

*CONFERENCE PROCEEDING***Body Mass Index and Sleep Duration in Boarding School Students:
A Cross-Sectional Study at Kolej PERMATA Insan**Muhammad Nashwan Mohd Nasarudin¹, Rahayu Ahmad¹, Nur Fazidah Asmuje^{1*}¹Kolej PERMATA Insan, Universiti Sains Islam Malaysia, 71800, Nilai, Negeri Sembilan, Malaysia**Corresponding author: nurfazidah@usim.edu.my***ABSTRACT**

Body mass index (BMI) and sleep duration are closely related health factors that have garnered significant attention in recent years due to their implications for public health. While high BMI has been hypothetically associated with shorter sleep duration in adults, limited studies have been conducted among boarding school students primarily due to variation in their daily routine. Therefore, this study aims to investigate the sleep duration among first-year secondary students at Kolej PERMATA Insan using a survey and determine whether BMI contributes to this issue. Demographic data including gender, height, and weight were then analysed using descriptive analysis. The BMI was calculated and classified as underweight, normal, overweight and obese based on the Malaysian population standards. An Anova test was employed to explore the relationship between BMI and sleep duration. The analysis revealed that the mean sleep duration for the 65 students was 5 hours 21 minutes, with a standard deviation (SD) of 1 hour 5 minutes. Male students slept significantly longer with a mean (SD), 5 hours 13 minutes (1 hour 52 minutes), compared to female students, who had a mean (SD) of 4 hours 46 minutes (1 hour 49 minutes) ($p=0.05$). However, no significant relationship was found between BMI categories and sleeping duration among first-year students. This study emphasized that gender, which influences different lifestyles, may contribute to sleep duration but BMI does not appear to play a significant role in this context. Future study may further investigate the relationship between BMI and sleep duration considering gender-specific factors.

Keywords: *first year, secondary students, sleep duration, body mass index, gender***INTRODUCTION**

Sleep is becoming more widely acknowledged as a vital aspect of psychological, emotional, and physical wellness. Healthy sleep is defined as having an appropriate amount of time, high-quality sleep, occurring at the right time, and not having any sleep disorders. The amount of time spent sleeping fluctuates throughout life and is inversely related to age.

Chaput et al., (2020) agreed that, for healthy individuals with normal sleep, the appropriate sleep duration for newborns is between 14 and 17 hours, infants between 12 and 15 hours, toddlers between 11 and 14 hours, preschoolers between 10 and 13 hours, and school-aged children between 9 and 11 hours. For teenagers, 8 to 10 hours was considered appropriate, 7 to 9 hours for young adults and adults, and 7 to 8 hours of sleep for older adults.

Insufficient sleep has become a public health concern in many countries given its high prevalence and association with mortality and morbidity (Liu et al. 2016; Chaput et al. 2017). Recent studies have shown that sleep problems and dissatisfaction

with sleep are prevalent and increasing among college students (Vijay et al. 2018). An inadequate quantity and quality of sleep produce adverse impact on health among students. A bad quality of sleep can help increase the risk of accidents and injuries brought on by exhaustion and sleepiness, such as slips and falls at work and car accidents (Institute of Medicine (US) Committee on Sleep Medicine and Research 2006).

Several factors affect sleep quality in children including genetics and medical problems as well as lifestyle factors such as sleep habits, screen time, physical inactivity, obesity, alcohol consumption, stress, anxiety and depression and the child's environment (Ahmad Fadzil et al. 2021; Francine Vilella Maciel et al. 2019). Studies done have investigated that the students are more vulnerable to sleep problems due to increased periods of academic training and high demands of studies, responsibilities including participating extracurricular activities (Francine Vilella Maciel et al. 2019). However, less intervention has been conducted to solve these contributing factors issue. Therefore, Ramar et al (2021) proposed an advisory program related to nutrition, exercise, and smoking as well as a program focusing on sleep health to intervene the issues on factors contributing to sleep.

