



THE ROLE OF GIVING EAT REMINDER APPLICATION MEDIA TO CHANGES IN KNOWLEDGE, ATTITUDE, BEHAVIOR AND EAT PATTERN OF ADOLESCENT AGE 13-15 YEARS OLD

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Abstract

Background: Adolescence is a period of transition physical, mental, and emotional changes. Adolescents usually experience lifestyle changes and eating habits such as excessive dieting, skipping meals, using supplements and adopting diets.

Method: The study used the quasy experimental method with pre-test and post-test in the intervention and control groups. The number of samples used in this study amounted to 84 samples

Result: Most of the respondents were male (61.9%) with an average age of 14 years. Based on the analysis carried out showed that there were no significant changes in the knowledge, attitudes, behaviors and eating patterns of adolescents before and after the intervention ($p > 0.05$), but there was a change in diet, the mean score on knowledge and behavior scores increased

Conclusion : Nutrition education with the application of Remind me application can increase the knowledge, attitudes, behavior and diet of adolescent balanced nutrition, if adolescents are exposed to the media intensely and continuously. Providing the Remind me application media as a media for nutritional education to adolescents still needs to be developed in an effort to perfect the application display, content, specifications of mobile phones or smart phones, better programming system specifications and safer domain server usage will reduce debugging on the application system, so that the message delivered and can be achieved.

INTRODUCTION

According to the Minister of Health Regulation Number 25 of 2014 adolescents are the age group of 10 to 18 years. Adolescence is a transition period from childhood to adulthood where physical, mental, and emotional changes occur very quickly (Ministry of Health, 2014). Biological, emotional, and cognitive changes in adolescents are directly related to nutritional status. The growth and physical development experienced by adolescents significantly increases their needs for energy, carbohydrates, fats, protein, vitamins and minerals. Adolescents usually experience changes in lifestyle and eating habits such as excessive diets, skipping meals, use of nutritional supplements and dietary adoption. This often occurs because of kei nginan to contort her body (body image) that result in changes in daily eating pattern (Purnamasari, 2017).

Diet consists of the amount, type and frequency of eating. The frequency of eating is said to be good if the frequency of eating every day is three main meals or two main meals with one snack, and it is considered insufficient if the frequency of eating each day is two main meals or less. The composition of food includes the type and quantity or portion of food to be consumed (Walalangi, Sahelangi, & Widodo, 2015). The dietary pattern of adolescents in Indonesia is still not good, this is reinforced by the results of research by the Ministry of Health (2014) that the average level of energy sufficiency in adolescents aged 13-18 years is 72.3% with the proportion who consume <70% AKE of 52% of the total population, youth nationally (Ministry of Health, 2014).

The research of Schoenfeld et al. (2015) there is emerging evidence that irregular eating patterns can have a negative impact on metabolic effects that will affect nutritional status. Basically, a person's nutritional status is determined based on nutritional consumption and the body's ability to use these nutrients. Normal nutritional status indicates that the quality and quantity of food has met the body's needs. Someone who is under normal weight has a risk of infectious diseases, while someone who is above the normal size has a high risk of degenerative diseases. Therefore, it is expected to

pay more attention to the diet that is carried out (Muhajirin, 2011).

Nutritional knowledge plays an important role in determining the health status of the community. Various nutritional and health problems can occur due to the low level of public knowledge about balanced nutrition, one of which is adolescents due to an imbalance in diet. Research conducted by Fadhilah, Widjanarko, & Shaluhayah (2018) as many as 65.4% of respondents have poor knowledge about eating behavior. Respondents with poor knowledge have bad eating behavior. This is illustrated by 50.6% of respondents having obesity nutritional status.

Based on these data, it can be concluded that the level of nutritional knowledge among adolescents is still lacking, so that health promotion and nutrition education for adolescents are still needed. Balanced nutrition education for school-age children can shape eating patterns and improve the negative impacts that arise as adults besides that it can form a healthy diet during their childhood so that they can grow well Bong Nguyen & Mary W (2017). KEMKOMINFO in collaboration with UNICEF in 2014 conducted a study on the use of internet for children and adolescents, the ownership of mobile phones in Indonesia reached 84% of the total population in 12 provinces with an age range of 10-19 years, the result was 80% of the 400 respondents had use the internet with the highest percentage of 27% among children aged 14-15 years, and as many as 52% of respondents access the internet via mobile phones with 65% using the internet to support learning activities. Research conducted by Perdana et al in May 2017, showed changes in balanced nutritional behavior before and after the intervention were measured using a questionnaire. Before the intervention, there were 72.9% children with a good level of knowledge, 78.5% children with a positive attitude, 54.9% children with good balanced nutrition practices. After the intervention, good knowledge, positive attitude, and good balanced nutrition practice increased by 11.8%, 5.5%, and 15.9%, respectively. Android-based nutrition education media is better than other media. This study aims to determine the role of application media giving to changes in knowledge, attitudes, behavior and dietary pat-

terns of balanced nutrition in adolescents aged 13-15 years.

