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The Use of Flipchart Media and Anti-Hypertension Exercise in Preventing Hypertension among the Productive Age Group in Rawalo District Banyumas Regency

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ABSTRACT

Background: The incidence of hypertension in Banyumas Regency in 2023 was 172,022 people. Rawalo District, specifically Sanggreman Village, ranked eighth in terms of the number of hypertension cases among the productive age group, with 105 people with hypertension.
Aims: This activity aims to provide interventions for the prevention and control of hypertension in the productive age group through extension and counseling using flipchart media and anti-hypertension exercises.
Methods: This intervention was implemented at a community health post (Posbindu) with 55 people with hypertension. The activity began with a questionnaire for the *Pre-test*, followed by socialization using flipcharts and anti-hypertension exercises, and concluded with a *Post-test*. This activity used a pre-experimental approach with a one-group pre-post test design. The sampling technique used accidental sampling. The *Pre-test* and *Post-test* methods were used to measure the level of knowledge and attitudes before and after intervention.
Results: The results of a bivariate analysis using the Wilcoxon test on the knowledge and attitude variables for hypertension prevention and control interventions in the productive age group yielded a p-value of 0.000 <0.05. This means that the intervention, through socialization and counseling using flipcharts and anti-hypertension exercises, was deemed successful, as knowledge and attitudes improved. There was a significant increase in the difference between the mean *Pre-test* and *Post-test* scores, namely 2.15 for the knowledge variable and 1.71 for the attitude variable. This indicates that people with hypertension were able to receive the information provided well through flipchart media. Anti-hypertension exercise is an example of positive physical activity that can be easily performed by patients as a preventive effort. It is recommended that anti-hypertension exercise and flipcharts be used as health education media to reduce the incidence of hypertension in Sanggreman Village, Rawalo District.

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1. Introduction

WHO (2021) reported that 1.13 billion people worldwide people with hypertension, two-thirds of which are in low-middle income countries. This proves that hypertension is a global public health problem predicted by IFPMA (2016) that by 2025, 1.5 billion people will suffer from hypertension. WHO (2022) estimates that by 2023, 1.28 billion adults will suffer from hypertension globally. Southeast Asia ranks third in the highest prevalence of hypertension, namely 25% of the total population. The Indonesian Ministry of Health (2018) reported that in Indonesia, the prevalence of hypertension in productive ages reached 28.4%. In Central Java in 2021, hypertension was in the highest order of all non-communicable diseases (NCDs), namely 76.5% or 618,546 people with hypertension, according to the Banyumas Regency Health Office (2024). In the working area of Central Java province, the prevalence of hypertension in Banyumas Regency ranks eleventh highest, namely 38.90%. The incidence of hypertension in Banyumas Regency in 2023 was 172,022 people. Rawalo District, especially in Sanggreman Village, ranks eighth highest in terms of the number of hypertension cases in the productive age group, namely 105 people with hypertension.

Hypertension is prevalent in the elderly, but due to increasingly modern lifestyles, the risk of hypertension increases in the productive age group (15-59 years). Based on research by Hird *et al.* (2019), this reason also causes the potential burden of disease to be greater in the productive age population. Kasumayanti *et al.* (2021) reported that the productive age group is at risk of hypertension because it is an age group that faces a lot of busy work or activities with high routines. Harun (2019) argues that hypertension in the productive age group can also occur due to changes in lifestyle that lead to an increase in degenerative diseases such as hypertension. In the study by Kasumayanti *et al.* (2021), risk factors associated with the occurrence of hypertension in the productive age group (20-45 years) include family history, stress levels, and an unhealthy lifestyle. Meanwhile, another study conducted by Arum (2019) found factors associated with the occurrence of hypertension in the productive age population (15-64 years) namely obesity and potassium consumption. Furthermore, Juliana et al (2024) reported that gender, occupation, physical activity, high sodium intake, low fiber, high fat, nutritional status, lack of physical activity, low consumption of fruit and vegetables, smoking, drinking alcohol, were related to hypertension, while age and education level were not related to the incidence of hypertension in productive age.

One of the global targets for non-communicable diseases is to reduce the prevalence of hypertension by 33% by 2030 (WHO, 2021). Therefore, non-communicable disease program managers are striving to reduce the prevalence of hypertension in their respective areas by engaging across sectors, including health education institutions. The academic community is actively implementing preventive and promotive efforts through information dissemination and proactive measures, such as increasing outreach and anti-hypertension exercises, to achieve this target. These activities aim to provide interventions for preventing and managing hypertension in the productive age group through education using flipcharts and anti-hypertension exercises.