Aim of this study is to seek the relationship between Body Mass Index (BMI) reading among first-year secondary students at Kolej PERMATA Insan and their sleep duration.

MATERIALS AND METHODS

Data Source

Participants included respondents of the Sleep Questionnaire for Adults by Sleep Disorders Clinic Department of Clinical Neurophysiology, Level 3 – West Wing, John Radcliffe Hospital, Headley Way, Oxford, OX3 9DU. Participants selected are from First-year secondary students of Kolej PERMATA INSAN aged 13 generally. Participants responded to questionnaires assessing their demographics. Given the complexity of the survey design, coupled with variable probabilities of selection, the data used in the following analyses were also weighted to control for representativeness, by following the procedures outlined in the current analytic and reporting guidelines.

Measures

Sleep Duration - Sleep duration was assessed with the survey item, “What time do you usually go to sleep?” and “What time do you usually get up?” Thus, the data will show the overall sleep duration of students. Responses were coded in whole numbers. This variable was used for the continuous measure of sleep duration. The analysis revealed that the mean sleep duration for the 65 students was 5 hours 21 minutes, with a standard deviation (SD) of 1 hour 5 minutes. Male students slept significantly longer with a mean (SD), 5 hours 13 minutes (1 hour 52 minutes), compared to female students, who had a mean (SD) of 4 hours 46 minutes (1 hour 49 minutes) ($p=0.05$).

Body Mass Index - The BMI was calculated and classified as underweight, normal, overweight, and obese based on the Malaysian population standards.

Age – First-year secondary students of Kolej PERMATA Insan were chosen as the participants aged 13 overall.

RESULTS

Demographic data including gender, height, and weight were then analysed using descriptive analysis. The BMI was calculated and classified as underweight, normal, overweight and obese based on the Malaysian population standards. An Anova test was employed to explore the relationship between BMI and sleep duration. The analysis revealed that the mean sleep duration for the 65 students was 5 hours 21 minutes, with a standard deviation (SD) of 1 hour 5 minutes. Male students slept significantly longer with a mean (SD), 5 hours 13 minutes (1 hour 52 minutes), compared to female students, who had a mean (SD) of 4 hours 46 minutes (1 hour 49 minutes) ($p=0.05$). However, no significant relationship was found between BMI categories and sleeping duration among first-year students.

DISCUSSION

This study examined data Sleep Questionnaire Survey from Sleep Disorders Clinic Department of Clinical Neurophysiology, Level 3 – West Wing, John Radcliffe Hospital, Headley Way, Oxford, OX3 9DU to determine whether the relationship between sleep duration and BMI varies based on genders and lifestyles. Sleep duration was assessed both continuously and categorically. In both cases, significant interactions were observed.

Table 1. Demographic

	Overall population	Mean sleeping
Gender, n (%)		
Male	26 (40%)	4.83 (1.04)
female	39 (60%)	4.05 (0.93)
Weight, mean (sd)	152.77 (6.96) cm	
Height, mean (sd)	46.61 (11.02)	
BMI, n(%)		
underweight	32 (49.2%)	4.18 (1.09)
normal	19 (29.2%)	4.79 (0.82)
overweight	8 (12.3%)	3.91 (1.15)
obesity	6 (9.2%)	4.62 (0.85)
Duration of Sleeping (min), mean (sd)	261.46 (63.05)	

CONCLUSION

This study attempts to explain when examining sleep duration and BMI. The relationship between those two variables likely depends on gender. Male students slept significantly longer with a mean (SD), 5 hours 13 minutes (1 hour 52 minutes), compared to female students, who had a mean (SD) of 4 hours 46 minutes (1 hour 49 minutes).

ACKNOWLEDGEMENT

(Katie A. Meyer, 2012) (Michael A. Grandner¹, 2015) (Fadzil, 2021) (Ramar, 2021) (Hirshkowitz, 2015) (LI, 2021)

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