

The Effectiveness of Education through Flashcard Media on Knowledge of Taking Medication in the Elderly with Hypertension at the Limboto Health Center, Gorontalo Regency

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ABSTRACT

Hypertension is a chronic disease that requires long-term treatment and medication to prevent complications. The success of therapy is influenced by the patient's understanding of the use of antihypertensive drugs. Good knowledge can support treatment, while lack of knowledge can lead to irregularities in treatment. One of the efforts to improve the knowledge of the elderly is through education using flashcard media. This study aims to determine the effectiveness of education through flashcard media on the knowledge of taking medication in the elderly with hypertension at the Limboto Health Center, Gorontalo Regency. This study uses a quantitative method with a pre-experimental one-group pretest-posttest design. The population was 71 people with a sample of 42 respondents selected using purposive sampling techniques. The research instruments were in the form of knowledge questionnaires and flashcard media. Data analysis used the Wilcoxon test. The results of the study showed that there was an effectiveness of education through flashcard media on the knowledge of taking medication in the elderly with hypertension with a p-value = 0.000 ($\alpha < 0.05$). It was concluded that flashcard media is effective in increasing the knowledge of taking medication in the elderly with hypertension at the Limboto Health Center, Gorontalo Regency.

This research is expected to contribute and become an input material for Puskesmas in the use of flashcard media as an educational medium to increase knowledge of taking drugs in the elderly with hypertension.

INTRODUCTION

Hypertension is one of the non-communicable diseases characterized by an increase in systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg. This disease is known as the silent killer because it often causes no symptoms, but it can cause various serious complications such as heart disease, stroke, kidney damage, and diabetes mellitus if not controlled properly. These complications are one of the main causes of morbidity and mortality in various countries, including Indonesia (WHO, 2023).

According to the World Health Organization (WHO), around 33% of the world's population has hypertension and the number of sufferers is estimated to reach 1.5 billion people by 2025. The global prevalence of hypertension stands at 22%, with the highest prevalence in the African region at 27%, while Southeast Asia ranks third at 25%. The prevalence of hypertension also increases with age and is more commonly found in men than women (WHO, 2023).

In Indonesia, hypertension is still a significant health problem. Based on the 2023 Indonesian Health Survey (SKI), the prevalence of hypertension in the population aged ≥ 18 years based on blood pressure measurement results reached 30.8%. In addition, there is still a gap between the prevalence of hypertension based on the diagnosis of health workers and the results of blood pressure measurements, especially in the elderly age

group. This condition shows that public awareness and knowledge about hypertension still needs to be increased as an effort to prevent complications of cardiovascular disease (Ministry of Health, 2023).

In Gorontalo Province, the prevalence of hypertension based on blood pressure measurement results reached 28%. Data from the Gorontalo Provincial Health Office in 2025 shows that Gorontalo Regency is the region with the highest number of hypertension cases, which is 28,628 people. In the working area of the Limboto Health Center, there will be 333 elderly people with hypertension in 2025 spread across 14 villages. The high number of hypertensive patients in the elderly group shows the need for sustainable disease control efforts, including through increasing knowledge about the use of antihypertensive drugs.

Knowledge is an important factor in the management of hypertension. Elderly people with a good level of knowledge tend to better understand the purpose of treatment, the rules for using drugs, the benefits of therapy, and the risks that can occur if treatment is not done correctly. Research by Putri et al. (2025) shows that there is a relationship between the level of knowledge and taking antihypertensive drugs in the elderly. Therefore, increasing knowledge is one of the important strategies in controlling hypertension.

One of the efforts that can be made to improve the knowledge of the elderly is through health education using flashcard media. Flashcards are visual learning media in the form of picture cards that contain short, interesting, and easy-to-understand information. The use of visual media is considered effective for the elderly because it can help increase attention, understanding, and memory of the health information provided (Gusty & Rahmadani, 2024). Previous research has shown that health education using flashcard media is able to increase health knowledge and attitudes in various patient groups (Wati et al., 2024).

Based on a preliminary study conducted at the Limboto Health Center on 10 elderly people with hypertension, it is known that most of the elderly only receive education orally or through leaflets that are considered less interesting and difficult to understand. Some elderly people stated that they often forget the information that has been provided because they do not have learning media that can be reused at home. Until now, health education using flashcard media related to the knowledge of taking medication in the elderly with hypertension has never been implemented at the Limboto Health Center. Therefore, this study aims to analyze the effectiveness of flashcard media on the level of knowledge of taking medication in the elderly with hypertension at the Limboto Health Center, Gorontalo Regency.

