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THE EFFECT OF EDUCATIONAL VIDEOS AS AN EFFORT TO IMPROVE THERAPY SUCCESS USING THE HEALTH BELIEF MODEL APPROACH: PERCEPTION OF SEVERITY

Trias Kania Sundari[1], M. Andy Rajab[2], Diyana Latifatul M[2], Malikatul Afidah[2], Annisa Azkiya Kamiela[2], Indriyati Hadi Sulistyaningrum[3]

[1,2]Department of Pharmacy, Faculty of Pharmacy Science and Technology, Universitas Al Irsyad Cilacap
[2] Department of Pharmacy, Faculty of Medicine, Universitas Islam Sultan Agung, Semarang 50117
[3] Department of Clinical Pharmacy and Community, Faculty of Medicine, Universitas Islam Sultan Agung, Semarang 50117

indriyati@unissula.ac.id

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ABSTRACT

Patient compliance with hypertension treatment is often a problem in therapy, so pharmacists and other health workers need to make an effort to improve patients' understanding of the disease and complications that can occur when patients do not take their medication, in order to achieve the clinical outcome of controlled blood pressure. This study aims to determine the effect of educational videos accompanied by the health belief model component of perceived severity on the compliance of hypertensive patients at the Gayamsari Community Health Center in Semarang. The method used in this study was a quasi-experiment using a pre-test and post-test group control conducted on 52 samples of Prolanis Hypertension patients who met the inclusion criteria at the Gayamsari Community Health Center in Semarang City, who were given the MARS (Medication Adherence Rate Scale) questionnaire. Results: From the intervention group that received educational videos accompanied by the health belief model component of perceived severity, the Wilcoxon signed rank test results had a p-value of 0.001, which means that there was a difference in patient compliance scores between the pretest and posttest. Meanwhile, the difference in post-test results between the two groups (control and intervention) also showed significance in the Mann-Whitney U Test with a p-value of 0.000, meaning that educational videos with health belief model components can influence the adherence of hypertensive patients at the Gayamsari Community Health Center in Semarang City. Conclusion: Showing educational videos accompanied by health belief model components to hypertensive patients at the Gayamsari Community Health Center in Semarang City can significantly influence patient compliance with $p<0.05$.

Keywords: Hypertension; Educational Video; Adherence; Health Belief Model; Perceived Severity

1. INTRODUCTION

The prevalence of non-communicable diseases related to unhealthy lifestyles continues to increase, one of which is hypertension. In Indonesia, the prevalence of hypertension shows an

increasing trend from 25.8% in 2013 to 34.11% in 2018 based on Riskesdas Data. In Central Java Province, hypertension still ranks highest among all reported non-communicable diseases, with a proportion of around 76.5%. This high figure shows that hypertension is still a serious public health problem that requires special attention, especially at the primary health care level (Dinkes, 2021; Mills et al., 2020).

This condition is also reflected in the level of health services in Semarang City. Based on the compilation of hypertension cases at the Semarang City Community Health Center, the Gayamsari Community Health Center showed a consistent increase in hypertension cases from 2015 to 2017. In 2015, there were 1,651 new cases, then an increase of about 2% in 2016, and another increase of 13% in 2017 with a total of 1,940 new cases. This continuous increase in cases indicates the need for intervention strategies that focus not only on treatment but also on changing patient behavior. Therefore, the use of video-based educational media with a Health Belief Model (HBM) approach is considered relevant to be implemented at the Gayamsari Community Health Center to improve the compliance of hypertensive patients with treatment.

Patient compliance with hypertension treatment remains a major challenge for healthcare providers. The World Health Organization (WHO) estimates that approximately 50–70% of patients with chronic diseases do not comply with their prescribed treatment regimens. These findings are consistent with a study conducted in Semarang, which showed that of 148 respondents with hypertension, 48.6% did not comply with their treatment. Non-adherence to antihypertensive therapy can have serious consequences, including an increased risk of cardiovascular complications, worsening blood pressure control, and a decline in patients' quality of life (Getenet et al., 2019; Nurhanani et al., 2020; Susanto et al., 2019).

