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## Physical Activity And Sleep Quality With The Incident Of Hypertension In Young Adults: A Cross-Sectional Study

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### Abstrak

Hipertensi saat ini menjadi permasalahan kesehatan di kalangan masyarakat terbesar karena hipertensi ialah pemicu utama kematian. Insiden hipertensi banyak ditemukan pada dewasa muda, yaitu usia antara 18 sampai dengan 40 tahun. Pada usia dewasa muda hampir 50% tidak menyadari bahwa mereka mengalami hipertensi. Tujuan penelitian ini adalah untuk mengetahui hubungan aktivitas fisik dan kualitas tidur dengan kejadian hipertensi pada usia dewasa muda. Penelitian ini adalah penelitian kuantitatif dengan pendekatan cross-sectional. Jumlah sampel dalam penelitian ini adalah 68 pasien dengan hipertensi di RSUD Johar Baru Jakarta Pusat diambil dengan menggunakan teknik purposive sampling. Instrumen penelitian yang digunakan meliputi Kuesioner International Physical Activity Questionnaire (IPAQ), Kuesioner Pittsburgh Sleep Quality Index (PSQI), Tensi meter untuk mengukur tekanan darah. Analisis data yang digunakan pada penelitian ini adalah Uji Chi-Square. Penelitian ini telah mendapatkan persetujuan dari Komisi Etik Penelitian Kesehatan Poltekkes Kemenkes Jakarta III No LB.02.02/043362023. Hasil penelitian menunjukkan bahwa terdapat hubungan yang signifikan antara aktivitas fisik ( $p\text{-value} = 0.000; \alpha < 0.05$ ) dan kualitas tidur ( $p\text{-value} = 0.008; \alpha < 0.05$ ) dengan kejadian hipertensi pada usia muda di RSUD Johar Baru Jakarta Pusat. Aktivitas fisik dan kualitas tidur merupakan faktor risiko hipertensi yang dapat dimodifikasi pada kelompok dewasa muda. Aktivitas fisik ringan dapat menyebabkan hipertensi pada orang dewasa muda. Selain itu, kualitas tidur yang buruk juga menjadi faktor risiko yang meningkatkan terjadinya hipertensi. Aktivitas fisik dan kualitas tidur berhubungan signifikan dengan kejadian hipertensi pada dewasa muda.

Kata Kunci: *Aktivitas Fisik, Dewasa Muda, Hipertensi, Kualitas Tidur*

## Abstract

Hypertension is currently the biggest health problem in society because hypertension is the main trigger of death or is called the silent killer. Hypertension is more common in young adults (18-40 years) compared to older people. In young adults, almost 50% do not realize that they have hypertension. The purpose of this study was to ascertain how young adults' incidence of hypertension related to physical activity and quality of sleep. The study used a cross-sectional methodology and was quantitative in nature. Sixty-eight hypertension patients at Johar Baru Regional Hospital in Central Jakarta provided samples for this investigation, which was conducted using a purposive sampling strategy. Using a tension meter, the Pittsburgh Sleep Quality Index (PSQI) Questionnaire, the International Physical Activity Questionnaire (IPAQ), and other research devices, blood pressure was collected. We used the Chi-Square Test for data analysis. The Ministry of Health's Jakarta III Health Polytechnic No. LB.02.02/043362023 was issued by the committee overseeing health research ethics. The study's findings demonstrated a significant correlation between physical exercise and p-value (0.000;  $\alpha < 0.05$ ). Young adult hypertension is a controllable risk factor for both physical activity and sleep quality. Young adults who engage in less physical activity may develop hypertension. In addition, a risk factor that may raise the prevalence of hypertension is inadequate sleep. The incidence of hypertension in young individuals is significantly correlated with both physical activity and sleep quality.

Keywords: *Hypertension, Physical Activity, Sleep Quality, Young Adult*

## INTRODUCTION

Hypertension is currently the biggest health problem in society because hypertension is the main trigger of death or is called the silent killer. Hypertension is an increase in blood in the arteries when the systolic pressure reaches at least 140 mmHg, and the diastolic pressure reaches 90 mmHg or more. Hypertension is more common in young adults (18-40 years) compared to older people. Of young adults, almost 50% are not aware that they have hypertension and therefore do not avoid or understand the risks of hypertension (Brigita et al., 2024; Chen et al., 2022). A poor diet, stress, consuming foods high in salt, smoking, not exercising, and getting little or no sleep are all contributing causes of this rise in blood pressure. These lifestyle choices also increase the risk of high blood pressure in young (Debora et al., 2023).

