase Score and The Bivariate Analysis

Criteria	Total Increase Score	Mean Increase Score	Mean		N		Std. Deviation		P Value
			Before	After	Before	After	Before	After	
Stunting Knowledge									
Module	20	0.67	8.20	8.87	30	30	2.34	2.18	0.199
Application	73	2.43	6.93	9.68	30	30	2.58	0.833	0.001
Anemia Knowledge									
Module	46	1.5	17	17	30	30	4.55	4.55	1
Application	182	6.67	14.32	19.42	30	30	4.88	0.69	0.001
Stunting Prevention Attitude									
Module	39	1.3	37.73	37.70	30	30	4.39	4.78	0.96
Application	136	4.53	31.87	39.55	30	30	5.79	1.21	0.001
Anemia Prevention Attitude									
Module	446	14.87	44.07	43.53	30	30	5.31	4.09	0.41
Application	554	18.47	14.32	19.42	30	30	4.89	0.69	0.001
Stunting Prevention Motivation									
Module	45	1.5	29.27	38.13	30	30	5.41	4.31	0.000
Application	158	5.27	31.28	39.28	30	30	5.22	1.81	0.001
Anemia Prevention Motivation									
Module	32	1.07	31.73	38.07	30	30	4.38	4.49	0.000
Application	168	5.6	30.30	37.45	30	30	4.94	3.95	0.001

Based on the table 2, the stunting knowledge score is higher in the application respondents than in the module respondents. There is no significant difference in stunting knowledge before and after the module intervention, with a p-value of 0.199. Whereas in application intervention, there is a significant difference in stunting knowledge before and after the intervention, with a p-value of 0.001. Then, we can see that the anemia knowledge score is score is higher in the application respondents than in the module respondents. The analysis shows that there is no significant difference in knowledge of anemia before and after the module intervention, with a p-value of 1. But, there is a significant difference in knowledge of anemia before and after the application

intervention, p-value of 0.001. We can also see that the increase in stunting prevention attitude scores is higher in the application respondents than in the module respondents. There is no significant difference in stunting prevention attitudes before and after getting the module intervention, with a p-value of 0.96. But, there is a significant difference in stunting prevention attitudes before and after getting application intervention with a p-value 0.001.

The table also shows that that the increase in anemia prevention attitude scores is higher in the application respondents than in the module respondents. The analysis shows that there is no significant difference in the anemia prevention attitude before and

after getting the module intervention, with a p-value of 0.41. Whereas there is a significant difference in the anemia prevention attitude before and after getting the application intervention, with a p-value of 0,001. Then, we can see that the increase in the stunting prevention motivation scores is higher in the application respondents than the module respondents. There is a significant difference in stunting motivation before and after the intervention in the form of a module, with a p-value of 0.000. And, there is a significant difference in stunting motivation before and after the intervention in the form of an application, with a p-value of 0.001.

And lastly, the increase in the anemia prevention motivation scores is higher in the application respondents than the module respondents. The analysis shows that there is a significant difference in anemia motivation before and after the module intervention, with a p-value of 0.000. And also a significant difference in anemia motivation before and after the application intervention, with a p value of 0.001.

The Difference between Stunting Knowledge Before and After Getting the Application

The results showed a significant difference in stunting knowledge scores before and after the intervention using the Si NaNing

application. The results of this study align with other studies that there is a significant increase in the level of knowledge about stunting in the intervention group. While in the control group, there was no significant increase in the level of expertise about stunting, which means that there is a significant effect between the application and knowledge of mothers with toddlers. (Ahmad Yanuar, Rudiyanto and Nur Nazmi, 2020). Another study that is also in line is that there is an increase in knowledge of Posyandu cadres about early detection of stunting after being given an intervention using the PPA Cadre application media. (Febrina and Antarsih, 2021).

Health education media in the form of smartphone applications can affect knowledge. This is because there is information that supports stunting in the application. This is supported by the theory, which states that the more often a person receives information, his/her knowledge and insight will increase. In contrast, if he/she does not get information, their knowledge and understanding will not increase. (Febrina and Antarsih, 2021). Engaging media will give the respondents confidence to achieve cognitive, affective, and psychomotor changes (Erawati, 2020).

The results of the mean difference test between the intervention group and the

control group after being given health education through the Si NaNing application showed increased knowledge. The health education provided affects increasing ability. The purpose of the health education given to respondents is intended to provide knowledge and understanding about the elimination of anemia and stunting. Although the intervention and control groups both experienced an increase in knowledge after being given health education, statistical results showed that the increase in command in the intervention group through the application of Si Naning was higher than before being given the application. Providing health education through applications can provide information that is more understandable by respondents. Submission through the application makes it easier for respondents to access and receive information provided anytime and anywhere without being constrained by place and time so that the knowledge information provided can be read at any time. Efforts to provide health education that minimizes travel or distance traveled are effective and accessible are needed for equitable distribution of health education. Someone who easily accesses information will learn faster (Kasjono and Suryani, 2020). The NaNing application is installed on the respondent's smartphone, making it easier for respondents to access

information about anemia anywhere and anytime.

