

Research Article

Physical Activity of the Elderly with Cardiovascular Disease During the COVID -19 Pandemic

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ORCIDAri Rahmat Aziz: <https://orcid.org/0000-0002-1416-9144>**Abstract.**

Cardiovascular disease is a major cause of disability and death in the elderly. Performing regular physical activity within the body's tolerance limit is another way to reduce the risk of death from cardiovascular disease. The study aimed to determine the physical activity of the elderly with cardiovascular disease during the COVID-19 pandemic. The research method used a descriptive survey. The study took place in the Payung Sekaki Health Center's work area. A cluster random sampling technique was employed in the sampling. There were four clusters with a total of 100 elderly respondents. Physical activity was measured using the PASE (physical activities scale for the elderly) questionnaire. The research showed that the majority of the elderly (56%) were women, the age included in the elderly category (60-74 years) was 96%, the ethnic groups came from Minang (37%), had a secondary education level (46%), worked history as a laborer (45%), the disease currently experienced by the elderly was 73% suffering from hypertension for 10-20 years (57%), complaints by the elderly during the last month are dizziness (58%) and neck pain (47 %), while the complaints experienced after physical activity was feeling weak (72%), and the physical activity of the elderly with cardiovascular problems during the COVID-19 pandemic was 67% having less physical activity. Based on these conditions, it can be concluded that during the COVID-19 pandemic, the elderly did not carry out physical activity. This condition should be a concern for healthcare providers, who should increase efforts to encourage the elderly to engage in physical activity.

Keywords: cardiovascular disease, physical activity, gerontology nursing

1. INTRODUCTION

Hypertension is a major non-communicable disease all over the world. Hypertension management can be done through medication adherence, bodyweight management, dietary intake, fasting, alcohol consumption, tobacco cessation, and physical exercise. Lifestyle modification was recommended as the first line to reduce the risk of cardiovascular disease in addition to pharmacological treatment⁽¹⁾. **Non-pharmacological**

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therapy for hypertension was achieved through lifestyle changes such as a hypertension diet, physical exercise, stress management, and patient compliance with frequently regulating blood pressure⁽²⁾⁽³⁾.

Physical activity was any movement that involves skeletal muscle work to increase energy and energy expenditure. Types of physical activity that can be done are daily physical activity, physical exercise, and sports. The implementation of physical activity in the elderly must pay attention to several things, namely the duration, frequency, and intensity of physical activity. According to JNC (The Seventh Report of The Joint National), the level of physical exercise as a non-pharmacological management of hypertension sufferers should be performed on a regular basis with moderate intensity since it can reduce blood pressure by 4-9 mmHg⁽³⁾.

The COVID-19 pandemic has had an impact on the decline in community activities in general. One of those affected is the elderly who are a vulnerable population to health problems. The elderly with cardiovascular disease comorbidities such as hypertension is a population that is very vulnerable to morbidity and mortality due to COVID-19. Hypertension has become the most threatening comorbid disease and aggravates the condition of COVID-19 patients. Patients with hypertension account for 50.7% of those who test positive for COVID-19. Furthermore, of the number of patients diagnosed as positive for COVID-19, 10.9% were aged over 60 years, and 48% of deaths occurred in patients aged over 60 years. Maintaining physical activity in the elderly during the COVID-19 pandemic is important. Physical activity can reduce low-level chronic inflammation and increase various immune markers in several disease states such as cancer, cardiovascular disease, diabetes, and obesity during pandemic times⁽⁴⁾.

Exercise during the pandemic should be accompanied by a clean, healthy lifestyle that includes eating a balanced diet, following health guidelines, being productive, and engaging in regular exercise to maintain physical and mental health and stay fit⁽⁵⁾.