RESEARCH METHODS

This study is a quantitative research with a pre-experimental design using a one group pretest-posttest design. The study population was all elderly with hypertension who participated in ProLanis activities at the Limboto Health Center as many as 71 respondents. The research sample amounted to 42 respondents using purposive sampling technique. The research instrument used knowledge level questionnaires and flashcard media as educational interventions. Data analysis was carried out univariate and bivariate. The normality test used Shapiro-Wilk and the bivariate analysis used the Wilcoxon Signed Rank Test.

RESEARCH RESULTS

Respondent Characteristics

Table 1 Distribution of Respondents by

Age	n	%
Young Elderly (60-69 Years Old)	34	81
Elderly (70-79 years old)	8	19
Quantity	42	100

Source : Primary Data, 2026

Based on table 1, it can be explained that of the 42 respondents with hypertension at the Limboto Health Center, Gorontalo Regency, it was found that the highest distribution in the middle elderly (60-69 years) was 34 respondents with a percentage of 81% and the lowest in the middle aged (70-79 years) was 8 respondents with a percentage of 19%.

Table 2 Distribution of Respondents by Gender at Limboto Health Center, Gorontalo Regency

Gender	n	%
Male	5	11,9
Women	37	88,1
Quantity	42	100

Source : Primary Data, 2026

Based on table 2, it can be explained that of the 42 respondents with hypertension at the Limboto Health Center, Gorontalo Regency, it was found that the highest distribution in the female gender was 37 respondents with a percentage of 88.1% and the lowest in the male gender of 5 respondents with a percentage of 11.9%.

Table 3 Distribution of Respondents by Education

Education	n	%
SD	21	50
Junior High School	11	26,2
High School	5	11,9
College	9	
Quantity	42	100

Source : Primary Data, 2026

Based on table 3, it can be explained that of the 42 respondents with hypertension at the Limboto Health Center, Gorontalo Regency, it was found that the highest distribution in elementary education was 21 respondents with a percentage of 50% and the lowest in high school and college education was 5 respondents each with a percentage of 11.9%.

Table 4. Distribution of Respondents Based on Work at Limboto Health Center, Gorontalo Regency

Jobs	n	%
IRT	32	76,2
Self-employed	2	4,8
Farmer	3	7,1
Retired civil servants		11,9
Quantity	42	100

Source : Primary Data, 2026

Based on table 4, it can be explained that of the 42 respondents with hypertension at the Limboto Health Center, Gorontalo Regency, information was obtained that the highest distribution in IRT Jobs was 32 respondents with a percentage of 76.2% and the lowest in self-employed jobs as many as 2 respondents with a percentage of 4.8%.

Table 5 Distribution of Respondents Based on Length of Hypertension at Limboto Health Center, Gorontalo Regency

Long Suffering from Hypertension	n	%
1 – 5 Years	23	54,8
6 -10 Years	12	28,6
> 10 Years		16,7
Quantity	42	100

Source : Primary Data, 2026

Based on table 5, it can be explained that of the 42 respondents with hypertension at the Limboto Health Center, Gorontalo Regency, it was found that the highest distribution in the length of suffering from hypertension for 1-5 years was 23 respondents with a percentage of 54.8% and the lowest in the long term suffering from hypertension > 10 years as many as 7 respondents with a percentage of 16.7%.

Univariate Analysis

Table 6 Distribution of Knowledge of Taking Medication in the Elderly with Hypertension Before and After Education Through Flashcard Media Based on Category at Limboto Health Center, Gorontalo Regency

Knowledge	Categories	n	%
Pretest	Good	1	2,4
	Enough	20	47,6
	Less	21	50
Posttest	Good	30	71,4
	Enough	12	28,6
	Less	0	0
Quantity		42	100

Source : Primary Data, 2026

Based on table 6, it can be explained that the knowledge of taking medication in the elderly with hypertension from 42 respondents before being educated through flashcard media obtained the highest distribution of knowledge of taking medication in the poor category of 21 respondents with a percentage of 50% and the lowest distribution in the good category of 1 respondent with a percentage of 2.4%. Meanwhile, after being given education through flashcard media, the highest distribution of knowledge of taking drugs in the good category was 30 respondents with a percentage of 71.4% and the lowest distribution in the sufficient category was 12 respondents with a percentage of 28.6%.

