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## Effectiveness of Reproductive Health Education Using the Health Belief Model (HBM) Approach to Increasing Reproductive Health Knowledge of Adolescents

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### ABSTRACT

Adolescence is a stage of potential and vulnerable psychological development, known as the phase of searching for identity, because in this phase they can no longer be said to be children but also cannot be said to be adults, and also in this phase teenagers are not yet able to master and maximize physical and psychological functions. This research is a quantitative research using a quasi-experimental method with a two group pre-test post-test design. The population of this study were all class IX students of Mojoanyar Middle School with a sample of 90 respondents who were divided into intervention groups and control groups and the sampling method used purposive sampling. From this research, it was found that there was an increase in health education knowledge using the health belief model (HBM) approach in the intervention group and control group. This Health Belief model (HBM) uses several indicators, namely, vulnerability, seriousness, benefits, obstacles and self-confidence. The results of the p value in this research are about increasing adolescent reproductive knowledge regarding vulnerability (p=0.000), seriousness (p=0.000), benefits (p= 0.000), obstacles (p= 0.000), and self-confidence (p= 0.000). Thus, it was found that there was an increase in adolescent reproductive health knowledge through health education using the health belief model (HBM) approach.

Keywords: Adolescence knowledge; Reproduction health; Health believe model

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## INTRODUCTION

Adolescence is the phase between childhood and adulthood in the age range between 10 and 19 years. Adolescence is a stage of potential and vulnerable psychological development, known as the phase of searching for identity, because in this phase they can no longer be said to be children but also cannot be said to be adults, and also in this phase teenagers are not yet able to master and maximize their physical and psychological functions<sup>1</sup>.

Adolescence is also a transition period between childhood and adulthood. The transition period often confronts the individual in a confusing situation, on the one hand he is still a child and on the other hand he has to act like an adult<sup>2</sup>. This can cause conflict within teenagers which often results in a lot of strange, awkward behavior, and if not controlled will cause delinquency in teenagers, one of which is the risk of risky sexual behavior. With the physical changes and physiological functions in adolescents, it causes attraction to the opposite sex which results in the emergence of sexual urges. With sexual urges and feelings of attraction towards the opposite sex, adolescent behavior begins to be directed towards attracting the attention of the opposite sex<sup>3</sup>.

In order to seek knowledge about sex, there are teenagers who do it openly and even start trying to experiment with their sexual life. For example, when dating, they express their feelings in forms of behavior that require physical intimacy with their partner, such as kissing, making out, etc<sup>4</sup>.

WHO (2022) quoting from Pakpahan, 2024, states that the number of teenagers in the world is 1.2 billion or 18% of the world's population. Meanwhile, according to the results of the 2020 population census through the Indonesian National Central Statistics Agency (BPS), data obtained that Indonesia's population in September 2020 was 270.20 million people, with the prevalence of teenagers in the age range 8-23 years amounting to 27.94%, according to age in fat glands and sweat glands<sup>5</sup>.

At the age of around 12-14 years, small lumps appear around the mammary glands. After several weeks of large and decreasing numbers, Mojokerto City in June 2024 is sourced from the publication of the Central Statistics Agency (BPS): Age 15-19 years 11.6 thousand people (8.19%) and age group 20-24 years 11.24 thousand people (7.94%).

Many problems will arise as a result of neglecting reproductive health. Problems that will arise due to a lack of knowledge regarding reproductive health, namely unwanted pregnancy (KTD), abortion, early marriage and marriage, STIs or STDs/AIDS<sup>6</sup>. One effort that can be made to reduce these numbers is by providing health education about how to care for reproductive organs, education about adolescent

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development during puberty, health education about the impact of pornography, unwanted pregnancies and abortion, health education about HIV/ AIDS and sexually transmitted infections as well as education regarding maturation after marriage involving the government, parents and peer groups<sup>7</sup>.

