



# Perception of Benefits and Barriers of Hypertension Prevention Behavior Through Audiovisual Health Education on Hypertension in Adolescents

Ratna Indriawati<sup>(✉)</sup> and Fadhil Abdillah

Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

ratna.indriawati@umy.ac.id

**Abstract.** Hypertension or increased blood pressure is often referred to as the silent killer since it usually does not show significant signs and symptoms. Most sufferers do not realize that they suffer from hypertension. Based on Riskesdas data in 2007, the prevalence of hypertension in the population aged 18 years and over in Indonesia was 31.7%. Yogyakarta is one of the provinces where the prevalence of hypertension is higher than the national standard of 35.8%. Therefore, the increasing prevalence of hypertension in adolescents requires preventive measures, one of which is changing the wrong perception among teenagers about hypertension. This study aims to determine the effect of health education through audiovisual media on adolescent perceptions. This research is quasi-experimental. Experimental tests were conducted on 96 respondents. This research employed pre-test and post-test on each variable through a questionnaire, namely the benefits and barriers. Data analysis used the descriptive method to identify the description of the respondents. Furthermore, the quantitative analysis used Mann-Whitney and Wilcoxon. The effect of health education through audiovisual media on adolescents' perceptions of the benefits of hypertension prevention behavior was found to be  $p > 0.05$ . Likewise, the variable inhibition of hypertension prevention behavior obtained  $p > 0.05$ . Although there was a change in the perception score from less good to good in the respondents, it was not statistically significant. The use of audiovisual media as health education has not significantly influenced adolescent perceptions about the benefits and barriers to hypertension prevention behavior.

**Keywords:** Adolescent · Behavior · Hypertension · Perceptions

## 1 Introduction

Hypertension is the condition when systolic  $\geq 140$  mmHg and diastolic  $\geq 90$  mmHg. Hypertension is an asymptomatic disorder that often occurs characterized by a persistent increase in blood pressure. Research in Southeast Asia reported that hypertension prevalence data in Thailand is 17% of the total population, Vietnam 34,6%, Singapura 24,9%,

Malaysia 29,9%, and Indonesia has a fairly high number, 15% of the total population. It is almost 35 million who have been affected by hypertension [1][2].

The prevalence of hypertension in Bantul, Yogyakarta, at the puskesmas level is the second-highest. Meanwhile, hypertension is ranked first at the hospital level as the most prevalent disease [3]. A report from Riskesdas in 2007 showed that the hypertension prevalence in Indonesia was 31.7% for 18 years old or more. South Kalimantan became the highest at 39.6% while West Papua has the last rank of hypertension prevalence at 20,1%. East Java, Bangka Belitung, Central Java, Central Sulawesi, DI Yogyakarta, Riau, West Sulawesi, Kalimantan Tengah, dan Nusa Tenggara Barat became the provinces with the higher prevalence than Nasional number. East Java has the prevalence of 37,4%; Bangka Belitung 37,2%; Central Java 37%; Central Sulawesi 36%; DI Yogyakarta 35,8%; Riau 34%; West Sulawesi 33,9%; Kalimantan Tengah 33,6%; dan Nusa Tenggara Barat 32,4% [4].

Meanwhile, the strongest risk factors for causing hypertension in children are overweight and obesity. World data in 2008 showed that 6% or about 40 million children were overweight[5]. Lack of exercise activity, consumption of fatty foods and high salt can also cause hypertension. Thus, it is necessary to adjust the lifestyle and the right diet to prevent the occurrence of hypertension [6][7][8].

Hypertension can be controlled by preventing its risk factors. Several obstacles will arise to prevent hypertension through behavioral changes, such as lack of motivation, knowledge of long-term effects, knowledge of the benefits that can be obtained if it can be prevented early, and trust in health workers. In addition, the education level factor is also an obstacle in efforts to change the behavior of a group of people[9][10]. One of the efforts to change behavior is through health education. Based on the study results, data showed that there was a significant difference in a person's level of knowledge about hypertension before and after being given health education [6][11].

However, perception can also affect a person's behavior towards an object and environmental situation. One of the models developed to see the factors that influence a person's behavior is the Health Belief Model (HBM), which explains the causes and effects of individual failures in undergoing disease prevention programs. In addition, HBM is often used to describe preventive health behavior. The model consists of several variables that affect prevention behavior, including barriers and perceived benefits [12][13]. Therefore, it is necessary to conduct research on the effect of health education on adolescents' perceptions of the benefits and barriers to hypertension prevention behavior.

## 2 Method

This was a quasi-experimental study with a pre-post-test approach. There were both an experimental group and a control group. 386 new students of Muhammadiyah 1 High School Yogyakarta became the population while 96 people, with each group being 48 people, were selected by the purposive sampling method.