Bivariate Analysis

Table 7 Analysis of the Effectiveness of Education Through Flashcard Media on Knowledge of Taking Medication in the Elderly with Hypertension at Limboto Health Center, Gorontalo Regency

Knowledge	Mean(Min-Max)	Std Dev	P Value
Before Education (n = 42)	6,86 (5-10)	1.35	0,001
After Education (n = 42)	9,98 (8-11)	1.02	
Wilcoxon test, 42 respondents increased knowledge after being educated			

Source : Primary Data, 2026

Based on the results of the analysis using the Wilcoxon Signed Rank Test in table 4.7, there was a significant difference in the knowledge of the elderly before and after being given learning using flashcard media with a p-value of <0.001, which was smaller than the p-value of < 0.05. Posttest data has an average value (M = 9.98) with a minimum-maximum value of 8 – 11 greater than the pretest data where the average value (M = 6.86) with a minimum – maximum value of 5 – 10. This states that Ho was rejected, which means that there is an effectiveness of education through flashcard media on the knowledge of taking medication for the elderly with hypertension at the Limboto Health Center, Gorontalo Regency.

DISCUSSION

Knowledge of Taking Medicine for the Elderly Before Education Through Flashcard Media at Limboto Health Center, Gorontalo Regency

Based on Table 6, it is known that before being given education through flashcard media, most of the respondents had a level of knowledge of taking drugs in the poor category, namely 21 respondents (50%), followed by the sufficient category as many as 20 respondents (47.6%), and the good category as many as 1 respondent (2.4%). These results show that most elderly people still have a low understanding of the use of antihypertensive drugs.

The low level of knowledge of respondents can be influenced by the characteristics of the elderly who experience a decline in cognitive function, memory, vision, and hearing, thus affecting the ability to receive and understand health information. In addition, the level of education also plays a role in determining a person's ability to understand the information received. In this study, there was only 1 respondent who had a good level of knowledge. The respondents have a higher level of education than other respondents and have the status of retirees. A higher level of education allows a person to more easily understand information about the name of the drug, dosage, time of use of the drug, how the drug works, and the importance of regular drug use.

Based on the results of filling out the questionnaire, most of the respondents were not able to answer the 12 questions given correctly. Answer errors that are often found are related to the name of the drug consumed, the dosage of the drug, the time to take the drug, how the drug works in the body, the actions taken when forgetting to take the drug, the interaction of the drug with certain foods or drinks, and the correct way to store the drug. In addition, there are still respondents who think that antihypertensive drugs can be stopped when the body condition feels healthy. This condition shows that respondents' knowledge about the use of antihypertensive drugs still needs to be improved.

According to WHO (2024), knowledge is a person's understanding and ability to use the information they have to make the right decisions. Good knowledge of hypertension treatment will help the elderly understand the function of the drug, dosage, time of use, therapeutic benefits, and how to store the drug correctly. Harahap et al. (2019) stated that a good level of knowledge can improve a person's ability to understand and apply the health information he receives.

Knowledge is one of the important aspects in hypertension management. Lack of knowledge can cause the elderly to not understand the risk of hypertension, treatment goals, and the importance of regular use of antihypertensive drugs. Seniors with low levels of education tend to have a harder time receiving and understanding health information compared to seniors with higher levels of education. On the other hand, the elderly who are

more educated generally have an easier time understanding information about diseases and their treatments.

The results of this study are in line with the research of Putri et al. (2025) which shows that most of the elderly have a level of knowledge in the medium category as many as 54 respondents, the high category as many as 23 respondents, and the low category as many as 26 respondents. The results of the study show that the level of knowledge about the use of antihypertensive drugs in the elderly still varies and is influenced by various individual factors, so effective health education efforts are needed to increase the knowledge of the elderly about the proper use of antihypertensive drugs.

Knowledge of Taking Medicine for the Elderly After Education Through Flashcard Media at Limboto Health Center, Gorontalo Regency

Based on Table 7, it can be seen that the knowledge of taking medication in the elderly with hypertension after being educated through flashcard media has increased. Of the 42 respondents, most of them were in the category of good knowledge, namely 30 respondents (71.4%), while 12 respondents (28.6%) were in the category of sufficient knowledge and there were no more respondents with the category of lack of knowledge. When compared to the results before the intervention, there was a considerable change where before being educated, most of the respondents were in the category of knowledge lacking as many as 21 respondents (50%), the sufficient category as many as 20 respondents (47.6%), and the good category only 1 respondent (2.4%). These results show that flashcard media is able to increase the understanding of the elderly regarding the use of antihypertensive drugs.

The increase in knowledge can be seen from the respondents' ability to answer 12 questions regarding the benefits of using antihypertensive drugs, drug names, dosages, how to use drugs, the importance of taking drugs regularly, and how to store drugs correctly. However, there are still 12 respondents who are in the category of sufficient knowledge. Respondents in this category generally still have difficulty understanding the right time to take medication, how antihypertensive drugs work in the body, actions to take when forgetting to take medication, and foods and drinks that should not be consumed at the same time as antihypertensive drugs. The condition is likely influenced by age factors because most of the respondents are ≥ 60 years old who physiologically have decreased memory and ability to receive new information.