Patient behavior plays an important role in determining the level of adherence to treatment. One behavioral theory that is widely used to analyze health issues related to lifestyle is the Health Belief Model (HBM), which explains how individuals' perceptions of disease influence decision-making and changes in health behavior (Conner & Norman, 2015). In an effort to improve compliance among hypertensive patients, pharmacists have developed various forms of educational interventions. A study conducted by Wang et al (2024) stated that health education interventions based on the Health Belief Model were proven to increase compliance among hypertensive patients, where patients who received education showed an increase in average compliance scores from 52.3% to 78.4% as well as a significant increase in disease severity and treatment benefit perception scores compared to the control group. These results were also accompanied by improved blood pressure control, with the proportion of patients achieving blood pressure targets increasing from 34.5% to 62.1% after the intervention, indicating that strengthening perceptions of the risks and benefits of treatment can drive behavioral change and better clinical outcomes.

A systematic review shows that delivering information and education through the media has been proven effective in improving patient compliance. The media used can include text messages, telephone calls, posters, leaflets, and videos. Educational videos are considered highly effective because they engage more senses, thereby increasing patient understanding and knowledge by up to 85% and potentially encouraging better behavioral change (Conn et al., 2015; Oktianti et al., 2019; Reeves et al., 2020).

2. METHODS

2.1 Research Design

This study was conducted using a quasi-experimental research method with a pre-post control design at the Gayamsari Community Health Center, Semarang City, by distributing questionnaires on compliance to patients with chronic hypertension. The sampling technique used was consecutive sampling, where all subjects who met the criteria were taken as samples until the required number of subjects was reached. The

inclusion criteria were: hypertensive patients who had filled out an informed consent form and were willing to be research respondents, hypertensive patients with or without complications who were undergoing treatment at the Gayamsari Community Health Center in Semarang City, and patients aged ≥18 years who were receiving antihypertensive medication. It was determined that the minimum number for each group was 21 people, so the total minimum sample size was 42 people.

2.2. Data Collection Method

Data was collected from the distribution of questionnaires in the form of MARS (Medication Adherence Rating Scale) questionnaires with 5 questions using a Likert scale with scores of 1 (always), 2 (often), 3 (sometimes), 4 (rarely), and 5 (never). The questionnaire items were translated and tested for validity and reliability by Chan in 2019. Measurement Results:

a. High Adherence: Score of 25
b. Moderate Adherence: Score of 6-24
c. Low Adherence: Score of 0-5

Patient data for hypertension included name, age, gender, highest level of education, occupation, diagnosis, treatment regimen, and duration of hypertension therapy.

2.3. Intervention

The educational intervention was conducted using a 4 minute 28 second video that was systematically arranged into several main segments, including explanations about hypertension, risk factors, potential complications due to uncontrolled blood pressure, the importance of medication adherence, examples of situations often experienced by patients, prevention efforts, and motivational messages at the end of the presentation. This video was developed based on the Health Belief Model approach with an emphasis on the perceived severity component, which aims to increase patient awareness of the seriousness of hypertension and the risk of long-term complications. The educational message is delivered through a combination of visual and audio narration accompanied by clinical illustrations, making the material easier to understand, engaging, and relevant to patients' conditions in primary healthcare settings. It is hoped that this will encourage improved patient adherence to treatment and prevention efforts.

2.4. Data Analysis

The collected data were analyzed to determine the impact of educational videos combined with the Health Belief Model component on the perceived severity of prolanis hypertensive patients at Gayamsari Public Health Center. A statistical test with the Wilcoxon Signed Rank Test (a comparison test of 2 paired samples) was used to analyze the differences between pre-test and post-test results in both groups. A statistical test with the Mann-Whitney Test (a comparison test of 2 unpaired samples) was used to compare hypertension patient compliance levels between the intervention and control groups.

2.5. Ethical Considerations

This study has been approved by the Health Research Ethics Committee of the Medical/Health Research Bioethics Commission, Faculty of Medicine, Sultan Agung Islamic University, Semarang, with approval number No. 240/VI/2023/KomisiBioetik. All respondents were given an explanation of the purpose and procedures of the research and signed an informed consent form after receiving the explanation. The confidentiality of the respondents' identities was maintained, and the data was used solely for research purposes.

3. RESULTS AND DISCUSSION

This study was conducted from August to September 2023 by distributing MARS questionnaires and showing educational videos at the Gayamsari Community Health Center in Semarang City. The respondents in this study were 52 prolanis patients who met the inclusion criteria.

3.1 Characteristics of Hypertensive Patients

The Table 1 shows the characteristics of respondents, indicating that most respondents were elderly patients aged 50 years or older, with a percentage of 84.6% (22 people) in the intervention group and 73.1% (19 people) in the control group. The distribution of respondents based on gender shows that there are more women, with a percentage of 76.9% (20 people) in the intervention group and 88.5% (23 people) in the control group. This is in line with the results of the 2018 Riskesdas, which states that as age increases, people become more susceptible to hypertension because at that age, the walls of blood vessels begin to lose their elasticity, causing a continuous increase in blood pressure as blood continues to be pumped without any dilation of the blood vessels (Indonesian Ministry of Health, 2018; Nurvita, 2022).

