

ISOMETRIC EXERCISES AND MASSAGE FOR HYPERTENSIVE PATIENTS AT PROLANIS MEMBERS AT JOHAR BARU HEALTH CENTER, JAKARTA

Dewi Prabawati ^{1*}, Fitriana Suprapti ², Maria Maxmilla Yoche ³, Felicia ⁴

^{1,2,4} STIK Sint Carolus, Jakarta

³ Universitas Pelita Harapan

Email: ^{1*} deprab24@yahoo.com

Abstract

Hypertension is a global health problem and is recognized as a major contributor to the burden of cardiovascular disease. The prevalence of hypertension continues to increase due to lifestyle changes such as smoking, obesity and psychosocial stress. It is important to educate people with hypertension to self-manage themselves at home. This community service activity aimed to provide health information about hypertension and self-management in the form of exercise and massage. This activity was attended by 30 Prolanis (Chronic Disease Management Program) participants at Johar Baru Health Center in Jakarta. There were 5 sessions in this activity: Session 1&2 for registration and measurement of physiological parameters, followed by cardiovascular exercises. Session 3 for health education about hypertension in general, then followed by next session on isometric exercises with a tennis ball and final session on self-massage exercise. The evaluation done on this activity showed that the participants demonstrated isometric exercises and back massage techniques that can be carried out independently. Hypertensive patients are expected to be actively involved in Prolanis activities and conduct self-management intervention to maintain their blood pressure and prevent the complications.

Keywords: Hypertension, Isometric Exercise, Massage.

INTRODUCTION

Hypertension is a global health problem and is recognized as a major contributor to the burden of cardiovascular disease. The prevalence of hypertension continues to increase due to lifestyle changes such as smoking, obesity and psychosocial stress. According to the WHO (World Health Organization), the incidence of hypertension reached 22% worldwide in 2019. According to the American Heart Association (AHA), the number of Americans over 20 with high blood pressure has reached 74.5 million, but nearly 90–95% of cases have no known cause (World Health Organization, 2019).

According to Riskesdas data for 2018, the number of hypertensive patients in Indonesia reached 8.4% based on medical diagnoses among residents over the age of 18. Based on the results of population blood pressure measurements, the prevalence of hypertension in Indonesia

in 2018 was about 34.1%, and the prevalence of hypertension in Indonesia in 2013 was about 25.8%. It can be said that the prevalence of blood pressure measurement results increased by about 8.3% from 2013 to 2018 (Risksedas, 2018).

Treatment for hypertension is based on the pillars of standard care and lifestyle changes, which include managing diet, managing stress, managing activity patterns, and avoiding alcohol and smoking (Nurachmah et al., 2013). The target blood pressure recommended in various studies in hypertensive patients with cardiovascular diseases is a systolic blood pressure < 140 mmHg and/or a diastolic blood pressure < 90 mmHg (Goff et al., 2014). In order to reduce cardiovascular risk, it is recommended to allow people with high blood pressure to comply with pharmacological therapy and perform non-pharmaceutical interventions such as physical activity. Several studies explain that exercises like progressive muscle relaxation can effectively reduce blood pressure and even anxiety in hypertensive patients, and previous study (Ermayani et al., 2020) declared that there was a significant difference on systolic and systolic before and after the fourth and eighth week of the intervention diastolic blood pressure and anxiety ($p=0.000$).

Another exercise that is also easy and can be performed by hypertensive patients is the isometric exercise. Isometric exercises are exercises that require the muscular strength of the body either for warm-up exercises or for rehabilitation training programs (Parlindungan & Lukitasari, 2016). A review by the (Lloyd-Jones et al., 2017) concluded that alternative isometric therapy can significantly reduce blood pressure. This isometric exercise, which only involves squeezing the machine, keeps the muscles tight without moving the hands (de Oliveira et al., 2022). An isometric tool that can be used with a rubber ball, foam ball, or tennis ball (Yehuda, 2020). Tennis balls are used because holding a tennis ball can produce the same results as holding a hand grip (Health and Wellness Associates, 2016). In addition, tennis balls are used because they are less expensive than using a handle. Previous research (Arkianti et al., 2021) found in their research that isometric hand grip exercises with a tennis ball three times a week can lower blood pressure, although no significant difference was found ($p=0.086$).

