

The Relationship between Sleep Quality and Sleep Duration with Blood Pressure in Students

Dwi Santy Damayati¹, Ani Auli Ilmi^{1,2}, Putri Awalia Nur¹, Musdalifah¹,
Nurul¹, Riska Wulandari¹, Regina Amalia Putri¹, Muhammad Sudarsin¹

¹. Faculty of Medicine and health sciences, Alauddin State Islamic University Makassar, Sulawesi Selatan, Indonesia

². La Trobe University, Australia

* Correspondence: musdalifahusda04@gmail.com

Abstract: Blood pressure is the force exerted by blood against the walls of blood vessels. Hypertension sufferers need to understand how to maintain stable blood pressure, one of which is by maintaining sleep quality. This study aims to determine the relationship between sleep quality and sleep duration with blood pressure. The type of research used is quantitative with a cross sectional approach. Data analysis used the Spearman Correlation Test. Sampling used Purposive Sampling. The research instrument uses the PSQI questionnaire to assess Sleep Quality, Sleep Duration and a Digital Tensimeter to measure blood pressure. Based on calculations, the sleep quality of the majority of respondents was in the good sleep quality category, 193 respondents, the sleep duration of the majority of respondents was in the adequate sleep duration category, 210 respondents, for increased blood pressure, the majority of respondents were in the low blood pressure category, 157 respondents. From the results of the Spearman correlation test, it was found that there was no significant relationship between sleep quality and sleep duration and blood pressure in students from the 2020-2023 class of the Public Health Study Program, Alauddin State Islamic University, Makassar.

Keywords: Sleep Quality, Sleep Duration, Blood Pressure: Sleep Quality, Sleep Duration, Blood Pressure

1. Introduction

Cancer Based on 2019 WHO (World Health Organization) data, it shows that currently the global prevalence of hypertension is 22% of the total world population. The African region has the highest prevalence of hypertension at 27% and the American region has the lowest prevalence of hypertension, namely 18%. Meanwhile, Southeast Asia itself is in the 3rd highest position with a prevalence of 25% of the total population. WHO also estimates that 1 in 5 women worldwide have hypertension. This number is greater among men, namely 1 in 4 people has hypertension (Kemenkes RI, 2019).

Blood pressure is the pressure exerted on the walls of the arteries. The peak pressure that occurs when the ventricles contract is called systolic pressure, while the lowest pressure that occurs when the heart is at rest is called diastolic pressure. Hypertension is a medical condition in which the blood pressure against the artery walls is high enough that it can ultimately cause health problems, such as heart disease. A person can be said to be

hypertensive if their blood pressure is above the normal limit, namely if the systolic blood pressure reaches above 140 mmHg and the diastolic blood pressure is above 90 mmHg (Jeini Ester Nelwan, 2022).

Sleep quality can be seen from several things such as sleep quality, sleep latency or the amount of time it takes to fall asleep, sleep duration, sleep habits, sleep disturbances, use of sleeping pills, dysfunction during the day, namely poor quality sleep that makes a person unable to sleep. function and carry out activities well after waking up and throughout the day. Poor quality sleep can damage memory and cognitive abilities. If this continues for years, it will have an impact on high blood pressure, heart attacks, strokes, and psychological problems such as depression and other emotional disorders (Rosalina et.al.,2020).

Students with poor sleep often have increased blood pressure when they wake up in the morning because they have had less than good quality sleep. When you are a teenager, the need for sleep increases, when you are a teenager, your daily activities change which can change your sleep time. Someone whose lifestyle, school, social activities and part time job can affect the time they need to sleep. In general, the human body can fulfill its sleep needs from 8 to 10 hours of sleep every day to prevent fatigue and keep the body's organs healthy.

Students' sleep quality is affected by stress due to lots of assignments, online or online lectures, and excessive physical activity can affect poor sleep quality. Good quality sleep will make you feel sound asleep and refresh your body so that students can carry out activities well the next day. If someone experiences poor sleep quality, it can affect blood pressure because the sleep-wake cycle is unbalanced which causes blood pressure to increase (Pitaloka, 2018).

2. Methods

The type of research used is quantitative with a Cross Sectional Study approach. This research was carried out in October 2023 with a population of undergraduate students in Public Health class 2020-2023, Alauddin State Islamic University, Makassar using a purposive sampling technique using the Slovin formula from a total population of 481 which became 218 samples. Data analysis used the Spearman Correlation Test. The variables in this study are the Independent variable and the Dependent Variable, where the Independent Variable in this study is Sleep Quality and Sleep Duration, while the Dependent Variable in this study is Blood Pressure. The research instrument uses the PSQI questionnaire to assess Sleep Quality and Sleep Duration while the Digital Tensimeter measures Blood Pressure. Data collection was carried out through Primary and Secondary Data, where Primary Data was obtained from the results of distributed questionnaires and Secondary Data was obtained from various literature books, journals, theses (previous research) and various searches for relevant data sourced from the internet.

