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Community-Based Hypertension Control Program in RT 01 RW 01 Jumerto Village, Patrang District, Jember Regency

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A B S T R A C T

Productive age is a risk group that is prone to hypertension and hypertension increases with age. Management of hypertension plays a role in maintaining the stability of the patient's medical condition and slowing the occurrence of complications. However, the implementation of the hypertension disease management program has not been carried out optimally. This research was carried out quantitatively, with a quasi-experimental type of research using one-group pretest-posttest design approach. Activities were carried out in four stages, namely situation analysis, plan formulation, implementation, and monitoring evaluation. Evaluation of systolic and diastolic blood pressure and knowledge of participants was done before and after the program. The intervention results showed that there were significant differences in systolic, diastolic blood pressure, and public knowledge before and after the program ($p<0.005$). Community-based hypertension management programs have proven to be effective in increasing the knowledge and clinical conditions of people with hypertension. Therefore, to increase knowledge, attitudes, and skills to control hypertension and support are needed by health workers, cadres and families

INTRODUCTION

Hypertension is one of the main risk factors for cardiovascular disease, globally it is the leading cause of increased cardiovascular mortality, sudden death, stroke, coronary heart disease, heart failure, atrial fibrillation, peripheral arterial disease, and renal insufficiency. Adult age is a risk factor that has a big influence on hypertension because with age, the body's abilities and mechanisms increase and decrease slowly. Hypertension is a serious medical condition and can increase the risk of heart, brain, and kidney disease (Ministry of Health of Republic of Indonesia, 2019). Productive age is a risk group that is prone to hypertension and hypertension increases with age (Ekarini et al., 2020). Hypertension affects about 25% of adults worldwide and is estimated to cause more than seven million deaths each year, and about 13% of the total number of deaths worldwide (Herawati, 2021).

Hypertension is influenced by several factors, such as age, being overweight or obese, alcoholic beverages, family history of hypertension, and eating foods high in salt. The frequency of consumption of foods high in salt, foods high in cholesterol, seasonings (MSG), and milk and its products can trigger hypertension (Astuti, 2017). Foods high in salt and fat can cause peripheral resistance and increase blood pressure (Susanto et al., 2016). Aristi et al., (2020) concluded that the frequency of food consumption

(biscuits, salted fish, milk, coffee, and food seasonings) was associated with the incidence of systolic hypertension. Meanwhile, research by Yanti et al., (2022) reported a relationship between obesity and the incidence of hypertension based on the measurements results of systolic blood pressure with the Odds Ratio results of 2.625 with a range of values between 1.480 to 4.656.

According to World Health Organization (WHO) in the world around 972 million people suffer from hypertension, which is divided into 333 million in developed countries and 639 in developing countries, including Indonesia which is ranked 2 of the 10 most diseases (Riyadina et al., 2018). The prevalence of hypertension in Indonesia based on the 2018 Riskesdas data results based on characteristics at the age of 18-24 years with the number of hypertension sufferers as much as 13.2% and at the age of 25-34 years with the number of hypertension sufferers 20.1% then at the age of 35-44 years as many as 31,6% and at the age of 45-54 years the number of patients with hypertension increased by 45.3% and at the age of 55-64 years with the number of 55.2% hypertension sufferers while at the age of 65-74 years as many as 63.2% and age 75 and over is 69.5% of people with hypertension (Ministry of Health of Republic of Indonesia, 2018).

Based on 2022 data obtained from the Banjarsengon Health Center, several diseases became health problems recorded from January-February 2022. It is known that the most disease in the Banjarsengon Health Center working areas Hypertension with a total of 97 cases. In Primary data collection, the blood pressure examination results showed that hypertension data in the productive age In RT 01 RW 01 Jumerto Village, Patrang District, Jember Regency that hypertension by gender were 20 men (62.5%) and 12 women (37.5%), 13 (7.9%) had pre-hypertension, 29 (17.7%) hypertension grade 1, and 3 (1.8%) hypertension grade 2, Present complaint is dizziness 13 (6.6%) and heavy head 10 (5.1%). 60 (30.6%) of the people in RT 01 RW 01 Jumerto Village are farmers. Total people who are overweighed or had excess BMI of 25-27 kg/m2 9 (4.6 %), 40 (24.4%) had smoking behavior, 113 (57.7%) did not exercise regularly, 107 (54.6%) consumed foods high in salt (> 50 g per day).

