IMPLEMENTATION OF HYPERTENSION EXERCISE IN ELDERLY WITH HYPERTENSION IN CINTA RAKYAT VILLAGE DELI SERDANG REGENCY

Dior Manta Tambunan[1*], Jhon Roby Purba[2*], Popy Aldiana[3], Asril Jon Briko Tanjung[4], Berkah Ridho Nainggolan[5], Frans Sesep Manogitua Marbun[6], Agnes Oktavia Br. Ginting[7], Aprina Sabine Sakerebau[8], Bertua Mitra Debora[9], Cahaya Nurtioma Purba[10], Chalida Annisa[11], Desi Fransisca Siahaan[12], Bella Roria Pardede[13]

[1-13]STIKes Murni Teguh

Email Correspondence: dior.endlessbay@gmail.com

Disubmit: 22 Juli 2023 Diterima: 02 Agustus 2023 Diterbitkan: 01 September 2023
Doi: https://doi.org/10.33024/jkpm.v6i9.11148

ABSTRACT

Elderly is someone who is aged 60 years or more. Many problems are often found in the elderly, one of them is hypertension. Hypertension is a serious medical condition that can increase the risk of heart, brain, kidney, and other diseases. Hypertension is the main cause of premature death worldwide, most (two-thirds) live in low-and-middle-income countries. Various efforts can be made to control blood pressure, including hypertension exercise. Hypertension exercise is believed to be able to control blood pressure because when carrying out exercise movements, blood vessels will dilate and relax so that blood pressure decreases. This community service aimed to improve the community's healthy lifestyle in controlling hypertension by implementing Hypertension exercise. This activity was carried out on the elderly with 22 respondents. Before the implementation of this activity, the first was carried out by filling in demographic data, drugs consumed, and routine control history every month as well as measuring vital signs before and after the implementation of the Hypertension exercise. The findings show that the majority of respondents who participated in the implementation of this Hypertension Exercise were >70 years old (45.5%); Female (59.1%); not taking hypertension medication (54.5%); not routine control (86.4%); and classification of hypertension majority degree 1 (31.8%). The average value of blood pressure before the implementation of the Hypertension Exercise was 2.95 and decreased significantly after the implementation of the Hypertension Exercise to 2.32. It can be concluded that there was a significant decrease in blood pressure after the implementation of hypertension exercises, the pre-test average value was 2.95 and the post-test was 2.32. It is recommended that village officials and Public Health Care officers conducted a Hypertension Exercise program as an implementation discourse in improving the quality of life of the Elderly with Hypertension. The implementation can be carried out in Cinta Rakyat Village, Deli Serdang Regency, regularly 2-3 times a week.

***Keywords**: Elderly, Hypertension, Hypertension Exercise*

1. INTRODUCTION

Health problems that occur in the elderly are generally a decrease in organ function which triggers the occurrence of various degenerative diseases including hypertension. Degenerative diseases in the elderly if not handled properly will reduce the quality of life of the elderly (Anwari et al., 2018). According to *World Health Organization*, hypertension is the leading cause of premature death worldwide, with a prevalence of more than 1 in 4 men and 1 in 5 women/one billion people having the condition. An estimated 1.28 billion adults aged 30-79 years worldwide suffer from hypertension, the majority (two-thirds) live in low and middle-income countries. About 46% of adults with hypertension are not aware that they have the condition. In adults with hypertension, only 42% are diagnosed and treated and about 1 out of 5 adults (21%) with hypertension can control it (World Health Organization, 2023).

The number of people suffering from hypertension in Indonesia has increased by 25.8% in 2013; 30.9% in 2016 and 34.1% in 2018. Meanwhile in North Sumatra, around 24.7% in 2013 and increased significantly to 29.2% in 2018 (Badan Pusat Statistik, 2023). The elderly increased from 18 million people (7.6%) in 2010 to 27 million people (10%) in 2020 and this figure is expected to continue increasing to 40 million people (13.8%) in 2035. According to the Center for Data and Information from Ministry of Health of the Republic of Indonesia (Pusat Data dan Informasi, 2022) that the prevalence of hypertension in the elderly in Indonesia can be seen in 2018 that the age is 55-64 years (55.2%); age 65-74 years (63.2%); and above 75 years (69.5%). WHO has a target to reduce the prevalence of hypertension by 33% between 2010 and 2030 (World Health Organization, 2023).