3. Result and Discussion

a) Respondent Characteristics

Table 1.1 Frequency of Respondents Based on Gender among Students Bachelor of Public Health Class of 2020-2023 UIN Alauddin Makassar in 2023

No.	Gender	F	%
1.	Man	29	13
2.	Woman	189	87
Total		218	100

Source: Primary Data 2023

Based on table 1.1 Gender Frequency of 2020-2023 Public Health Undergraduate Students at UIN Alauddin Makassar in 2023, it was found that (13%) of the respondents were male, namely 29 people, and (87%) of the respondents were female, namely 189 people.

Table 1.2 Frequency of Respondents Based on Age among Students Bachelor of Public Health Class of 2020-2023 UIN Alauddin Makassar in 2023

No.	Age	F	%
1.	17	14	6
2.	18	91	42
3.	19	59	27
4.	20	29	13
5.	21	18	8
6.	22	5	2
7.	23	2	1
Total		218	100

Source: Primary Data 2023

Based on Table 1.2, it shows that from a total of 218 respondents, the highest age was 18 years, 91 respondents (42%) and the lowest age was 23 years, 2 respondents (1%).

Table 1.3 Frequency of Respondents Based on Generation of Students Bachelor of Public Health Class of 2020-2023 UIN Alauddin Makassar in 2023

No.	Force	F	%
1.	2020	19	9
2.	2021	26	12
3.	2022	59	27
4.	2023	114	52
Total		218	100

Based on Table 1.3, it shows that from a total of 218 respondents, the largest class was obtained, namely the class of 2023, with 114 respondents (52%) and the smallest class, namely the class of 2020, with 19 respondents (9%).

Table 1.4 Distribution of Respondents Based on Family History of Hypertension for Public Health Undergraduate Students Class of 2020-2023 UIN Alauddin Makassar in 2023

No.	History of Hypertension Family	N	%
1.	There is	35	16
2.	There isn't any	183	84
Total		218	100

Source: Primary Data 2023

Based on table 1.4 Distribution of Respondents Based on Family History of Hypertension among Undergraduate Public Health Students Class of 2020-2023, UIN Alauddin Makassar in 2023. Of the 218 respondents, 183 respondents (84%) had no family history of hypertension and 35 respondents (16%) had a history of hypertension family.

2. Univariate Analysis

Table 2.1 Distribution of Sleep Quality Scores for Undergraduate Public Health Students Class 2020-2023 UIN Alauddin Makassar 2023

No.	Sleep Quality	N	%
1.	Good	193	89
2.	Not Good	25	11
Total		218	100

Source: Primary Data 2023

Based on table 2.1, the calculation for sleep quality scores shows that the sleep quality of the majority of Public Health undergraduate students class 2020-2023 at UIN Alauddin Makassar was good, namely 193 respondents (89%), and 25 respondents (11%) had poor sleep quality.

Table 2.2 Distribution of Sleep Duration Values for Undergraduate Publi Health Students Class 2020-2023 UIN Alauddin Makassar 2023

No.	Sleep duration	n	%
1.	Enough	210	96
2.	Not Enough	8	4
Total		218	100

Source: Primary Data 2023

Based on table 2.2, the calculation for the Sleep Duration value shows that the sleep duration of most of the 2020-2023 Public Health undergraduate students at UIN Alauddin Makassar was sufficient, 210 respondents (96%) and less, namely 8 respondents (4%).

Table 2.3 Distribution of Blood Pressure Values for Undergraduate Public Health Students Class 2020-2023 UIN Alauddin Makassar 2023

No.	Tekanan Darah	n	%
1.	Low	157	72
2.	Normal	45	21
3.	Pre Hypertension	11	5
4.	Hypertension	5	2
Total		218	100

Source: Primary Data 2023

Based on table 2.3, the calculation for blood pressure values shows that of the 218 respondents, the highest blood pressure category was obtained, namely low blood pressure, 157 respondents (72%) and the least, namely the pre-hypertension category, 5 respondents (2%).

3. Bivariat Analysis

Table 3.1 Correlation of sleep quality with blood pressure for undergraduate students Public Health Class of 2020-2023 UIN Alauddin Makassar in 2023

Variable	p		r	
	TDS	TDD	TDS	TDD
Sleep Quality	0,411	0,119	0,056	0,106
Sleep Duration	0,530	0,467	0,043	0,043
TDS	-	-	1	1
TDD	-	-	1	1

Source: Primary Data 2023

Based on table 3.1 for the sperm correlation test, the test results for the sleep quality variable on systolic blood pressure showed a significance of 0.411 and a correlation of 0.056. Meanwhile, the test results based on diastolic blood pressure showed a significance result of 0.119 and a correlation of 0.106. The test results for the sleep duration variable on systolic blood pressure showed a significance of 0.530 and a correlation of 0.043. Meanwhile, the results of sleep duration on diastolic blood pressure showed a significance of 0.467 and a correlation of 0.043. From the correlation table, it can be concluded that there is no relationship between sleep quality and sleep duration on blood pressure in public health undergraduate students class 2020-2023 at UIN Alauddin Makassar.