Efforts to control hypertension are more cost-effective through non-pharmacological approaches. Community-based health promotion and disease prevention programs are intervention efforts that are commonly carried out in managing chronic diseases including hypertension and other cardiovascular diseases. Literature studies show that community-based disease management programs are effective in modifying the lifestyle of hypertensive patients to be healthier, such as doing regular physical activity, consuming healthy foods, and optimally utilizing preventive health services (Vandiver et al., 2018).

Based on the data collection results, it is known that the main problem in RT 01 RW 01 Jumerto Village is hypertension at productive age. Therefore, we will contribute by carrying out activities in community development in controlling hypertension. Having hypertension at a productive age can increase the risk of health problems in the future. Blood pressure that is not well controlled will tend to increase in old age. If

this condition is left unchecked, it can become a serious health problem because it can interfere with activities and can lead to dangerous complications if not controlled and early prevention is not sought. Symptoms of advanced disease that may occur involve a stroke, eye damage, pain, enlargement of the heart muscle, brain (dizziness), and kidneys (Sarumaha & Diana, 2018). A study conducted in the Journal of the American College of Cardiology explained that adults who have blood pressure above normal are more likely to have heart problems later in life. From the study, it was found that blood pressure that is higher or above normal and continues to occur can trigger changes in heart muscle function and increase the risk of heart disease. In addition, the study presented at the International Stroke Conference in Honolulu, US, found that the risk of having a stroke increased significantly. The risk of stroke is greater if someone has at least two risk factors of hypertension.

Activities are carried out in four stages, namely situation analysis, plan formulation, implementation, and evaluation monitoring (Quimbo et al., 2018). Through community nursing with the Community as Partner (CAP) model approach which provides care focused on public health and involves the community to actively participate in overcoming existing health problems. This study aims are to increase the knowledge and awareness of the public about the importance of controlling hypertension in the surrounding environment. It is hoped that controlling hypertension status in the community, it will be able to prevent non-communicable diseases due to hypertension in the community, so that it can improve the health status of the community RT 01 RW 01 Jumerto Village.

METHOD

This research was carried out quantitatively, with a quasi-experimental type of research using one-group pretest-posttest design approach. This research was conducted in RT 01 RW 01 Jumerto Subdistrict in May 2022. The sample was taken using a total sampling technique where the sample population used in this study was a productive age who had hypertension in RT 01 RW 01 Jumerto Village, Patrang District, Jember Regency with a total of 21 samples of productive age collected with categorical data displayed in the frequency table and then numerical data analyzed by dependent T-test. The team collected data, analyzed data, and processed the data that had been obtained using SPSS 22.

The implementation of this community service program referred to the community planning stage which includes situation analysis, plan formulation, implementation, and monitoring evaluation. The first stage was situation analysis. At this stage, the community service team conducted an introspective survey of the community to determine which health problems will be a priority to be resolved. In addition, the team also analyzed secondary data in the form of reports on visits to the health center to see the most cases of disease suffered by the community. The plan formulation stage was carried out by consultation with the community to determine problem priorities and develop an intervention plan. the implementation stage

was carried out for 3 weeks which included health education activities, making herbal drinks and moringa leaf pudding, anti-hypertensive exercise, progressive muscle relaxation, and NCD Integrated Development Post. Monitoring and evaluation of program implementation were carried out routinely, the program was evaluated by checking blood pressure when the program starts and after the program ends. In addition, we also evaluated the community knowledge before and after the intervention was carried out.

RESULT AND DISCUSSION

Stage 1. Situation Analysis

The situation analysis phase includes an introspective survey and analysis of secondary data owned by the health Center. The survey was conducted on 65 families in the target area door to door. The team used a Community as Partner (CAP) approach to identify complaints and illnesses experienced by the community. In addition, screening was done to check the blood pressure. The data obtained from the survey were then compared with secondary data held by the Banjarsengon Health Center. The analysis results showed that as many as 21 people of productive age suffering from hypertension agree and are willing to participate in community-based hypertension activities until the end. In addition, other problems found that as many as 5 people had strokes, cholesterol, gout, and 10 people had diarrhoea.