According to data from the World Health Organization (WHO), 22% of people worldwide had hypertension as of 2019. According to Riskesdas data from 2018, the prevalence of hypertension climbed from 25.8% in 2013 to 34.1% in 2018. According to age category, the prevalence of hypertension in 2018 was 20.13% in 25–34 years old, 31.61% in 35–44 years old, and 13.22% in 18–24 year olds. The DKI Jakarta Health Profile states that

the province has a 33.43% prevalence of hypertension, placing it ninth out of the top ten in Indonesia. Of the DKI Jakarta areas, Central Jakarta has the highest prevalence of hypertension problems, with 11,410 cases and a percentage of 64.94% (Kementrian Kesehatan Republik Indonesia, 2019).

Hypertension risk factors include age, gender, family history, iodine intake, physical activity, sleep hygiene, and obesity. Two modifiable risk factors for hypertension are sleep hygiene and physical activity level. Regular physical activity can improve overall heart performance and reduce risk factors for coronary artery disease, such as hypertension. Lower physical activity can disrupt the circulation of blood and oxygen throughout the body which can cause health problems such as high blood pressure (Nagata et al., 2021). In addition, poor sleep quality can put you at risk of developing hypertension, because poor sleep quality causes metabolic disorders and changes the stress hormone cortisol and sympathetic nerves which affect the cardiovascular system, which can cause an increase in blood pressure. Quality sleep means sleeping for a sufficient duration, which for young adults is around 7-9 hours a day. Aspects that support quality sleep are the length of time the sleep lasts, continuous sleep without waking up, and sound sleep (Ayanaw et al., 2022). This study aims to determine the relationship between physical activity and sleep quality with the incidence of hypertension in young adults.

## RESEARCH METHOD

A cross-sectional quantitative research methodology was used in this study. Sixty-eight hypertensive patients at Johar Baru Hospital in Central Jakarta provided samples for this study, which was conducted in May 2023 using a purposive sampling technique. Ages 18 to 40 years old who were hypertension patients met the inclusion criteria. The International Physical Activity Questionnaire (IPAQ) was used to measure physical activity, the Pittsburgh Sleep Quality Index (PSQI) questionnaire was used to evaluate sleep quality, and a tension meter was used to track blood pressure. The data was analyzed using the Chi-Square Test. The study was approved by the Ministry of Health's Health Research Ethics Committee using Jakarta III Health Polytechnic No. LB.02.02/043362023.

## RESULTS AND DISCUSSION

Table 1 Characteristics of Respondents based on Gender, Age, Education Level, Occupation, and History of Hypertension at Johar Baru Hospital, Central Jakarta in 2023 (n = 68)

	Variable	n	%
Gender	Man	34	50.0
	Woman	34	50.0
Age	Youngest (18 years old)	1	1.5
	Oldest (40 years old)	20	29.4
Level of Education	Elementary School		
	Senior High School	11	16.1
	Collage	36	52.9
		21	30.9
Employment	No	33	48.5
	Yes (Civil Servants, Teachers, Businessman, Private Employee, Freelance, Laborer, Military)	35	51.5
History of Hypertension	No	34	50.5
	Yes	34	50.5

Table 2 Distribution of Respondents Based on Physical Activity, Sleep Quality, and Hypertension Incidence at Johar Baru Hospital, Central Jakarta in 2023 (n = 68)

	Variable	n	%
Physical Activity	Low	35	51.5
	Moderate	21	30.9
	High	12	17.6
	Total	68	100.0
Sleep Quality	Poor	50	73.5
	Baik	18	26.5
	Total	68	100.0
Incidence of Hypertension	No	21	30.9
	Yes	47	69.1
	Total	68	100.0

Table 3 Relationship Between Physical Activity and Sleep Quality with the Incidence of Hypertension at Johar Baru Hospital, Central Jakarta in 2023 (n = 68)

Variable		Incidence of Hypertension				P-value
		No		Yes		
		n	%	n	%	
Physical Activity	Low	3	4.4	32	47.1	0,000
	Moderate	10	14.7	11	16.2	
	High	8	11.8	4	5.8	
Total		21	30.9	47	69.1	
Sleep Quality	Poor	11	16.2	39	57.3	0.008
	Good	10	14.7	8	11.8	
Total		21	30.9	47	69.1	

Table 1 above showed that there were equal numbers of men and women, namely 34 respondents (50.0%). The youngest age in this study was 18 years old with 1 respondent (1.5%) and the oldest age was 40 years old with 20 respondents (29.4%). The majority of respondents' education level in this study was at the secondary education level, with 36 respondents (52.9%). The majority of respondents worked, 35 respondents (51.5%), and the same number of respondents who had a history of hypertension and no history of hypertension, namely 34 respondents (50.0%).

Table 2 above showed that most of the physical activity of hypertensive patients at Johar Baru Regional Hospital, Central Jakarta was low activity as many as 35 respondents (51.5%), most respondents had poor sleep quality as many as 50 respondents (73.5%), and the majority 47 respondents (69.1%) experienced hypertension.