This type of research was designed in the form of quantitative research with a Cross Sectional Study design to find out about "The Relationship Between Sleep Quality and Sleep Duration and Blood Pressure in Students of the 2020-2023 Class of Public Health Undergraduate Study Program at UIN Alauddin Makassar". This research was conducted on 26- 29 October 2023 at the Faculty of Medicine and Health Sciences, UIN Alauddin Makassar, with a population of 481 students. Sampling was carried out using purposive sampling technique, resulting in a sample of 218 respondents.

The relationship between sleep quality and blood pressure in public health undergraduate students class 2020-2023 at UIN Alauddin Makassar.

Based on table 3.1, it shows that the results of the Spearman Correlation Test between Sleep Quality and Systolic Blood Pressure obtained $p\text{-value} = 0.411$, so $p\text{-value} > 0.05$, and between Sleep Quality and Diastolic Blood Pressure, $p\text{-value} = 0.119$, so $p\text{-value} > 0.05$, which means that H_0 is accepted and H_a is rejected, so it can be concluded that there is no significant relationship between Sleep Quality and Blood Pressure in 2020- 2023 Public Health Undergraduate students at UIN Alauddin Makassar.

After observing, it was found that there was no relationship between sleep quality and blood pressure in public health students class 2020-2023 at UIN Alauddin Makassar, it was analyzed that most students had good sleep quality because the majority of students did not experience sleep disturbances at night and sleep duration. students average 7-8 hours. Apart from modifying your lifestyle, one way to achieve good quality sleep is to minimize stress, reduce caffeine consumption and maintain a regular sleep pattern.

This is in line with research conducted by Pitaloka, et al (2018) that the results of statistical tests on the relationship between sleep quality and blood pressure using the Kolmogorov-Smirnov test obtained $p > 0.05$, which means there is no relationship between sleep quality and blood pressure. This is because there are other factors that can influence the respondent's blood pressure such as gender, heredity, lifestyle, anxiety, stress, smoking habits and age which cannot be controlled (Kusumaningrum, 2020). This is contrary to the theory which states that students' sleep quality is influenced by stress due to lots of assignments, online or online lectures, and excessive physical activity can affect poor sleep quality. If someone experiences poor sleep quality, it can affect blood pressure because the sleep-wake cycle is unbalanced which causes blood pressure to increase (Rusdiana, 2019).

The relationship between sleep duration and blood pressure in public health undergraduate students class 2020-2023 at UIN Alauddin Makassar.

Based on table 3.1, it shows that the results of the Spearman Correlation Test between Sleep Duration and Systolic Blood Pressure obtained $p\text{-value}=0.530$, so $p\text{-value}>0.05$ and between Sleep Duration and Diastolic Blood Pressure, $p\text{-value}=0.467$, so $p\text{-value}>0.05$, which means that H_0 is accepted and H_a is rejected, so it can be concluded that there is no significant relationship between sleep duration and blood pressure in undergraduate students of public health class 2020-2023 at UIN Alauddin Makassar.

Balanced sleep and wake management will maximize the body's physiological and psychological functions so that cardiovascular problems from poor sleep such as high blood pressure can be prevented. Education about the importance of sleep rest also needs to be given to teenagers who understand the importance of getting good sleep so that it does not interfere with activities during the day (Pradana, 2017).

This research is in line with research (Francisca Noveliani, et al. 2017) in her journal on the Effect of Sleep Hours on Blood Pressure in Students of the Faculty of Medicine, Krida Wacana Christian University Class of 2013, that the results showed that there was no relationship between the duration of sleep hours and blood pressure values. The results of this study are not in accordance with the theory which states that lack of sleep can increase blood pressure in adults who have normal blood pressure (normotensive) and hypertension through several mechanisms.

This is contrary to the theory which states that short sleep duration will also affect the balance of nervous system activity which will cause increased sympathetic, decreased parasympathetic, imbalance of the hormones Ghrelin, Leptin, increase appetite and food intake and damage circadian rhythms. The combination of all of this will increase blood pressure (Noveliani, 2017).

4. Conclusion

Based on the results of the research that has been carried out, it can be concluded that there is no significant relationship between Sleep Quality and Sleep Duration and Blood Pressure in students from the 2020-2023 class of the Public Health Study Program at UIN Alauddin Makassar.

Conflicting Interest

All authors declare no conflict of interest.

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