METHOD

This type of research used in this study was a quasy experimental method by intervening (treatment) on the research subjects for behavior and knowledge of balanced nutrition by giving a pre-test and post-test . The design used is a non-equivalent control group design, in which the intervention group and the control group are not selected in a straightforward manner but have been determined by the researcher (Siswanto, Susila, & Suryanto, 2013) . The variables of this research include independent variables (free), namely a media application called Remind Me, this application is based on android which can be downloaded on the Play Store. The Remind Me application contains measurement of nutritional status, recall of respondent meals, balanced nutrition education and meal time alarms in accordance with the principles of balanced nutrition. Sedangkan , the dependent variable (dependent) such as knowledge, attitude, behavior and nutritional diet seimb ang teenagers.

The sample in this study were adolescents who were still students of SMP AL-Chasanah and SMP Al-Kamal aged 13-15 years. The sample will be divided into two groups, namely the treatment group given the application and the other group without treatment with only counseling related to balanced nutrition for adolescents using the discussion or question and answer method, each group totaling 42 people. The statistical test in this study was conducted to determine differences in knowledge, attitudes, behavior and dietary patterns of balanced nutrition between the intervention group and the control group. Based on the results of the normality test between the treatment group and the control group in this study, all data were normally distributed, so that the next analysis can be used the paired sample t-test and independent t-test.

RESULT AND DISCUSSION

Respondent Characteristics

The number of respondents in this study were 84 students consisting of the treatment group and the control group. There are 26 male respondents (61.9%) and 16 female respondents (38.1%).

This study uses adolescent respondents aged 13-15 years because according to Sundari (2005) in adolescence, individuals tend to still make adjustments , which in adolescents is the ability to make plans and organize responses in such a way that they can survive and cope with everything. form conflicts, difficulties, and frustrations efficiently and have mastery and emotional maturity

The most of the respondents were 14 years old in both the treatment group and the control group with a total of 22 students (52.4%) and 18 students (42.9%)

Balanced Diet Pre-test, Post-test 1 and Post-test 2 between Treatment and Control groups

Giving questionnaires to respondents in the treatment group and control group to determine a balanced nutritional diet.

From a total of 84 respondents with each group of 42 respondents, still a few respondents who have a diet in accordance with the pillars and guidelines for balanced nutrition. In the treatment group, the value before being given the intervention (pre- test) was 4 respondents (9.5%) who obeyed this value continued to increase during the study as evidenced by the increase in respondents who obeyed the post-test 1 to 8 respondents and post-test 2 to 9 respondent,

In the control group or group respondents who were not given the media, the mean score of behavior at the time of the pre-test was found to be 7 obedient and 35 disobedient. At the time of Post-test 1, it was seen that there was no increase in respondents who were obedient, still 7 and 35 people were non-compliant. Post-test 2 decreased the number of respondents who obeyed to 5 people and 37 people who did not comply.

This proves that balanced nutrition education can encourage increased knowledge but has not been able to change behavior so that

Table 1 Analysis of Balanced Nutrition Knowledge Score

Knowledge	Group	Mean	Sd	Difference	p Value
<i>Pre-Test</i>	Treatment	7.95	1.05	0.64	0.06
	Control	7.31	1.02		
<i>Post-Test 1</i>	Treatment	7.81	1.21	0.15	0.56
	Control	7.66	1.02		
<i>Post-Test 2</i>	Treatment	8.04	0.93	0.30	0.08
	Control	7.64	1.14		

dietary patterns also change . In line with research conducted by Musyayyib et al (2018), it is shown that teenagers at the Nahdlatul Ulum Soreang Maros Islamic Boarding School in Maros Regency who have knowledge and good eating patterns are 48 subjects (35.8%), while those who have good knowledge but poor diet. as many as 50 subjects (37.5%). Then those who had less knowledge and good eating patterns were 15 subjects (11.2%), while those who had less knowledge and eating patterns were 21 subjects (15.7%) . The results of the Chi square analysis, the value of $p = 0.57$, indicate that there is no relationship between knowledge and diet at the Nahdlatul Ulum Soreang Islamic Boarding School . Another study conducted by Damayanti et al (2014) states that there is no relationship between nutritional knowledge and diet. The cause of the absence of a relationship between nutritional knowledge and diet is due to having a diet that includes the number, type and frequency of being in a category that is not in accordance with the nutritional needs recommended every day.