Stage 2: Plan Formulation

This activity is intended to build commitment with the community in supporting the intervention program implemented. The community service team presented the situation analysis results that presented priority health problems. After that, the team facilitated a discussion to determine priority health problems for intervention. The forum finally agreed that hypertension was the chosen problem for intervention. After that, the team formulated an intervention plan and a timeline of activities together with the community. The implementation of community nursing focuses on efforts to improve, pay attention to, improve health, prevent disease and rehabilitation through 4 strategies, namely health education, group processes, empowerment, and partnerships (Susanto et al., 2021). The agreed community-based hypertension control programs were health education, making herbal drinks and moringa leaf pudding, antihypertensive exercise, progressive muscle relaxation exercise, and guiding the community to participate in the NCD Integrated Development Post. carried out by the Health Center.

Stage 3: Implementation

Health education about hypertension

The implementation of health education was carried out on Friday, May 20, 2022. Before the counseling started, participants were given a questionnaire (pre-test) to get information about the participants' understanding of hypertension.

Figure 1. Implementation of health education about hypertension

Source: Primary data (2022)

The pre-test and post-test results to determine the level of community knowledge are as follows:

Table 1. Comparison of Community Knowledge Before and After Health Education

Variable	n	*Pre-test*		*Post-test*	
		mean	SD	mean	SD
Knowledge	21	54.44	14.500	85.93	10.099

Source: Primary data (2022)

Based on table 1, the results showedthat there were differences in the mean and SD values before and after health education activities regarding hypertension were carried out. The mean pre-test value was 54.44 ±14.500. While the scores on the post-test mean 83.93 ±10,099.

Based on the post-test results, it can be concluded that most people already understand hypertension and the results knowledge with the post-test average value was 85.93. It can be concluded that there was an increase in participants' knowledge about hypertension. It is shown that before the socialization was carried out, the knowledge of the community from the pre-test results showed an average value of 54.44 and after health education, the value of public knowledge about hypertension increased, namely the post-test average value of 85.93. This is in line with the service results carried out (Kurniasari & Alrosyidi, 2020) before the counseling began, participants were given a pre-test, and the average pre-test score was 73.85. After the counseling and question and answer session, participants were given a post-test, the average post-test score was 93.7. There was an increase in participants' knowledge of about 20% about hypertension. Wandira et al., (2020) his research results explain that one of the strategic steps to reduce or suppress the incidence of hypertension can be done with health education in the community, one of which is through counseling. There is a significant relationship between the levels of public knowledge in controlling hypertension.

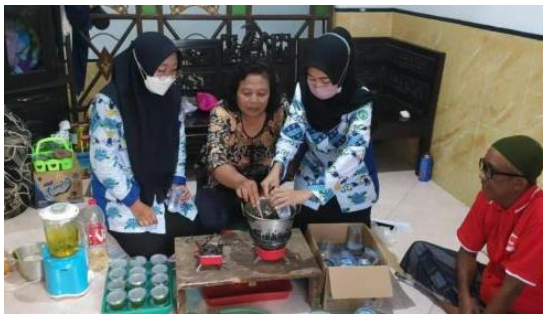
Controlling hypertension is done by making various efforts, one of which is by paying attention to lifestyle. This can be done if the community understands and knows about the prevention and treatment of hypertension. Knowledge of cognition is a domain that plays an important role so the formation of one's actions (overt behaviour) from the research found that behavior based on knowledge will be better than

behaviour that is not based on knowledge. Health knowledge influences shaping behaviour as an effort to achieve the intermediate impact of the health education provided (Kadriati Erna, Hasifah, 2021).

Making herbal drinks and moringa leaf pudding

The implementation of making herbal drinks and moringa leaf pudding was carried out on Wednesday, May 25, 2022. The team first explained information related to the content of each herbal plant, its benefits, and how to make herbal drinks and Moringa leaf pudding to participants. After that, invited participants to demonstrate together to make herbal drinks and Moringa leaf pudding which aimed to improve skills in controlling hypertension.

