



EFFECTIVENESS OF THE “HEART” ANIMATED EDUCATIONAL VIDEO ON MEDICATION ADHERENCE AMONG HYPERTENSIVE PATIENTS

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ABSTRACT

Hypertension is a common non-communicable condition with inadequate drug adherence. Noncompliance with antihypertensive treatment can lead to stroke, heart failure, and kidney problems. Health education through the HEART (Hypertension Education and Resource Toolkit) animated movie being tested to improve medication adherence in hypertension patients at Sebelas Maret University Hospital (UNS) Solo. The study was quasi-experimental with a single group pretest–posttest. Purposive sampling yielded 94 individuals. The Wilcoxon Signed Rank test was used to analyze the results before and after the intervention using the MMAS-8 questionnaire with Cronbach's Alpha validity test. The Morisky Medication Adherence Scale 8 (MMAS-8) was 0.83, indicating high internal consistency. Reliability was tested using the test-retest reliability method with a Cronbach's Alpha coefficient of 0.898. Education significantly increased adherence ($p = 0.001$), with 96.8% of patients non-adherent before the intervention and 91.5% moderately and 3.2% totally adherent afterward. These findings demonstrate that audiovisual educational media improves patient comprehension and adherence. In conclusion, UNS Solo Hospital hypertension patients' medication adherence has improved using the HEART animated movie.

Keywords: animation video; health education; HEART (hypertension education and resource toolkit); hypertension; medication adherence

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INTRODUCTION

Hypertension occurs when systolic or diastolic blood pressure reaches 140 or 90 mmHg, respectively (Tambunan et al., 2021). This type of non-communicable disease (NCD) contributes significantly to morbidity and mortality rates in Indonesia (Kementerian Kesehatan, 2021). According to data from the World Health Organization (World Health Organization, 2023), one in five adults worldwide suffers from hypertension. Based on blood pressure measurements, 30.8% of Indonesian adults are diagnosed with hypertension (BPS, 2018). Similarly, in the City of Surakarta, 82.25% of non-communicable disease cases are classified as hypertension (Dinas Kesehatan Kota Surakarta, 2023).

Most individuals with hypertension are unaware that they require regular blood pressure monitoring, making it a silent disease (Oktaviani & Karjatin, 2023). This lack of awareness often leads to serious complications in vital organs such as the heart, kidneys, brain, and eyes, which may result in heart failure, stroke, or blindness. Data indicate that the majority of hypertension patients are female (33.1%) compared to male (25.9%) (Kementerian Kesehatan, 2018). Primary hypertension accounts for approximately 90% of all hypertension cases, while secondary hypertension represents 10%. The causes of hypertension remain largely unclear, although known contributing factors include heredity, sex, lifestyle choices, and metabolic changes (Fuadi et al., 2024). Without appropriate treatment, hypertension can lead to severe complications and even death.

In addition to physiological and genetic factors, changes in modern lifestyle patterns also play a major role in the increasing prevalence of hypertension. Urbanization, the growing consumption of high-sodium fast food, low levels of physical activity, and elevated stress are the main contributors

to rising blood pressure within the community (Jimat et al., 2025). Studies have shown that smoking, lack of sleep, and obesity are strongly associated with hypertension among individuals of productive age (Rajagukguk et al., 2025). The population's limited knowledge regarding regular blood pressure monitoring delays the diagnosis of hypertension (Raising et al., 2025). This indicates that medical therapy alone cannot effectively control hypertension without health education and long-term behavioral adjustments.

Hypertension is treated using both non-pharmacological and pharmacological methods. A low-salt diet, regular exercise, and stress management are considered non-pharmacological treatments. Pharmacological therapy controls blood pressure through the administration of antihypertensive drugs (Lolo et al., 2023). However, medication adherence remains a major challenge in hypertension management. Adherence is crucial, as noncompliance increases the risk of complications such as stroke, coronary heart disease, and kidney failure, which ultimately reduce quality of life and elevate healthcare costs (Rahayu et al., 2024). Approximately 53.8% of individuals with hypertension regularly take their prescribed medication (Pamungkas, 2022). Therefore, improving medication adherence is essential to regulate blood pressure and prevent related complications.

Interactive educational materials, such as animated videos, can improve patient adherence. Videos convey information in an audiovisual format, making it easier to understand and remember. According to a study by Putri et al. (2023), patients' knowledge levels after receiving education through video reached the "good" category at 69.7% and the "moderate" category at 30.3%. Another study by Aini & Sudiyat (2021) also showed that animated videos on blood pressure management are effective as health education media. The advantages of animated videos are supported by the theory that approximately 75–85% of knowledge is acquired through the sense of sight, while only 13–25% is obtained through other senses (Sakinah, 2023). This proves that visual-based media have great potential to enhance patients' understanding of hypertension treatment.

