



UTILIZATION OF THE ANDROID APPLICATION “BOCESTING” IN ENHANCING KNOWLEDGE FOR MOTHERS OF CHILDREN UNDER FIVE YEARS ABOUT STUNTING PREVENTION

By

Tiyara Safitri^{1,2}, Dewi Mey Lestanti Mukodri^{1,2}

¹Prodi DIII Kebidanan Poltekkes Kemenkes Tanjungpinang

²PUI PK Kemilau Poltekkes Kemenkes Tanjungpinang

Email: tyara_sardie@yahoo.com

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ABSTRACT

The most common health problem is malnutrition, called stunting. In the province of Riau Islands in 2020, 7.2% of cases were distributed among seven districts/cities. One attempt to address nutritional problems in young children is to approach health education using the Android method. Continuing previous research on nutritional therapies as delayed prevention in the news, using brochure media to stop prevention (Bocesting), implementation of Bocesting has a knowledge-increasing effect compared to the dissemination method. Based on this, the author is interested in researching brochure prevention of stunting (Bocesting) based android application as a learning environment in improving maternal nutritional behavior and nutritional status news, so that in Riau Islands community a special field of work in Puskesmas Kampung Bugi complexity. village Bugis District, Tanjungpinang City to analyze the differences in the effect of education on the prevention of stunting using a media leaflet and an Android-based application to improve maternal nutritional behavior and nutritional news to prevent news-induced stunting events

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Corresponding Author:

Tiyara Safitri

Prodi DIII Kebidanan Poltekkes Kemenkes Tanjungpinang

Email: tyara_sardie@yahoo.com

1. INTRODUCTION

The most common health problem is malnutrition, known as stunting. Stunting is a chronic malnutrition problem caused by a prolonged lack of food that causes stunting in the growth disorder of a child, lower or shorter than the normal age¹ Health problems in developing countries, including Indonesia, are nutritional problems that are indirect causes of maternal and child mortality². Children under 5 years of age are susceptible to malnutrition due to their relatively high need to grow flowers for adults. Stunting problems can be prevented by improving nutrition according to nutritional needs³. The measure of success in nutritional satisfaction is the reported nutritional value of the child and his/her weight and height. It is often said that a child's short body condition is a hereditary factor from both parents, so many people simply accept it without doing anything to prevent it.

But as we know, genetics is the least determinant of health compared to factors that influence behavior, environment and health care. Asuh model Stunting is one of those also influenced by behavioral aspects especially breastfeeding model in feeding practice especially in child under five years. Based on Fitriami, 2021 study on Android Application-Based Stunting prevention education in Increasing Mother's Knowledge and Attitude, was imposed There is an effect of stunting education using an android application (p-value) $0.0001 < 0.05$ on increasing knowledge and attitudes of mothers at the Tenayan Raya Public Health Center in Pekanbaru.

In 2020, Riau Islands Province was divided into 7 (seven) districts/cities. Bintan district is one of the districts where 11.0% of stunting cases are distributed in 15 Health center⁴. One attempt to solve the nutritional problems of young children is to approach health education using the Android method. According to the results of the Mucodri Dkk 2020 study, the Android method can help expectant mothers easily, conveniently and effectively. to improve knowledge about the balanced diet of pregnant women².

Continuing previous research on nutritional therapy as a slow preventive measure in the news, using brochures for the prevention of contraceptives (Bocestring), the application of bocestring has an additional effect on knowledge compared to the distribution method.⁸ Based on this. , The author is interested in researching brochure-based stunting prevention (Bocestring) based android application as an educational media to improve maternal nutritional behavior and nutritional status news, so Riau Islands Community Special Work Area Puskesmas Kampung Bugis Complex Village Bugis Distric Tanjungpinang to analyze differences in the effect of stunting prevention knowledge using a media booklet and an Android-based application to improve maternal eating behavior and nutritional status news to prevent news-induced stunting events. This study is a very important effort to prevent cases of stunting in Indonesia, the prevalence of which is increasing. The design of the tool is made with the help of an Android-based application in accordance with the current media development, which is easy to use and visible at any time. This educational media study will help you anticipate the slowdown, especially in the news. In addition, it is also one of the efforts to support the existence of a program to change the health system, especially when it comes to inhibitory priorities. Efforts to improve knowledge and attitudes are integral to improving the health and nutritional status of stunted children. Knowledge are formed through health education. Health education is applied for the improvement of mother's knowledge about stunting prevention.

2. LITERATURE REVIEW

Children under five or often abbreviated as toddlers are children aged more than one year or less than five years or whose monthly number is between 12 and 59 months⁵. Toddlers are children under the age of five whose bodies and brains develop very quickly to achieve optimal function. Childhood is also often referred to as the golden age, because during this period basic growth affects and determines the development of language, creativity, social awareness, emotions and intellectual abilities, which takes place very quickly and becomes the foundation for further development.