Massage is an art of hand movement aimed at bringing pleasure and maintaining health. This mechanical hand movement gives the recipient a feeling of calm and security. Massage pressure (massage) sends signals that balance the nervous system or release chemicals such as endorphins that induce or promote feelings of relaxation, relieve pain, and improve circulation. A massage performed on a point stimulates the body to release various substances such as serotonin, histamine, bradykinin, slow reacting substance (SRS) and other unknown substances. These substances cause capillaries and arterioles to dilate and flare responses, leading to improved vascular microcirculation. As a result, there is a relaxing effect (relaxation) of stiff muscles and, as a result of general vasodilatation, blood pressure is stably lowered (Moghadasi et al., 2021).

Massage research on the effect of massage on hypertensive patients in the elderly conducted by (Udani & Keperawatan, 2016) at UPTD Panti Tresna Werdha South Lampung. The study was conducted on 33 people suffering from high blood pressure. Based on the data obtained, there was a significant effect on systolic and diastolic blood pressure with a systolic p-value of 0.032 and a diastolic p-value of 0.024 after 15 minutes of massage. Reflexology has a good effect on people with high blood pressure, which leads to a reduction in blood pressure in some elderly people due to the relaxing effects of reflexology. For this reason, this non-profit

activity consists of providing training in the form of isometric exercises with a tennis ball and self-massage techniques to hypertensive patients at the Johar Baru Health Center in central Jakarta.

IMPLEMENTATION METHOD

This community service was conducted using the offline method in the Johar Baru Public Health Center in Central Jakarta. The activity was divided into 5 sessions, with session 1 measuring blood pressure, weight, height and fasting blood glucose levels. In the second session, the participants were invited to exercise, especially cardiovascular exercises. The 3rd session is an explanation of hypertension in general, followed by the 4th session with presentation and practice of isometric exercises with a tennis ball and the 5th session is a presentation and demonstration of self-massage. In addition, an oral evaluation of this community service was conducted. This activity was carried out in collaboration with the Public Health Center, specifically nurse and medical doctor at the Non-Communicable Diseases Department (PTM), who are responsible for Prolanis (Chronic Disease Management Program) activities. This activity took place in May 2023 and was attended by 30 members from Prolanis Johar Baru Health Center, Central Jakarta.

RESULTS AND DISCUSSION

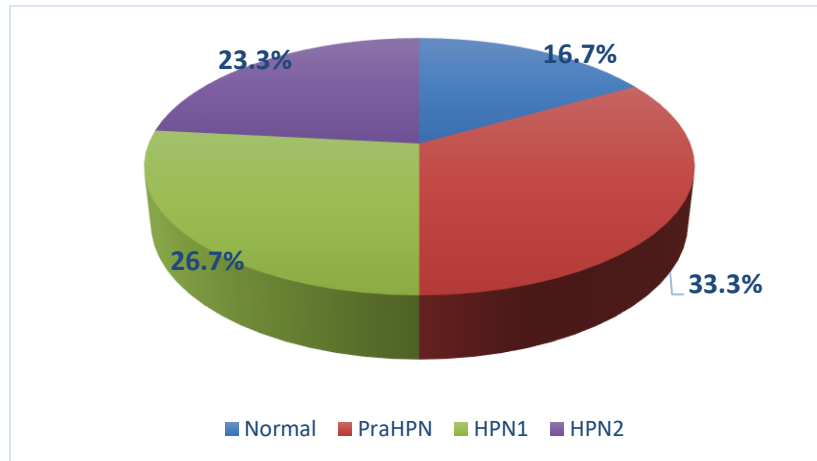
Before starting the activity, all members present received an attendance list, followed by measuring weight dan height. As the results; participants consisted of 30 individuals, with the majority ages of 45 and 59 years old (63.3%), female (83.3%), and have normal body mass index (50%) as shown in Table 1.

