

# The Correlation Between Physical Activity and Sleep Quality in Elderly Outpatients with Hypertension at Sokaraja I Public Health Care Center, Banyumas Regency

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## ABSTRACT

*Background: Physical activity is one effort that can control blood pressure in people with hypertension. Physical activity that is carried out excessively will result in a person experiencing fatigue easily so that it will have an impact on the quality of his sleep. Objective: This study was to determine the relationship between physical activity and sleep quality in elderly outpatients with hypertension at the Sokaraja I Public Health Center, Banyumas Regency. Method: This type of search used correlational analysis with a cross-sectional design approach. The time of the study was from February to March 2023. The population in this study were elderly outpatients with hypertension at the Sokaraja I Health Center, Banyumas Regency. The sampling technique used a non-probability sampling technique with purposive sampling, namely as many as 59 respondents. Results: The results showed that most respondents did heavy physical activity as much as 23 (39.0%), and respondents who had good sleep quality as many as 39 (66.1%). of statistical tests using the Chi-Square test obtained the results of calculating  $p\text{-value} = 0.00 < \alpha = 0.05$  so that  $H_0$  was rejected and  $H_a$  was accepted. Based on the results of this research, it can be concluded that there is a relationship between physical activity and sleep quality in the elderly in Sokaraja I public health care center, Banyumas Regency. Conclusion: It can be concluded that there is a relationship between physical activity and sleep quality in elderly outpatients with hypertension at the Sokaraja I Public Health Center, Banyumas Regency. The heavier the activity, the better the quality of sleep so that blood pressure can be controlled and can reduce the risk of complications.*

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## 1. INTRODUCTION

A person over the age of 60 is considered elderly or elderly. What will be faced is experiencing limited movement and increased susceptibility to various diseases and environmental changes. A person who has reached this stage of life will experience physical, social, and psychological changes as part of the normal aging process[1]. Between 2015 and 2050, the aging population of developing countries is expected to grow by 20%. After China, India, Japan, and Indonesia. Indonesia ranks fourth with the largest elderly population. Based on data from the Central Statistics Agency (BPS), the proportion of people aged 65 years and over increased from 7.27% in 2000 to 10.57% in 2011. Central Java Province has the proportion of individuals aged 65 years and

over increasing from 8.50% in 2018 to 8.79% in 2019. According to information from the Banyumas Regency Office, as of December 31, 2019 there were 1,840,152 people, of which 68,627 were elderly residents.

According to WHO, about 972 million people, or 26.5% of the population, have health problems related to high blood pressure. Estimates of the calculation find that as many as 9.4 million people die each year from hypertension-related complications. Indonesia has a hypertension incidence rate reaching 34.11% of the population, according to Riskesdas in 2018.

Hypertension is a major risk for the development of heart disease and various cardiovascular diseases that often occur at the age of over 55 years, if not done properly treatment will cause several problems including rupture of blood vessels or narrowing[2]. Hypertension is also related to quality of life, one of the contributors that affect quality of life is physical activity and sleep quality. A person's ability to maintain a healthy balance physiologically and psychologically can be disrupted by physical activity and good quality sleep. Can control high blood pressure in elderly people with hypertension. Hypertension elderly who fulfill routine physical activity independently have good sleep quality. Elderly people who participate in physical activity will have a healthy body and can improve their sleep quality [3]. The purpose of the study was to determine the relationship of physical activity to sleep quality in elderly outpatients with hypertension at the Sokaraja 1 Health Center, Banyumas Regency.

## 2. RESEARCH METHOD

The type of analytical survey research with a cross sectional study approach is to find out the relationship of physical activity to sleep quality in elderly outpatients with hypertension at the Sokaraja 1 Health Center, Banyumas Regency. The population amounted to 50 elderly and a sample of 59 elderly was determined by non-probability sampling technique with purposive method. Tools for data collection are IPAQ and PSQI questionnaires. The data that has been collected is processed by univariate and bivariate analysis. Bivariate analysis used the chi-square test to determine the relationship between physical activity and sleep quality.