The Difference between Anemia Knowledge Before and After Getting the Application

The results showed a significant difference in knowledge of anemia before and after the intervention using the Si NaNing application. The results of this study are in line with other studies that the average value of respondents' knowledge about the prevention and treatment of anemia before education is 51.97 with a standard deviation of 14.55, while after education, the average ability is 64.03 with a standard deviation of 10.42 and there are differences in knowledge before and after the education of 8.06 with a P-Value of 0.000(Sukmawati, Mamuroh and Nurhakim, 2019). Education on the prevention and treatment of anemia in pregnant women is an effort to convey the importance of preventing and treating anemia. (Sukmawati, Mamuroh and Nurhakim, 2019).

Anemia is still a severe global health problem, especially in pregnant women. Knowledge of pregnant women about anemia can help prevent anemia during pregnancy (Devi, Lumentut and Suparman, 2021). Submission through the application makes it easier for respondents to access and receive information provided anytime

and anywhere without being constrained by place and time so that the knowledge information provided can be read at any time. Efforts to provide health education that minimizes travel or distance traveled are effective and accessible and are needed for equitable distribution of health education. Someone who easily accesses information will get knowledge faster (Kasjono and Suryani, 2020).

The Si NaNing application provides information about the meaning of anemia, the side effects of anemia, how to prevent anemia in pregnant women, the causes of anemia in pregnant women, and the program for giving blood-added tablets to pregnant women so that the knowledge of pregnant women given the Si NaNing application has a higher increase in knowledge. Then, before being given the Si NaNing application. Submission through the application makes it easier for respondents to access and receive information provided anytime and anywhere without being constrained by place and time so that the knowledge information provided can be read at any time. Efforts to provide health education that minimize travel or distance traveled are practical and accessible and are needed for equitable distribution of health education. Someone who easily accesses information will learn faster (Kasjono and Suryani,

2020). The NaNing application is installed on the respondent's smartphone, making it easier for respondents to access information about anemia anywhere and anytime.

The Difference between Stunting Precautionary Attitude Before and After Getting the Application

The results showed a significant difference in stunting attitudes before and after the intervention. The results of this study are also following research conducted by Rista Sewa (2019), that there is a significant effect of health promotion on knowledge and attitudes toward stunting prevention by posyandu cadres in the experimental group a and experimental group b with p-value < 0.05 and no significant effect in the control group with p-value > 0.05. (30). Attitude is a form of readiness, willingness to act, or predisposing behavior (actions) of a person (Devi et al., 2021). Knowledge is a critical domain for the formation of one's Attitude. Knowledge is needed as support in growing self-confidence as well as attitudes and behavior every day, so it can be said that knowledge is a fact that supports one's actions. Knowledge is one of the factors that influence health behavior (Rosdiana *et al.*, 2018).

The use of the Si NaNing application provides information related to stunting, including the definition of stunting, the causes of stunting, the characteristics, and

how to prevent stunting. Health education using the Si NaNing application provides information that is easily accessible and can be accessed by pregnant women at any time so that pregnant women have good knowledge and become the basis for a significant increase in attitudes after using the Si NaNing application. The knowledge that a mother has will influence decision-making and also affect her behavior (Rosdiana *et al.*, 2018).

Health education is a long-term behavioral investment as a process of changing behavior in a person. In a short time (immediate impact), health education produces changes or increases in knowledge (Notoadmodjo S, 2010). Knowledge is a force factor for attitude change. Knowledge and attitudes will be the basis for the formation of adolescent behavior so that in a person, ideally, there is a harmony between knowledge and attitudes, where attitudes are formed after knowing beforehand. (Putra *et al.*, 2021). Previous research stated that android education applications effectively increased adolescent knowledge and attitudes toward stunting with $p < 0.05$ (Putra *et al.*, 2021). With the increase in knowledge and attitudes towards stunting after exposure to stunting education android applications, it is

assumed that android applications are practical for stunting prevention if carried out systematically and sustainably. This study is in line with research conducted by Perdana *et al.*, which states that android-based educational media is more effective than other media in increasing students' knowledge and behavior of balanced nutrition. (Perdana, Madanijah and Ekayanti, 2017) . Likewise, research by Cartel *et al.*, android application is effective for nutrition intervention, in this case, weight loss (Carter *et al.*, 2013). Knowledge can make a person aware so that he behaves in accordance with the knowledge she has.

The Difference between Anemia Precautionary Attitude Before and After Getting the Application

The results showed a significant difference in the Attitude toward anemia before and after the intervention. This is in line with the results of other studies that the average value of respondents' attitudes about the prevention and treatment of anemia before education is 50.54 with a standard deviation of 29.72, while after education, the average Attitude is 69.73 with a standard deviation of 13.64 and there are differences in attitudes. Before and after the education of 19.19 with a P-Value of 0.000. (10) and it can be seen that the difference in the mean before and after the intervention is 4.46.