Tabel 1. Profiles of Health Education participants in terms of age, gender and BMI of Prolanis member, Johar Baru

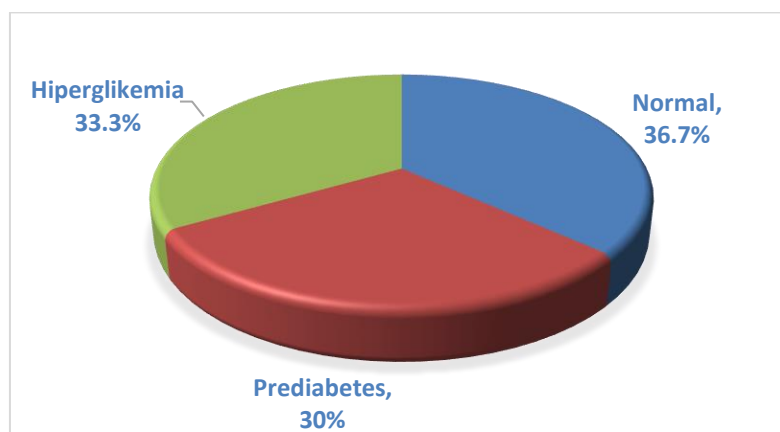
Characteristics	n	%
Age		
Pre-elderly	19	63.3
Elderly	11	36.7
Sex		
Male	5	16.7
Female	25	83.3
Body Mass Index		
Underweight	2	6.7
Normal	15	50.0
Overweight	13	43.3
Total	30	100

Prior to the activity, Prolanis members had their routine checks on weight, height, blood pressure and blood glucose levels. This examination is carried out in collaboration with the nurse and the doctor in charge of the Polyclinics for Non-Communicable Diseases (PTM) and

has become a proven method to control the stability of the blood pressure and blood sugar level, as shown in graphs 1 and 2. The majority of Prolanis members who attended the activity had blood pressure in the prehypertension category of 33.3%, followed by Grade 1 hypertension of 26.7%; while blood glucose levels were within the normal range of 36.7%, followed by hyperglycemia of 33.3%.



Pie chart 1. Profile of Blood Pressure Measurement of Respondents (HPN: Hipertensi)



Grafik 2. Profile of Blood Sugar Level of Respondents

Persistent high blood pressure can eventually lead to complications. Hypertension is a risk factor for diseases such as heart disease, kidney failure, diabetes and stroke (Ministry of Health of the Republic of Indonesia, 2019). The number of people with high blood pressure continues to increase each year, it is estimated that 1.5 billion people will be affected by high blood pressure by 2025 and it is estimated that 9.4 million people will die from high blood pressure and its complications each year (US Department of Health and Human Services) Republic of Indonesia, 2019). Hypertension needs to be prevented to prevent complications and death from hypertension.

Chronic hyperglycemia can lead to macrovascular complications such as myocardial infarction, stroke and peripheral arterial disease. High blood sugar levels have far-reaching negative effects. As a result, atherosclerosis can occur in the blood vessels and make high blood pressure worse. According to (Perkeni, 2015), there are several things that lead to an increase

in blood sugar, namely lack of exercise, increased food intake, increased stress and emotional factors, weight gain and age, and the effects of treatment by medications, such as steroids.

The next activity is physical exercise through warm-up, core, and cool-down phases. The exercise begins with a pulse rate check and those who are unwell, feel dizzy or excessively weak are not allowed to participate in the exercise, as shown in Figure 2.



Figure 2. Physical Exercise

The activity begins with an opening addressed by representatives from PIC of PTM unit (Non-Communicable Diseases) to explain the purpose and benefits of the activities undertaken. This is followed by a presentation of the team and reading of the program flow during the educational activity.