Stunting (dwarfism) is a condition where a child is short or tall for their age. This condition is measured by height or height greater than minus 2 standard deviations from the WHO average child growth standard. Malnutrition is a chronic nutritional problem caused by many factors, including socioeconomic conditions, maternal nutrition, infant pain, and childhood malnutrition¹. Young children with stunted growth will have difficulty achieving optimal physical and cognitive development in the future.

A child's growth and development can be impaired and slowed down if they have a history of low birth weight (LBW) or prematurity, male children, have a history of neonatal disease, frequent and recurrent diarrhea, infectious diseases, and sexually transmitted diseases. The environment also plays a role in causing stunting. Some of them are low socio-economic status, inadequate family education especially mothers, low family income, open defecation habits such as rivers or inadequate gardens, untreated drinking water and high exposure to pesticides⁶.

Character Competency Value is one of the value dimensions of Purchasing Game Items ⁷. Character Competency Value has another term, namely functional value ⁸. Be stronger, functional props, functional items, character competencies, and functional attributes are the Character Competency Value keywords ⁸. Within the game world, gamers consume digital images just by playing the game and they consume digital images in the game world by using various items such as armors and swords ⁹.

Knowledge is the result of knowledge and occurs after humans perceive a certain object. Perception occurs through the human senses of sight, hearing, smell, taste and touch. Most human knowledge is obtained through the eyes and ears. Knowledge or cognition is a very important aspect in shaping human activity¹⁰.

The level of knowledge in the cognitive domain consists of : (1) To know, knowing means adding material that has been previously learned. This level of knowledge involves increasing something specific based on the material learned or the stimulus received. (2) Understanding means the ability to correctly explain a known object and interpret the material correctly. (3) Application, Application refers to the ability to use the material learned in real situations or conditions (real). (4) Analysis, analysis is the ability to decompose a material or object into its components, but still in an organizational structure and still interconnected. (5) Synthesis, synthesis refers to the ability to compile or combine parts into a new overall form. (6) Evaluation, this evaluation refers to the ability to discuss or evaluate a material or object¹⁰.

Factors that influence information can be divided into two factors, namely internal factors and external factors. Internal factors consist of education, which means the guidance given by a person to develop others towards certain



ideals that force a person to act and live his life to achieve security and happiness. Education is processed to provide information, such as things that support health, so that it can improve the quality of life. In addition, according to Thomas quoted by Nursalam (2003), work is a necessity that must be done, especially to support one's own life and family life. Work is not a source of joy, but rather a boring, repetitive and challenging way of life. Third, age is the age of a person calculated from birth to his birthday, the older a person is, the more mature his behavior and strength in thinking and working. The next factor comes from outside or outside, namely environmental factors. The environment is all the circumstances around a person and their influences that can affect the development and behavior of a person or group. In addition, cultural conditions, namely the socio-cultural system prevailing in society, can influence attitudes in receiving information ¹¹.

In preventive health education efforts, information must be conveyed through media in such a way that it is easily accepted by parents, especially mothers, and in this way the problem of organizing education or health education can be overcome. In order for the community to understand the information conveyed, it is necessary to develop media in the community. The purpose of media delivery of information related to health education is to facilitate communication and disseminate information widely. Android application-based media is the most important choice of dissemination media because it can disseminate information in a relatively short time. The Android application media used in this study were designed by the researchers themselves. research objectives and facilitate the delivery of training with existing materials. adapted to respondents, can be used with an internet network and can also be used without an active internet network ¹².

3. METHODS

Quantitative methods (Quasy Experiment) and corresponding control group structure with pre-test post-test and analytical. Analysis are used in the design of this type of research. The Quasy Experimental design method is used to determine the feeding behavior and nutritional status of the mother and child under five years. The design is divided into two intervention groups and one control group. The intervention group and the control group received pre-tests related to the feeding behavior of the mother and newborn according to the material, after the pre-test, intervention group 1 received prevention education through a media booklet, intervention group 2. received cessation prevention training using an Android application, while control groups received no intervention. After the training, the intervention and control groups completed a post-test, which included a questionnaire about maternal and adolescent eating behaviors, then saw the final results and did so all the time. All mothers who have news about Puskesmas village in Bugis area participate in this survey. The number of samples in the study was 17 people in each group. None of the respondents in this study left until the end of the study, so the number of respondents was 51, of which 17 were in the control group, 17 in the experimental group 1, and 17 in the experimental group. The study group was conducted in three posyandu, where the posyandu brochure Jewel Heart group, the android posyandu Love Mother group, and the Posyandu Happy Heart control group. Sampling is a probability sampling method that gives each element or member of the population an equal chance or chance of being selected. The study received ethical approval from the Health Research Ethics Committee of Sekolah Tinggi Ilmu Kesehatan Bani Saleh under Ethics Certificate EC.269/KEPK/STKBS/VIII/2023. During the research, the researcher pays attention to the ethical principles of informed consent, respect for human rights, charity and non-treatment.