One of the treatments for hypertension in the elderly is exercise. Hypertension exercise is a sport that aims to increase blood flow and oxygen supply to the active muscles and skeleton, especially to the heart muscle (Hernawan & Rosyid, 2017). The implementation of this hypertension exercise will only be carried out for a 1-time meeting and coordinated with the elderly and village officials accompanied by giving health education about hypertension. Based on the problems above, the community service team from the STIKes Murni Teguh is interested in doing community service at Hamlet II in Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency to improve the community's healthy lifestyle in controlling hypertension by implementing Hypertension Exercise in the Elderly.

2. PROBLEM AND PROBLEM FORMULATION

Patients with hypertension in 2019 in Deli Serdang Regency were 484,648 people with 242,465 men and around 242,183 women (North Sumatera Province Health Service (Dinkes, 2019). Cinta Rakyat Village is one of the sub-districts in Percut Sei Tuan district, Deli Serdang Regency, with an area of 148 hectares. Administratively, Cinta Rakyat village consists of 11 hamlets. Some people are reluctant to visit health services to have their health checked because they are busy making a living and some people do not yet have access to the National Health Insurance (JKN) due to economic limitations.

Based on the background described, the formulation of the problem of community service from the STIKes Murni Teguh is how to improve the

healthy lifestyle of the people of Hamlet II in Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency in controlling hypertension by implementing Hypertension Exercise in the Elderly?. The map of activity locations in Hamlet II in Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency (Figure 1) is as follows:

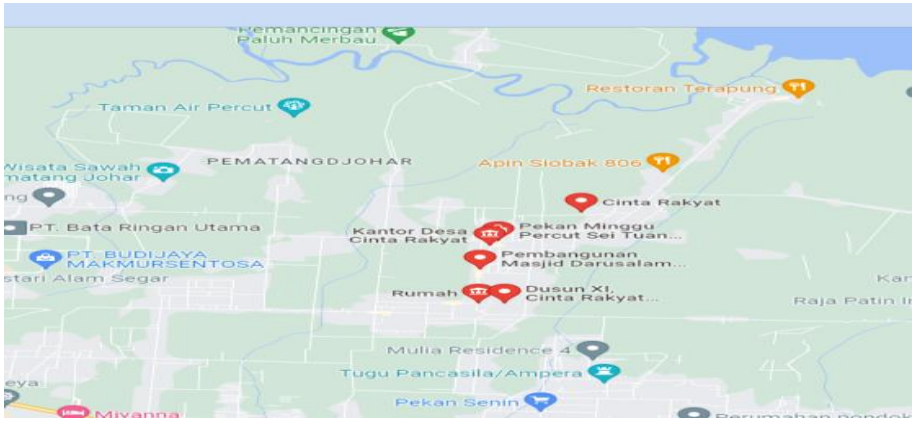

Figure 1. Map of Community Service Locations

3. LITERATURE REVIEW

The elderly is someone who is 60 years old or more (Ministry of Health of the Republic of Indonesia (Kemenkes RI, 2016). Hypertension is a serious medical condition and can increase the risk of heart, brain, kidney, and other diseases. Treatment of hypertension can be done pharmacologically and non-pharmacologically. Pharmacological treatment is through the use of drugs that have anti-hypertensive effects. Non-pharmacological treatment, as follows by implementing healthy lifestyle habits such as reducing salt intake in food, consuming fruits and vegetables, maintaining ideal body weight, not drinking alcoholic beverages, not smoking, managing stress, exercising regularly, genetics, diet, and doing other physical activities more often, and routinely carrying out blood pressure checks so that blood pressure remains controlled (Sherwood, 2016).