This study was conducted to explore the potential benefits of animation-based video instructions for hypertensive patients in improving treatment adherence. The animated film used was HEART (Hypertension Education and Resource Toolkit), a learning aid designed to help hypertensive patients understand the importance of medication and healthy lifestyle practices. Through technology-based educational initiatives such as animated films, it is hoped that patient engagement can be increased, health behaviors improved, and adherence to long-term pharmacological therapy strengthened (Azhimah et al., 2022). The main objective of this study was to assess the effectiveness of using instructional animated videos (HEART) in improving hypertensive patients' adherence to treatment, as well as to identify the influence of demographic factors such as gender, age, and education level on adherence levels before and after the intervention. This study was conducted at the Sebelas Maret University (UNS) Hospital in Solo, and it is hoped that the results can serve as a basis for the development of digital media as a continuous education tool to support independent management of hypertension in health facilities (Cabral et al., 2024).

METHOD

This study was approved by the Health Research Ethics Committee of the Faculty of Medicine, Sebelas Maret University (FK UNS), under Ethical Clearance Number: 74/UN27.06.11/KEP/EC/2025. All research protocols complied with ethical research standards. This quantitative, quasi-experimental study employed a one-group pretest–posttest design to assess the impact of the HEART (Hypertension Education and Resource Toolkit) animated video on medication adherence among patients with hypertension. The study was conducted from July to September 2025 at Sebelas Maret University Hospital (UNS) Solo. The study population included 1,511 outpatient hypertension patients, with 94 participants selected through purposive sampling based on the following inclusion criteria: aged 20–75 years, undergoing hypertension therapy for more than three months, and having provided informed consent for participation. A demographic sheet and the MMAS-8 questionnaire (Morisky Medication Adherence Scale-8) were completed

before and after viewing the three-minute HEART (Hypertension Education and Resource Toolkit) animated video, which explained hypertension, its complications, and medication adherence. Previous research has shown that the MMAS-8 is a valid and reliable instrument, with a Cronbach's alpha value of 0.83 (Fatmawati *et al.*, 2023). Respondent and adherence characteristics were determined using univariate data analysis. After confirming that the data were not normally distributed, the Wilcoxon Signed-Rank Test was applied to compare adherence levels before and after the intervention at a significant level.

RESULT

Table 1.
Demographic Characteristics of Hypertensive Patients (n = 94)

Characteristic	Category	f	%
Age	Pre-elderly	69	73.4
	Elderly	25	26.6
Sex	Male	46	48.9
	Female	48	51.1
Educational Level	Did not complete elementary school	2	2.1
	Elementary school	21	22.3
	Junior high school	13	13.8
	Senior high school	35	37.2
	Higher education	23	24.5

Table 1 shows that most participants were in the pre-elderly age group (40–59 years) (73.4%), while 26.6% were classified as elderly. The sex distribution indicates that 48.9% of the respondents were male and 51.1% were female. Regarding educational level, the majority of participants were senior high school graduates (37.2%), followed by those with higher education (24.5%), elementary school education (22.3%), junior high school education (13.8%), and 2.1% who did not complete elementary school.

Table 2.
Medication Adherence Before (Pre-test 1) and After (Post-test 3) Health Education Using the HEART (Hypertension Education and Resource Toolkit) Animated Video (n = 94)

Adherence Level	Before Intervention (Pre Test 1)		After Intervention (Post Test 3)	
	f	%	f	%
Non-adherent	91	96.8	5	5.3
Moderately adherent	3	3.2	86	91.5
Adherent	0	0	3	3

Table 2 shows that before receiving health education through the HEART (Hypertension Education and Resource Toolkit) animated video (pre-test 1), most hypertensive patients were categorized as non-adherent (96.8%). After the intervention (post-test 3), there was a notable improvement, with 91.5% of participants classified as moderately adherent and 3.2% as adherent.

Table 3.
Effect of Health Education Using the HEART (Hypertension Education and Resource Toolkit) Animated Video (n = 94)

Variable	N	Mean	Standard Deviation	P-Value
Before	94	1.03	0.177	0.001
After	94	1.85	0.358	

Table 3 presents the results of the *Wilcoxon Signed-Rank Test* for medication adherence. The *mean* adherence score before the intervention was 1.03 with a standard deviation of 0.177, whereas after the HEART (*Hypertension Education and Resource Toolkit*) animated video education intervention, it increased to 1.85 with a *standard deviation* of 0.358. The analysis yielded a p-value of 0.001 ($p < 0.05$), indicating a significant difference in medication adherence between the pre-test (before the intervention) and post-test (after the intervention).