Figure 2. Implementation of making herbal drinks and moringa leaf pudding



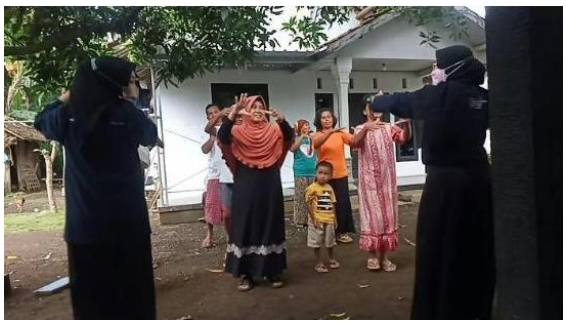
Source: Primary data (2022)

21 partcipants use natural medicines as complementary therapies and they have independently made Moringa and herbal plants (betel leaf, bay leaf, avocado leaf, celery and other plants). This is in accordance with a study by (Pujiyanto, 2008) which also showed that all hypertensive patients, apart from consuming modern medicine, also took traditional medicine from plants. In the Jumerto neighbourhood community, people who have practiced making herbal plants and moringa pudding are on average 1-3 days a week consuming blood pressure-lowering drug. In this case, the measurement of blood pressure results decreased in systolic and diastolic in the range of 130-140 and 70-80 mmHg. Meanwhile, research by Gusmira, (2012) showed that the decrease in diastolic blood pressure in the combination therapy group with conventional hypertension drugs along with natural ingredients was better than in the conventional therapy group. In line with research by Nurhayati & Widowati (2016) found that patients undergoing conventional pharmacology therapy together with herbal or traditional therapy were found to have a better quality of life (29%) when compared to patients who only underwent herbal or traditional therapy. So, in this case, the use of making natural medicines such as moringa, betel leaf, avocado leaf, bay leaf, and celery and so on has a maximum impact on lowering blood pressure in the Jumerto neighbourhood community with hypertension accompanied by taking drugs to lower blood pressure.

Anti-Hypertension exercise

The implementation of the anti-hypertension exercise was carried out on Friday, May 27, 2022. Before the implementation, education related to hypertension control was carried out through physical activity in the form of exercise, andmeasuring blood pressure for 30 minutes before the intervention.

Figure 3. Implementation of Anti-Hypertension exercise



Source: Primary data (2022)

After 30 minutes of doing anti-hypertension exercise, participants were allowed to rest, and then we measured their blood pressure again. The blood pressure measurement results before and after anti-hypertensive exercise are as follows:

Table 2. Comparison of blood pressure before and after anti-hypertension exercise

Variable	n	Pre		Post		*p-value*
		mean	SD	mean	SD	
Systole	21	136.67	11.547	126.19	10.235	0.000
Diastole	21	88.10	8.729	80.00	10.00	0.001

Source: Primary data (2022)

Table 2 showed that the mean systolic and diastolic blood pressure before exercise was 136.67±11,547 and 126.19±10,235, respectively. Meanwhile, after the intervention, the participant's blood pressure dropped to 126.19±10.235 systolic and 80.00±10.00 diastolic. The statistical paired t-test results on systole before and after the community-based hypertension control program obtained p-value = 0.000 <0.05 while the systolic value, namely p-value = 0.001 <0.05, which means there was a significant difference in systolic and diastolic blood pressure before and after the intervention.

Based on the research results by Anwari et al., (2018), it is known that 8 participants experienced a decrease in blood pressure after taking anti-hypertensive exercise. With the statistical test results obtained a probability value of 0.001 it can be concluded that anti-hypertensive exercise was proven to help lower blood pressure more quickly in hypertensive patients which were carried out with light intensity, exercise frequency 1 time a week with exercise duration of 4-12 minutes. The research of Siswati et al., (2021) also reported a decrease after the antihypertensive exercise intervention with data distribution of 26.7% pre-hypertension, 53.3% hypertension grade 1, and 20% hypertension grade 2. The Wilcoxon signed rank

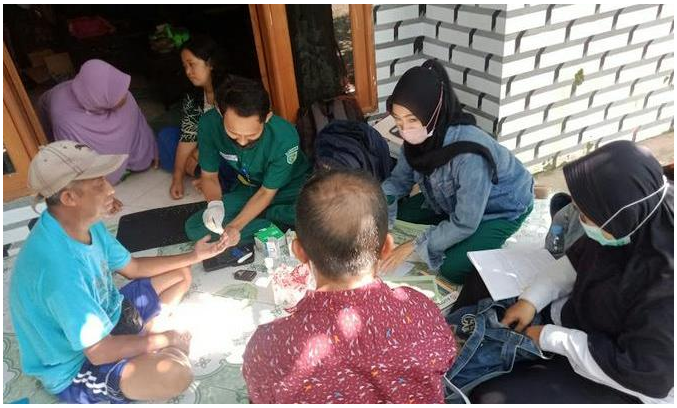
test statistic test showed the value of significant (p) = 0.000 which means that there was an effect of giving anti-hypertensive exercise on blood pressure stability.