4. FINDING AND DISCUSSION

This research was conducted in the work area of Kampung Bugis Health center, located on Abdul Rahim street, Tanjungpinang City. This study was conducted on mothers who have toddlers in the working area of the Kampung Bugis's Health center with a total of 48 respondents. In sampling, 17 people were obtained for the control group, 17 people for the intervention group with android application media and 17 people for the intervention group with booklet media.

The Characteristics of 3 groups respondents, the largest group is 0-23 months and the smallest group is 24-59 months. The age of 0-23 months is known as the golden age, where this period is very important to know the growth and development of children in order to detect abnormalities as early as possible, in addition to being able to treat these abnormalities according to their golden period so as to prevent and minimize permanent developmental disabilities (Marilyn-Eaton, Donna, Marilyn, David, & Patricia, 2019). Some research results show that one way to prevent stunting can be done at the age of 0-23 months, the most common age is toddlers aged 3-12 months (Dewi and Nindya, 2017).

The table below shows the characteristics of respondent mothers based on age, education, mother's occupation, parents' income, and water source in the Kampung Bugis Health Center working area.

Table 1. Distribution of Respondents based on age, education, mother's occupation, and parents' income in the Kampung Bugis Health Center working area in 2023 (n=51)

Characteristics of Respondents	Control Group (n=17)		Booklet Group (n=17)		Application Group (n=17)	
	F	%	F	%	F	%
Age						
≤ 20 years	0	0	0	0	0	0
21-30 years	13	76,4	12	70,6	11	64,7
≥ 31 years	4	23,6	5	29,4	6	35,3
Education						
Primary	5	29,4	3	17,7	2	11,8
Elementary	5	29,4	4	23,5	6	35,2
High School	7	41,2	10	58,8	7	41,2
Bachelor	0	0	0	0	2	11,8
Mother's Occupation						
Housewife	17	100	17	100	14	82,4
Worker	0	0	0	0	3	17,6
Parent's Income						
≤ Minimum Fee	17	100	17	100	14	82,4
Minimum Fee	0	0	0	0	2	11,8
≥ Minimum Fee	0	0	0	0	1	5,8

Based on table 1. The age characteristics of mothers in the control group, booklet and application, the majority were aged 21-30 years in the control group as many as 13 people (76.4%), the booklet group was 12 people (70.6%), and for the application group as many as 11 people (64.7%). The results of data recapitulation in table 1. obtained the characteristics of respondents from 3 groups with the majority aged 21-30 years and the smallest age aged ≥ 31 years. The reproductive period in women is divided into 3 periods including young reproductive period (15-20 years), healthy reproductive period (21-30 years) and old reproductive period (31-45 years). Delaying the first pregnancy until the age of 20 years can ensure pregnancy until the birth process becomes safer and can reduce the risk of low birth weight babies¹³. The results of the study state that young mothers will be able to prevent malnutrition in their toddlers, in other words that old mothers (≥31 years old) are at risk of almost 11 times greater to have toddlers with malnutrition (Khotimah & Kuswandi, 2015).

Mothers's education in the control group, booklet and application obtained the majority results in the high school category in the control group as many as 7 people (41.2%), the booklet group as many as 10 people (58.8%) and in the application group as many as 7 people (41.2%). The results of data recapitulation in table 1. obtained the characteristics of respondents from 3 groups with the results of the majority of mothers' education in high school and the lowest education in elementary school. The results of the fisher exact test analysis show that maternal education is not a factor in causing stunting in toddlers. This is in line with the research of Aisyah et al. (2019) that there is no relationship between maternal education level and the incidence of stunting in toddlers. However, it is inversely proportional to research conducted by Farah Okky Aridiyah and Ninna Rohmawati (2015) found that there is a significant relationship between maternal education level and the incidence of stunting in children under five, both in rural and urban areas.

Mother's occupation in the control group, booklet and application obtained the majority of housewives in the control group as many as 17 people (100%), the booklet group 17 people (100%) and the application group 14 people (82.4%). The results of data recapitulation in table 2.1 obtained the characteristics of respondents from 3 groups with the majority as housewives and the smallest private workers. The holder of control in improving health in children under five is the mother. The involvement of parents, especially mothers in terms of nutritional parenting in toddlers is very important in order to change children's behavior and is one of the most effective ways to overcome nutritional problems in toddlers, this is inversely proportional to the results of Amini's research (2016) where most of the toddlers who experience stunting have mothers who do not work or as housewives (65.6%).

