

## The influence of physical activities and sleep quality on cardiovascular disorders in the elderly

Ainul Ghurri<sup>1\*</sup>, Laily Mita Andriana<sup>2</sup>, Danuditya Purna Atmaja<sup>3</sup>

<sup>1\*,2,3</sup>Faculty of Health Sciences, Anwar Medika University, East Java, Indonesia

### ARTICLE INFO

#### Article history:

Received Oct 22, 2022

Revised Nov 12, 2022

Accepted Nov 26, 2022

#### Keywords:

Elderly  
Physical Activity  
Sleep Quality

### ABSTRACT

With age, many body functions decline, and the structure and function of cells, tissues, and organ systems change. Such changes can cause muscle weakness, affect the ability to participate in physical activity, and can affect sleep quality. The sampling technique used in this study was direct sampling. A sample of 56 elderly aged 50 years and over was obtained. Physical activity was measured using the Elderly Physical Activity Scale (PASE) questionnaire, and sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI). Based on the result analysis of the relationship test using the chi-square test, the p-value obtained from the results of the statistical significance test was  $0.5 > 0.05$ . This shows no relationship between physical activity and sleeps quality in the elderly at Poshandu Mawar, Menur Pampang, Sukolilo District, Surabaya City.

This is an open access article under the [CC BY-NC](#) license.



### Corresponding Author:

Ainul Ghurri,  
Faculty of Health Sciences,  
Anwar Medika University,  
Raya KM 33 Bypass Krian Street, Jl. Parengan, Semawut, Balongbendo, Kec. BalongBendo, Kabupaten  
Sidoarjo District, East Java, 61262, Indonesia,  
Email: ainulghurri17@gmail.com

## INTRODUCTION

Ageing is a common thing experienced by both men and women over the age of 60 (Yuli, 2014). According to the World Health Organization, around 142 million elderly people live in Southeast Asia. According to data from the Ministry of Health, the number of elderly people in Indonesia is increasing yearly. In 2010, the number was 18 million (7.56%). In 2019, the number was 25.9 million (9.7%). , estimated at 48.2 million. By 2035, 15.77% of the population will be over 65 years old. This trend is increasing yearly, and it is estimated that by 2050, the elderly population will increase threefold from this year (Kurnianto, 2015).

The elderly often experience symptoms as a result of decreased biological, psychological, social and economic functions. These changes have a major impact on health (Ekasari et al., 2019). As you get older, it may become more difficult to get up and move around as before (Assiddiqy, 2020)(Sambeka et al., 2018). This can cause various health problems, such as reduced physical activity (Andiani et al., 2021). As we age, our physical abilities decline (Baga et al., 2017), our social role may decline, and we may be less able to meet our needs, especially our need for rest and poor quality sleep.

According to the National Sleep Foundation (NSF), about 67% of Americans aged 65 and older report sleep problems, and 7.3% of older adults report difficulty falling asleep, staying asleep, or experiencing insomnia (Ohayon et al., 2017). Research has shown that good sleep can profoundly impact mental, physical and emotional health. A study by the University of California found that people aged 60 and over were almost twice as likely to have a good night's sleep if they got at least 7 hours of sleep per night (Khasanah & Handayani, 2012). There is always one bad apple in any group. The ability to think critically is an important skill that students need to succeed in college. Critical thinking skills are important because they allow students to analyze information and come to conclusions based on the evidence they have (Kusuma, 2021). Critical thinking skills help students to think critically about the information presented to them and to arrive at reasonable conclusions.

Several studies have shown that physical activity can improve sleep quality. This is also supported by the opinion of Kredlow (Kredlow et al., 2015), which states that an increase in the level of physical activity can lead to longer sleep duration. In addition, physical activity can also improve sleep quality. Statistical test results show that physically active people are three to five times more likely to get a good night's sleep than people who are not physically active (Supriyono, 2015). Regular exercise while lying in bed can reduce the risk of health problems (Madeira et al., 2019).

According to research by Coenen, P., Huysmans, MA, Holtermann, A., Krause, N., van Mechelen, W., Straker, L.M., and van der Beek (Craven et al., 1992), there are three types of happiness: temporary, lasting, and expansive. People who exercise a lot have an 18% higher risk of premature death than those who don't (Maulana & Bawono, 2021).

Researchers are interested in studying the relationship between physical activity and sleep quality in the elderly at Poshandu Mawar, Menur Pampangan Ward, Sukoriro District, Surabaya City. The sleep quality of elderly living in Surabaya is very good in Menur Pampung Ward.

