Jurnal Eduhealth
Volume 16, Number 03 2025 DOI 10.54209/eduhealth.v16i03
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

The Relationship Between Sleep Quality and Body Mass Index (BMI) in Unjani Medical Faculty Students

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Article Info
Keywords:
Ecxcess weight BMI,
Normal BMI,
Sleep Quality

ABSTRACT
Excess weight is a major public health problem with high prevalence rates increasing every year. Excess weight in adults has increased 10-fold over the past four years. Decreased sleep time is a factor that plays a role in increasing weight/obesity. This study aims to determine the quality of sleep in students with normal body mass index and excess weight. This study is a analytical study of medical faculty students of General Achmad Yani University class of 2020 with consecutive sampling method. Measurement of sleep quality was carried out through filling out the Pittsburgh sleep quality index (PSQI) questionnaire and measurement of body mass index was carried out by measuring body weight and height analyzed by the Chi Square test. Of the 88 research subjects showed that in the group of students with normal body mass index there were 37 students with poor sleep quality (78.7%) and 10 students with good sleep quality (21.2%). In the group of students with excess body mass index there were 30 students with poor sleep quality (73.1%) and 11 students with good sleep quality (26.8%). From the results of the analysis, it was found that there was no relationship between the quality of sleep of students and body mass index (p = 0.542). Decreased sleep time can lead to poor sleep quality which can cause imbalances in the hormones ghrelin and leptin. From the results of this study, other factors that can cause disturbed sleep are health problems and psychological disorders.

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INTRODUCTION

The rise in overweight and obesity rates is a serious global health issue. [1]Over the past forty years, the prevalence of obesity in children, adolescents, and adults has increased significantly, even tenfold. [2]Obesity, which is the abnormal or excessive accumulation of fat, increases fourfold annually. The prevalence of obesity is relatively lower in Asian populations compared to other continents. [3]In 2014, the global population of overweight adults aged 18 years and older reached more than 1.9 billion individuals. Approximately 13.5% of adults aged 18 years and older in Indonesia are overweight. In addition, approximately 28.7% of the

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adult population in Indonesia is obese with a BMI ≥ 25. [4]Factors that can influence BMI are age, gender, genetics, diet, and sleep patterns.[5]

To determine nutritional status, there are categories to divide it if BMI <18.5 then it is included in the *underweight category* , BMI 18.5-22.9 is included in the normal category, BMI 23-24.9 is included in the *overweight* category, BMI 25-29.9 is included in the Obesity I category, BMI ≥30 is included in the Obesity II category .[6]

Lack of sleep may be a contributing factor to the increased risk of obesity. Decreased sleep duration has been linked to an increased risk of obesity.[4] Epidemiological data indicates an increase in the number of patients reporting sleep quality problems. Surveys indicate that approximately 15-35% of adolescents and adults experience sleep disorders. [7]Reduced sleep duration can disrupt hormonal balance, including leptin, which regulates satiety, and ghrelin, which regulates hunger.[8]

Research in the UK shows that poor sleep quality is common among university students. Approximately 24% of students in the study reported experiencing poor or poor sleep quality. Medical students, in particular, are at higher risk due to their heavy academic workload. This workload often leads to students working late into the night or even working on hospital shifts. This can negatively impact their sleep patterns and quality. [9,10]Furthermore, medical students also face high levels of stress during their academic years, which can disrupt their sleep. This is due to the pressures of weekly and monthly exams and involvement in organizational activities, which sometimes unknowingly compromise their sleep.[11] The aim of this study was to determine the relationship between sleep quality and body mass index in students of the Faculty of Medicine, Unjani .

RESEARCH METHODS

The research method used is an analytical method with a *cross-sectional research design* . This study aims to determine the relationship between sleep quality and body mass index. This study took place at the Faculty of Medicine, Unjani in 2023. Sampling in this study was carried out by *consecutive sampling* , namely sampling where all subjects were present and met the inclusion criteria, namely students of the Faculty of Medicine, Unjani Class of 2020 who had a body mass index of 18-22.9 kg/m2 and students of the Faculty of Medicine, Unjani Class of 2020 who had a body mass index of ≥23 kg/m2 . The exclusion criteria in this study were research subjects who consumed substances or drugs that affected sleep quality (for example; alcohol, caffeine, beta-blockers, morphine) and research subjects who consumed drugs that could reduce weight/diet drugs (for example; orlistat, apisate, sibutramine)

The sampling method involved filling out personal data through interviews, followed by height and weight measurements to determine the subjects' body mass index. Subjects who met the inclusion criteria were then administered the Pittsburgh Sleep Quality Index (PSQI) questionnaire to assess their sleep quality. The sample size for this study was 88 individuals. The independent variable used in this study was sleep quality, with the dependent variable being body mass index. An analysis was carried out using a statistical test, namely the Chi-Square test, to see the relationship between two variables, namely the sleep quality category and the body mass index category.