2. MATERIALS AND METHOD

The design used in this research was a descriptive survey method. The research location was in the work area of Payung Sekaki Primary Health Care Centre. The research was conducted for 4 months starting from July to October 2022. The sampling technique was cluster random sampling. There were four clusters with a total of 100 elderly respondents. Physical activity was measured using the PASE (physical activities scale for the elderly) questionnaire. The data analysis used in this research was univariate analysis

to describe the characteristics of the research variables. The bivariate analysis used the chi-square test (*p-value* <0.05). This research has passed the ethical test/ ethical exemption of the Faculty of Nursing, the University of Riau with registered number No.511/UN.19.5.1.8/KEPK.FKp/2022.

3. RESULTS

The age, gender, ethnicity, education, occupation, and description of the physical activity of the elderly with cardiovascular issues are among the characteristics of respondents in this study that were described by the univariate analysis. The findings of the univariate analysis were as follows:

3.1. Demographic

TABLE 1: Demographic.

Variable	n = 100	Percentage
Age: Elderly Old	96 4	96% 4%
Sex: Male Female	44 56	44% 56%
Ethnic: Minang Malay Javanese Batak	37 15 24 24	37 % 15 % 24 % 24%
Education: No School Primary school High school College	18 35 46 1	18% 35% 46% 1%
Work: Laborer Farmer Retired Trader Private sector employee	45 10 5 18 22	45% 10% 5% 18% 22%
Blood pressure: Hypertension Normal	73 27	73% 27%
Disease Complaint: Feeling weak Dizzy Breathless No complaints	72 15 5 8	72% 15% 5% 8%
Total	100	100%

In this study, 96% of respondents fell into the category of the elderly (aged 60–74). Most of the respondents in this study were female, as many as 56 respondents (56%). Most of the respondents in this study came from the Minang tribe, which was 37%, followed by the Javanese and Batak tribes at 24%, then the Malays at 15%. Most of the respondents in this study had a history of secondary education, which was 46%, and then primary level education was 15%. The majority of respondents in this survey, 45%, had a history of working as a worker, followed by 22% who had a history of working as a private employee. Respondents in this study were divided into two groups based on their blood pressure: hypertension and normal. The majority of respondents (73%), have hypertension. With a total of 72 responders (72%) following physical activity, the biggest complaint in this study was that the body felt weak.

3.2. Time of suffering from hypertension

TABLE 2: Time suffering from hypertension characteristic.

Category	n	Percentage
0-9 years 10-20 years 21-30 years	11 42 20	15,1% 57,5% 27,4%
Total	73	100%

Characteristics of respondents based on long-suffering from hypertension, in this study, were grouped into three groups. Most of the respondents have experienced hypertension for 10-20 years, which is 42%.

3.3. Overview of elderly physical activity during the COVID-19 pandemic with cardiovascular issues

TABLE 3: Physical activity of the elderly with cardiovascular during the covid-19 pandemic.

Activity category	Amount	Percentage
Good Less	33 67	33% 67%
Total	100	100%

In this study, 67% of respondents exhibited physical activity patterns that were associated with reduced exercise, compared to 33% of those who engaged in good exercise.

3.4. The correlation between education and physical activity in the elderly

TABLE 4: The relationship between education and physical activity in the elderly.

Education	Physical activity		p value
	Good	Less	
None	5	13	0.194
Elementary school	11	24	
Middle school	10	10	
Senior school	6	20	
Graduate/university	1	0	
Total	33	67	

Table 4 shows that the majority of respondents who do less physical activity are elementary school educated with a total of 24 respondents. The results of the chi square test obtained a *p value* of 0.194 ($p > 0.05$).

3.5. The correlation between ethnicity and physical activity in the elderly with cardiovascular disorders

TABLE 5: The relationship between ethnicity and physical activity in the elderly with cardiovascular disorders.

Ethnic	Physical activity		p value
	Good	Less	
Minang	13	24	0.081
Malay	7	8	
Javanese	10	14	
Batak	3	21	
Total	33	67	

Table 5 reveals that, with up to 24 respondents, the majority of the tribes with low levels of physical activity among the elderly are Minang tribes. The results of the chi square test obtained a *p-value* of 0.081 ($p\text{-value} > 0.05$).

