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## PROCEEDING BOOK

### *THE 4<sup>th</sup> INTERNATIONAL CONFERENCE ON HEALTH SCIENCE 2017*

### **“The Optimalization of Adolescent Health in The Era of SDGs”**

INNA GARUDA HOTEL YOGYAKARTA,  
INDONESIA  
November 5<sup>th</sup>, 2017



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“The Optimalization of Adolescent Health in The Era of SDGs”

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**THE EFFECTIVENESS OF HEALTH EDUCATION THROUGH SMARTPHONE AND BOOKLET ON KNOWLEDGE AND ATTITUDE OF ADOLESCENCE REPRODUCTIVE HEALTH**

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**ABSTRACT**

Adolescent related to reproductive health problems. The problem occurs because of adolescent had a lack of knowledge and attitudes about reproductive health. Smartphones was effective tools of education and it can improve knowledge and attitudes of teenagers, so the problem on adolescent reproductive health can be solved. This research analyze the differences and effect of health education through a smartphone and a booklet on the knowledge and attitudes of adolescents about reproductive health, also to analyze the factors that change knowledge and attitudes of adolescent after receiving health education from smartphone. This research was a mix method research that combines quantitative and qualitative research with concurrent embedded design. Quantitative research used quasi-experiment design, conducted on 84 adolescent, divided in to two groups. Qualitative research conducted in 8 adolescents who received health education through the smartphone as an informant. Differences in knowledge and attitudes before and after health education through smartphones and booklets were analyzed with the Wilcoxon test. There was the differences between health education through smartphone and booklet on changed knowledge and attitudes of adolescents about reproductive health. The influences of health education through smartphone on knowledge and attitudes of adolescents about reproductive health is better than booklet ( $p < 0.05$ ). The factors that cause the adolescent knowledge and attitude changed after getting health education through smartphones are good content, simple language, the content is interesting, easy to understand, being a trend, easy to read, effective, easy to carry, easy to store, more privacy, easily stored, simple, easily accessible and the content was complete. Smartphone as effective tools of health education, it can improve knowledge and attitudes of adolescents about reproductive health.

**Keywords:** *Health Education, Smartphones, Booklets, Adolescent Reproductive Health*

**INTRODUCTION**

Adolescent is a gold generation, therefore adolescents need to be provided with reproductive health education to improve their knowledge.<sup>1</sup> Reproductive health education is basically an effort to provide knowledge.<sup>1</sup> The fact is teenagers get less information and access to reproduction health service, because the parents in Indonesia still consider taboo to discuss everything related to the organ and the reproduction process, beside that in schools, adolescent only get general information about the reproductive organs, without learning how to maintain reproductive health and how to avoid risk behaviors related to reproductive health.

The issue is reinforced by the Indonesian Demographic Health Survey which results in data that adolescent knowledge about reproductive health is lacking.<sup>2</sup> Reproductive health problems are associated with risk behavior. The risk behavior of teenagers can lead to unwanted pregnancies and sexually transmitted diseases. Various

risk behaviors such as premarital sexual intercourse, early marriage, unwanted pregnancies, abortion, Sexually Transmitted Diseases (STDs), Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS), and other risk of sexual behaviors.<sup>3,4,5</sup>

Health promotion increasing positive behavior, is influenced by various factors such as health education tools.<sup>6</sup> Booklet is a book that provides complete information, consisting of several pages, in the form of text and images to convey health messages.<sup>7</sup> The advantages of the booklet are long-lasting, usable, low cost, unnecessary electrical energy, easy to carry, and easy to understand.<sup>8</sup> The weakness of the booklet is it can not stimulate sound effects, it is easily damaged, otherwise the information on the booklet can not be updated quickly, it takes time and cost to print again.<sup>9</sup>

To overcome the weakness of booklets is electronic tools. Today, Mobile phones can be used as a tools of health education and healthcare services.<sup>10,11,12</sup> Mobile phones are one of the keys in WHO's global strategy to achieve Millennium Development Goals (MDG's).<sup>13</sup> Mobile phones (as mobile health) are expected to increase knowledge communities to reduce maternal mortality rate (MMR) and infant mortality (IMR), help prevent STDs, and unwanted pregnancies.<sup>14,15,16,17</sup> Based on data compiled by the Indonesian Cellular Telecommunication Association (ATSI), as of the end of 2011 cellular phone usage in Indonesia is so large that the possibility of using mobile phone technology as a health education strategy is expected to improve public health status.<sup>18</sup>

This research analyze the differences and effect of health education through a smartphone and a booklet on the knowledge and attitudes of adolescents about reproductive health, also to analyze the factors that change knowledge and attitudes of adolescent after receiving health education from smartphone.