Apart from that, steps that can be taken to overcome reproductive health issues in adolescents are to increase their understanding of reproductive health. Health education is one means of overcoming reproductive health problems. The data above shows the urgency of health education in preventing potential reproductive health problems in adolescents, as suggested by the World Health Organization (WHO, 2009), which highlights the importance of providing reproductive health education to young adolescent groups, especially those aged 10 - 14 years. This age range is considered a critical period for forming and preparing teenagers to make more responsible decisions regarding their reproductive health<sup>8</sup>. Health education is not only a persuasive or learning effort for the community to encourage them to take actions to maintain and improve their health, but also as an activity that conveys health information with the aim of changing target behavior. Providing reproductive health education to teenagers has a positive impact on increasing their knowledge in caring for reproductive health. The effectiveness of providing reproductive health education in increasing adolescent knowledge is also influenced by the approach used in providing education, including the use of the Health Belief Model approach. Health Belief This model has a close relationship with health education, being one of the first models developed to encourage individuals to take positive actions related to health<sup>9</sup>.

## METHOD

This research is a quantitative research using a quasi-experimental method with a two group pre-test post-test design. The population of this study were all class IX students of Mojoanyar Middle School with a sample of 90 respondents who were divided into intervention groups and control groups and the sampling method used purposive sampling. This research was conducted in October 2024 and the research instrument used a questionnaire and data analysis used the chi-square test and logistic regression and presented the data in tabular form

**RESULTS**

Table 1. Frequency Distribution of Respondents' Characteristics

No	Indicator	Group				Value	
		Intervention		Control		N	%
		N	%	N	%		
1	Age						
	14 years	1	2,2	-	0	1	1,1
	15 years	35	77,8	37	82,2	72	91
	16 years	9	20	8	17,8	17	18,8
	Total	45	100	45	100	90	100
2	Gender						
	Man	23	51,1	21	46,7	44	48,9
	Woman	22	48,9	24	53,3	46	51,1
	Total	45	100	45	100	100	100
3	Living together						
	With Parents	44	97,8	43	95,6	87	96,7
	Not with parents but with family	1	2,2	2	44,4	3	3,3
	Other	0	0	0	0	0	0
	Total	45	100	45	100	90	100

From table 1, it can be seen that almost all of the 90 respondents were 15 years old, 72 respondents (91%), a small proportion of respondents were 14 years old, namely 1 respondent (1.1%). More than half of the respondents in this study were female, namely 46 respondents (51.1%), almost all respondents lived with their parents, namely 87 respondents (96.7%).

Table 2. Effectiveness of Health Education Using the Health Belief Model (HBM) Approach on the Level of Adolescent Reproductive Health Knowledge

Variable	Group	Before	After	Value
Vulnerability	Intervention (n=45)	19.81±3,576	44.80±1.253	P=0.000
	Control (n=45)	19.86±3,537	24.72±1.057	P=0.000
	Value	P=0,022	P=0.112	
seriousness	Intervention (n=45)	21.14±3.877	52.52±1.485	P=0.000
	Control (n=45)	21.15±3.919	28.01±1.778	P=0.000
	Value	P= 0.455	P= 0.203	
Benefit	Intervention (n=45)	16.64±3.002	51.45±1.251	P=0.000
	Control (n=45)	16.70±3.279	23.76± 1.049	P=0.000
	Value	P= 0.786	P= 0.248	
Obstacle	Intervention (n=45)	2064±3.197	49.36±1.305	P=0.000
	Control (n=45)	20,73±3.089	26.59±2.608	P=0.000
	Value	P=0.634	P=0.817	
Self-confidence	Intervention (n=45)	20,76±3.197	49.06±1.305	P=0.000
	Control (n=45)	20,87±3.089	26.39±2.608	P=0.000
	Value	P=0.952	P=0.867	

Table 2 shows the increase in knowledge in the intervention group before and after health education regarding adolescent reproductive health, namely from 19.81 (pre-test) to 44.80 (post-test) with p value = 0.000. In the control group, there was an increase in knowledge on perceived vulnerability, from 119.86 (pre-test) to 24.72 (post-test) with p value = 0.000. Statistically, there is a significant increase in perceived vulnerability scores before and after providing health education interventions regarding adolescent reproductive health knowledge using the Health Belief Model approach

The increase in knowledge in the intervention group before and after health education regarding seriousness was 21.14 (pre-test) to 52.52 (post-test) with p value = 0.000. Meanwhile in the control group, knowledge increased from 21.15 (pre-test) to 28.01 (post-test) with p value = 0.000. This means that, statistically, there is a significant increase in the perceived seriousness score before and after the health education intervention regarding adolescent reproductive health knowledge using the Health Belief Model approach.