According to Table 3, the proportion of respondents who reported having hypertension was 32 (47.1%), the proportion of respondents who reported having moderate physical activity who experienced hypertension was 11 (16.2%), and the proportion of respondents who reported having high physical activity who did not experience as many episodes of hypertension was 8 (11.8%). Additional research revealed a strong correlation between young adults' incidence of hypertension at Johar Baru Hospital in Central Jakarta and physical activity (p-value = 0.000;  $\alpha < 0.05$ ).

Ten respondents (14.7%) and 39 respondents (57.3%), respectively, reported having moderate sleep quality and not having hypertension. The prevalence of respondents with poor sleep quality experiencing hypertension was higher. Subsequent analysis revealed a strong correlation between the occurrence of hypertension in young adults at Johar Baru

Hospital in Central Jakarta and the quality of their sleep (p-value = 0.008;  $\alpha < 0.05$ ).

## DISCUSSION

### The Relationship Between Physical Activity and The Incidence of Hypertension

According to the study's findings, young adults at Johar Baru District Hospital in Central Jakarta had a significantly higher incidence of hypertension when they were physically active (p-value = 0.000;  $\alpha < 0.05$ ). The present study's findings are consistent with those of Lestari et al. (2020), who found a significant correlation (p-value = 0.001;  $\alpha < 0.05$ ) between physical activity and the incidence of hypertension. Furthermore, there is a correlation between physical activity and hypertension according to factors linked to adult-onset hypertension. Additionally, an OR of 0.25 is found, indicating that respondents with light exercise are 0.25 times more likely to experience hypertension than respondents with moderate and high physical activity (Ekarini, Wahyuni, and Sulistyowati, 2020).

The results of this study are not in line with research by Sihotang and Elon (2020) regarding the significant relationship between physical activity and blood pressure in adults (p-value = 0.521;  $\alpha < 0.05$ ). This is possible because respondents carry out regular physical activity. Hypertension is more common in young adults (18-40 years) compared to older people. In young adults, almost 50% are not aware that they have hypertension so they do not avoid or understand the risks of hypertension. The phenomenon among young adults today is that young adults often spend more time working so physical activities such as sports are rarely done. In addition, young adults of working age often have something to do, but these activities are not carried out regularly (Chen et al., 2022).

The results of the study showed that the prevalence of respondents with physical activity who experienced hypertension was 32 respondents (47.1%). The results of this research prove that physical activity is related to the incidence of hypertension, as the theory put forward by Herawati et al (2020), states that someone who does not exercise has a higher heart rate, making the heart muscle work harder with each contraction. Thus, the harder the heart muscle tries to pump blood, the greater the blood pressure exerted on the artery walls, thereby increasing peripheral blood flow which causes an increase in blood pressure. In this study, it can be concluded that low physical activity is a risk factor for hypertension in young adults. Young adults tend to have an unhealthy lifestyle, which creates bad habits, namely a lack of interest in regular activities.

## The Relationship Between Sleep Quality and The Incidence of Hypertension

The results of the study showed that there was a significant relationship between sleep quality and the incidence of hypertension in young adults at Johar Baru Hospital, Central Jakarta (p-value = 0.008;  $\alpha < 0.05$ ). The results of this study are in line with research by Sumarna et al (2019), namely that there is a significant relationship between sleep quality and blood pressure in young adults (p-value = 0.047;  $\alpha < 0.05$ ). Other research that is in line is research by Oktaviana et al (2023), showing that there is a significant relationship between sleep quality and hypertension (p-value = 0.000;  $\alpha < 0.05$ ). Every individual must fulfill basic needs that are useful for survival by supporting life and health. These basic needs have five levels, one of which is basic physiological needs such as sleep. Poor sleep quality will result in a decrease in antibodies with symptoms of weakness and fatigue, resulting in reduced endurance and instability in vital functions such as blood pressure. Unstable vital signs are caused by poor sleep quality, which can cause cardiovascular disease (Novitri, Prasetya, and Artini, 2021).

The study's findings demonstrated that 39 respondents, or 57.3% of the sample, had hypertension as a result of having poor sleep quality. Young adults who experience poor sleep quality are more likely to age, which can lead to mental and physical changes that alter sleep patterns. These changes might include difficulties falling asleep at regular hours, waking up in the middle of the night, and difficulty falling back asleep. Due to metabolic disturbances, altered levels of the stress hormone cortisol, and altered sympathetic nervous system, which impacts the cardiovascular system and raises blood pressure, inadequate sleep quality increases the risk of developing hypertension. This study's findings suggest that inadequate sleep is a risk factor (Ayanaw et al., 2022; Gou, Zhong, and Jiao, 2023).