## METHOD

This study takes the subject of high school students, between 14 to 16 years (middle adolescent), with the consideration that middle adolescents are experiencing the peak of physical and emotional changes. Due to limited time, cost and effort, only 2 of 136 high schools in 30 districts in Bandung are taken. In quantitative research, sample selected 42 people for the smartphone group and 42 people for the booklet group, the total sample is 84 people.

Sampling in qualitative research using non probability sampling technique, that is sampling technique that does not give equal opportunity or opportunity for every element or member of population, by purposive sampling that is sample determination technique with certain consideration, where the sample is believed to represent sample of adolescent under study. Samples were adolescnets who received information from smartphone, amounting to 8 people with sampling criteria based on the highest value of questionnaires in quantitative research.

This research was a mix method research that combines quantitative and qualitative research with concurrent embedded design. Quantitative research used quasi-experiment design, conducted on 84 adolescent, divided into two groups. Qualitative research conducted in 8 adolescents who received health education through the smartphone as an informant. Differences in knowledge and attitudes before and after the health education through smartphones and booklets were analyzed with the Wilcoxon test. The influences of health education was analyzed through a simple regression linearity test.

The research method of combining the sequential explanatory model is done by collecting and analyzing quantitative data in the first stage and followed by the collection and analysis of qualitative data in the second stage to obtain an explanation of quantitative data in the early stages. Quantitative methods in this study have higher weight than qualitative methods.

Quantitative research in this research used quasi-experimental design with non randomized control group technique pre test posttest design. The design of this study used 2 groups, the first group got treatment of reproductive health adolescent based on smartphone while the second group as control group was given promotion of adolescent reproductive health with a booklet. In both groups, measurements were made before and after health promotion to identify changes in adolescent knowledge and attitudes about adolescent reproductive health.

## RESULT

1. The characteristic of adolescent, explained in this table.

**Table 1 Adolescence Characteristic**

Adolescence Characteristic	Group				<i>p Value</i>
	Smartphone		Booklet		
	n=42	%	n=42	%	
<b>1. Gender</b>					
– Male	14	33,3	17	40,5	0,498
– Female	28	66,7	25	59,5	
<b>2. Residence</b>					
– With only Mother or Father	2	4,8	3	7,1	0,645
– With Parents	40	95,2	39	92,9	
<b>2. Information Source</b>					
– Newspaper/ Magazinne	7	16,7	5	11,9	0,648
– Electronic	25	59,5	21	28,6	
– Friends	1	2,4	1	2,4	
– Parents	8	19,0	12	50,0	
– Health Workers	1	2,4	3	7,1	

Table 1 Illustrated the distribution of respondent characteristics. The gender of the respondents was mostly female, with most living residing with parents, and obtaining a source of information on adolescent reproductive health mostly from electronic. Based on statistical test of respondent's characteristic, showing gender, residence, and source of information with  $p > 0,05$ , so it is worth to be compared.

**Table 2 The Difference of Knowledge and Attitude of High School Students About Adolescent Reproduction Health**

Variable	Smartphone Group (n=42)		Z <sub>w</sub>	p Value	Booklet Group (n=42)		Z <sub>w</sub>	p Value
	Pre	Post			Pre	Post		
<b>1. Knowledge</b>								
- Mean	85,7	89,0	-	0,001	82,0	82,1	-1,000	0,323
- Median	84,0	88,0	3,224		84,0	84,0		
- SD	5,9	6,1			7,1	7,1		
<b>2. Attitude</b>								
- Mean	68,0	71,0	-	0,000	63,7	69,1	-7,410	0,000
- Median	68,0	70,0	5,620		64,0	68,0		
- SD	2,3	4,0			2,4	4,2		

Table 2 shows the difference of knowledge and attitude of high school students about adolescent reproduction health before and after health promotion through smartphone and booklet. There was an increasing of knowledge with p value <0,05 in adolescence group before and after getting health promotion by smartphone. Whereas in adolescent group that get health promotion through booklet there is no difference of knowledge level about adolescent reproductive health before and after health promotion with p-value > 0,05 but there is difference of attitude with p-value <0,05.