The increase in knowledge in the intervention group before and after health education regarding perceived benefits was - from 16.64 (pre-test) to 51.45 (post-test) with p value = 0.000. In the control group, knowledge increased from 16.70 (pre-test) to 28.01 (post-test) with p value = 0.000. Thus,

statistically, there is a significant increase in the perceived benefit value before and after the health education intervention regarding adolescent reproductive health knowledge using the Health Belief Model approach.

Increased knowledge in the intervention group before and after health education regarding perceived barriers from 20.64 (pre-test) to 49.36 (post-test) with p value = 0.000. In the control group, knowledge of perceived barriers increased from 20.73 (pre-test) to 23.76 (post-test) with p value = 0.000. Statistically, there was a significant increase in the value of perceived barriers before and after the health education intervention regarding adolescent reproductive health knowledge using the Health Belief Model approach.

The increase in knowledge in the intervention group before and after health education regarding the self-efficacy variable was from 20.76 (pre-test) to 49.06 (post-test) with p value = 0.000. Meanwhile in the control group, there was an increase in knowledge and self-confidence, from 20.87 (pre-test) to 26.39 (post-test) with p value = 0.000. Thus, statistically, there is a significant increase in the value of the Self-Efficacy variable before and after the health education intervention regarding adolescent reproductive health knowledge using the Health Belief Model approach.

Table 3. Multivariate Analysis of the Effectiveness of Health Education Using the Health Belief Model (HBM) Approach on Adolescent Reproductive Health Knowledge

After Intervention	Variable	Mean	P	P
Intervention group	Vulnerability	35,13	0.000	0.000
	Seriousness	32.27	0.000	
	Benefit	31.45	0.000	
	Obstacle	34.51	0.000	
	Self-confidence	34.51	0.000	
	Variable	Mean	P	P
Control Group	Vulnerability	32.83	0.000	0.000
	Seriousness	31.27	0.000	
	Benefit	29.76	0.000	
	Obstacle	37.24	0.000	
	Self-confidence	33.24	0.000	

Table 3 shows a comparison of the mean values of variables in the intervention group and the control group after providing adolescent reproductive health education using the Health Belief Model (HBM) approach. In the intervention group, the mean value of the perceived vulnerability variable was

35.13, perceived seriousness was 32.27, perceived benefits were 31.45, perceived barriers were 34.51, and self-confidence i was 33.24. Meanwhile in the control group, the mean value of the perceived vulnerability variable was 32..83, perceived seriousness was 31.27, perceived benefits were 29.76, perceived obstacles were 37.24, and self-confidence was 33.24.

Statistically, there is a significant difference in reproductive health knowledge between the intervention group and the control group after implementing health education based on the Health Belief Model (HBM). The statistical test results show that the difference in values for the variable perceived vulnerability is 2.2, perceived seriousness is -1, perceived benefits is -0.35, perceived obstacles is 3.08, and self-efficacy is 2.36 with a p value = 0.000. The low P value indicates that this difference is not the result of mere chance, but rather shows that there is a significant difference between the two groups after the health education intervention using the Health Belief Model approach.

## DISCUSSION

### 1. Knowledge of Adolescent Reproductive Health through the Health Belief Model (HBM) approach at the Vulnerability level

Adolescent reproductive health knowledge regarding perceived vulnerability through health education with a health belief model approach related to perceived vulnerability in the context of adolescent reproductive health knowledge shows an individual's perception or response to risks or potential threats related to their reproductive health.