Hypertension in the elderly occurs due to the aging process so there is a physiological decline which causes the strength of the heart's pumping machine to decrease and the large arteries lose their flexibility and become stiff and cannot expand when the heart pumps blood through these arteries increasing blood pressure. Various especially important blood vessels in the heart and the brain experience stiffness, so physical exercise can help strength ((Tulak & Umar, 2017). Some sports that can be done by people with hypertension include swimming, cycling, jogging, and exercise, especially hypertension exercises.

Hypertension exercise is a sport that can encourage the heart to work optimally and can increase energy demand by cells, tissues, and organs of the body. Hypertension exercise can increase venous return and cause stroke volume, directly increasing cardiac output and arterial blood pressure. An increase in arterial blood pressure in this phase will have an impact on reducing respiratory and skeletal muscle activity which causes decreased sympathetic nerve activity. This will then cause the heart rate to

decrease, stroke volume to decrease, and arteriolar and venous vasodilation (Sherwood, 2016). This decrease resulted in a decrease in cardiac output and a decrease in total peripheral resistance, resulting in a decrease in blood pressure (Alexander & Madhur, 2022).

Hypertension exercise (Sherwood, 2016) is carried out for 30 minutes and at least two times a week (Hernawan & Rosyid, 2017). If you exercise regularly and continuously, the blood vessels will be more elastic and the decrease in blood pressure will last longer. So that by dilating blood vessels (Sianipar & Putri, 2018), blood pressure will decrease after doing sports activities (Hernawan & Rosyid, 2017).

Previous research showed that pre-test blood pressure revealed that 28 elderly respondents had pre-hypertension at 39%, and post-test blood pressure after hypertension exercise intervention was mostly normal at 56%. So, it was found that there was an effect of hypertension exercise on the blood pressure of the elderly at the Wredha Dharma Bhakti Pajang Surakarta Nursing Home with a p-value = 0.001 (Hernawan & Rosyid, 2017). The similar study presented their findings to a sample of 30 people. It was found that there was a significant effect of elderly hypertension exercise on the blood pressure of elderly people with hypertension in the working area of the Cakranegara Health Center, Turida Village, with a p-value = 0.000 (Sumartini, Zulkifli, & Adhitya, 2019). It is suggested that elderly hypertension exercise can be an alternative exercise that can be given to the elderly participating in the Chronic Disease Management Program which is named as Prolanis program or other sports activities.

Another study was on 35 elderly respondents of female sex aged 60-70 years and had a systolic pressure range between 140 -180 mmHg. Given hypertension exercise for two weeks (two times for 30 minutes) can show changes in systolic blood pressure where there is a decrease of 22 mmHg and diastolic has decreased by 3.4 mmHg. So, it can be concluded that hypertension exercise can reduce both systolic and diastolic pressure in the elderly with a p-value <0.025 (Tina, Handayani, & Monika, 2021).

Based on the explanation above, the community service team from the STIKes Murni Teguh want to improve the lifestyle of the elderly with hypertension through the implementation of hypertension exercise. So, the question of this community service, "Is the implementation of hypertension exercise be able to improve the lifestyle of the elderly people of Hamlet II in Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency?"

4. METHODS

This community service activity was carried out with students of the Nurse Profession Study Program from STIKes Murni Teguh Medan at Hamlet II in Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency on May 28 2023 by implementing Hypertension Exercise in the Elderly with 22 respondents. Before the implementation of this activity, the first was carried out by filling out an observation sheet in the form of name, gender, age, medical history, drugs consumed, and history of routine control every month. Blood pressure, respiration, and pulse measurements were also carried out before and after the Hypertension Exercise was carried out.

Followed by hypertension exercise with the elderly and village officials for 30 minutes. After completing the hypertension exercise, the elderly was asked to sit down and the instructor who is a Nurse Profession

Student and supervisor, gave health education about hypertension. The final step is to measure the blood pressure of the elderly as shown in Figure 2.