## CONCLUSION

Physical activity and sleep quality are modifiable risk factors for hypertension in young adults. Lower physical activity can cause young adults to experience hypertension. Apart from that, poor sleep quality is also a risk factor that can increase the incidence of hypertension. Physical activity and sleep quality have a significant relationship with the incidence of hypertension in young adults.

## REFERENCE

- Ayanaw, T. et al. (2022) 'Sleep quality and associated factors among adult hypertensive patients attending a chronic follow up care clinic in northwest Amhara regional state referral hospitals, Northwest Ethiopia', *PLoS ONE*, 17(7 July), pp. 1–15. doi: 10.1371/journal.pone.0271072.
- Brigita Aulia Juliana Soeryanto et al. (2024) 'The Effectiveness of Lemon Aromatherapy on Blood Pressure in Hypertension Patients in Modopuro Public Health Center, Mojokerto', *Journal of Scientific Research, Education, and Technology (JSRET)*, 3(1), pp. 62–67. doi: 10.58526/jsret.v3i1.316.
- Chen, S. et al. (2022) 'Association Between Sleep Quality and Hypertension in Chinese Adults: A Cross-Sectional Analysis in the Tianning Cohort', *Nature and Science of Sleep*, 14(November), pp. 2097–2105. doi: 10.2147/NSS.S388535.
- Debora, C. et al. (2023) 'Risk Factors for Hypertension Among Adults Living in A Rural Area, Minahasa', *Jurnal Keperawatan Indonesia*, 26(1), pp. 36–45. doi: 10.7454/jki.v26i1.2527.
- Ekarini, N. L. P., Wahyuni, J. D. and Sulistyowati, D. (2020) 'Faktor - Faktor Yang Berhubungan Dengan Hipertensi Pada Usia Dewasa', *Jkep*, 5(1), pp. 61–73. doi: 10.32668/jkep.v5i1.357.
- Gou, F., Zhong, X. and Jiao, H. (2023) 'Sleep quality and related influencing factors in adult hypertensive patients in Shandong Province, China', *Medicine (United States)*, 102(22), p. E33926. doi: 10.1097/MD.00000000000033926.
- Herawati, C., Indragiri, S. and Melati, P. (2020) 'Aktivitas Fisik Dan Stres Sebagai Faktor Risiko Terjadinya Hipertensi Pada Usia 45 Tahun Keatas', *JKM (Jurnal Kesehatan Masyarakat) Cendekia Utama*, 7(2), p. 66. doi: 10.31596/jkm.v7i2.502.
- Kementrian Kesehatan Republik Indonesia (2019) 'Laporan Riskesdas 2018 Nasional.pdf', p. 674.
- Lestari, P., Yudanari, Y. G. and Saparwati, M. (2020) 'Hubungan Antara Aktifitas Fisik Dengan Kejadian Hipertensi Pada Usia Dewasa Di Puskesmas Kedu Kabupaten Temanggung', *Jurnal Kesehatan Primer*, 5(2), pp. 21–30. doi: <https://doi.org/10.31965/jkp>.
- Nagata, J. M. et al. (2021) 'Physical Activity and Hypertension From Young Adulthood to Middle Age', *American Journal of Preventive Medicine*, 60(6), pp. 757–765. doi: 10.1016/j.amepre.2020.12.018.
- Novitri, S., Prasetya, T. and Artini, I. (2021) 'Hubungan Kualitas Tidur Dan Pola Makan (Diet Dash) Dengan Kejadian Penyakit Hipertensi Pada Usia Dewasa Muda Di Puskesmas Simbarwaringin Kecamatan Trimurjo Kabupaten Lampung Tengah Provinsi Lampung', *Jurnal Medika Malahayati*, 5(3), pp. 154–162. doi: 10.33024/jmm.v5i3.4208.

- Oktaviana, Novitasari, D. and Dewi, F. K. (2023) 'Hubungan Kualitas Tidur dengan Tekanan Darah Penderita Hipertensi pada Lansia di Posyandu Lansia Desa Cipaku', *Jurnal Citra Keperawatan*, 2(2), pp. 2502–3454.
- Sihotang, M. and Elon, Y. (2020) 'The Relationship of Physical Activities With Blood Pressure among Adults', *Chmk Nursing Scientific Journal*, 4(2), pp. 199–204. Available at: <http://cyber-chmk.net/ojs/index.php/ners/article/view/787>.
- Sumarna, U., Rosidin, U. and Suhendar, I. (2019) 'Hubungan Kualitas Tidur dengan Tekanan Darah pada Pasien Prehipertensi/Hipertensi Puskesmas Tarogong Garut', *Jurnal Keperawatan BSI*, 7(1), pp. 1–3. Available at: <http://ejournal.bsi.ac.id/ejurnal/index.php/jk> 1.