## 3. RESULT AND DISCUSSIONS

### Univariate Analysis

Table 1 shows that respondents aged 60-74 years were 48 (81.4%), Education respondents were mostly high school education with 40 (67.8%) The daily work of respondents was 21 traders (35.5%). From the questionnaire that has been filled out, it was found that most respondents did heavy physical activity as much as 23 (39.0%), and respondents who had good sleep quality as many as 39 (66.1%).

Table 1. Distribution of Characteristics of Elderly Outpatients with Hypertension at Sokaraja Health Center 1 Banyumas Regency

Characteristics of Respondents	Frequency ( <i>f</i> )	Percentage (%)
Age		
Seniors (60 – 74)	48	81,4
Elderly (75 – 90)	11	18,6
Gender		
Male	26	44,1
Woman	33	55,9
Education		
Did not finish elementary school	1	1,7
SD	5	8,5
JUNIOR	13	22,0
SMA	40	67,8
Work		
Farmer	20	33,9
Merchant	21	35,6
Self employed	1	1,7
Teacher	2	3,4
Pensioner	2	3,4
Miscellaneous	13	22,0
Physical Activity		
Light	15	25,4
Keep	21	35,6
Tall	23	39,0
Sleep Quality		
Good	39	66,1

Characteristics of Respondents	Frequency ( <i>f</i> )	Percentage (%)
Bad	20	33,9
Total	59	100

### Bivariate Analysis

Table 2 shows respondents with heavy physical activity mostly have good sleep quality, which is as many as 29 respondents while respondents with heavy physical activity who have poor sleep quality as many as 1 response. In respondents who had moderate physical activity with good sleep quality as many as 19 and poor sleep quality as many as 1 respondent. Respondents with light activity who had good sleep quality as many as 1 respondent and light physical activity who had poor sleep quality as many as 8 respondents. The results of the Chi Square Test obtained a *p-value* of 0.00 then with a significant  $\alpha = 0.05$ . The result is *p-value* = 0.00 < 0.05. It can be concluded that there is a relationship between physical activity and the quality of sleep of the elderly with hypertension.

Table 2. The Relationship of Physical Activity to Sleep Quality of Elderly Outpatients with Hypertension at Sokaraja 1 Health Center, Banyumas Regency

Physical Activity	Sleep Quality				Total	%	p-value
	Good		Poor				
	N	%	N	%			
Light	1	1,7	14	23,7	15	25,4	0,000
Keep	15	25,4	6	10,2	21	35,6	
Heavy	23	39	0	0	23	39,0	
Total	39	66,1	20	33,9	59	100	

### Characteristics of Respondents

That the age of more than 40 years has a higher risk of developing hypertension. Explains that high hypertension in line with age is caused by structural changes in large blood vessels, so that blood vessels become narrower and blood vessel walls become stiff, as a result is increased blood pressure[4]. From the results of the study, it was found that most of the respondents were female. According to [4] the average woman will experience an increased risk of high blood pressure or hypertension after menopause, namely the age over 45 years. Women who have not been menopausal are protected by the hormone estrogen which plays a role in increasing High Density Lipoprotein (HDL) levels. In old age, estrogen production will decrease so that it cannot increase HDL levels and cause elderly women to experience hypertension, affecting the occurrence of atherosclerosis process. According to [5] said that the level of education affects a person's ability to receive information and process it before it becomes good or bad behavior so that it affects his health status. In this study, it was found that some respondents had a high school education.

The physical activity of respondents is closely related to the work done daily, explaining that physical activity or low activity caused by lack of movement can result in unstable appetite control resulting in excessive energy consumption and if the weight increases then the blood volume will increase, so that the burden of the heart in pumping blood also increases. As a result, the heart will work harder in pumping blood throughout the body so that peripheral pressure and cardiac output increase and control of blood pressure is disrupted and increases[6]. Most of the respondents did strenuous physical activity. The results showed that the cause of heavy physical activity in respondents could be caused because the majority were working as traders, farmers and housewives. This research is in line with research conducted[7] with 90 respondents, explaining that good physical activity was carried out by 53 respondents while the bad as many as 37 respondents with the average activity carried out was as a farmer. That physical activity can reduce the risk of diabetes, hypertension and coronary heart disease. In addition, physical activity is also physiological, psychological and social, physical activity can increase the capacity of strength, flexibility and balance[8].