Parents' income in the control group, booklet and application obtained the results of the majority having an income ≤ Minimum fee in the control group as many as 17 people (100%), the booklet group 17 people (100%) and the application group 14 people (82.4%). The results of the data recapitulation in table 1. obtained the most parents' income ≤ Minimum fee and the least ≥ Minimum fee. The nutritional status of a family is influenced by the economic



status of the family. This has to do with the amount of food supply available in the household. Toddlers will be more at risk of stunting if the home situation is of low economic status (Agustin, 2021). This is supported by Basic Health Research data which states that one of the causes of stunting is due to inadequate food in the household, causing a lack of nutritional intake of food, especially in toddlers. This condition requires the role of health workers, especially Health center nutrition officers, by conducting counseling on how to compile a healthy menu from existing local food ingredients to help families overcome family nutrition problems, as well as supervising toddlers who are at risk of stunting, especially in underprivileged families.

Differences in knowledge scores before and after intervention in the booklet media education group, android application media education group and control group. Bivariate testing is used to determine the effect of educational interventions through Android applications, education through brochure media, before testing differences in knowledge by conducting pre and post tests first after data is obtained. The Kolmogorov-Smirnov normality test was conducted to determine whether the data was normally distributed or not.

Table 2. Normality Results of Booklet Media Education Group, Android Application Media Education Group, and Control Group at Kampung Bugis Health Center Working Area (n=51)

Variable	Normality Test Results		Description
	Pre-Test (P-Value)	Post-Test (P-Value)	
Control Group Knowledge	0,052	0,001	Not Normal
Booklet Group Knowledge	0,009	0,001	Not Normal
Application Group Knowledge	0,095	0,002	Not Normal

Based on table 2. in the control group, booklet group, and application group, it is found that the results of the normality test of the data are not normally distributed p value: < 0,05.

The difference in pre-test and post-test values in the intervention group and control group This research was then carried out the Wilcoxon test, where this test serves to determine the difference in the results of the use of three variables that became the pillars of research, namely education using android applications, education using booklet media, and control groups to improve maternal nutritional behavior and attitudes in 51 people who became respondents. The results of the research of the knowledge variables are as follows :

Table 3. Wilcoxon Test Results Booklet Media Education Group, Android Application Media Education Group, and Control Group at Kampung Bugis Health Center Working Area 2023 (n=51)

Research variables	Application Group			Booklet Group			Control Group		
	Pre (mean)	Post (mean)	P	Pre (mean)	Post (mean)	P	Pre (mean)	Post (mean)	P
Knowledge	72,66	85,56	0,001	61,71	68,89	0,001	66,04	73,41	0,100

In accordance with the results of the above analysis, it is known that the android group has a significant difference in pre-test and post-test scores in the knowledge aspect and there is a significant difference in the increase in pre-post test scores in the knowledge aspect. In the control group there was no significant difference in pre-test and post-test scores.

The android treatment group showed a higher level of knowledge about stunting than the other treatment groups. Measurement of knowledge one month after nutrition education about stunting (post-test) showed an increase in the score of the treatment group. Herzman-harari et al (2013) state that nutrition education interventions significantly improve knowledge and healthy eating habits. Research by Oliveira et al (2014) states that eating habits are significantly related to the level of parental knowledge, nutritional knowledge, and nutritional attitudes. Booklets provided both hard copy and soft copy through whatsapp messenger (WA) with android devices help cadres and mothers of toddlers in increasing knowledge about child nutrition in preventing stunting.14 This is supported by research that there is an effect of stunting education using android applications on increasing maternal knowledge and attitudes (Fitriami & Galaresa, 2021). This activity also shows that educational media with booklets about eating

recommendations for healthy and sick children are proven to increase knowledge about proper nutrition to prevent stunting. This is in line with the results of research showing that flipchart media and booklets about the first 1000 days of life (HPK) with the theme of regular weighing and providing complementary foods at the right amount and time can promote behaviors that lead to improved health outcomes (Nasrul et al., 2018).

5. CONCLUSION

Based on the results of the research and discussion of the Android application Booklet priesting stunting (Bocesting) as a education tools to enhancing mother's knowledge, it can be concluded that there are significant differences in the improvement of mother's knowledge towards prevents stunting. Three study groups, while according to nutritional status, there was no significant change in the improvement of nutritional status. The more information we have about a balanced diet, the better implementation of a balanced diet will be. This is because when someone receives information, their knowledge about balanced nutrition increases so that they can implement balanced eating behavior properly. It is hoped that health professionals can provide health education to mothers using educational media leaflets and recommended programs such as new media to deliver effective health information to the community and engage new researchers.

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