Jatmika *et al.* (20219) menyatakan bahwa pendidikan kesehatan dapat dilakukan dengan memanfaatkan media sebagai sarana penyampaian pesan atau informasi, yang dapat disajikan dalam berbagai bentuk, seperti leaflet, poster, media audiovisual, booklet, flipchart, dan flip book. Wahyuliani *et al.* (2016) menyatakan bahwa dalam upaya meningkatkan kemampuan self-management pada pasien hipertensi, salah satu metode yang efektif adalah pemberian edukasi melalui penggunaan media flipchart. Flipchart merupakan lembaran kertas yang menyerupai album atau kalender, yang dapat digunakan dalam sosialisasi secara individu maupun kelompok sebagai media penyampaian informasi. Penggunaan flipchart dinilai praktis karena mudah dibawa, ringan, tahan lama, serta mudah disimpan.

Selain itu, flipchart memuat poin-poin utama yang disajikan secara ringkas dan jelas, sehingga informasi dapat lebih mudah dipahami oleh masyarakat serta mampu meningkatkan pengetahuan pasien mengenai pengelolaan hipertensi yang mereka alami.

2. Methods

This community service activity uses a pre-experimental approach with a one-group pre-post test design. Participants/respondents in this activity are the productive age group aged 15-59 years who suffer from hypertension. The sample determination uses accidental sampling, namely sampling at the same time as the posbindu activity, if an individual with blood pressure measurement results with the following conditions "if the blood pressure examination shows a result of 140/90 mmHg or more in a resting state, with two examinations with a time interval of five minutes", then they will be made respondents to fill out the questionnaire for the *pre-test* and *post-test*. A sample of 55 people was obtained.

To determine whether the questionnaire is able to measure what is intended, a validity test is conducted. Calculations are carried out using the Pearson product moment correlation. The results of the validity test are based on a significance value (p) of 0.000 compared to the value of $\alpha = 5\%$ where $p < 0.05$, indicating that the item is valid, because there is a significant relationship between the item and the total number of item scores. A measuring instrument is said to be reliable if it has an alpha value of at least 0.7, so to determine whether the questionnaire is reliable or not, we just need to look at the alpha value. The results of the reliability test show an average of 0.93, so it is said to be reliable.

This activity was carried out in October - November 2024, located at the Posbindu (Community Health Post) in Sangreman Village, Rawalo District, Banyumas Regency, Central Java Province. The intervention was carried out in the form of a socialization activity using flipchart media, which contained information and messages regarding the prevention and management of hypertension, accompanied by anti-hypertension exercise practices. The activity facilitators were lecturers and students from the Public Health Department of Jenderal Soedirman University. This activity used a *pre-test* and *post-test* method. The *pre-test* was carried out in October and the *post-test* in November. The *post-test* was carried out one month after the socialization and exercise sessions, to ensure that the information provided after the socialization had been better accepted or learned by the respondents. Respondents had also practiced anti-hypertension exercise movements. After one month after the *pre-test*, a *post-test* was administered to all respondents participating in the *pre-test*. The *pre-test* and *post-test* aimed to measure the level of knowledge and attitudes of the respondents participating in the activity. The results of the *pre-test* and *post-test* were then analyzed bivariately using the Wilcoxon test to measure the increase in knowledge and attitudes, for the intervention of the socialization activity of prevention and management of hypertension using flipchart media.