Regular physical exercise prevents and treats hypertension and dyslipidemia. Physical activity greatly affects blood pressure. Physical exercise induces physiological cardiovascular adaptations that improve physical performance, by doing regular physical activity, the cardiovascular function also improves, and blood pressure can be controlled (Neng et al., 2020). The physical activity carried out by the respondent, although not a programmed type of regular exercise, can be done in the form of anti-hypertensive exercise. Antihypertensive exercise is one of the non-pharmacological approaches to reducing high blood pressure. Antihypertensive exercise is a sport that aims to increase blood flow and oxygen supply to the active heart and skeletal muscles, especially the heart muscle and stimulates vasodilation of blood vessels so that blood flow increaes smoothly (Anwari et al., 2018). Yuanti (2020) stated that exercise will increase in the concentration of oxygen transported by the blood throughout the body and adequate changes in abnormal changes in the heart, blood vessels, and the pumping ability of the heart will return to normal work resulting in a decrease in blood pressure.

Integrated Development Post (Posbindu) for non-communicable diseases (NCD)

The implementation of NCD Integrated Development Post was carried out on Sunday, May 31, 2022. 60 residents came directly to check their condition at NCD Integrated Development Post and most of them were of productive age and elderly. The implementation of the NCD Integrated Development Post was a partnership with the Banjarsengon Health Center. The people who came were not only from the fostered community. However, 21 participants were all present for the screening.

Figure 4. Implementation of Posbindu PTM



Source: Primary data (2022)

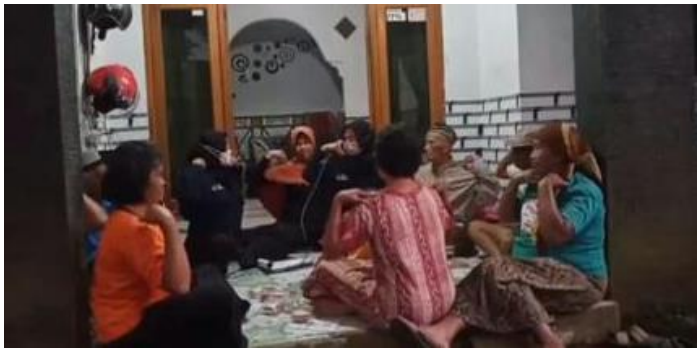
From the visits and examinations that have been carried out, about 50 residents are suffering from high blood pressure, 10 residents suffering from low blood pressure, 10-15 residents having an excessive Body Mass Index (BMI), and about 15 residents have a low BMI. These results are in line with the research conducted by Putri et al. (2019), that non-communicable diseases are most found in the productive age

namely hypertension. The data shows that in Integrated Development Post activities of RT 01 RW 01 in the Jumerto neighbourhood, most of the residents, especially the community, are in unhealthy condition and some have serious complaints related to non-communicable diseases. In addition, there are obstacles in implementing the program, namely, there is still some productive age who does not attend the Integrated Development Post activities because access is quite far from where they live, and there is still a lack of community participation in the program planning stage. This is very influential in measuring the condition of people in integrated development post activities RT 01 RW 01 in the Jumerto Environment who have not been able to fully reach the disease of productive age. The response of productive age and elderly is also shown by understanding the intent and purpose of integrated development post only 5 of the respondents do not understand the intent and purpose of integrated development post. Therefore, it is necessary to monitor blood pressure regularly and regulate food consumption through activities of Integrated Development Post for non-communicable diseases (NCD) periodically every month (Ferdinand et al., 2012).

Progressive muscle relaxation (PMR) exercice

The implementation of progressive muscle relaxation exercise was carried out on Tuesday, May 31, 2022. Participants were given education beforehand regarding how to control hypertension with PMR and blood pressure was checked before intervention.