Hypertension exercise in the elderly guided by 3 students of the Nurse profession. The implementation agenda starts with warm-up exercises, core exercises, and cool-down exercises in which the movements aim to reduce anxiety, and stress, and reduce depression levels. This decrease will stimulate the work of the peripheral nervous system (autonomic nervous system), especially the parasympathetic which causes vasodilation of the cross-section of blood vessels which will result in a decrease in blood pressure both systolic and diastolic (Anwari et al., 2018).

Figure 2. Examination of the Vital Signs of the People of Hamlet II in Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency

5. RESULTS AND DISCUSSION

a. Results

1. Characteristics of Respondents Implementation of Hypertension Exercise which included age, gender, consumption of hypertension medication, control routine, and classification of hypertension.

Table 1. Characteristics of Respondents in the Implementation of Hypertension Exercises

Measured Variables	Frequency (f)	Percentage (%)
Age		
60-65 Years	7	31,8%
66-70 Years	5	22,7%
>70 Years	10	45,2%
Gender		
Male	9	40,9%
Female	13	59,1%
Consumption of Hypertension Medication		
With Drugs	9	40,9%

Without Medication	12	54,6%
Traditional Medicine	1	4,5%
Control Routine		
Routine	3	13,6%
Not Routine	19	86,4%
Classification of Hypertension		
Normal	2	9,1%
Pre-Hypertension	3	13,6%
Grade 1 hypertension	7	31,8%
Grade 2 hypertension	6	27,3%
Hypertension Crisis	4	18,2%

Based on the table above, the majority of respondents who took part in the implementation of this Hypertension Exercise were aged >70 years (45.5%), followed by the elderly aged 60-65 years (31.8%), and the lowest were aged 66-70 years (22.7%). While the gender of the majority of respondents was female (59.1%) and then male (40.9%). Furthermore, the majority of respondents did not take hypertension medication (54.5%), consumed hypertension medication 40.9%, and used traditional medicines 4.5%. The majority of respondents did not routinely control (86.4%) and routinely controlled 13.6%. Classification of hypertension for the majority of respondents is grade 1 (31.8%); followed by grade 2 hypertension with 27.3%; next is hypertensive crisis with 18.25%; while pre-hypertension was 13.6%; and the lowest is the classification of blood pressure is normal with 9.1%.

2. The mean decrease in blood pressure before and after the implementation of hypertension exercise

Table 2. The mean decrease in blood pressure before and after the implementation of hypertension exercise

	Implementation of Hypertension Exercise	
	Frequency (f)	***Mean***
Decrease in Blood Pressure		
Pre-test	22	2,95
Post-test	22	2,32

Based on the table above, it showed that the mean blood pressure before the implementation of the Hypertension Exercise was 2.95 and decreased significantly after 30 minutes of implementing the Hypertension Exercise with a mean (2.32).

Figure 3. Implementation of Hypertension Exercise with the Elderly of Dusun II in Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency

Figure 4. Photo of the Community Service Team with the Dusun II Community of Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency

b. Discussion

The results of this community service are inversely proportional to the activities carried out in the community of as many as 30 residents (Saputri, Widiastuti, & Budiana, 2023) where the majority were over 40 years of age, experiencing hypertension as many as 17 residents (57%) both men and women. Meanwhile, 13 residents (43%) did not experience hypertension. Then hypertension exercise was carried out for 30 minutes and showed a significant change in results, it described the number of respondents who experienced hypertension decreasing to 7 residents (32%) and those who did not experience hypertension increased by 23 residents (77%).

In line with research conducted (Hernawan & Rosyid, 2017) on 28 elderly respondents. It was found that the majority of the elderly were women as many as 18 people with 64%. The age of the majority of the elderly is 60-75 years with 64%. Other studies that are in line showed that hypertension exercise affects reducing systolic blood pressure with

a p-value of 0.002 in the community of elderly women in Petir village, Kalibagor sub-district, Banyumas. Post-test blood pressure measurements were carried out after being given hypertension exercise treatment three times to elderly women in Petir Village, Kalibagor District, Banyumas (Basuki & Barnawi, 2021).