Figure 3. Health education about hypertension

As shown in the figure 3, the speaker explained about hypertension including definition and classification of hypertension, causes, risk factors, signs and symptoms, and complications that can occur in hypertensive patients as well as the treatment. Patients are suggested to have a low-salt diet limiting sodium/salt intake to 2–3 grams to lower blood pressure (Lewis, Bucher, Heitkemper & Dirksen, 2014). The material ends with an exercise on how to read food labels on packaged foods and beverages, on which the number of calories, sugar, salt and fat is adjusted according to the recommendations of Regulation of Ministry of Health on Permenkes No. 30 of 2013 .

High blood pressure is considered as a disease that is not dangerous because people with high blood pressure feel healthy and have no significant symptoms and therefore classify the disease as mild. Hypertension is detected during routine examinations or other symptoms of the patient. The serious effects of hypertension are not felt until complications have arisen and organ damage such as heart failure, kidney failure, cognitive dysfunction or stroke occurs (Lewis, Bucher, Heitkemper & Dirksen, 2014)

After having health education about hypertension; the participants were joining in the alternative treatment of isometric exercises based on the recommendation of research result related to complementary therapy. Isometric exercises using tennis ball is aimed to lower blood pressure in hypertensive patients as shown in Figure 4.



Figure 4. Isometric Exercise Session

Isometric exercises are exercises that require the muscular strength of the body either for warm-up exercises or for rehabilitation exercise programs (Parlindungan & Lukitasari, 2016). A review by the (Lloyd-Jones et al., 2017) concluded that alternative isometric therapy can significantly reduce blood pressure. This isometric exercise, which only involves squeezing the machine, keeps the muscles tight without moving the hands (Wellness, 2013).

The isometric tool that can be used is a hand grip device. Another option is to use a rubber, foam, or tennis ball (Yehuda, 2020). In this study, the researchers used a tennis ball as a hand grip tool. Tennis balls are used because holding a tennis ball can produce the same results as holding a hand grip (Health and Wellness Associates, 2016). In addition, tennis balls are used because they are less expensive than using a handle.

Next session is the self-massage which enable the patients to do it independently at home, This material begins with understanding and applying massage to reduce the complaints of neck stiffness and headache. This is recommended since it can be done by patients themselves and with no cost. By implementing this self-massage; patients will have their blood circulation flow well. The activity of documentation is shown in Figure 5.



Figure 5. Self-massage session

Massage is an art of hand movement aimed at bringing pleasure and maintaining health. This mechanical hand movement gives the recipient a feeling of calm and security. Massage pressure (massage) sends signals that balance the nervous system or release chemicals such as endorphins that induce or promote feelings of relaxation, relieve pain, and improve circulation. One of the treatments consists in massaging the reflex area to obtain a stimulation that is picked up by the sensory nerves and transmitted directly by the motor nerves to the desired organ.

When you massage an area, the body releases several substances including serotonin, histamine, bradykinin, slow reacting substances (SRS) and other unknown substances. These substances cause capillaries and arterioles to dilate and flare responses, leading to improved vascular microcirculation. As a result, there is a relaxing effect (relaxation) of stiff muscles and, as a result of general vasodilatation, blood pressure is stably lowered (de Oliveira et al., 2022). Study shown that patients who received massage for 10-15 minutes three times a week for 10 sessions significantly lower the blood pressure. This blood pressure is maintained 72 hours after study but then return to its hypertension level after two weeks without massage (Givi et al., 2018).

CONCLUSION

This educational activity was conducted for Prolanis members at Johar Baru Health Center in central Jakarta. The profile of the participants showed that the majority at 63.3% were between the ages of 45; 83.3% were female and had a normal body mass index of 50%. Based on the parameter, the majority of Prolanis participants had blood pressure in the Prehypertension category (33.3%), followed by Grade 1 hypertension (26.7%); while blood glucose levels were within the normal range of 36.7%, followed by hyperglycemia of 33.3%. This training provides materials on hypertension and various alternatives as complementary therapy, namely isometric exercises with a tennis ball and self-massage. Exercise and massage can be performed independently at home and are inexpensive and convenient therapy, as they only require simple tools.

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