Table 1. Characteristics of Hypertensive Patients at Gayamsari Public Health Center In Semarang

Characteristics of Respondents	Control Group		Intervention Group	
	F	%	F	%
Age				
- >50 years	19	73.1%	22	84.6%
- 31-49 years	7	26.9%	4	15.4%
Gender				
- Male	3	11.5%	6	23.1%
- Female	23	88.5%	20	76.9%
Duration of taking Hypertension Medication	9	34.6%	0	0%
- < 3 months	10	38.5%	0	0%
- 3-6 months	7	26.9%	26	100%
- > 1 year				
Number of Medications Prescribed				
- 1-2 Medications	22	84.6%	23	88.5%
- 3-4 Medications	2	7.7%	2	7.7%
- >5 Medications	2	7.7%	1	3.8%
Medication Name				
- Amlodipine 5mg	8	30.8%	6	23.1%
- Amlodipine 10mg	16	61.5%	15	57.7%
- Candesartan 8mg	0	0%	1	3.8%
- Captopril	1	3.8%	0	0%
- Amlodipine 10mg dan Candesartan 8mg	1	3.8%	3	11.5%
- Amlodipine 10mg, Candesartan 8mg dan Bisoprolol	0	0%	1	3.8%
Education Level				
- Elementary School	12	46.2%	6	23.1%
- Junior High School	7	26.1%	6	23.1%
- Senior High School	6	23.1%	13	50%
- Bachelor's Degree	1	3.8%	1	3.8%
Monthly Income				
- <1 million	25	96.2%	19	73.1%
- 1-5 million	1	3.8%	6	23.1%
- >5 million	0	0%	1	3.8%

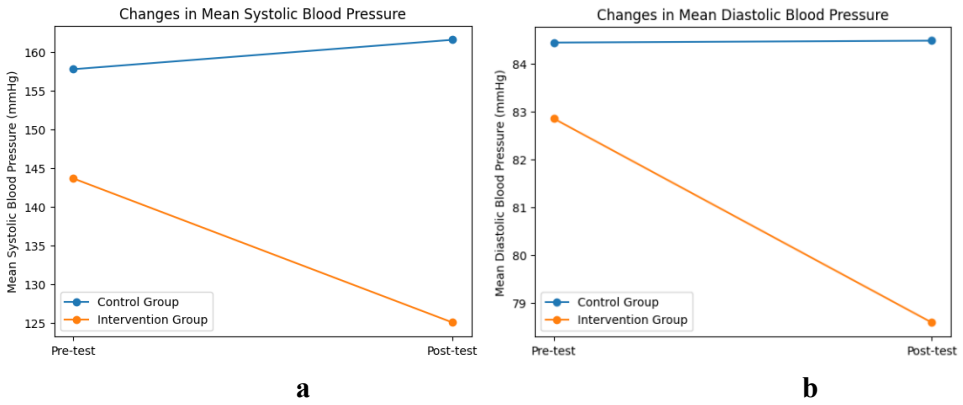
Female respondents had a higher prevalence, with a percentage of 76.9% (20 people) in the intervention group and 88.5% (23 people) in the control group. This is consistent with previous studies, which state that female patients are more prone to hypertension due to hormonal changes caused by menopause and the use of oral contraceptives. Blood pressure can also increase due to changes in the concentration of estrogen and progesterone hormones (Ahmad & Oparil, 2017; Wenger et al., 2018).

The results of this study indicate that most respondents had a primary school education, with 46.2% (12 people) in the control group and 23.1% (6 people) in the intervention group. This is consistent with research conducted by Tabrizi (2016) that education level has a negative correlation with hypertension, whereby the lower the education level, the more people will be affected by hypertension. This may occur because the level of education affects the amount of knowledge acquired, so patients with a higher level of education are more likely to have a healthier lifestyle (Singh et al., 2017; Tabrizi et al., 2016).

The monthly income of respondents showed that most patients only had an income of less than 1 million rupiah per month, with the control group at 73.1% (19 people) and the intervention group at 96.2% (25 people). This is in line with Anstey's statement in 2019 that the lower a person's income, the more susceptible they are to hypertension. This may occur because people with lower incomes have less purchasing power, especially for daily food needs that do not meet balanced nutritional values, such as insufficient consumption of fruits and vegetables, which can lead to an increase in the prevalence of hypertension in low-income communities (Anstey et al., 2019; Singh et al., 2017).

