

ORIGINAL ARTICLE

The Gemas Application Toward Knowledge and Attitude in Preventing Stunting of Teenagers

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ABSTRACT

Introduction: Anemia, overweight, and underweight are problems that often occur for teenagers. If this condition continues until pregnancy, the baby born is at risk of stunting. So, teenagers as a millennial generation should be given the access for education of health and balance nutrition by using Gemas application. It is more practical, easy to access, and almost everyone currently has the device. So, efforts to increase teenagers' knowledge can be achieved. This study is aimed to know the impact of Gemas application toward knowledge and attitude in preventing stunting of teenagers. **Methods:** Type of this study is an experimental study by static pretest and posttest with control group design. Respondents of the study were all students that fulfilled the study criteria. The sample was 100 respondents chosen by simple random sampling technique. Instruments that were used for this study were knowledge and attitude questionnaires in preventing stunting, and smartphone. The data analysis used univariate and bi-variate by using t test. **Results:** Respondents' characteristic show that the male respondents were more than 70%, and respondents aged 15 years old were more than 70%, The senior high school level of parents education was more than 66%. Gemas application significantly impacts knowledge and attitude of teenagers toward the preventing of stunting, which are $p=0.00$ and $p=0.00$, respectively. **Conclusion:** Gemas application can impact significantly the knowledge and attitude of teenagers in preventing stunting.

Keywords: Gemas application, Stunting, Knowledge, Attitude

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INTRODUCTION

Teenage is period that shows the rapid growing and development of physical, psychology, and intellectual attributes. The teenager is a group of people in the range of 10 - 19 years old and there are 261, 730 teenagers in Banyumas Regency (1). Moreover, Ministry of Family Planning mentioned that teenagers in the range of 10 - 24 years old and have not married yet (2). The problems that often occur in teenagers today are anemia, overweight, and underweight (3). Premarital sex or anemia of teenagers can cause a problem for their pregnancy, such as growth and developmental disorders. Malnutrition of mother can support incidence of low birth weight, which can cause stunting. About 37% of children experience stunting in Indonesia, almost 9 million. The stunting rate of children under five in Central Java in 2017 (28.5%) increased compared to 2014 (22.6%), 2015 (24.8%), as well as in Banyumas Regency which increased in 2017 (24.5%) compared to 2014 (19.1%) and 2015 (22.8%) (4).

Stunting can be caused by multi-dimension factors, not only by malnutrition of pregnant mother, but also during the toddler period. Incidence of stunting for toddlers can be decreased in the first 1000 days of life by giving specific intervention for pregnant mothers such as extra food. It could overcome the problem of lack of energy and chronic protein malnutrition, Fe deficiency and folic acid, less iodine, intestinal worms, and malaria disease (5). Maternal knowledge about stunting can reduce the incidence of stunting (6). Some risk factors that can cause stunting are low family income, history of infectious disease, sanitation and cleanliness of the environment, parents' height, especially mothers, and lack of vitamin C and vitamin D (7). Moreover, stunting in toddlers is influenced by various factors, which are child factors, parents, socioeconomic, and environmental factors.

Therefore, the use of Gemas application about stunting provides health information to teenagers on how to prevent stunting as early as possible. Almost all Indonesian teenagers as internet users will be able to access information about stunting. The Gemas application integrated with a smartphone will make it easier for users to obtain stunting information. Android smartphone with Gemas application can be used for

increasing knowledge and attitude of teenagers toward preventing of stunting. The Gemas application was developed by System Information experts and consists of health information on how to prevent stunting. The Gemas digital application can be used for educating today's generation, so it can access many teenagers in a short time. Internet addiction is complicated and impacts on all aspects of teenage lives (8,9). The use of smartphone as a media of learning can increase knowledge on the subject of math's (10). Media learning by using Android smartphones is proven very good in quality based on criteria to provide health promotion. Media is divided into print media such as leaflet, booklet, poster and electronic media, such as television, radio, PowerPoint, smartphone, etc. (11, 12). This study used an electronic media by smartphone application containing topics about preventing of stunting. The use of this media information can be delivered effectively by smartphone for teenagers (13). Gemas is an application that uses Android and can be downloaded by smartphones. This application can be downloaded from Playstore or Appstore. This study aims to know the impact of Gemas toward teenagers' knowledge and attitude in preventing stunting.