Notoatmodjo (2012) stated that perceived susceptibility is one of the most influential perceptual drives in decisions to carry out health behavior<sup>10</sup>. The concept of the Health Belief Model structure put forward by Resenstock (2004) explains that if a person's perceived susceptibility is good or positive, this will lead to the emergence of risk prevention behavior which will also be large. However, on the contrary, Glanz et al (2008) stated that when someone believes that he has no risk or is at low risk of a disease, then the individual will tend not to behave healthily<sup>11</sup>.

Perceived susceptibility is a construct of personal risk or susceptibility. This refers to a person's subjective perception regarding the risk of their health condition. In this case, it relates to adolescents' knowledge about adolescent reproductive health, which includes how adolescents'

vulnerabilities in their personal thoughts affect their knowledge about reproductive health. resusceptibility (sensitivity arises again), and susceptibility (sensitivity) to disease in general<sup>12</sup>.

Education is an important factor that influences an individual's health belief model. Lack of knowledge will cause individuals to feel vulnerable to disorders, which in a study conducted by Edmonds and friends is osteoporosis. Psychological characteristics are factors that influence an individual's health belief model<sup>13</sup>.

Adolescent reproductive health education through the Health Belief Model approach shows positive changes in adolescent perceptions of reproductive health risks and consequences. Teenagers need to be introduced to the phenomenon of juvenile delinquency that we often encounter, such as brawls, drug use, and premarital sexual relations. By involving the concept of perceived vulnerability in health education, this model recognizes the importance of stimulating individual awareness of risks and benefits, which in turn can motivate positive behavioral changes regarding reproductive health. Adolescent reproductive health education through the Health Belief model approach can provide stimulation to adolescents in terms of the vulnerability that adolescents feel so that they can strive to maintain adolescent reproductive health and can also form healthy and responsible behavior both for themselves and their environment.

By using descriptive analysis of the vulnerability felt by students, there is a belief that every teenager has the potential to contract sexually transmitted infections if they cannot maintain the cleanliness of their genital organs, such as leaving the genital organs damp, frequently using feminine cleaning soap which can cause irritation and changes. acidity levels, as well as using sitting toilets in public bathrooms without drying them first.

## **2. Level of Adolescent Reproductive Health Knowledge through Reproductive Health Education using the Health Belief Model (HBM) approach in Seriousness**

Perceived severity or perceived seriousness. Feelings about the seriousness of an illness, including evaluation activities regarding clinical and medical consequences (for example, death, disability, and illness) and social consequences that may occur (such as effects on work, family life, and social relationships ). Many experts combine the two components above as a perceived threat.

The results of research conducted by Nur Hamima Harahap et al. There was an increase in knowledge in the intervention group before and after health education regarding perceived



seriousness was -38.805, from 22.14 (pre-test) to 53.62 (post-test) with p value = 0.000). while the research results are different from research conducted in Surabaya, there is no relationship between perceived seriousness and adolescent knowledge about adolescent reproductive health.

Through the analysis of this research, it is known that female adolescents experience the highest perception of seriousness regarding the risk of pregnancy outside of marriage. They believe that if they avoid risky behaviors that can increase the chances of developing disease or reproductive health problems, then there is no need to adopt healthy behaviors regarding their reproductive health.

Many factors can be related to reproductive health behavior such as knowledge, religiosity, culture, other people considered important, mass media, personal experience, education and emotions in individuals<sup>14</sup>. There are many factors that can be related to health behavior. Understanding adolescent sexual behavior is an understanding that is very important to know, because this period is a transition period from children's sexual behavior to adolescent sexual behavior. Lack of understanding about sexual behavior during adolescence is very detrimental for teenagers themselves, including their families, such as knowledge, religiosity, culture, other people considered important, mass media, personal experience, education and emotions in individuals<sup>3</sup>.