Based on the analysis of previous studies, a significant value was obtained ($p = 0.000$; $= 0.05$). This means that H_0 is rejected. In other words, it can be concluded that there is a significant difference between the average pre-test and post-test attitudes, which means providing effective health education to improve attitudes in preventing iron deficiency anemia in pregnant women (Wardani, Husna and Saumiana, 2020).

Education on the prevention and treatment of anemia in pregnant women is an effort to convey the importance of preventing and treating anemia. (Sukmawati, Mamuroh and Nurhakim, 2019). Attitude is a form of readiness, willingness to act, or predisposition to a person's behavior (action) (Devi, Lumentut and Suparman, 2021). The results of previous studies also stated that most regions in Indonesia had a positive attitude toward preventing anemia (Devi, Lumentut and Suparman, 2021). Pregnant women who know and understand the consequences of anemia and how to prevent it will have positive behaviors and actions to avoid the effects and risks of anemia during pregnancy. Good knowledge will affect health behavior so that it affects health behavior (Chandra, Junita and Fatmawati, 2019).

The Difference between Stunting Precautionary Motivation Before and After Getting the Application

The results showed a significant difference in stunting motivation before and after the intervention. Nutrition education or education for pregnant women is expected to contribute to the awareness of pregnant women as prospective parents about maternal and child health at critical times in their lives, including breaking the cycle of stunting problems. The success of nutrition education is greatly supported by the media used. Various educational media have been developed in nutrition education (Putra *et al.*, 2021). Awareness in pregnant women can be started by having the motivation to prevent stunting. Educational media serves to mobilize as many senses as possible to an object to facilitate perception. Educational media make it easier for someone to understand information or material considered complicated. Media use will help clarify the information conveyed because it can be more interesting, more interactive, and can overcome the limitations of space, time, and human senses. For the information related to be more transparent and easier to understand following the objectives to be achieved, the data needs to be packaged according to the characteristics of each media used. (Handayani, Tarawan and Nurihsan, 2019). One of the media that can be used is the Si

NaNing application. The use of this application provides information about stunting, the causes of stunting, the characteristics of stunting, and how to prevent it. The whole provision of this information resulted in the addition of new information for the mother so that when pregnant women know what the impact of iron deficiency anemia is on themselves and their fetuses, the mother is motivated to prevent this from happening so that there is encouragement in the form of mother's willingness and awareness to prevent iron deficiency anemia. This is because individuals tend to be motivated (Handayani, Tarawan and Nurihsan, 2019). Health education often involves changing attitudes and values to lead to beliefs that motivate a person to learn and apply education about the facts given. Motivation is an impulse (in the form of an idea, emotion, or physical need) that causes a person to take action. Motivation can come from a social, task, or physical motives, as well as pregnant women's motivation to prevent stunting after getting information through the NaNing application.

The Difference between Anemia Precautionary Motivation Before and After Getting the Application

The results showed a significant difference in the motivation for prevention before and after the intervention. The motivation to

prevent anemia is a desire that arises within pregnant women, which encourages them to make efforts to prevent anemia. Motivation is seen as a mental impulse that moves and directs human behavior, including learning behavior. Motivation is an encouragement that a person has to do something, and as a giver of direction in his behavior, one of which is by encouraging someone to learn. Giving intervention to pregnant women is one of the strategic steps to increase the motivation of pregnant women to prevent anemia (Dwi Ayu, 2017).

In addition to the attitude aspect of pregnant women, the results of previous studies showed that there was a difference in the average value of pregnant women's motivation in preventing anemia before and after being given health counseling interventions with a pre-test of 9.18 and a post-test of 11.04, respectively. . It can be seen that the difference in the mean before and after the intervention is 1.86. Based on the data analysis, a significant value was obtained ($p = 0.000; = 0.05$); this means that H_0 is rejected so that it can be concluded that there is a significant difference between the mean values of pre-test and post-test attitudes, which means that the provision of health education effective for increasing motivation in the prevention of

anemia (Handayani, Tarawan and Nurihsan, 2019).

The increase in motivation in this study was due to the material about iron deficiency anemia given to pregnant women through the Si NaNing application. Pregnant women are provided with information about the definition, causes, signs, symptoms, consequences, and ways to prevent iron deficiency anemia in pregnant women. The whole provision of this information resulted in the addition of new information for the mother so that when pregnant women found out what the impact of iron deficiency anemia was on themselves and their fetuses, the mother was motivated to prevent this from happening so that there was encouragement in the form of mother's willingness and awareness to prevent iron deficiency anemia. This is because individuals tend to be motivated after using the Si NaNing application.

CONCLUSION

The Si NaNing application can increase knowledge, attitudes and motivation to prevent anemia and stunting. Suggestions based on research results are the need for application development by adding some more interesting and useful features.

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