MATERIALS AND METHODS

This study is an experimental study by pretest and posttest with control group design. The study was conducted for three months. Population of study was 357 students at SMA Negeri 1 Sokaraja in the academic year of 2019 from September to October. Respondents of study were all students that fulfilled the inclusion criteria of study, such as: students of level X, have an Android smartphone, and willing to be a respondent. The exclusion criteria are absence of respondents when data are collected and canceled their participation. The sample was 100 respondents chosen by simple random sampling technique. Respondents were divided into intervention group for 50 respondents and control group for 50 respondents. The independent variable of this study is Gemas application and the dependent variables are knowledge of stunting and attitude for preventing of stunting. This study used a questionnaire for measuring knowledge and attitude for preventing of stunting. The questionnaire was developed by own researchers. Knowledge and attitude questionnaires were analyzed by content validity. Content validity was used to ensure the contents of the questionnaire are appropriate and relevant to the study objectives. The measurement of knowledge attitude for preventing of stunting for intervention and control group was done before giving an intervention (pretest).

Gemas application for smartphones for intervention group should be done by downloading from Playstore. All respondents of this group must read all the content of the Gemas application for 15 minutes. All respondents were given seven days for studying from the application

at home or anywhere. Respondents were given an observation form to record when they read and learned the content of the Gemas application over seven days. After seven days, researchers measured level of knowledge and attitude for preventing of stunting for intervention and control group (posttest). The control group was not given a Gemas application. The Gemas application was given after completing the study.

Univariate analysis such as respondents' characteristics of age, gender, parent education, and parent job are presented with distribution and frequency tables (14). Normality test used Kolmogorov Smirnov test, for knowing the distribution of data. Pair t-test was used for knowing the difference of pretest and posttest results for intervention and control groups. Moreover, independent samples t test was used to identify the difference of posttest result from knowledge and attitude of intervention and control group. This study was approved by the ethics committee of Poltekkes Kemenkes Semarang by No. EC 005/EA/KEPK/2020 23 June, 2019.

RESULTS

Distribution result of respondents' characteristic based on parent age, gender, parent education, parent job and environment (number of family members) at Sokaraja Senior High School - Banyumas are described in Table I. There was a total of 100 respondents in this study. There were two groups of respondents which were intervention group (n = 50) and control group (n = 50). The gender of the respondents in the intervention group and the control group in this study was found to be mostly male, namely 15 (30%) and 35 (70%) in the intervention group and 14 (28%) and 36 (72%) in the control group. The respondents' education in the intervention group and control group was mostly high school, respectively 33 (66%) and 37 (74%). It was found that 100% of respondents' parents, both the intervention group and the control group, all worked, both employees and workers.

For respondents age, the highest percentage of respondents aged 15 years in the intervention group was 35 (70%) and the control group 39 (78%). The number of brother/sister more than to in the intervention group and the control group was almost the same, namely 45 (90%) and 47 (94%).

The impact of Gemas application toward knowledge and attitude in preventing stunting of teenage at SMA Negeri 1 Sokaraja - Banyumas in 2019 for intervention and control group is shown in Table II.

There is a significant difference of knowledge before and after giving Gemas application for intervention group (p=0.00) and control group (p=0.01) and Gemas application can influence knowledge significantly (p=0.00). There is difference of attitude before and after

giving Gemas application for intervention group ($p=0.00$) and control group ($p=0.42$). Gemas application can influence teenagers' attitude significantly ($p=0.00$).