4. DISCUSSION

This research has found the fact that the number of life expectancy is increasing. It is proven that the majority of respondents are in the range of 60-74 years, which is 96%. The data from the BPS population census, which shows that the proportion of elderly people in Indonesia is rising from 7.59% in 2010 to 9.78% in 2020, is also consistent with this demographic condition. The number of elderly will continue to increase along with the demographic bonus that Indonesia will get in 2030. In the future, the number of elderly people can become a disaster if the elderly experience health problems. There will be an increase in health financing borne by the government. It is necessary to develop strategies to improve the fitness of the elderly and prevent degenerative diseases to avoid health problems⁽⁶⁾.

Gender is one of the variables that will determine the incidence of cardiovascular disease. Hypertension as a cardiovascular disease will have a greater risk of infecting men than women. The frequency of hypertension is strongly correlated with gender, and it is more common in women throughout menopause. Estrogen protects women who have not gone through menopause, and it also contributes to higher levels of

High-Density Lipoprotein (HDL). High levels of HDL cholesterol are a protective factor in preventing the process of atherosclerosis. There will be blockage in the blood vessels which causes the heart to work harder. The protective effect of estrogen is thought to explain the presence of premenopausal female immunity.

In 2020, the proportion of elderly men and women is nearly equal at 48% (12.96) and 51.72 women (13.88). Future predictions indicate that this will affect people's welfare and health. As is common knowledge, women are more likely than males to experience poverty and lose their occupations as they age. If a robust strategy is not developed to empower the elderly in Indonesia, this will worsen the problem that will be encountered in the future ⁽⁶⁾.

4.1. Ethnic

Certain ethnic groups in Indonesia have different cultures regarding the prevention of hypertension. Food is one of the determinants of the occurrence of hypertension in a person. The food eaten by the elderly will affect the condition of their health. Foods that contain a lot of LDL (low lipid deficiency) will increase the incidence of hypertension. The results of the study found that the majority (37 %) ethnic group that experienced hypertension was the Minang ethnic. Research conducted by Erda in 2012 ⁽⁷⁾ on the diet of people with hypertension in the Minangkabau ethnic. Hypertension is suffered by the elderly who come from Minangkabau, one of the contributing factors is their old eating habits in accordance with Minangkabau cultural traditions which still persist even though they no longer live in the Minang realm. On the other hand, parents in Minangkabau culture have a high appreciation as people who deserve to be respected and appreciated, one of which is manifested by eating good or slow food. Old eating habits are difficult to change even though they are already suffering from hypertension because it is difficult to change tastes or choices of preferred foods. They will change after the illness is very severe, but after a long time to recover back to the old eating habits. Food is a cultural concept, a statement that actually states "this substance is suitable for our nutritional needs". It is proving exceedingly challenging to persuade people to modify their traditional diets in the interests of healthy nutrition because of the stronger beliefs about what constitutes food and what does not ⁽⁸⁾. Quality food above quantity is advised while providing for the elderly. Due to changes in metabolism and decreased activity, it is advised that elderly people consume less food, but the quality of the food must be higher than when they were younger. In this study, it was also found that there was no correlation between ethnicity and physical

activity in the elderly with cardiovascular problems (*p-value* 0.081) during the COVID-19 pandemic. Elderly individuals are less active than they were when they were younger. Therefore, fewer calories, carbohydrates, and fats are required to maintain their current level of activity. Protein and minerals are needed unless calcium is needed in large quantities. Elderly people need a lot of vitamins but the total calorie requirement is determined by the individual's weight and activity. Treatment of hypertension is not only done with a medical approach. Some other approaches that must be considered are cultural relevance, environment, and resources ⁽⁹⁾.

4.2. Job experiences

One of the causes of hypertension is modern lifestyle factors; people today are busy prioritizing work to achieve success. Busyness and hard work and heavy goals lead to a sense of stress and cause high pressure. Feeling depressed makes blood pressure rise. In addition, busy people also do not have time to exercise. As a result, fat in the body is getting more and more accumulated which can block the flow of blood vessels that are squeezed by piles of fat, making the blood pressure high. This is one of the causes of hypertension.