DISCUSSION

This study found that 73.4% of hypertensive patients were in the pre-elderly age group (40–59 years), while only 26.6% were elderly (≥ 60 years). This finding indicates that middle-aged individuals are also affected by hypertension. Physiological changes, including reduced arterial wall elasticity and increased peripheral vascular resistance, begin after the age of 40, explaining this condition. These modifications contribute to elevated blood pressure. Lifestyle factors among pre-elderly individuals, such as a high-salt diet, lack of physical activity, stress, and irregular sleep patterns, further contribute to the development of hypertension. These data support the notion that the risk of hypertension increases with age due to cardiovascular system degeneration as well as environmental and lifestyle factors (Salsabila et al., 2024). The results of this study are also consistent with the findings of Nurhayati et al. (2023). Consequently, hypertension tends to become more prevalent with increasing age, particularly among individuals aged 45–59 years, where it is more common than in younger age groups. This study supports the notion that middle-aged adults constitute a significant risk group for hypertension and should therefore be prioritized in health promotion and prevention programs. Early detection efforts, control of risk factors, and health education during middle age are crucial in reducing the future burden of hypertension (Baringbing, 2023).

Furthermore, based on sex distribution, hypertension affected 51.1% of women and 48.9% of men. Although these proportions appear balanced, several studies have shown differing tendencies across specific age groups. This finding aligns with the results of Tirtasari & Kodim (2019), who reported that men are at greater risk of developing hypertension during their productive years, whereas women become more susceptible after menopause due to decreased estrogen levels, which play a protective role in the cardiovascular system. However, in this study, the equal proportion of male and female patients indicates a shift in the risk pattern, suggesting that non-hormonal factors such as high sodium intake, stress, and lack of physical activity now contribute similarly to both sexes. Therefore, preventive strategies should not only focus on sex differences but also emphasize healthy lifestyle modifications across all productive age groups.

From the educational aspect, most respondents had a senior high school education (37.2%), followed by higher education (24.5%), elementary school (22.3%), junior high school (13.8%), and a small proportion who did not complete elementary school (2.1%). Educational level is closely related to understanding health information and adherence to treatment. Individuals with higher education levels are more likely to comprehend the risks and importance of hypertension control. However, 38.2% of participants with lower education levels remain a challenge in terms of receiving medical information and developing healthy behaviors. These findings are consistent with Rahayu et al. (2024), who stated that education influences disease knowledge and prevention. To ensure that health messages are effectively received, health education should be tailored to the patient's level of understanding, using simple language and engaging delivery methods.

On average, medication adherence among hypertensive patients increased from 1.03 to 1.85 after receiving educational intervention through the HEART (Hypertension Education and Resource Toolkit) animated film ($p = 0.001$). This finding demonstrates that audiovisual educational media enhance patients' health behaviors. The clarity and visual appeal of the content make the information easier to absorb and remember, thereby improving adherence. These results are consistent with the study by Oktianti et al. (2019), which reported that the use of educational video media significantly improved medication adherence among hypertensive patients compared to conventional verbal counseling. Furthermore, the active engagement of participants in the learning process through audiovisual media also contributes to the increased effectiveness of health education. When participants visually observe the process and effects of hypertension treatment, they gain a clearer understanding of the consequences of nonadherence and become more motivated to modify their behavior. This indicates that interactive and engaging educational media can foster a sense of responsibility and enhance participants' self-awareness regarding the importance of self-

management in disease control. Therefore, the educational intervention using the HEART (Hypertension Education and Resource Toolkit) animated video not only conveys knowledge but also builds awareness, fosters motivation, and improves patients' medication adherence. These findings reinforce that audiovisual-based health education is an innovative approach that can be implemented in primary healthcare settings to reduce nonadherence rates and hypertension-related complications.

CONCLUSION

This study revealed that the majority of individuals with hypertension were in the pre-elderly age range (40–59 years), with an equal distribution between males and females. Most participants had a secondary education level. These findings indicate that age, sex, and educational background contribute to the occurrence of hypertension. Prior to the intervention, patients' adherence to antihypertensive medication was low, with most participants categorized as non-adherent. After receiving education through the HEART (Hypertension Education and Resource Toolkit) animated video, there was a significant improvement in adherence, with most participants becoming moderately adherent and a small proportion achieving full adherence. The HEART animated video learning intervention effectively improved medication adherence among hypertensive patients at Sebelas Maret University Hospital, Solo, as evidenced by the Wilcoxon Signed-Rank Test result showing a p-value of 0.001. This study demonstrates that audiovisual-based health education can serve as an innovative and engaging approach for patients, particularly because it helps bridge the gap between healthcare providers and patients. This educational method not only improves adherence but also fosters awareness of the importance of independent and sustainable disease management. It is expected that this educational model can be adapted across various primary healthcare services as part of preventive and promotive efforts to reduce the incidence of hypertension-related complications in the community.

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