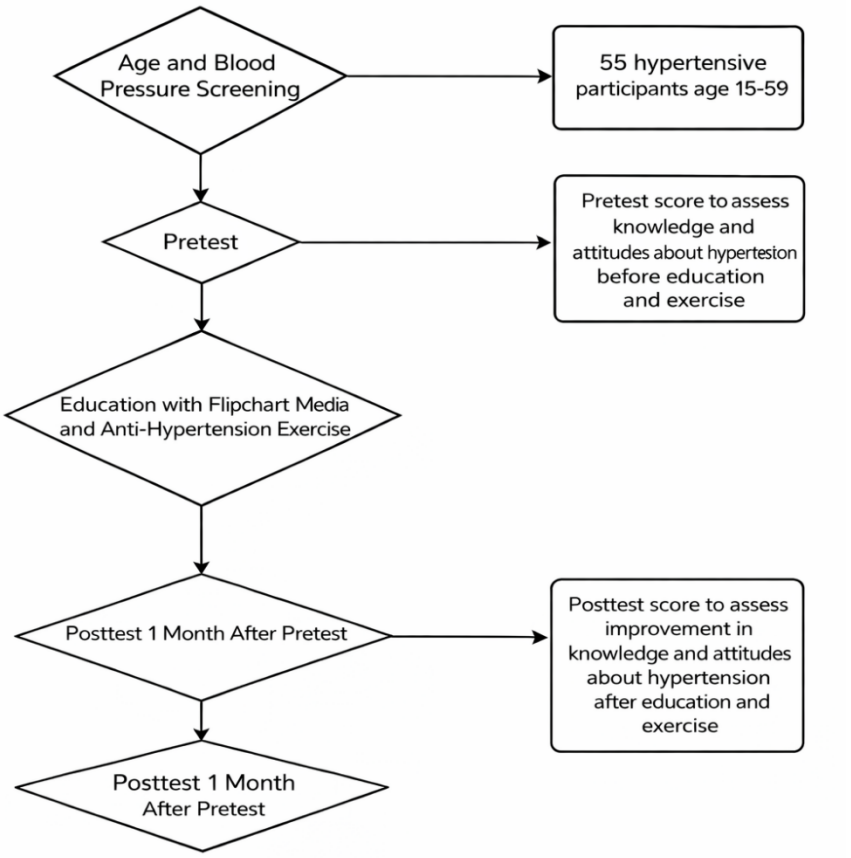
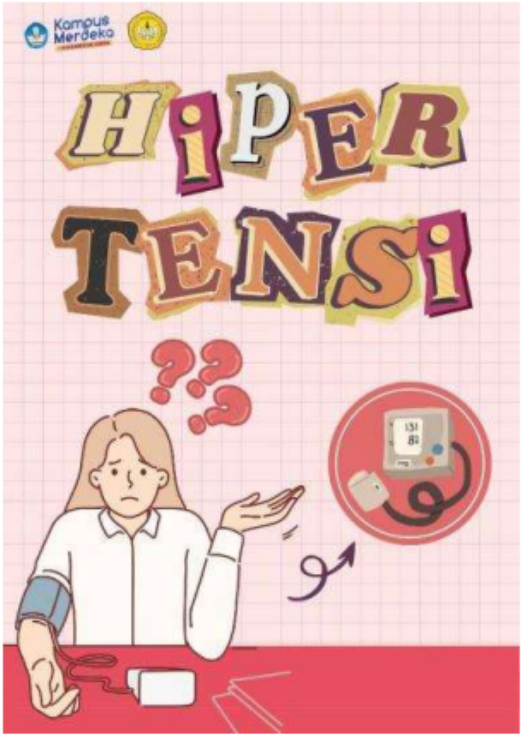


Figure 1. Activity Flow



Figure 2. Socialization with Flipchart Media and Anti-Hypertension Exercises





Klasifikasi	TD sistolik (mmHg)		TD diastolik (mmHg)
Optimal	< 120	dan	< 80
Normal	120-129	dan/atau	80-84
Prehipertensi (Normal tinggi)	130-139	dan/atau	85-89
Hipertensi Derajat 1	140-159	dan/atau	90-99
Hipertensi Derajat 2	160-179	dan/atau	100-109
Hipertensi Derajat 3	≥ 180	dan/atau	≥ 110
Hipertensi Sistolik Terisolasi	≥ 140	dan	<90







Figure 2. Flipchart socialization media.

3. Results and Discussion

This community service activity was carried out at the integrated health post (Posbindu) located in the Sanggreman Village Hall with 55 participants, all of whom were women. The characteristics of the participants based on age were 96.4% of the productive age group (15-59 years), or 53 people. Table 1 shows the frequency distribution of age and gender of the participants.

Table 1. Participant characteristics

Participant characteristics	N	%
1. Age group		
Elderly	2	3.6
Productive age	53	96.4
2. Gender		
Male	0	0
Female	55	100

This activity produces *pre-test* and *post-test* data; Table 2 presents the frequency distribution of *pre-test* and *post-test* knowledge of activity participants.

Table 2. Frequency distribution of *pre-test* and *post-test* knowledge variables of participants.