The inclusion criteria used were class X, who attended Muhammadiyah Yogyakarta High School and were willing to be respondents in the study. Adolescents who are being treated in hospital, who do not attend school, and who do not want to fill out a questionnaire are excluded from this study.

The independent variable was health education, while the dependent variable was the adolescent's perception of the benefits and barriers to hypertension prevention behavior. Uncontrollable disturbing factors included the respondent's level of knowledge, economic status, and the surrounding environment.

This research was conducted at Muhammadiyah 1 High School Yogyakarta from May 2017 to February 2018. The implementation began with the preparation of researchers collecting secondary data obtained from literature studies, health profiles in Yogyakarta City, and demographics data of students at Muhammadiyah 1 High School Yogyakarta. Furthermore, the researchers collected primary data using a questionnaire on perceptions of benefits and barriers to hypertension prevention behavior. After that, the researchers conducted a pre-test on students who agreed to the informed consent, both the intervention and control groups. The health education was carried out in the intervention group while the control group was not treated. The health education was provided using educational videos. After the health education was carried out, both control and intervention groups carried out a post-test.

The data were tabulated by using Microsoft Excel and SPSS programs, then analyzed in stages. Data were analyzed univariately to examine gender, age, address, family history of hypertension, kidney disease, and diabetes mellitus. The Wilcoxon test was used differently to calculate the effect of health education on the pre-test and post-test data from the control and intervention groups. Meanwhile, the Mann-Whitney test was utilized to compare the control and intervention groups' effect.

### 3 Result and Discussion

Based on Table 1, it can be seen that in the intervention group, most respondents were female, namely 66.7%. As for the control group, we can see that the distribution was evenly distributed between men and women, namely 50%.

Most of the respondents were in the age of 15 years, as many as 64.6% in the intervention group and 56.25% in the control group. As for the address, most respondents came from within the city, both for the intervention and control groups. The intervention group was 87.5%, and the control group was 75%.

A family history of hypertension is associated with the incidence of hypertension. 77% of respondents had no history of hypertension in the family for the intervention group and 85.4% for the control group. Regarding kidney disease, we can see that most respondents did not have a family history of this disease; 83% for the intervention group and 98% for the control group. Likewise, regarding the characteristics of a history of DM, the majority of respondents did not have it, namely 77% for the intervention group and 100% for the control group.

Based on Fig. 1, it can be seen that the "good score" is higher than the "poor score" in the control group. The pre-test was 54.1% versus 45.9%, and the post-test was 56.2% versus 43.8%. Likewise, for the intervention group, the good scores were also more than the poor scores for the pre-test and post-test.

Based on Fig. 2, It can be seen that a "good score" is higher than the "poor score". The pre-test was 66.7% compared to 33.3%, and the post-test was 64.5% compared to 35.5%. Likewise, there were more good scores for the intervention group than the less good scores for both pre-test and post-test (Table 2).

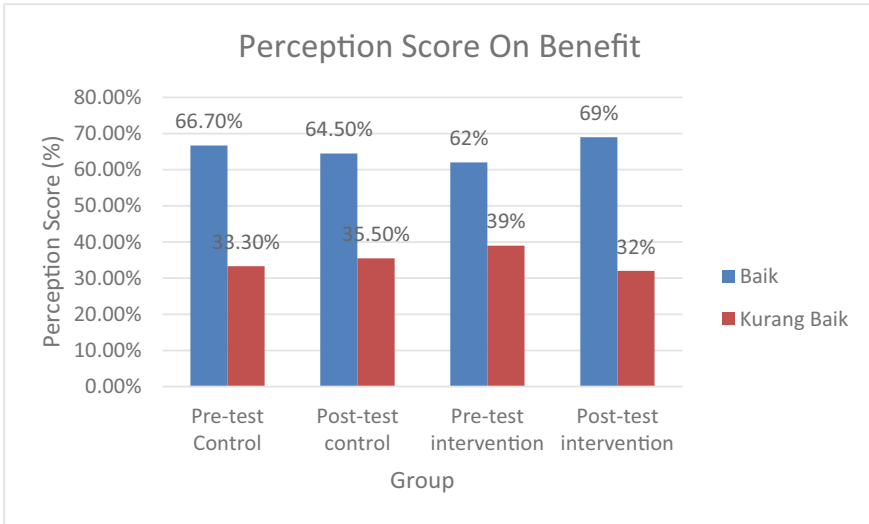
**Table 1.** Description of Respondents' Characteristics