To support better reproductive health, health education using the health belief model approach is an important tool to shape teenagers' perceptions regarding adolescent reproductive health problems in terms of the seriousness of the problem. Adolescent reproductive health education using the health belief model (HBM) approach is an effort to convey information that is relevant to current conditions by presenting statistical data about adolescent reproductive health problems such as promiscuity, out-of-wedlock pregnancies and the dangers and impacts resulting from this behavior in order to stimulate adolescent awareness in facing the seriousness of problems related to adolescent reproductive health. By providing this information, it is hoped that it will stimulate the motivation of teenagers to be able to adopt healthy living behaviors and prevent various behaviors that can have an impact on teenagers' reproductive health both now and in the future.

### **3. Knowledge of Adolescent Reproductive Health through Health Education using the Health Belief Model (HBM) approach to Benefits**

The trust factor will bring benefits and obstacles. These factors show the variables that determine a person's choice of action to treat their illness. Health service factors and trust in service provision influence individual behavior in health seeking. Apart from that, signaling factors and encouraging signs also influence the patient's health seeking behavior<sup>15</sup>. Seeking treatment is carried out when one of the family members is really sick and needs help, then the sick person and their family look for information or visit a health facility to treat their illness. People who have a disease and do not feel the pain will not act against the disease. They will only act when the disease they are attacking causes pain, then various kinds of behavior and efforts will arise.

Perceived benefits in the context of adolescent reproductive health knowledge through health education based on the Health Belief Model (HBM) refers to an individual's perception of the value or benefits that can be obtained through understanding and applying reproductive health information<sup>16</sup>. The HBM approach emphasizes that when people understand the benefits of a health behavior, they are more likely to adopt and maintain that behavior. The results of health education research using the Health Belief Model (HBM) approach on the perceived benefits of adolescent knowledge about reproductive health show a p-value of 0.000. This finding is in line with previous research on adolescent girls in Malang, which showed a relationship between perceived barriers and reproductive health behavior (p-value <0.001).

Even though some teenagers feel benefits related to reproductive health knowledge, the results of the research show that the perceived benefits do not significantly influence teenagers' actual reproductive health behavior. Univariate data in the control group showed that there were 16 12 year old female teenagers who were in class IX and had a sufficient level of knowledge. By providing clear and relevant information, HBM-based health education hopes to shape teenagers' positive perceptions of the benefits of reproductive health. Examples of perceived benefits may include reduced risk of developing sexually transmitted diseases, continued healthy reproduction, and improved physical and mental well-being.

By stimulating perceptions of benefits, HBM-based health education aims to provide motivational encouragement for adolescents to make decisions that support their reproductive health. In this context, perceived benefits are expected to be a motivating factor for adolescents to

adopt positive and sustainable reproductive health behavior. The possibility of the low influence of perceived benefits on adolescent reproductive health behavior may be due to the belief that adolescents feel healthy as long as there are no signs or symptoms that are not present. normal. The age factor was also taken into consideration, where the age range of the teenagers studied was 14-16 years. At this age, a high sense of curiosity and a tendency to try new things can influence adolescent sexual behavior, especially if it is not balanced with adequate sexual knowledge and education.

#### **4. Knowledge of Adolescent Reproductive Health through Health Education based on the Health Belief Model (HBM) on Barriers**

Perceived barriers or perceived obstacles to change, or if individuals face obstacles found in taking this action. In addition to the four beliefs or perceptions<sup>17</sup>. According to the HBM theory, the likelihood that an individual will take preventive action depends directly on the outcome of two health beliefs or judgments, namely the perceived threat of disease and considerations about advantages and disadvantages.<sup>18</sup>The obstacles found in taking preventive measures will affect the size of the individual's business.

Perceived barriers in the context of adolescent reproductive health knowledge through reproductive health education using the Health Belief Model (HBM) approach refers to individual perceptions of the obstacles or obstacles they may face in adopting the desired reproductive health behavior.

Adolescent reproductive health education using the health belief model (HBM) approach aims to identify, clarify and overcome the obstacles that adolescents may face in achieving a better understanding of reproductive health. Some of the obstacles that teenagers may face include social stigma, lack of access to information, lack of health services or even teenagers' lack of understanding regarding adolescent reproductive health. These obstacles that may be experienced by teenagers can be one of the factors that prevent teenagers from adopting good and positive behavior in maintaining their own healthy health both now and in the future.