No	Questions	*Pre-test*				*Post-test*			
		True		False		True		False	
		N	%	N	%	N	%	N	%
1	Definition of hypertension	55	100	55	100	55	100	0	0.0
2	Causes of hypertension	28	50.9	27	49.1	55	100	0	0.0
3	Normal systolic and diastolic measurements	29	52.7	26	47.3	53	96.4	2	3.6
4	Signs and symptoms of hypertension	33	60.0	22	40.0	53	96.4	2	3.6
5	Foods that should be avoided by people with hypertension	47	85.5	8	14.5	54	98.2	1	1.8
6	The purpose of hypertension screening at Posbindu (community health post)	52	94.5	3	5.5	54	98.2	1	1.8
7	Foods that are good for people with hypertension	46	83.6	9	16.4	55	100	0	0.0
8	Diseases caused by high blood pressure	53	96.4	2	3.6	55	100	0	0.0
9	Recommended daily salt intake	28	50.9	27	49.1	54	98.2	1	1.8
10	Complications caused by hypertension	52	94.2	3	5.5	55	100	0	0.0

The results of the *pre-test* of the knowledge of the participants in this community service activity showed that the participants knew what was meant by hypertension. This was indicated by the 100% correct answer. However, 49.1% of participants in general did not know the cause of hypertension, as seen from the incorrect answer to question number 2. According to Purwanto & Chasanah (2022), the high percentage of incorrect answers still indicates that the participants' knowledge still needs to be improved. Univariate results, *pre-test* answers to question number 9, amounting to 49.1% of the socialization participants also did not have a good level of knowledge regarding the amount of salt consumption per day, Putri *et al.* (2023) revealed that this lack of knowledge of the participants could cause them not to apply the safe limit of iodine consumption per day.

The *post-test* was conducted one month after the *pre-test*. The *post-test* was provided with the same questions as the *pre-test*. The univariate *post-test* results showed that 100% of participants answered questions 1, 2, 7, 8, and 10 correctly. Two participants (3.6%) still answered questions 3 and 4 incorrectly, regarding normal blood pressure of 120/80 mmHg. Some participants still believed that hypertension was only a high systolic reading, even though hypertension can also occur if the diastolic reading is high. Hardiana & Yuliana (2021) explained that such understanding should not be ignored because both high systolic and diastolic readings are also hypertension. As many as 3.6% of participants still answered incorrectly regarding the symptoms of hypertension, considering dizziness, blurred vision, and fatigue not to be signs of hypertension, but rather normal conditions that are commonly experienced. According to Nony *et al.* (2024), knowledge of the symptoms of hypertension is important as a preventative measure and should not be ignored. Flipcharts are educational tools or media that resemble illustrated flip calendars. Yuanta *et al.* (2023) stated that interventions using flipchart media are known to be effective in increasing a person's knowledge. Flipcharts are an effective health promotion medium

for hypertension education because their visual and sequential format (like an album or calendar) makes it easier to explain concepts, causes, risk factors, and recommendations and restrictions on food/healthy lifestyles, proven to increase patient knowledge, making it a practical tool to increase awareness and change behaviors to prevent hypertension in health centers or community groups.

Table 3. Frequency distribution of *pre-test* and *post-test* attitude variables of socialization participants.

No	Questions	*Pre-test*				*Post-test*			
		True		False		True		False	
		N	%	N	%	N	%	N	%
1	Even without symptoms, people with hypertension must routinely monitor their blood pressure.	52	94.5	3	5.5	55	100	0	0.0
2	Controlling diet and blood pressure is important for people with hypertension.	54	98.2	1	1.8	55	100	0	0.00
3	Exercising for 30 minutes a day should be done regularly to reduce the risk of disease complications.	54	98.2	1	1.8	55	100	0	0.00
4	Consuming vegetables and fruits every day is important for people with hypertension.	54	98.2	1	1.8	54	98.2	1	1.8
5	Limiting the consumption of high-salt foods is important for people with hypertension.	54	98.2	1	1.8	55	100	0	0.0
6	People with hypertension should take antihypertensive medication regularly according to the doctor's instructions.	55	100	0	0.0	55	100	0	0.0
7	People with hypertension are allowed to do light exercise such as walking and gymnastics.	55	100	0	0.0	55	100	0	0.0
8	If enough rest has been taken but dizziness still occurs, antihypertensive medication should still be taken according to the doctor's instructions.	53	96.4	2	3.6	55	100	0	0.0
9	Lack of rest and stress can cause blood pressure to rise.	45	81.8	10	18.2	2	3.6	53	96.4
10	If blood pressure is normal, people with hypertension do not need to take antihypertensive medication.	49	89.1	6	10.9	6	10.9	49	89.1