## RESEARCH METHOD

The type of research used in this research is observational with a cross-sectional approach (Sugiyono, 2017). This research was conducted at the Elderly Mawar Poshandu in Menur Pamungan Ward. Interviews were conducted with seniors from Poshandu Mawar Rantia and Menur Pampangan Ward in September and October 2022. An opinion poll was conducted to learn more about their views on various issues. A total of 56 elderly people participated in Posyandu Mawar Rantia activities in Menur Pampungan Ward, totalling around 60 people. The research was conducted on elderly Poshandu Mawar Rantia in Menur Pupungan Ward. They are the elderly who live in Menur Pupungan Ward. The sampling technique is Target Sample. The number of people who can participate in the lottery is 56. In this study, the independent variable is physical activity. This study aims to measure the quality of sleep in the elderly.

## RESULTS AND DISCUSSIONS

The type of research used in this research is observational with a cross-sectional approach (Sugiyono, 2017). This research was conducted at the Elderly Mawar Poshandu in Menur Pamungan Ward. Interviews were conducted with seniors from Poshandu Mawar Rantia and Menur Pampangan Ward in September and October 2022. An opinion poll was conducted to learn more about their views on various issues. A total of 56 elderly people participated in Posyandu Mawar Rantia activities in Menur Pampungan Ward, totalling around 60 people. The research was conducted on elderly Poshandu Mawar Rantia in Menur Pupungan Ward. They are the elderly who live in Menur Pupungan Ward. The sampling technique is Target Sample. The number of people who can participate in the lottery is 56. In this study, the independent variable is physical activity. This study aims to measure the quality of sleep in the elderly.

## RESULTS AND DISCUSSIONS

The research data used the number of subjects according to gender in the elderly at the Elderly Mawar Posyandu, Menur Pumpungan Ward, which can be seen in Table 1 below.

**Table 1.** Number of subjects by gender in the elderly at the lansia mawar posyandu, menur pumpungan ward

Gender	Amount	Percentage (%)
Man	35	62,5
Woman	21	37,5
Total	56	100,00

The majority of those surveyed, 22 (37.5%) were men, and the remaining 35 (62.5%) were women. Menur Pumpungan Ward is located close to various institutions, such as educational institutions, development centers, and government activities.

**Table 2.** Number of subjects by age in the elderly at the lansia mawar posyandu, menur pumpungan ward

Age	Amount	Percentage (%)
50-65 year	41	73,2
50-76 year	15	26,8
Total	56	100,00

According to table 2, it can be said that the ages of 50-65 years and 65-76 years are the majority. The group aged 50 to 65 who could do independent physical activity was statistically significant. Social, withdrawal, and activity theory suggests that social activity and interaction, and social withdrawal, automatically decline with age. Physical and mental functions decrease faster when we reduce interaction. Physically active elderly people may be affected by fatigue.

**Table 3.** The results of measuring the physical activity of the subjects at the elderly mawar posyandu, menur pumpungan ward

Physical Activity	Amount	Percentage (%)
Active	38	67,9
Not Active	18	32,1
Total	56	100,00

Table 3 above shows that many subjects in the active category are still physically active. 38 subjects (67.9%) and 18 subjects (32.1%) were not physically active. Active physical activity for people included in the active category is exercising at least once a week. Routines such as caring for the grandchildren or cleaning the house can help refresh the topic. Physical activity is any body movement that requires energy, such as various activities that can be enjoyed in spare time. Walking, dancing and raising grandchildren are just a few examples. Sport is a physical activity that involves repetitive body movements and is intended to improve physical fitness.

**Table 4.** The results of measuring the quality of sleep of the subjects in the study at the elderly mawar posyandu, menur pumpungan ward

Sleep Quality	Amount	Percentage (%)
Fresh	45	80,4
Not Fresh	11	19,6
Total	56	100,00

Table 4 above shows that 45 subjects (80.4%) had good sleep quality and 11 subjects (19.6%) had poor sleep quality. Various factors, including the environment, can cause poor sleep quality. Near the STIE Indonesia campus, many houses have been converted into boarding homes. This dormitory is used by students studying at the university. The existence of a pension company affects

a person's lifestyle. Living in a boarding school makes the atmosphere more lively, with the sound of motorized vehicles being used by the students becoming more prominent. The denser the air, the worse the sleep quality of the test subjects.