Balanced Nutrition Knowledge Pre-test, Post-test 1 and Post-test 2 between the Treatment and Control Groups

Measurement of knowledge is carried out by interviewing or giving questionnaires that ask about the content of the material to be measured from the research subject or respondent Notoatmodjo (2010). A person's nutritional knowledge according to Suwandono 2007 in Arimurti (2012) can be assessed based on the respondent's answer to the questions given according to the questionnaire proposed. The pre-test in this study was conducted to determine the basic knowledge of respondents regarding knowledge of balanced nutrition. Measurement of adolescent knowledge about the message of

balanced nutrition in this study was carried out using a questionnaire.

Based on research conducted in the treatment group, it was found that the mean score of knowledge had an insignificant increase because the pre-test score was good. Based on table 1, the respondent's knowledge during the study can be said to be good (8.04 ± 0.09), the mean obtained from the control group can also be said that the control group has knowledge of good balanced nutrition (7.67 ± 0.88) . This is in line with the theory of Nursalam (2008) which states that the criteria for assessing the level of knowledge use values: the level of knowledge is good if the score is 76-100%, the level of knowledge is sufficient if the score or value is 56-75% and the level of knowledge is insufficient if the score is or is value $\leq 56\%$.

The results of statistical tests carried out both in the treatment group and the control group showed that there was a significant change in the mean value of response knowledge ($p < 0.05$), but there was no significant change indicating that nutrition education with the Remind me application media could improve respondents' knowledge ($p > 0.05$). This research is in line with the research conducted by Safitri & Fitranti (2016), it was found that the mean increase in nutritional knowledge in the lecture group from the previous 72.99% to 78.88%, while in the booklet group the average knowledge before education was 73.96% to 78.89%. There was a difference in the mean knowledge of the lecture and booklet groups ($p < 0.05$). However, there was no difference in changes in nutritional knowledge between the two groups ($p > 0.05$).

One of the factors causing students' low knowledge is the lack of socialization and knowledge about balanced nutrition. Soekirman (2011) stated that in 2003 and 2005 the

Table 2 Analysis of Balanced Nutrition Attitude Score

Behavior	Group	Mean	Sd	Difference	p Value
Pre-Test	Treatment	8.33	1.63	0.17	0.64
	Control	8.50	1.67		
Post-Test 1	Treatment	8.28	1.40	0.22	0.45
	Control	8.50	1.23		
Post-Test 2	Treatment	8.31	1.33	0.09	0.82
	Control	8.23	1.65		

Ministry of Health issued a Balanced Nutrition Guidelines book, but the lack of socialization and publication on this matter made the public less familiar with the guidelines for balanced nutrition. Another factor that influences changes in respondents' knowledge is the distance during the study. According to Vaus (2005) in Arimurti, (2012) giving distance between pre- test and intervention should not be too long . This is done to minimize any outside influence before the intervention. However, the distance that is too close between the pre-test and the intervention can also affect the level of memory sensitivity of the treatment group to the intervention that will be given. Therefore, the distance between the pre-test and the intervention in this study was seven days with a pre-test time of 45 minutes (Arimurti, 2012) .

Supported by research by Siagian et al (2010) which tested the effect of visual media posters and healthy food leaflets on the behavior and knowledge of snack selection students in schools got an average score before the intervention by distributing leaflets of 1.99 and after the intervention the score increased to 3.00. The results of the questionnaire after giving the leaflet showed an increase in overall knowledge, namely 100% of students answered questions about knowledge of street food correctly, the pretest and post-test durations were different. In this study , a two-week pre-post test was used , while this study was only three days after the intervention with the distribution of the Remind me application media . In addition to the long factor of giving intervention, the factor of giving the frequency of intervention can also affect a person's knowledge, as according to Dewi & Aminah (2016) giving optimal intervention is sufficient to do a maximum of three times because if it is given more than twice it can cause boredom. Meanwhile, according to

Saloso (2011) the provision of interventions must be done at least three times so that increased knowledge is achieved.

Balanced Nutrition Attitude Pre-test, Post-test 1 and Post-test 2 between Treatment and Control Groups

The analysis carried out on the attitude scores in the treatment group and the control group using the Independent T-test showed that the mean value increase in the pre-test attitude score between the treatment group and the control group was 8.33 ± 1.63 and 8.50 ± 1.67 , the difference in mean value was 0.17 and obtained p value 0.64, the mean post-test attitude score 1 treatment group was 8.28 ± 1.40 and 8.50 ± 1.23 in the control group with a p value 0.45, the difference between the mean post-test 1 score was 0.22, then the mean score of attitude scores at post -test 2 treatment groups and the control group were 8.31 ± 1.33 and 8.23 ± 1.65 , the difference in value obtained was 0.09 and the p value was 0.82 so it could be said that there was no significant effect between the provision of media applications on the attitude score of pre-test, post-test. test 1 and post-test 2 treatment group and control group, but it can be seen from the difference between the two groups in each test conducted that i changes in the mean value of the attitude of the treatment group and the control group. Nutrition education with the Remind Me application cannot provide a significant change to changes in the attitude of balanced nutrition among respondents. This is because human attitudes are the main predictors of everyday behavior (actions), although there are other factors, namely the environment and one's beliefs. This means that sometimes attitude can determine a person's actions, but sometimes attitude doesn't turn into action. Consideration of all the positive and negative impacts of an action also determines