3.2 Blood Pressure of Hypertensive Patients

A comparison of blood pressure in the intervention group before and after viewing the educational video accompanied by the health belief model component shows a decrease, as can be seen in the Figure 1. The mean value of systolic blood pressure before treatment was 143.65 with a standard deviation of 21.341, and after viewing the educational video, the mean was 125. 04 with SD 15.823, indicating a decrease in mean blood pressure of 18.61. Based on the results of statistical testing using the Wilcoxon Signed Rank Test, the p-value was <0.05, indicating a significant decrease in blood pressure between before and after the educational video screening (Table 2). This is in line with previous research, which found that showing educational videos about hypertension reduced patients' blood pressure by 10.5 mmHg (systolic) and 4.3 mmHg (diastolic This is because videos can provide more information about hypertension, so that the more knowledge patients have, the more it will affect their compliance with treatment, thereby better controlling their blood pressure (Miller et al., 2021; Shi et al., 2017).



a **b**

Figure 1. Graph Comparing Systolic Blood Pressure in The Control and Intervention Groups (A), Graph Comparing Diastolic Blood Pressure in The Control and Intervention Groups (B).

Table 2. Blood Pressure of Hypertensive Patient at Gayamsari Public Health Service Semarang City

Blood Pressure		Control Group N=26		*P value*	Intervention Group N= 26		*P value*
		Pre-test	*Post-test*		*Pre-test*	*Post-test*	
Systolic	Min.	118	135	0,563	102	103	0.000
	Max.	197	189		180	156	
	Mean of	157.76	161.56		143.65	125.04	
	SD	19.477	16.409		21.341	15.823	
Diastolic	Min.	61	114	1,000	59	67	0.183
	Max.	64	120		109	89	
	Mean of	84.44	84.48		82.85	78.58	
	SD	13.364	11.987		10.433	7.061	

However, in the intervention group, there was no significant decrease in diastolic blood pressure, as seen from the results of the Wilcoxon Signed Rank Test, which had a p-value >0.05, namely 0.183. In the control group, there was also no significant decrease in either systolic or diastolic blood pressure, as seen from the p-value >0.05. In other words, the results were inconsistent. This is in line with the statement by Du, 2018, which states that there is inconsistent evidence of a relationship between literacy levels and clinical outcomes in the form of a decrease in blood pressure, which may be due to differences in patient demographic data such as age, gender, and education level (Du et al., 2018).

In addition, the findings in this study are also in line with various studies in the last decade which show that educational interventions and improved health literacy tend to have a more consistent impact on behavioral change and medication adherence than on short-term clinical outcomes, particularly diastolic blood pressure. Several studies report that media-based education, including video and digital interventions, can significantly improve medication adherence and self-management in hypertensive patients, but reductions in blood pressure, especially diastolic pressure, often do not show statistically significant differences (Bosworth et al., 2011; McManus et al., 2014; Karami et al., 2023). Recent systematic reviews also confirm that the effectiveness of educational interventions on blood pressure control is greatly influenced by the duration of the intervention, the intensity of monitoring, and patient engagement in long-term lifestyle changes, such as diet, physical activity, and stress management (Ukoha-Kalu et al., 2023; Boima et al., 2024). Thus, the non-significant reduction in diastolic blood pressure in this study can be understood as a result of the complexity of clinical and behavioral factors that influence hypertension control, necessitating multimodal and sustained interventions to achieve more optimal clinical outcomes.

3.3 Mean Adherence of Hypertensive Patients

The level of compliance with antihypertensive therapy is divided into three groups: high compliance, moderate compliance, and low compliance. The Table 3 shows the distribution of compliance among hypertensive patients in the intervention group and the control group, as well as the effect of the intervention in the form of educational videos on patient compliance.

Table 3. Compliance Levels of Hypertensive Patients at Gayamsari Public Health Center Semarang City

Compliance Levels	Control		Intervention		P Value (*Mann Whitney*)
	Pre-test	Post-test	Pre-test	Post-test	
	F (%)	F(%)	F(%)	F(%)	
High compliance	4 (15%)	4 (15%)	9 (34.6%)	12(46%)	0.000 (Intervention and Control)
Moderate compliance	22(85%)	22(85%)	17(65.4%)	14(54%)	
Low compliance	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Total	26(100%)	26(100%)	26(100%)	26(100%)	
Mean	21.31	21.54	23	24.15	

SD	2.604	2.319	2.020	1.120
Wilcoxon	P= 0.105		P=0.001	

In this study, it was found that there was a significant difference in compliance before and after viewing the educational video, as seen from the results of the Wilcoxon signed rank test with a p-value of 0.001. This is in line with the research conducted by Oktianti in 2019, which found a significant effect between before and after the screening of educational videos on medication adherence, with a significance value of 0.000 (Oktianti et al., 2019).