Figure 5. Implementation of PMR exercise



Source: Primary data (2022)

After doing the PMR exercise, participants were allowed to rest, and then we measured their blood pressure again. The results of measuring the blood pressure of participants are as follows:

Table 3. Comparison of Systolic and Diastolic Blood Pressure Before and After Progressive Muscle Relaxation Exercise

Variable	n	Pre		Post		*p-value*
		Mean	SD	Mean	SD	
Systole	21	135.71	9.258	129.05	8.309	0.000
Diastole	21	91.43	7.928	83.81	6.690	0.000

Source: Primary data (2022)

Based on table 3 shows the statistical paired t-test results on systole before and after progressive muscle relaxation, the p-value = 0.000 <0.05, which means that there is an effect of PMR exercise with a decrease in systolic and diastolic blood pressure.

The results showed that the average value of systolic blood pressure before the PMR intervention was 135.71 mmHg, while after the intervention it was 129.05 mmHg. The decrease in systolic pressure pre-posttest was 6.66 mmHg. This is also in line with the research conducted by Amelia (2021) in which the systolic pretest and post-test treatment groups obtained an average value of 2.111 with a standard deviation of 1.02, the p-value of 0.001 <0.05. Systolic blood pressure is the amount of pressure against the artery walls each time the heart contracts or pushes blood out of the heart. The pumping action of the heart provides pressure that pushes blood through the vessels. With each heartbeat, blood is pumped out of the heart into the veins, which carry blood throughout the body. Between the ages of 30 and 65, systolic pressure increases by an average of 20 mmHg and continues to increase after age 70. The increased risk associated with age factors largely explains isolated systolic hypertension and is associated with increased peripheral vascular resistance (inhibition of blood flow in peripheral blood vessels–red) in the arteries (Hasan, 2019). Progressive muscle relaxation techniques affect decreasing systolic blood pressure because it is influenced by psychology so that relaxation will get energy which makes baroreceptors release action in the hypothalamus to reduce cortisol and epinephrine levels which can cause a decrease in blood pressure and pulse frequency. Cortisol levels in the blood affect vasoconstriction of blood vessels. Decreased levels of epinephrine and norepinephrine can cause vasodilation of blood vessels. Epinephrine and norepinephrine can reduce total peripheral which will lower blood pressure.

Stage 4: Monitoring and Evaluation

Monitoring and evaluation of program implementation were carried out regularly. The team coordinated weekly routines to discuss the lack of activities carried out and formulate a work plan for the next week. Meanwhile, the success of the program was evaluated by checking blood pressure when the program starts and after the program ends. After the implementation of the intervention for compliance with independent implementation at home, the data was recorded through a checklist for the implementation of the intervention that had been taught at home. The success measurement of this program can be seen from the changes in blood pressure of hypertensive patients who participated in this program until the last session. The results of checking blood pressure door to door were 32 participants who were categorized as having high blood pressure. However, 21 participants actively participated in the intervention until the last session. The community-based hypertension control program which was carried out for 3 weeks obtained the results of pre and post-blood pressure measurements of the intervention as follows:

Table 4. Comparison of Blood Pressure Before and After the Program

Variable	n	Pre		Post		*p-value*
		mean	SD	mean	SD	
Systole	21	150.00	11.832	129.05	8.309	0.000
Diastole	21	99.05	13.002	83.81	6.690	0.000

Source: Primary data (2022)

Based on table 4. shows that the mean systolic and diastolic blood pressure before the program was implemented were 150.00±11.832 and 99.05±13.002, respectively. Meanwhile, after the intervention, the participant's blood pressure dropped to 129.05±8.309 systolic and 83.81±6.690 diastolic. The statistical paired t-test results on systolic and diastolic before and after the community-based hypertension control program obtained p-value = 0.000 <0.05 which means there is a significant difference in systolic and diastolic blood pressure.

The success of this program showed the importance of community-based health promotion programs in managing hypertension. This is in line with the research results which states that hypertension requires long-term treatment which includes not only medication but also the management of aggravating factors. The program that has been run is only a stimulant and then needs to be carried out periodically through the active collaboration of the community and related parties (Sartik et al., 2017).

CONCLUSION

Based on the implementation of the activities and the outcomes results that have been achieved, it can be concluded that by conducting an intervention community-based hypertension control program, the blood pressure of the participating patients decreased significantly. The participants who attended were enthusiastic and enthusiastic in listening to the material provided and were willing to commit to implementing a healthy lifestyle to prevent hypertension. Suggestions in efforts to increase knowledge, attitudes, and skills to control hypertension and support are needed by health workers, cadres and by families.

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