Characteristic	Intervention group		Control group	
	Amount	Percentage	Amount	Percentage
Gender				
1.Male	16	33.3%	24	50%
2.Female	32	66.7%	24	50%
Age				
1.14 years	0	0%	3	6.25%
2.15 years	31	64.6%	27	56.25%
3.16 years	16	33.3%	18	37.5%
4.17 years	1	2%	0	0%
Address				
1.Within the city	42	87.5%	36	75%
2.Out of town	6	12.5%	12	25%
Family history of hypertension				
1.Yes	11	23%	7	14.6%
2.No	37	77%	41	85.4%
Family history of kidney disease				
1.Yes	8	17%	1	2%
2.No	40	83%	47	98%
Family history of diabetes mellitus				
1.Yes	11	23%	0	0%
2.No	37	77%	48	100%

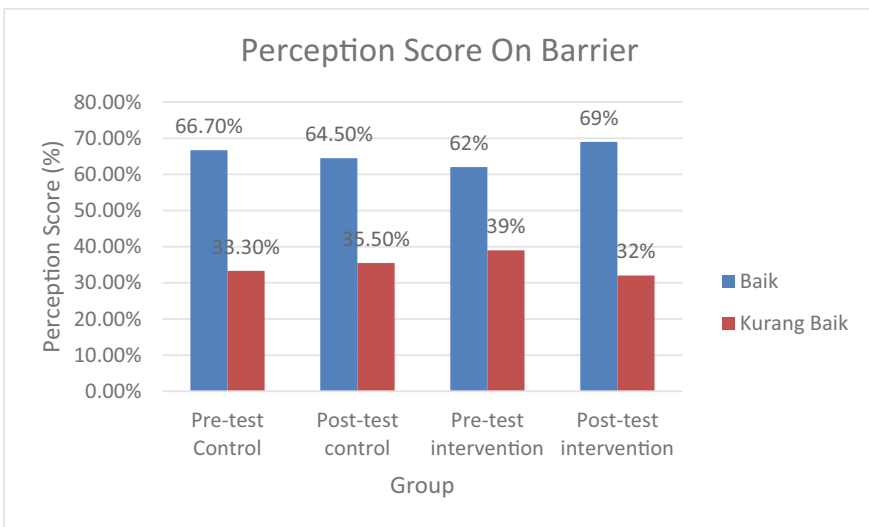
Based on the different test table of the paired benefit scores, it can be seen that in the control group, the value was  $p = 0.808$ . Thus, it can be concluded that the control group was not statistically significant. Meanwhile, for the data from the different test results for the intervention group, the value was  $p = 0.532$  indicating an insignificant difference (Table 3).

Based on the different test table of unpaired benefit scores above, it can be seen that in the pre-test group test, the p-value was 0.542, indicating that the pre-test data were not statistically significant for the different test results was  $p > 0.05$ . From the post-test group difference of the test results, the p-value was 0.838, indicating that the post-test data of the different test results are not statistically significant because it was  $p > 0.05$  (Table 4).

Based on the test table for the difference in paired resistance scores above, it can be seen that in the control group test, the p-value was 0.796, so it can be concluded that for the results of the different test control data, the value is not statistically significant or  $p > 0.05$ . For the data from the different test results for the intervention group, the p-value



**Fig. 1.** Perception score on benefit



**Fig. 2.** Perception score on a barrier

= 0.467, so it can be concluded that the different intervention data test results were not statistically significant or  $p > 0.05$  (Table 5).

It can be concluded that for the different test results, the pre-test data value was not statistically significant or  $p > 0.05$ . For the data from the post-test group difference test results, the p-value was 0.667. It can also be concluded that the post-test data difference test results were not statistically significant or  $p > 0.05$ .

**Table 2.** Results of Different Test Scores of Perception on the Benefits of Hypertension Prevention Behavior in Paired Group

Group	Mean $\pm$ SD	p
Pretest Control	1,54 $\pm$ 0,503	0,808
Posttest Control	1,56 $\pm$ 0,501	
Pretest Intervention	1,47 $\pm$ 0,504	0,532
Posttest Intervention	1,54 $\pm$ 0,503	

**Table 3.** Results of Different Test Scores of Perception on the Benefits of Hypertension Prevention Behavior in the Unpaired Group

Group	Mean $\pm$ SD	p
<i>Pretest</i> Control	1,54 $\pm$ 0,503	0,542
<i>Pretest</i> Intervention	1,56 $\pm$ 0,501	
<i>Posttest</i> Control	1,47 $\pm$ 0,504	0,838
<i>Posttest</i> Intervention	1,54 $\pm$ 0,503	

**Table 4.** Results of Different Tests of Perception on the Barriers of Hypertension Prevention Behavior Scores in Paired Groups

Group	Mean $\pm$ SD	p
<i>Pretest</i> Control	1.67 $\pm$ 0.47	0.796
<i>Posttest</i> Control	1.64 $\pm$ 0.48	
<i>Pretest</i> Intervention	1.62 $\pm$ 0.49	0.467
<i>Posttest</i> Intervention	1.68 $\pm$ 0.47	

**Table 5.** Different Test Results of Perception on the Barriers of Hypertension Prevention Behavior Scores in the Unpaired Group

Group	Mean $\pm$ SD	p
<i>Pretest</i> Control	1.64 $\pm$ 0.48	0.671
<i>Pretest</i> Intervention		
<i>Posttest</i> Control	1.67 $\pm$ 0.47	0.667
<i>Posttest</i> Intervention		

This study used an experimental method conducted at Muhammadiyah 1 High School Yogyakarta. 96 respondents were divided into two groups, namely the control group and the intervention group. This study aims to determine whether health education affects adolescent perceptions of the benefits and barriers to hypertension prevention behavior.