This study shows (Figure 2; Figure 3) that educating hypertensive patients through videos produces a significant difference between the control group and the intervention group, with a p-value of 0.000 using the Mann-Whitney U Test. This is in line with previous research, which found a significant difference in medication adherence between the intervention group and the control group after receiving the educational intervention, with a p-value of 0.001 (Nuridayanti et al., 2018).

From the results of the study, it can be said that perceived severity or the perception of severity that patients have from watching educational videos has an influence on the compliance of hypertensive patients at the Gayamsari Community Health Center. This is supported by previous research, which states that higher perceived severity of the disease is associated with greater treatment compliance. The same study also states that the level of patient knowledge about their disease can influence the compliance of hypertensive patients. Therefore, it is recommended to provide education and information about blood pressure and its complications to effectively foster the perception that hypertension can be life-threatening if not properly managed (Larki et al., 2018).

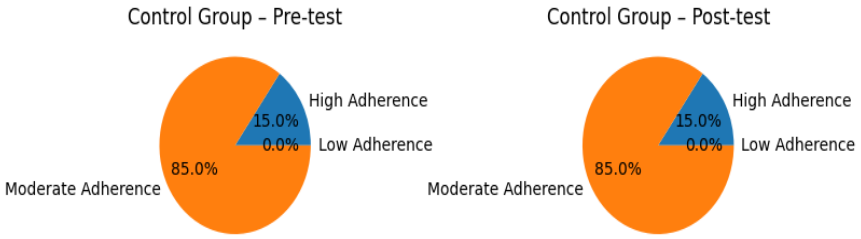


Figure 2. Pre-Test and Post-Test Compliance Rates of The Control Group

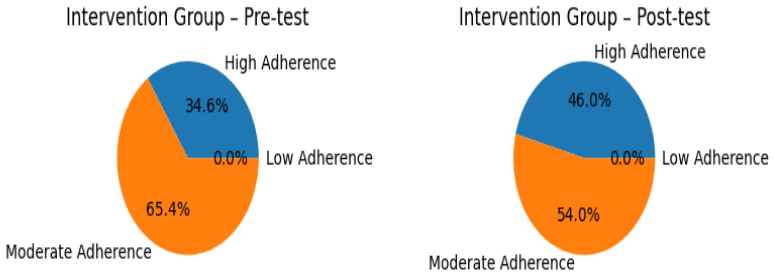


Figure 3. Pre-Test and Post-Test Compliance Rates of The Intervention Group

In the intervention group, educational videos were shown that included components of the Health Belief Model, namely perceived severity, which was expected to increase patient compliance. This suggests that health education incorporating components of the Health Belief Model can also be used as an educational program for patients with chronic diseases such as hypertension and diabetes mellitus (Larki et al., 2018).

This study has several limitations. The quasi-experimental design without randomization resulted in baseline differences between the control and intervention groups in terms of education level, income, and duration of treatment, which may have acted as confounding factors. The relatively small sample size (52 respondents) from a single

community health center also limits the generalizability of the findings. In addition, patient compliance was measured using a self-reported questionnaire (MARS), which is susceptible to recall and social desirability bias, and outcomes were only assessed immediately after the intervention without long-term follow-up to determine whether the improvement in compliance and blood pressure control was sustained. This study also focused solely on the perceived severity component of the Health Belief Model, so the potential influence of other components, such as perceived susceptibility, perceived benefits, and self-efficacy, was not evaluated and should be explored in future research.

4. CONCLUSION

The screening of educational videos accompanied by the Health Belief Model component can increase compliance among hypertensive patients, as seen from the increase in compliance from the pretest and posttest of the control group with an average increase of 1.15 and a statistical test result of <0.05, namely 0.001. There was a difference in compliance between patients who received education in the form of videos accompanied by the Health Belief Model component, as seen from the difference in post-test results between the control group and the intervention group with a p-value <0.05, namely 0.000.

5. ACKNOWLEDGMENT

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6. CONFLICT OF INTEREST

All authors declared that there was no conflict of interest.

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