**Table 3. The Difference of Knowledge and Difference of Attitude of High School Student about Adolescent Reproduction Health Between Health Promotion Group Through Smartphone And Booklet**

Variable	Group		t or Z <sub>Mw</sub>	p Value
	Smartphone	Booklet		
<b>1 Knowledge</b>				
- X (SD)	3,33(5,79)	0,10(0,62)	-3,789	0,000
- Median	4	0		
<b>2 Attitude</b>				
- X (SD)	2,95(2,00)	5,40(4,73)	-1,869	0,062
- Median	2	5,50		

Table 3 shows that there is a difference of knowledge and difference of attitude of high school student about adolescent reproduction health between health promotion group through smartphone and booklet. The knowledge variable between smartphone group and booklet has Z<sub>Mw</sub> value of -3.789 and p-value value <0,05, hence can be concluded there is difference of knowledge between smartphone group and booklet. Attitude variable between smartphone group and booklet has Z<sub>Mw</sub> value equal to -1,869 and p-value value > 0,05, hence can be concluded there is no difference Attitude between smart phone group and booklet.

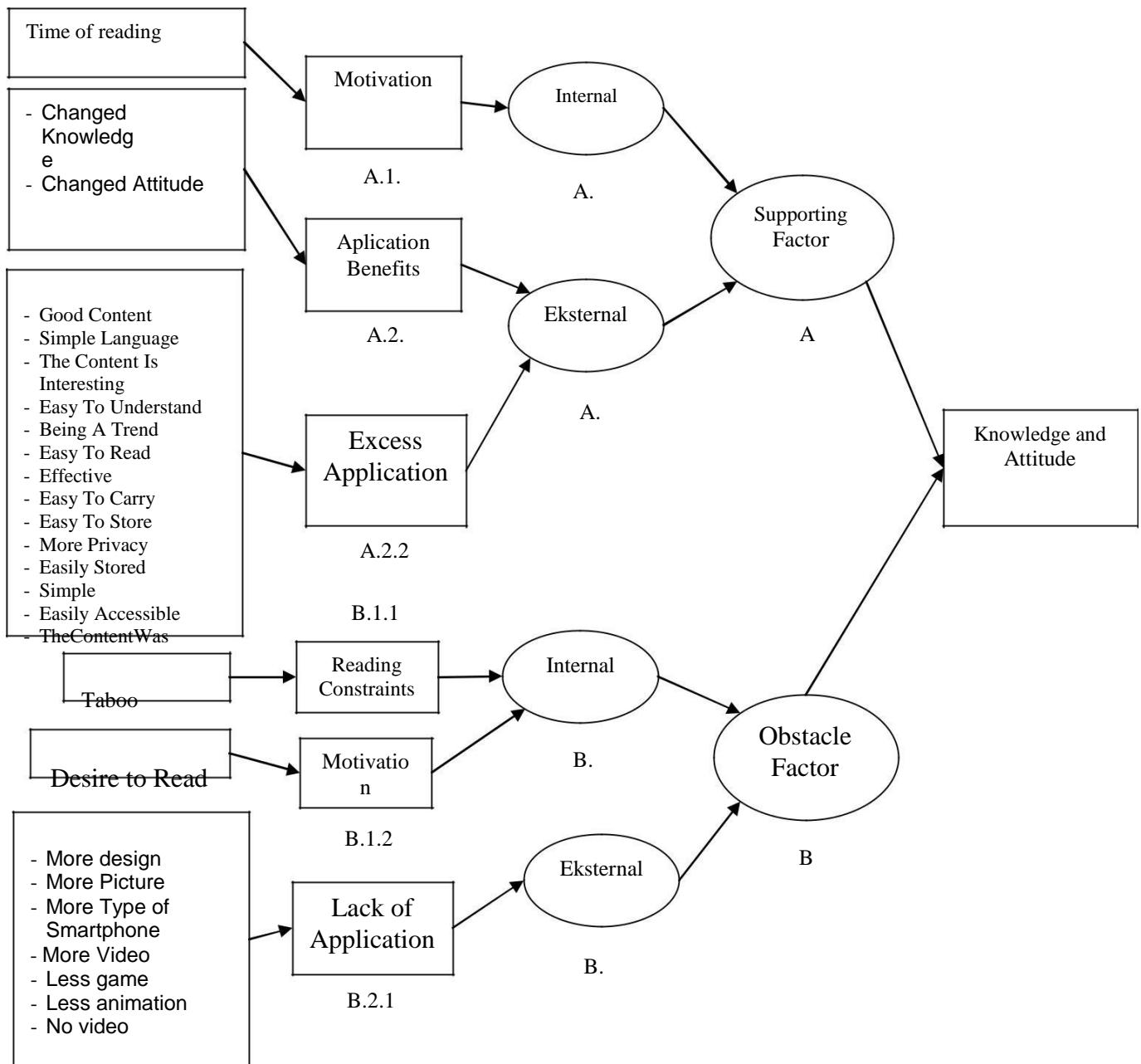
This suggests that to improve adolescent knowledge about reproductive health can be done through health education. Adolescents have the right to obtain health education to improve knowledge and attitude in maintaining reproductive health to avoid adolescent reproductive health problem. Health education will increase positive knowledge. Health education increasing knowledge as well as to change health behavior. The use of