The prevalence of systolic hypertension is correlated with the frequency of intake of foods high in sodium, such as biscuits, salted fish, milk and its derivatives, coffee, and spices (MSG), whereas the prevalence of diastolic hypertension is correlated with tea consumption.

Through education, a person can acquire the mental and emotional abilities that enable them to grow and mature to the desired level. The higher the knowledge, the more skills, both intellectually and emotionally, and the more developed the mindset they have. Sufficient information received by a person can cause a person to have high knowledge so that he can apply his knowledge according to his participation in the field. Someone who has a good mindset will easily adapt to situations and conditions that exist in his environment to carry out what is his responsibility so that people will respond quickly. In some literature, there are several actions taken by the elderly in seeking treatment for hypertension. One of the methods used is the use of herbal medicinal plants ⁽⁹⁾.

4.3. Blood pressure

Cardiovascular disease in the elderly is a disease caused by a degenerative process. This disease can be caused by reduced elasticity of blood vessels in the elderly. It can also be caused by other factors such as food and physical exercise. The aortic wall's decreased elasticity, thickened and stiff heart valves, the heart's ability to pump blood, which declines 1% annually after the age of 20, resulting in a decrease in contraction and volume, loss of blood vessel elasticity, and elevated peripheral vascular resistance are a few of the factors that contribute to hypertension in the elderly. Based on these factors, lowering high blood pressure in the elderly is difficult, with a success rate of no more than a 10 mmHg drop in both systolic and diastolic pressure ⁽¹⁰⁾.

A low-fat diet, a low-salt diet, avoiding consumption of meat, durian fruit, and high alcohol levels, and engaging in regular and controlled exercise such as brisk walking, running, riding, biking, and swimming are additional measures that can increase the success of prevention for people with hypertension. Other measures include quitting smoking, stopping coffee use, losing weight for obese users, avoiding stress with a more laid-back lifestyle and attitude, and treating comorbidities such as diabetes, hyperthyroidism, and high cholesterol⁽¹¹⁾.

4.4. Physical activity in elderly

In this study, it was discovered that he had battled hypertension for 10 to 20 years. When he was an adult, the typical elderly person had hypertension. Adult hypertension is typically brought on by an unhealthy lifestyle. Through old age, this problem persists. The elderly's willingness to take their medications and alter their lifestyles to control their blood pressure is also impacted by this condition ⁽¹²⁾. Physical activity in the elderly will improve their cognitive function of the elderly. However, physical activity in the elderly does not run smoothly, especially in the elderly who have hypertension. The various complaints encountered by the elderly with hypertension include the inability to carry out activities ⁽¹³⁾.

The main complaint after activity in the elderly is weakness. This is related to the heart function of the elderly. The work of the heart becomes heavy because the blood pumping process is hampered by reduced elasticity and width of blood vessels. Physical activity is an activity that is carried out for at least 10 minutes without stopping. The category of physical activity is divided into three levels, namely light, moderate and heavy physical activity ⁽¹⁴⁾.

Light physical activity is anything related to moving the body, moderate physical activity is body movement that causes a large amount of energy expenditure, in other words, a movement that causes breathing a little faster than usual, while heavy physical activity is body movement that causes energy expenditure. Physical activity in older adults 65 years of age and older includes recreational activity, physical activity, transportation (such as walking or cycling), work (if the person is still employed), housework, play, games, sport, or planned exercise, in the context of daily activities, family, and community ⁽¹⁵⁾. Prior to the Covid-19 pandemic, primary healthcare providers typically implemented physical activity at "Posbindu," however during Covid 19, these activities were suspended as a preventive precaution and physical activity was carried out at home instead. There is a need for technology-based interventions so that the elderly can have physical activities without face-to-face contact ⁽⁴⁾.