By understanding the barriers that adolescents may face in accessing, understanding, or adopting correct reproductive health practices, adolescent reproductive health education using the Health Belief Model (HBM) approach seeks to stimulate positive behavioral changes. After

knowing the various obstacles that teenagers may experience in understanding adolescent reproductive health, we can provide effective and relevant interventions according to their needs. By knowing these obstacles, it will be the basis for designing and implementing programs, both in school areas, community and family environments in the context of health education, especially adolescent reproductive health, so that it can help success in increasing knowledge and positive behavior in maintaining adolescent reproductive health both for themselves and the environment

##### **5. Knowledge of Adolescent Reproductive Health through Health Education Using the Health Belief Model (HBM) Approach to Self-Confidence**

Several factors in the Health Belief model are cognitive-based (such as beliefs and attitudes) and are related to the thought processes involved in individual decision making in determining an individual's healthy lifestyle. Self-efficacy is a person's belief in their ability to do something, self-efficacy is a supporter in initiating and maintaining changes in individual behavior (Bandura, 1997 in Glanz et al, 2008). Individuals must believe that they are capable of doing something so they can overcome obstacles that hinder the adoption of new behavior. Individuals will not try to do something new unless they know that they can do it.

The results of research on adolescent reproductive health education using the health belief model (HBM) approach to the self-confidence variable in adolescent reproductive health knowledge showed that there was a relationship with a value of  $p=0.000$ . This researcher shows that the better the self-efficacy that adolescents have, the higher the possibility of knowing about adolescent reproductive health.

Providing the information, skills and support needed to make healthy decisions regarding reproductive health is the aim of increasing self-confidence regarding adolescent reproductive health knowledge through health education using the Health Belief Model (HBM) approach<sup>19</sup>. HBM-based health education aims to increase adolescent self-efficacy by providing the information, skills and support needed to make healthy decisions regarding reproductive health.

Adolescents' beliefs related to knowledge about adolescent reproductive health give them confidence that they can overcome various obstacles and are able to make good and responsible decisions and involve themselves in healthy living behavior so that they are able to minimize events that have an adverse impact on adolescent reproductive health, such as social interactions.

promiscuity and pregnancy out of wedlock. The results of this study are in line with previous research on high school students in Tamale, Northern Ghana showing that there are differences in self-efficacy between students who were given a comprehensive sex education program consisting of 6 sessions with students who were given a simple sex education program. The results of this research are in line with research conducted by (Ulfiana, 2013) which stated that there was a relationship between self-efficacy and knowledge of adolescent reproductive health in the Kedungmungdu Community Health Center Area, Semarang City.

Adolescents must be empowered and given responsibility for themselves in maintaining adolescent reproductive health. Teenagers must be given confidence that they are competent teenagers and have control over their reproductive health. This will be able to build self-confidence in building self-confidence, making the right decisions related to adolescent reproductive health, such as those related to pregnancy outside of marriage and promiscuity.

Adolescent reproductive health education through the health belief model (HBM) approach aims to shape adolescent attitudes, so that adolescents can act proactively in protecting and maintaining their own reproductive health, both now and in the future. This increasing self-confidence will be one of the factors for teenagers to take action for adolescent reproductive health both for themselves and for their environment. Thus, increasing self-efficacy is considered to be one of the key steps in creating sustainable and positive behavioral changes related to adolescent reproductive health.

## CONCLUSION

From this research, it was found that there was an increase in adolescent reproductive health knowledge through health education using the health belief model (HBM) approach. In health education, the application of the Health Belief Model (HBM) approach is able to increase adolescents' understanding of the importance of maintaining reproductive health during adolescence, including behavior that risks reproductive health, preventing diseases related to adolescent reproductive health, as well as efforts to distance themselves from negative behavior that has an impact. on reproductive health.

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