Table 3 Analysis Behavior Score of Balance Diet

Behavior	Group	Mean	Sd	Difference	p Value
Pre- Test	Treatment	11.81	3.10	0.86	0.17
	Control	12.67	2.56		
Post-Test 1	Treatment	11.88	2.52	1.52	0.01*
	Control	13.40	3.00		
Post-Test 2	Treatment	12.38	2.68	0.97	0.09
	Control	13.35	2.67		

whether a person's attitude becomes a real action or not. In other words, besides attitude, another major factor influencing one's actions is social norms (Zuchdi, 1995). In line with the research conducted by Damayanti (2017) on elementary school children carried out for two weeks with two counseling while playing MOZIBANG getting a value of $p(\text{sig}) = 1.16 > \alpha 0.05$ so that it can be concluded that there is no effect of counseling using balanced nutrition monopoly media. (MOZIBANG) on the balanced nutritional attitude of students.

Balanced Nutritional Behavior of Pre-test, Post-test 1 and Post-test 2 between the Treatment and Control Groups

The behavior is the end result of the increase of knowledge and change the attitude of an individual, based on the research and analysis using test Independent T-test found a mean value increment behavior score pre-test group perlaku late and the control group was $11.81 \pm 3:10$ and $12.67 \pm 2:56$ with a value p value 0.17. The mean post-test behavior score of 1 treatment group was 11.88 ± 2.52 and 13.40 ± 3.00 in the control group with the p value of the test results of 0.01 so it can be said that there is a significant difference between the post-test behavior score 1 treatment group and the control group. The mean post-test behavior scores of the 2 treatment groups were 12.38 ± 2.68 and 13.35 ± 2.67 in the control group with a p value of 0.09.

This research is in line with the research conducted by Perdana (2017) regarding the development of balanced nutrition education media based on Android and the website which states that all treatment groups generally show balanced nutrition practice during the pre-test is quite good (average score 80-86) and there was no difference between treatment groups .

However, there are still quite a lot of students (25-63.9%) whose practice is in the medium and low category; Generally students often buy unhealthy snacks and eat instant food. Nutrition education interventions improve the subject's balanced nutrition practice. After the intervention, there was an increase in the practice score by 5.1 points (android & website combined group) to 11.6 points (website group), which differed significantly between groups.

There are several factors that influence the occurrence of this, one of which is because the behavior observed by the researcher is limited to closed behavior where the measurement of behavior is carried out by calculating the score of the number of respondents' answers to the questions raised. According to Skinner (1993) in Notoatmodjo (2010) states that closed behavior (covert behavior), closed behavior occurs when the response to the stimulus cannot be clearly observed by other people (from outside).

Research conducted by Fadhilah et al (2018) states that there are several factors that influence a person's eating behavior, especially junior high school adolescents. Some of these factors are the availability of infrastructure at home which is still poor (54.3%), and the majority have light physical activity (58 %), the majority of the allowances given are used to buy snacks and sweet drinks (84%), environmental factors such as the role of teachers are still bad (50.6%), the role of parents who have not supported respondents in eating well (58%), as well as the role of friends who have not provided a good example to respondents in eating behavior (74.1%), some of these factors produce a p value <0.05 , so it can be concluded that these factors have a significant effect on changes in a person's behavior.

CONCLUSION

There were changes to a balanced nutritional diet before and after the intervention in the treatment group and the control group. There was no difference in the scores of knowledge, attitudes and behavior of balanced nutrition for adolescents before and after the intervention in the treatment group and the control group. It can be concluded that there is no influence of media applications Remind me to an increase in knowledge, attitudes and behavior of balanced nutrition in adolescents aged 13-15 years.

The Remind me application media is one of the media that can keep up with technological developments and trends among teenagers so that it is expected to be able to convey messages to adolescents with an easy and appropriate method. However, the granting of media applications Remind me as a media nutrition education to adolescents still need to be developed as an attempt to download yempurnakan shortage of applications ranging from media display, the content of the content, the specification mobile phone or smart phone, specification system better programming and use of the domain server that safer so that it will reduce debugging in the application system , so that the message conveyed and the desired goal can be achieved. In further research, it is necessary to test the acceptance of the Remind me application media so that it can continue to be developed according to the times. In addition, to overcome dietary problems in adolescents, the application of Remind Me can increase knowledge, attitudes and behavior of balanced nutrition for adolescents, but adolescents need to be exposed to the media intensely and continuously

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