Increased knowledge after providing education through flashcard media shows that visual learning media can help the elderly understand health information better. Flashcards present information in the form of images, colors, and short sentences that are easy to understand, making it easier to store information in memory. According to Notoatmodjo in Santoso (2023), knowledge is the result of a person's sensing of an object through the five senses. Good knowledge will affect a person's ability to understand and apply the health information received. In the context of hypertension, increasing knowledge about drug use is very important because it can help the elderly understand the purpose of treatment, the benefits of therapy, and the importance of using drugs appropriately and sustainably.

The findings of this study are in line with the research of Handono et al. (2025) which shows that the use of flashcard media effectively increases participants' understanding of hypertension and the importance of correct drug storage with a p-value of 0.003 ($p < 0.05$). The results of this study are also supported by Wati et al. (2024) who found that health education using flashcard media can significantly increase respondents' knowledge. Thus, health education through flashcard media is effective in increasing knowledge of taking medication in the elderly with hypertension at the Limboto Health Center, Gorontalo Regency.

Effectiveness of Education Through Flashcard Media on Knowledge of Taking Medication in the Elderly with Hypertension at Limboto Health Center, Gorontalo Regency

Based on the results of the study, before being educated through flashcard media, most of the respondents had a level of knowledge of taking drugs in the poor category, namely 21 respondents (50%), the adequate category as many as 20 respondents (47.6%), and the good category as many as 1 respondent (2.4%). After being educated, there was a change in the distribution of knowledge levels, where most of the respondents were in the good category as many as 30 respondents (71.4%) and the adequate category as many as 12 respondents (28.6%). There are no more respondents with a category of less knowledge. These results show an increase in knowledge of taking medication in the elderly after being educated using flashcard media.

The increase in knowledge can also be seen from the average score of the respondents. Before the intervention, the average value of respondents' knowledge was 6.86 with a score range of 5–10, while after the intervention it increased to 9.98 with a score range of 8–11. There was an average increase of 3.12 points. When compared to the maximum score of the instrument, the achievement of knowledge increased from 62.36% to 90.73%, or an increase of 28.37%. In addition, the minimum score of respondents increased from 5 to 8 indicating that an increase in knowledge occurred in almost all study respondents.

The increase in knowledge shows that flashcard media is effectively used as a health education medium for the elderly with hypertension. According to Notoatmodjo in Maryam (2024), health education media is a tool used to convey health messages to the public. Flashcards as a visual medium that combines pictures and short writing can help the elderly understand health information more easily. The characteristics of the media that are simple, attractive, and easy to understand make flashcards suitable for use in the elderly group who generally

experience a decline in cognitive function and memory.

The effectiveness of flashcard media in this study was strengthened by the results of the Wilcoxon test which showed a $p < 0.05$ value, so it can be concluded that there is a significant difference between the level of knowledge before and after education. The success of the intervention was also supported by the characteristics of the respondents, where most of the respondents were in the age group of 60–69 years (81%), had basic education (50%), and had suffered from hypertension for 1–5 years (54.8%). This condition allows respondents to have experience in managing hypertension and more easily receive health information provided through visual media.

The results of this study are in line with the research of Wati et al. (2024) which shows that health education using flashcard media has a significant effect on increasing respondents' knowledge with a value of $p = 0.000 (< 0.05)$. Research by Handono et al. (2025) also reported that flashcard media was effective in increasing participants' understanding of hypertension and the appropriate use of medications. Thus, flashcard media can be an effective alternative health education media to increase knowledge of taking medication in the elderly with hypertension.

CONCLUSION

Knowledge of taking medication in the elderly with hypertension before being educated through flashcard media at the Limboto Health Center, Gorontalo Regency is in the good category of 2.4%, 47.6% and less than 50%.

Knowledge of taking medication in the elderly with hypertension after being educated through flashcard media at the Limboto Health Center, Gorontalo Regency in the good category of 71.4% and sufficient 28.6%

There is an effectiveness of education through flashcard media on the knowledge of taking medication in the elderly with hypertension at the Limboto Health Center, Gorontalo Regency ($p \text{ value} = < 0.001 < \alpha = 0.05$).

ADVICE

This research is expected to increase knowledge and introduce flashcard media as a learning medium to increase the desire to take medication in the elderly with hypertension.

This research is expected to add scientific insight and information for nursing, especially for nursing educators and students in terms of increasing knowledge of taking medication in the elderly with hypertension through flashcard learning media and can also be used as a reference for students for further research.

This research is expected to contribute and input to the Puskesmas as one of the alternative therapies to improve the knowledge of taking medication in hypertensive patients.

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