Physiologically, the elderly have experienced many changes in body function decline, so the elderly are often said to be of an unproductive age (Zein, 2019). In addition to experiencing physiological decline, the elderly are also susceptible to disease, this is one of the factors that make the elderly rarely exercise and lack knowledge of the benefits of exercise. Physical activity that is planned and structured involves body movements that are carried out repeatedly and aimed at physical fitness called sports ⁽⁴⁾.

In addition, older persons are more likely than younger adults to be worried of accidents, illness, or loved ones becoming hurt. Therefore, exercise can be a technique for the elderly to develop and maintain fitness, freshness, and physical flexibility while also easing these concerns. Examples of this include walking, elderly exercise, stretching, flexibility, and fishing ⁽¹⁶⁾.

However, during the current pandemic, it is highly recommended that after doing physical activities or sports do not gather in crowded places or avoid crowds and apply health protocols by washing hands and feet, showering, and immediately changing the clothes used when exercising ⁽¹⁷⁾. According to the study's findings, the elderly are greatly worried about the COVID-19 pandemic, which is one of the study's concern-related features. This is consistent with other studies that demonstrate how psychological issues in older people are a condition of decline that are also influenced by physical health. Mental issues include patterns and attitudes toward life, loneliness, feeling unworthy, rising emotions, and the inability to adjust tasks. Anxiety disorders, including generalized anxiety disorder in particular, are characterized by worry. It is believed that worry affects both younger and older people, becoming more prevalent in old age (passive age), but that it can be reduced by engaging in healthy physical activity, which has a positive psychological impact on elderly people. As the COVID-19

pandemic spreads across the globe, it creates considerable fear, worry, and concern in the population at large and among certain groups in particular, such as older adults. Elderly education is not related to the physical activity of the elderly with cardiovascular disorders. The results of the chi-square test showed that there was no significant relationship to relationship between elderly education and physical activity (*p-value* 0.194).

The possibility that can occur is a decrease in physical activity in the elderly caused by fear and prohibition of physical activity outside the home. Research conducted by Bergman et al (2020) also stated that health and age concerns were positively associated with anxiety symptoms in the elderly. In addition, the relationship between health concerns and symptoms of anxiety in the elderly during the COVID-19 pandemic is more visible among older adults or the elderly with a high level of age, and the elderly are especially vulnerable to the negative consequences of feeling worried about their health related to COVID-19.

This is in contrast to the results of a study conducted by Barber & Kim (2020) which showed that the elderly in the early phase of the COVID-19 pandemic showed a moderate level of COVID-19 concern and had implemented substantial behavioral changes to reduce the spread of COVID-19. However, the results of other researchers stated that older men showed relatively less anxiety and the least amount of total behavior change. Thus, it is very important to always motivate the elderly to make various preventive efforts during the pandemic, considering that the highest COVID-19 case fatality rate also occurs in older men. The motivation for physical activity among the elderly is needed during the Covid-19 Pandemic. Exercise is an essential contributor to the prevention and recovery of elderly cardiac patients⁽³⁾.

5. CONCLUSION

Based on these conditions, it can be concluded that during the Covid-19 pandemic, the elderly did not carry out physical activity. This situation was possible because the majority of the elderly have concerns about dealing with the COVID-19 pandemic. Physical activity during the COVID-19 pandemic is important for the elderly because it can improve health. In addition, it will also maintain physical fitness, increase body immunity, reduce the impact of depression due to restrictions on community movement, and be able to prevent various risk factors for non-communicable diseases. Walking, stretching exercises performed for 10 minutes each day, cycling, gardening, and other activities that are done in accordance with physical abilities and facilities available are

some simple physical activities that seniors can engage in. Gymnastics exercise can also help elderly with strength and balance. Healthcare providers can play an active role in increasing this activity, especially in community health Nursing programs. Make routine activities with online methods or offline activities with covid-19 health protocols. This condition needs to be a concern for health service providers **to** increase promote efforts for the elderly to increase physical activity ⁽³⁾.

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CONFLICT OF INTEREST

The Author declares that there is no conflict of interest in this research.

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