Table I : Distribution and Frequency of Teenagers Based on Parent Age, Gender, Parent Education, Parent Job, and Environment (Number of Family Members) at SMA Negeri 1 Sokaraja - Banyumas in 2019

Variable	Groups	
	Intervention n = 50 F (%)	Control n = 50 F (%)
Gender		
Male	35 (70)	36(72)
Famale	15 (30)	14(28)
Education		
Primary school	2 (4)	1(2)
Yunior high school	9(18)	4(8)
Senior high school	33(66)	37(74)
University	6(12)	8(16)
Age (in year)		
14	4(8)	4(8)
15	35(70)	34(78)
16	9(18)	12(24)
17	2(4)	0(0)
Job		
No Job	0(0)	0(0)
Employer (Civil servant, Private employer)	50(100)	50(100)
Number of brothers/sisters		
≤ 2	5(10)	3(6)
> 2	45(90)	47(94)

The intervention group described that the mean value of the respondent's level of knowledge in the pre-test was 40,9. After they were provided health information through the Gemas application, the level of stunting knowledge obtained the mean value of 70,9 in the posttest. On the other hand, the stunting knowledge level of control group experienced a slight increase in the mean score from 43,4 to 48.2. Moreover, the stunting attitude level of the intervention group was a significant increase in the mean score from 48 to 58 and the control group was stable on mean score 48.

DISCUSSION

Male respondents were more than female respondents for intervention group and control group as the population number of male students were greater than female students. Sample of respondents was taken randomly, so every student had chance to be a respondent. Majority parent education is senior high school for intervention group and control group. The education level of father was around 45% of primary school, and 47% of Junior High School and Senior High School, and University around 8% (15). The educational level of parents is a factor that influences parenting pattern for their children in feeding, nutritional consumption pattern, and nutritional status (16). In general, someone's education can influence attitude and behavior of their life. Educational level of parents can influence nutritional status of their children. Formal education of parents can decrease risk of stunting in Indonesia. Higher level of formal education is a wider knowledge of thinking. So, it can mean more information is received by parents (17). Also, nutritional status of children can be influenced

Table II : The Impact Of Gemas Application Toward Knowledge and Attitude for Preventing Stunting of Teenage at SMA Negeri 1 Sokaraja - Banyumas in 2019

Variable	Intervention Group		Control Group	
	Pre Test	Post Test	Pre Test	Post Test
Knowledge:				
Minimum	15	45	20	15
Maximum	65	90	65	75
Mean	40,9	70,9	43,4	48,2
SD	10,77	10,91	10,77	10,91
P-value		0,00		0,01
Delta		3,0		4,8
P-value				0,00
Attitude :				
Minimum	37	47	39	36
Maximum	55	59	39	57
Mean	48	58	48	48
SD	4,51	2,79	4,47	4,12
P-value		0,00		0,42
Delta		6,22		0,52
P-value				0,00

by educational level of mother. Mothers of a higher educational level tend to receive more information. So, the development of their children will be good (18).

In general, teenage will start at 10 -13 years old until 18-22 years old (14). The table shows that respondents' characteristic of this study were 14-17 years old. The respondents aged 15 years old was almost similar for intervention and control group. Several factors were identified as having an influence on changes on knowledge and attitudes about stunting, namely gender, and age level (19). Then, nutritional knowledge of female teenagers can increase by increasing age (20). Parents' job also contributes to increasing knowledge and attitudes to prevent stunting (15, 21). Almost all parents have a job, such as farmer, fisherman/laborer, private employer, army, policeman, and civil servant and around 5,6% is jobless, which can support facilities of family members to prevent stunting. If parents have a job it can give more facilities for studying their children. This study did not identify economic status of parents for both intervention and control group. Parents' job can reflect family income.

High level of father's education can influence job and income of family. The level of education possessed by a person will be directly proportional to his job and income. A sufficient income can influence family purchasing power to fulfil nutritional needs of their family. If the educational level of father or parent is low, it can cause the income to be not enough to properly fulfil the needs of the family (22). Almost all number of brothers/sisters were >2 for intervention and control group. Number of sisters and brothers that stay together in a house can influence stunting incidence. Previous study showed that there was a correlation between knowledge ($p=0.000$), father's education ($p=0.000$), mother's education (0.000), and member of family ($p=0.02$) with stunting incidence (23). Then, Gemas application can influence knowledge significantly and teenage attitude significantly. Knowledge is a result of sensing a certain object. Knowledge of preventing stunting is a cognitive aspect that shows understanding of respondents toward stunting, treatment and preventing stunting. Knowledge is an important domain for forming an action (24). Gemas is a smartphone application based on Android. Gemas can impact of increasing knowledge by presenting image shape, color, being interesting and easy for using. So, it can influence short memory and vision, which can cause an understanding (12). This application can be found on smartphones the same as other applications. Teenagers can read the application whenever and wherever, because the application can operate without an internet connection. This study result is supported by previous study which showed that there was an increase in value above on minimum completeness standard of learning about Pancasila by using a smartphone based on Android ($p=0.001$) (25).