**Table 5.** The relationship between physical activity and sleep quality in research subjects at the elderly mawar posyandu, menur pumpungan ward

Physical Activity	Sleep Quality				P
	Fresh		Not Fresh		
	Amount	Percentage (%)	Amount	Percentage (%)	
Active	35	92,1	3	7,9	0,5
Not Active	10	55,6	8	44,4	
Total	45	80,4	11	19,4	

Table 5 above shows that many physically active subjects in the active category have good sleep quality of 92.1%. In comparison, many physically active subjects in the inactive category of 44.4% are described as having poor sleep quality. Based on the results of the chi-square test, the value of  $p = 0.5$  ( $p > 0.05$ ) was obtained. The p-value for the relationship between physical activity and sleep quality in this study indicates that the resulting error bar is 50% above the margin of error ( $\alpha$ ), which is set at a statistically generated value of 5% or 0.05. This shows that the physical activity factor is not significantly related to the subject's sleep quality.

## CONCLUSION

The researchers found no association between physical activity and sleep quality in older adults. It is based on statistical test analysis and calculation results. It can improve the quality of life. Human physical, psychological, social and ageing functions are all important in our society. The results of this study suggest that older adults tend to have less social contact and quality sleep, which may be related to less physical activity. Therefore, students should be encouraged to participate in various activities related to preventive, curative and rehabilitation purposes. This study provides valuable information for future researchers. It is hoped that other researchers, especially in Surabaya and Indonesia in general, can develop similar research to improve the quality of life of the elderly. People experience different emotions and sensation.

## References

- Andiani, E. T., Suryani, S. K., & Sugiyanto, A. M. K. (2021). *Hubungan Kualitas Tidur Dengan Tingkat Hipertensi Lansia: Literature Review*.
- Assiddiqy, A. (2020). Hubungan Kualitas Tidur Dengan Tekanan Darah Pada Lansia di Posyandu Lansia RW II Puskesmas Kedungkandang Kota Malang. *Jurnal Kesehatan Mesencephalon*, 6(1).
- Baga, H. D. S., Sujana, T., & Triwibowo, A. (2017). Perspektif lansia terhadap aktivitas fisik dan kesejahteraan jasmani di Desa Margosari Salatiga. *Jurnal Ilmu Keperawatan Dan Kebidanan*, 8(2), 89-99.
- Craven, R. F., Hirnle, C. J., & Henshaw, C. (1992). *Fundamentals of nursing: human health and function*. Lippincott.
- Ekasari, M. F., Riasmini, N. M., & Hartini, T. (2019). *Meningkatkan kualitas hidup lansia konsep dan berbagai intervensi*. Wineka Media.
- Khasanah, K., & Handayani, W. (2012). Kualitas Tidur Lansia Balai Rehabilitasi Sosial "MANDIRI" Semarang. *Jurnal Keperawatan Diponegoro*, 1(1), 189-196.
- Kredlow, M. A., Capozzoli, M. C., Hearon, B. A., Calkins, A. W., & Otto, M. W. (2015). The effects of physical activity on sleep: a meta-analytic review. *Journal of Behavioral Medicine*, 38(3), 427-449.
- Kurnianto, D. (2015). Menjaga kesehatan di usia lanjut. *Jorpres (Jurnal Olahraga Prestasi)*, 11(2).
- Kusuma, A. O. (2021). *HUBUNGAN AKTIVITAS FISIK DENGAN KUALITAS HIDUP PADA LANSIA BERDASARKAN LITERATUR REVIEW*.
- Madeira, A., Wiyono, J., & Ariani, N. L. (2019). HUBUNGAN GANGGUAN POLA TIDUR DENGAN HIPERTENSI PADA LANSIA. *Nursing News: Jurnal Ilmiah Keperawatan*, 4(1).

- Maulana, G. W., & Bawono, M. N. (2021). Peningkatan Imunitas Tubuh Lansia Melalui Olahraga Pada Saat Pandemi Covid-19. *Jurnal Kesehatan Olahraga*, 9(03), 211-220.
- Ohayon, M., Wickwire, E. M., Hirshkowitz, M., Albert, S. M., Avidan, A., Daly, F. J., Dauvilliers, Y., Ferri, R., Funk, C., & Gozal, D. (2017). National Sleep Foundation's sleep quality recommendations: first report. *Sleep Health*, 3(1), 6-19.
- Sambeka, R., Kalesaran, A. F. C., & Asrifuddin, A. (2018). Hubungan Kualitas Tidur dengan Hipertensi pada Lansia di Desa Tambun Kecamatan Likupang Barat Tahun 2018. *KESMAS*, 7(3).
- Sugiyono. (2017). *Metode penelitian: Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung : Alfabeta, 2015.
- Supriyono, E. (2015). Aktifitas Fisik Keseimbangan Guna Mengurangi resiko Jatuh pada Lansia. *Jorpres (Jurnal Olahraga Prestasi)*, 11(2).
- Yuli, R. (2014). Buku ajar asuhan keperawatan gerontik. *Jakarta: Trans Info Media*.