Based on the results of the univariate *pre-test* of the attitude variable, it is known that all participants 100% stated their agreement with statement 6, namely curative efforts to take antihypertensive medication regularly for people with hypertension and question number 7 regarding the need for light exercise for people with hypertension. Question number 10 is an unfavorable question, 89.1% of

participants agreed that if blood pressure is normal, then there is no need to take antihypertensive medication. This is an attitude that needs to be improved, in order to support the action of always taking antihypertensive medication regularly. Meanwhile, according to Mekonnen *et al.* (2017); Wahyudi *et al.* (2017); Wahyuni *et al.* (2019) the most frequently emerging factors that influence adherence to taking antihypertensive medication are family attitudes and support Najjuma *et al.* (2020); Nuratiqa *et al.* (2020); Tania *et al.* (2019). The results of research by Mekonnen *et al* (2017); Perdana (2018); Wahyudi *et al* (2017) showed that good perceptions and attitudes support adherence to taking anti-hypertensive medication. This is because understanding hypertension will lead to attitudes and behaviors in the treatment recommended by the doctor. Patients who experience hypertension will be worried about complications, so that patients will comply with treatment and implement what the doctor has suggested or recommended. Said (2016) added that a good attitude in patients is due to the patient's need or greater desire to recover.

The results of the *post-test* analysis of the attitude variable, participants stated that they agreed with statements number 1, 2, 3, 5, 6, 7, 8. For unfavorable statement number 9, 3.6% believed that lack of rest and stress cause low blood pressure. Daro (2022) argued that this assumption is a wrong attitude, because if the body lacks sleep or is continuously stressed, the autonomic nervous system that plays a role in regulating blood pressure is disturbed, causing disruption in the process of blood pressure regulation that leads to impaired blood pressure. In statement number 10, 10.9% still agreed that if blood pressure is normal, there is no need to take antihypertensive medication. This attitude of non-compliance is wrong so the assumption that if there are no symptoms of hypertension then consumption of antihypertensive medication should be stopped, must be changed. According to Harahap *et al.* (2019) for people with hypertension, adherence to taking medication is very important because by taking antihypertensive medication, blood pressure can be controlled and in the long term the risk of organ damage can be reduced. The use of antihypertensive medication has been proven to be able to control blood pressure, but if taking antihypertensive medication is not supported by adherence to taking medication in the long term, the resulting effect will not be optimal.

Based on the results of the bivariate test listed in Table 4, the knowledge variable shows a p value of 0.000 or p value < α (α = 0.05), which means there is a significant change between the *pre-test* and *post-test* with an increase in knowledge based on the average result of 2.15.

Table 4. Bivariate test analysis of knowledge variables.

Answer Score	Group		df	*p* value
	Pre-test	*Post-test*		
Mean	7,69	9,84	55	0,00
Std deviation	1.804	0,501		

This can occur because respondents are able to understand the material on the flipchart media well, so that respondents' knowledge can increase. This also shows that there is an effect of the use of educational media on increasing knowledge. Explanations in flipcharts are accompanied by colors, images, and simple language so that it is easy to understand. The success of education is also supported by the presence of aids or media to help facilitate the delivery of the message or material to be conveyed. The level of knowledge is influenced by the level of education. The opinion of Mathavan *et al.* (2017) that not all patients with low education have very little knowledge, because knowledge is not only obtained from formal learning. Knowledge can be obtained from experience and the five senses in processing information. This activity is an informal education for the community, so that they have the ability to prevent and manage hypertension.

Based on Table 5. The results of the bivariate analysis show a p value of 0.000 or p value <α (α = 0.05) for the attitude variable, which means there is a significant change between the *Pre-test* and *Post-*

test with an increase in positive attitudes towards hypertension prevention, based on the average result of 1.71.