Most people, especially teenagers, will use Android smartphone for accessing or finding many kinds of information (26). So, it can be concluded that there is an impact of Gemas toward teenagers' knowledge. On the other hand, prior study found p -value > 0.05 , so it can be said there was no significant difference of knowledge when an intervention is given to an experiment group using counseling and leaflet (26). Gemas application in preventing stunting can influence teenagers' attitude. Attitude can increase by using smartphones because much information can be accessed for increasing knowledge. So, it can contribute in gaining positive attitude. Using smartphones wisely can cause a positive impact such as a changing of someone's attitude and behavior. It can be caused by easily getting information (11). So, attitude can be changed by using smartphone application media (5). This condition may occur because media applications of smartphones are interesting, helping students in getting many experiences. juga karena membantu siswa mendapatkan pengalaman. Also, there are many menus and choice icons such as moving animations, videos, or games for entertainment and information.

Some factors can influence attitude, such as personal experience (27). Personal experience is an experience of individual that will be a support factor in forming a positive or negative attitude. Important people can influence someone. Someone tends to imitate attitudes of important people in his/her life (28). So, important people can be a motivator in their life to have a positive attitude. However, a positive change in this study is not a single factor caused by Gemas, because it could be influenced by other factors such as important people or personal experience. Media information can also influence the increased knowledge of preventing stunting. Some factors can influence someone's knowledge such as age, education, media information, social and local culture, environment, and experiences (24). Media can be divided into two parts : print media and electronic media. . Print media are leaflet, booklet, poster, and so on. Electronic media are television, radio, PowerPoint, smartphone and so on (29, 30). This study used electronic media as a distributor of information. The advantage of Gemas for the study is that some subjects such as definition, etiology, treatment, effect, and prevention can be presented in writing and shaped interestingly. The counseling effect for increasing health knowledge of teenage reproduction at SMA PGRI 3 Purwakarta mentioned there was a significant influence of counseling toward the increasing of health knowledge of teenage reproduction at SMA PGRI 3 Purwakarta with p -value= 0.000 or <0.05 (28). The impact of health education by using leaflet method toward knowledge of volunteers in the community in term of Booster MR immunization show the result of paired sample t-test, p -value= 0.000 or < 0.05 (14). Moreover, in regard to the impact of counseling and training by using leaflet media toward knowledge of healthy lifestyle behavior

volunteers at Ratolindo Tojo Una-Una District, the result of t test analysis shows that there was a significant difference of knowledge of PHBS cadres after intervention of counseling and training with p -value = 0.010 or < 0.05 (29). Then, the knowledge of stunting can be an important factor for influencing attitude of cadres in doing their tasks. Intervention group was more significantly influenced in attitude than control group ($p = 0.000$) (26). It is clear that there was a relationship between increasing knowledge and changing attitudes in healthy lifestyle behavior.

Gemas application in preventing stunting is the only factor for influencing teenagers' attitude. There are some other factors can influence their attitude, such as: 1). Personal experience; 2). influence from important people; 3). culture; 4). mass media: news from newspaper and radio or other communication medias; 5). educational institution and religion institution; and 6). emotional factor (27). Other factors that may persuade the change of attitude toward stunting include the role of parents and personal attitude, including age, job, education, and parity (30). Therefore, the use of Gemas may improve the level of knowledge and attitude to prevent stunting in the future.

CONCLUSION

Male respondents are more than female respondents for intervention group and control group. Majority parent education is Senior High School for intervention group and control group. One hundred percent of parents have a job. Almost all number of brothers/sisters was > 2 for intervention and control group. Gemas can influence knowledge significantly. Also, Gemas can influence teenage attitude significantly. Gemas application in preventing stunting is a good application to use for increasing knowledge and attitude of teenagers. It could be used as a media for health education. Also it can be used as a source of digital information that can be brought anywhere. So, it can be a solution for increasing knowledge and attitude of teenagers in preventing stunting.

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