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RESULTS AND DISCUSSION

Respondent Characteristics Based on Gender and Age

Of the 88 respondents in this study, there were 23 men with a percentage of 26.1% and 65 others were women with a percentage of 73.9%. The age of the respondents was mostly 20 years old, namely 54 people with a percentage of 61.4%, while there were 5 respondents at the age of 19 years with a percentage of 5.7%, at the age of 21 years 25 people with a percentage of 28.4%, and at the age of 22 years 3 people with a percentage of 4.5% .

Overview of Sleep Quality in Unjani Faculty of Medicine Students Class of 2020

Table 1. Overview of sleep quality in Unjani Faculty of Medicine students, Class of 2020

Sleep Quality	Amount	Percentage (%)
Good	21	23.9
Bad	67	76.1
Total	88	100.00

Based on table 1, it shows that the sleep quality of 88 students of the Faculty of Medicine, General Achmad Yani University, Class of 2020, mostly had poor sleep quality, namely 67 people (76.1) and 21 people (23.9) had good sleep quality . The results of this study are in line with research conducted at General Achmad Yani University by Haniaa (2021) as many as 46 out of 65 students of the Faculty of Medicine, General Achmad Yani University had poor sleep quality. [12]This study is also similar to research conducted by Abro (2020) at the University of Karachi on medical students, as many as 368 out of 382 students had poor sleep quality.[13]

College students often experience poor sleep quality because they have to wake up early to prepare for class. [14]Due to their busy lifestyles, long study periods, and high-intensity learning, medical students in particular experience poor sleep quality. This can lead to sleep problems, which impact their sleep quality. Furthermore, medical students experience high levels of stress during the academic year, which can lead to psychological problems that disrupt their sleep, especially with weekly and monthly exams and organizational commitments.[15–17]

Description of Body Mass Index (BMI) in Unjani Faculty of Medicine students, Class of 2020

Table 2. Description of body mass index in students of the Faculty of Medicine, Unjani Class of 2020

Body Mass Index (BMI)	Amount	Percentage (%)
Normal	47	53.4
Overweight	41	46.6
Total	88	100.00

Table 2 shows that the body mass index (BMI) of students from the Faculty of Medicine, General Achmad Yani University, class of 2020, mostly had a normal body mass index (47 people (53.4%), and 41 people (46.6%) had an overweight body mass index. The results of this study are in line with Astuti (2022) on students from the Faculty of Health, Samawa University, where the results of the body mass index in students who had a normal body mass index were 39 people (72.2%) and 5 people had an overweight body mass index.

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The busy schedules of medical students, both academic and non-academic, can lead to later bedtimes, which can lead to weight gain, which is associated with decreased leptin and increased ghrelin levels, leading to decreased fat reserves. Furthermore, busy schedules and living in boarding houses can lead students to choose less nutritious foods.

The Relationship Between Sleep Quality and Body Mass Index in Medical Students at Unjani University in 2020

Table 3. Relationship between sleep quality and body mass index

Sleep Quality	BMI				Total	*p*
	Normal		Overweight			
	N	%	N	%		
Good	10	21.2	11	26.8	21	
Bad	37	78.7	30	73.1	67	0.542
Total	47	53.4	41	46.6	88	

Based on the data in table 3, it shows that out of 21 students of the Faculty of Medicine, General Achmad Yani University, class of 2020, 10 (21.2%) had normal weight and 11 (26.8%) were overweight. Out of 61 students with poor sleep quality, 37 (78.7%) had normal weight and 30 (73.1%) were overweight. The results obtained for students of the Faculty of Medicine, General Achmad Yani University, class of 2020 were that there was no significant relationship between sleep quality and body mass index, both at normal weight. with (p=0.542).

The results of this study are in line with research conducted by Yuda (2019) on students of the Faculty of Medicine, Udayana University in 2018, namely there was no significant relationship between sleep quality and body mass index caused by factors such as stress and anxiety levels in students. This study is also similar to research by Abro (2020) on students of the Faculty of Medicine, Karchi University, which found no significant relationship between sleep quality and body mass index in medical students.

Sleep is a physiological and psychological need for humans. Quality sleep is essential, especially for adolescents and students. In college students, lack of sleep due to various assignments and activities can lead to decreased sleep quality. Lack of sleep can lead to obesity. The normal sleep requirement for adults is 7-8 hours. Those who sleep less than 6 hours a night have a 23% risk of obesity. Those who sleep less than 5 hours have a 50% risk of obesity. Those who sleep less than 4 hours have a 75% risk of obesity.

Poor sleep quality in college students can lead to changes in appetite regulation due to an imbalance in ghrelin and leptin secretion, which can impact calorie intake and food choices. This research uncovered new evidence that health problems can contribute to reduced sleep quality, such as asthma, coughing, leg cramps, tingling, and psychological disorders like excessive anxiety.

CONCLUSION

Of the 88 students from the Faculty of Medicine, General Achmad Yani University, class of 2020 who participated in the study, 67 (76.1%) had poor sleep quality and 21 (23.9%) had

good sleep quality. 47 (53.4%) had a normal body mass index (BMI) and 41 (46.6%) had an overweight body mass index (BMI). Therefore, there was no significant relationship between sleep quality and body mass index (BMI) in the Faculty of Medicine, General Achmad Yani University, class of 2020.

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