From the results of the study, it is known that some respondents who have good sleep quality. The results of this study are in line with research conducted [9] with the title of the relationship between physical activity and sleep quality in coastal communities of Manado City which was conducted on 84 respondents with good sleep quality as many as 51 respondents and bad as many as 33 respondents [10] explained that sleep quality is a phenomenon involving various domains, among others, assessment of sleep duration, sleep disturbances, sleep latency periods, sleep dysfunction during the day, sleep efficiency, sleep quality and use of sleeping pills. So if one of the 7 domains is disturbed, it will result in a decrease in sleep quality. According to [11] in his research explained that hypertension can interfere with sleep which has an impact on sleep quality so that it interferes with blood pressure control.

### The Relationship Between Physical Activity and Sleep Quality

Based on the results of the study, there is a relationship between physical activity and sleep quality of elderly outpatients with hypertension at the Sokaraja 1 Health Center, Banyumas Regency. Based on statistical tests using Chi-Square, the calculation results of  $p\text{-value} = 0.00 < \alpha = 0.05$  can be concluded that there is a relationship between physical activity and the quality of sleep of the elderly with hypertension. Regular physical activity also causes glucose reserves to decrease, triggering the release of endorphins that provide a sense of comfort, pleasure and happiness. When the body is comfortable and relaxed, the elderly will easily meet their sleep needs[11]. All of these conditions help the elderly to be able to start sleeping faster. This research is in line with research conducted [12] The Relationship of Physical Activity with Sleep Quality in the Elderly in Babah Dua Village which was conducted on 47 samples, in the study it was explained that the elderly who carried out physical activity with high and moderate categories made the body feel tired because of all day activities so that at night the body felt relaxed, felt fit and felt comfortable so as to reduce anxiety and stress levels, So even sleep feels sound.

In his research[10]with the title of the relationship of physical activity with sleep quality in the elderly at the elderly posyandu, Cangkring Hamlet, Kedunglosari Village, Tembalang District, Jombang Regency which was conducted on 54 respondents using the Chi-Square Test with a p-value result 0.000 level  $\alpha=0.05$  so  $p < \alpha$  which means there is a relationship between physical activity and sleep quality in the elderly. Physical activity that is done regularly is beneficial to improve sleep quality and get positive benefits for health.

Physical activity greatly affects the stability of blood pressure. Someone who does less activity will tend to have a higher heart rate frequency, so the heart muscle will work harder at each contraction. The harder and more often the heart muscle pumps, the greater the pressure imposed on the arteries resulting in an increase in blood pressure. High physical activity will cause fatigue which then produces Delta Inducing Pepida Sleep (DIPS) and makes sleep quality better. A person's sleep needs will be felt in life after a day of tired activities and automatically the body will give a signal to rest and someone must sleep so that the body can be optimal for activities the next day. Lack of daily activities or unstructured activities will affect sleep time or sleep quality. If physical activity is low then the quality of sleep will be poor and experience an uncontrolled increase in blood pressure so that the risk. [4]. The limitations in this research are time and limitations in filling out questionnaires for elderly respondents who are illiterate and need help in filling out questionnaires

### 4. CONCLUSION AND RECOMMENDATION

From this research it can be concluded that there is a relationship between physical activity and sleep quality in elderly people with hypertension. The more activities you do, the better the quality of sleep you expect will be, besides that it will help your blood pressure be better. There is a relationship between physical activity and sleep quality in elderly outpatients with hypertension at Puskesmas Sokaraja 1 Banyumas Regency.

The results of this research can be used as evaluation material to increase a person's knowledge in physical activity and sleep quality. For future researchers, this research can be a reference and can add variables to their research.

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