The health education provided in this study was understanding hypertension, the causes of hypertension, classification of hypertension, the dangers of hypertension, and other important matters related to hypertension by using learning video media [12][14]. Based on the results of previous research conducted by [15], there was an effect of health education on hypertension knowledge in the Patobong village community.

In addition, research conducted by [16] found that health education using audio-visual media effectively increased knowledge about the ability to care for newborns. The results from the table of respondent characteristics showed that the age of most respondents was 15 years. This data indicated that most of the respondents were in their middle adolescence, in the range of 14–16 years old [17][18]. The selection of these respondents was based on studies in adolescence where intelligence development occurred. The development was marked by developing an abstract way of thinking and wanting to try new things [19][20]. Therefore, it is important to correct wrong perceptions among the community, starting from the teenagers.

Furthermore, it can be seen that in the family history of disease status data, the majority of respondents did not have it. According to research from [21][22], family history of this disease influences the incidence of hypertension. Based on the table contained in the univariate analysis, many respondents still have a low level of perception affected by many factors, namely internal factors and external factors. Internal factors include feelings, attitudes and individual personalities, learning processes, physical conditions, etc. Meanwhile, external factors include family background, information, knowledge and needs. According to perception, we are in contact with the environment to interact and adapt to it. Perception is designed for action. Thus, it can be concluded that perception is the starting point for humans to act. It is expected that at the end of this study, the provision of health education can have a significant effect on changing perceptions among adolescents [23][24].

Regarding the bivariate analysis difference test results, the researchers started by testing the normality of the data distribution. Since the data to be tested was  $< 50$ , the researchers used Shapiro Wilk. The results showed were not statistically normal. There were  $> 2$  groups to be tested in this study, and the data to be tested was categorical. Thus, the researchers used the Mann-Whitney test for the unpaired and the Wilcoxon for the paired. Based on the results of the different tests, it can be seen that there was no statistically significant effect of health education on adolescents' perceptions of the benefits and barriers to hypertension prevention behavior. The results of this study contradict the results of research from [25][26] concerning the Effect of Health Education Using Audiovisual Media on Adolescent Knowledge and Attitudes Regarding Efforts to Prevent Sexually Transmitted Diseases. In that study, researchers used 86 respondents from Senior High School 11 Pekanbaru. They were divided into two groups, namely the control and treatment groups. It then showed a significant difference between the pre-test and post-test with a value of  $p = 0.000 (< 0.05)$ .

Furthermore, insignificant results can be caused by various factors. However, the most important aspect is the learning factor. Learning is a process of interaction between students and educators and learning resources in a learning environment. Based on this definition, it can be concluded that there is a mismatch in the interaction between students and educators.

As we all know that it is not easy to make adolescents focus on learning. If we look at the internal factors of adolescents[27], in the middle school context, it was found that 89.7% of children did not want to ask questions as they were afraid, 84.6% did not understand the lessons given, and 76.9% of adolescents did not have good concentration power when studying.

The factors mentioned above occurred because they did not like the teacher's learning method, talked a lot in class, were sleepy during learning, and lacked interest in learning. In addition, the majority of them also did not hang out with friends who had a high interest in education. It occurred because they were easier to get along with friends who had the same educational interest. Therefore, environmental factors here are also very influential. The research results on high school students showed a significant influence between the learning environment on student interest in learning as much as 1.09%. The factors that influence student interest in learning first come from the student's factors, including the absence of a clear goal, whether or not learning is useful for the individual, health that often interferes with, and the existence of mental problems or difficulties [14] [28] [29][30].

Meanwhile, the second is a factor that comes from the school environment. These factors include how lessons are delivered by the teacher, the existence of personal conflicts between teachers and students, and the atmosphere of the school environment. The third is a factor that comes from the family and community environment, including the problem of a broken home and students' outside-school activities.

## 4 Conclusion

Based on the result of this study, it can be concluded that health education regarding perceptions of the benefits and barriers of hypertension prevention behavior in Muhammadiyah 1 High School Yogyakarta students by using educational videos could not increase the perception score regarding the benefits and barriers of hypertension prevention behavior.

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