The results of the community service carried out (Sumarni, Rosidin, Sumarna, & Sholahudin, 2021) are in line with this activity with the pre-test which consisted of 10 questions, the smallest score was 55.2 and the largest score were 65, and the post-test results obtained the smallest score of 78.4 and the largest 85.2. So, it was found that through health education to the elderly, they understand and know the importance of elderly exercise to improve body fitness. In conclusion, there is an increase in knowledge about the importance of elderly exercise to improve body fitness by 20.2 points.

The mean blood pressure before the implementation of the Hypertension Exercise was 2.95 and decreased significantly after the implementation of the Hypertension Exercise with a mean value was 2.32. In line with the other study (Hernawan & Rosyid, 2017) that the pre-test value of respondents' blood pressure measurements obtained an average systolic blood pressure of 151.43 mmHg, the lowest pressure was 140 mmHg, the highest was 180 mmHg, the median was 150 mmHg and the standard deviation was 11.46 mmHg. Furthermore, the pre-test average diastolic blood pressure was 95.36 mmHg, the lowest pressure was 80 mmHg, the highest was 110 mmHg, the median was 95 mmHg and the standard deviation was 8.81 mmHg. While the post-test values obtained an average systolic blood pressure of 130.36 mmHg, the lowest pressure was 110 mmHg, the highest was 160 mmHg, the median was 130 mmHg and the standard deviation was 14.52 mmHg. Furthermore, the post-test diastolic blood pressure was 82.14 mmHg, the lowest pressure was 70 mmHg, the highest was 100 mmHg, the median was 80 mmHg and the standard deviation was 8.33 mmHg (Hernawan & Rosyid, 2017).

The case study conducted (Abdul & Nurhayati, 2022) is in line with the results of this community service, that there was a decrease in blood pressure in both subjects where in group I before exercise it was 160/100 mmHg and decreased by 130/80 mmHg as well as in group II before exercise it was 170/100 mmHg and after exercise, it decreased 140/80 mmHg. Meanwhile, the other authors found that health education can increase public knowledge and exercise activities can be carried out routinely to prevent an increase in blood pressure (Wahyudi, Zakiya, Adyani, & Tobing, 2022).

In line with the study (Zulaikha, Kasjono, & Wijayanti, 2016), a p-value of 0.376 was obtained. This means that there is no difference in diastolic blood pressure in the three study groups (experimental group 1 with hypertension exercise in the elderly 2 times a week, experimental group 2 with elderly exercise 3 times a week, and group 3 without intervention) in the hypertensive elderly in the Work Area of the Bulu Health Center. Other findings are related to the finding in this community service results with 16 for the experimental group and 16 for the control group. The results showed that there was an effect of giving hypertension exercise on reducing high blood pressure with the results of the pre-test and post-test systolic on the first day with a p-value =

0.000 and diastolic with a p-value = 0.001. On the second day, the systolic pre-test and post-test with p = 0.003 and the diastolic post-test with p = 0.003. On the third day, the systolic pre-test and post-test with ρ = 0.000 and the diastolic pre-test and post-test with p = 0.000. It is recommended for the elderly to be able to do hypertension exercise as a treatment for high blood pressure (Efliani, Ramadia, & Hikmah, 2022).

6. CONCLUSION

Community service from the STIKes Murni Teguh has been proven to be able to improve the healthy lifestyle of the people of Hamlet II in Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency in controlling hypertension by implementing Hypertension Exercise in the Elderly. It is suggested that the community service team from the STIKes Murni Teguh is planning to conduct another community service at Hamlet II in Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency with topic "Implementation of Himalayan or Pink Salt in lowering blood pressure among elderly with hypertension. It is recommended that village officials and Public Health Center officers. The related health center conducted a Hypertension Exercise program as an implementation discourse in improving the quality of life of the Elderly with Hypertension. The implementation can be carried out at Hamlet II in Cinta Rakyat Village, Percut Sei Tuan District, Deli Serdang Regency regularly 2 until 3 times a week.

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