smartphone in health education, can improve the knowledge and attitude of adolescents about reproductive health.<sup>19</sup>

Booklets as a tools for health education which can also improve knowledge, attitudes and skills.<sup>20</sup> Afwani in her research, mentioned that the smartphone can replace the booklet.<sup>21</sup> Smartphones, effective in health care because of their wide reach, portability, and can present information on a probabilistic basis. Intelligent calling is already commonly used as an effective health education in providing information on reproductive and sexual health as it changes people's behavior.<sup>22,23,24,25</sup>

Smartphone as, electronic media has advantages that are not easily damaged, easy to carry, without time constraints, much in demand by teenagers. the smart phone is also effective because the required information already exists and the data can be updated periodically.<sup>26,27</sup> The smartphone is a new concept in health care.<sup>12,28</sup> Its shape is small and portable, making it a useful tool in health care activities.<sup>28</sup> In this study was seen that the influence of the smartphone is greater than the booklet.

## 2. Qualitative Result



Form qualitative result, the factors that cause the adolescent knowledge and attitude changed after getting health education through smartphones are time to read, good content, simple language, the content interesting, easy to understand, being a trend, easy to read, effective, easy to carry, easy to store, more privacy, easily stored, simple, easily accessible and the content was complete.

## **DISCUSSION**

Reproductive health issues are associated with risk behavior. Risk behavior deals with knowledge and attitude. Knowledge can be improved through health education. Health education is the process of improving knowledge about health and facilitating changes in attitudes and behaviors. Health education is influenced by a tools of health education. Tools of health education is a means to display messages or information to be conveyed by communicators, both print and electronic media. Booklet is a tools which is often used as health promotion media. The disadvantages of the booklet are easily damaged and the content of the material can not be updated quickly. To overcome the weakness of booklet used smartphone media. Smartphones are already widely used in developing countries as promotive and preventive efforts in health services. Smartphones are commonly used as effective health promotion media in providing information on reproductive and sexual health education because they can change people's behavior. Another advantage of smartphones is that they are not easily damaged, portable, usable everywhere, without time constraints, much in demand by teenagers with renewable materials quickly. Gabaron said that cellular phones are useful in changing behavior in preventing sexually transmitted diseases in adolescents. Currently, the use of smartphones in health education is very effective in improving knowledge and attitude of adolescent about reproductive health.<sup>12,28,29</sup>

## **CONCLUSION**

Smartphone as an effective tool of health education, it can improve knowledge and attitudes of adolescents about reproductive health. To address the issue of adolescent reproductive health needs further research in a larger population with applications that have been perfected.

## **RECOMMENDATION**

Smartphones were effective tools of education and it can improve knowledge and attitudes of teenagers, so the problem on adolescent reproductive health can be solved.

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