Table 5. Bivariate test analysis of attitude variables

Answer Score	Group		df	*p* value
	Pre-test	*Post-test*		
Mean	8,13	9,84	55	0,000
Std deviation	0,640	0,373		

The resulting increase in knowledge results in an attitude response. Attitude is a person's closed reaction or response to a stimulus or object, in this case, socialization using flipcharts and anti-hypertension exercises. Good knowledge about hypertension (causes, complications, and treatment) triggers a more positive response or attitude, such as awareness of the dangers of the disease and the importance of a healthy lifestyle (diet, exercise, and not smoking). Attitude refers to an individual's internal response to a particular stimulus or situation, encompassing their thoughts and feelings, whether good or bad, pleasant or unpleasant, and so on. Sumarni *et al.* (2023) argue that if someone experiences hypertension but fails to cultivate an attitude that supports prevention, it can result in a higher likelihood of experiencing recurrent episodes. The root cause of these recurrences often stems from inappropriate attitudes, particularly when individuals do not adhere to recommended dietary guidelines. Research by Doloh (2015) shows that the greater the respondents' knowledge about hypertension, the more positive their attitudes toward preventive measures, such as maintaining a healthy diet and physical activity. This finding aligns with the theory that knowledge is the initial domain of behavior that influences attitudes, which then trigger preventive action.

Intervention activities through socialization using flip chart media and anti-hypertension exercises, provided quite good results in increasing participants' knowledge and attitudes, namely there was a significant increase between the difference in the mean *Pre-test* and *Post-test* values, namely for the knowledge variable of 2.15 and the attitude variable of 1.71. This is because the intervention uses media that complement each other's functions. Socialization in an effort to convey information to the community, is complemented and facilitated by the facilitation of flipchart media so that it is multifunctional for education as an information board with images and text.

Antihypertensive exercise serves as an example of physical activity, a preventative measure that is easy for anyone with hypertension to do. Rasiman & Ansyah, (2019) argue that antihypertensive exercise is a form of physical activity that functions to increase blood flow and oxygen supply to active muscles and skeleton, especially the heart muscle. This exercise is specifically designed to help lower high blood pressure and maintain heart health. Research by Hernawan & Rosyid (2017) shows that antihypertensive exercise is effective in improving blood circulation, stretching stiff muscles in hypertensive patients, helping with weight control, increasing heart fitness, and reducing stress levels in hypertensive patients. This combination complements hypertension management. Dasuki *et al.* (2018) stated that non-pharmacological management of hypertension includes lifestyle modifications such as a low-fat and low-salt diet, physical activity, maintaining ideal body weight, reducing stress, and avoiding caffeine and cigarettes. A study by Suling *et al.* (2023) shows that the prevalence of hypertension in productive-age patients in Indonesia is quite high, and indicates that most hypertensive clients have a moderate level of motivation to manage their condition. Therefore, the participation of productive age groups in utilizing health services at integrated health posts (Posbindu), particularly those related to the prevention and management of hypertension, is needed. Maryaningsih (2020) argues that respondents will participate in Posbindu activities if they feel they need them. Research by Fitriani *et al.* (2021) shows that motivation is crucial for encouraging someone to take action when they feel the need. If respondents are well-motivated, they will be encouraged to participate in activities and have their health checked at Posbindu

PTM, thus ensuring proper health monitoring. Research by Octavia *et al.* (2025) shows that a combination of education, physical activities such as anti-hypertension exercises, and counseling has a positive effect on blood pressure management in people with hypertension.

Bias in measuring knowledge and attitudes can occur if respondents receive additional information other than from educational flipchart media. A limitation of this observation is that it did not measure the effectiveness of the interventions. It also did not compare the intervention activities.

4. Conclusion and Suggestion

4.1 Conclusion

Intervention activities through socialization using flip charts, and anti-hypertension exercises, provided quite good results in increasing participants' knowledge and attitudes, namely there was a significant increase between the difference in the mean *Pre-test* and *Post-test* values, namely for the knowledge variable of 2.15 and the attitude variable of 1.71, so that it can be used as an alternative combination of methods in non-pharmacological hypertension control.

4.2 Suggestion

Posbindu is expected to provide anti-hypertension education and exercise services as a routine health service program, due to its significant benefits for people with hypertension. The author would like to thank the academic community of the Public Health Department, Jenderal Soedirman University, for their assistance in organizing this activity.

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6. Conflict of Interest Declaration

The authors declare that there is no conflict of interest regarding the publication of this article. The Authors confirmed that the paper was free of plagiarism.

7. Author Contribution Statement

All authors contributed equally to the conduct community service project, data analysis, and writing and preparation of this article.

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