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Cross-Sectional Study on Effects of Stress Towards Sleep Quality Among University of Cyberjaya Students

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Abstract

Introduction: Stress has shown a significant impact on the contribution towards depression. The frequency of medical students who suffer from stress is increasing where it could cause sleep disturbance which will impact the student's sleep quality.

Objective: This study attempted to investigate the effect of stress towards sleep quality among medical students in University of Cyberjaya.

Methods: The questionnaires used to collect the data which included the Depression, Anxiety and Stress Scale-21 (Dass-21), the Pittsburgh Sleep Quality Index (PSQI) the and a self-reported sociodemographic inventory were completed by 400 medical students within University of Cyberjaya by systematic random sampling and stratified sampling. Descriptive statistics, logistics regression, chi-square test, ANOVA were conducted for data analysis with significant p-value of <0.05.

Results: This study found that the prevalence of stress and poor sleep quality among medical students in University of Cyberjaya was 34.8% and 66.4% respectively. Chi square shows significant association between stress and sleep quality (OR=1.14 ,95% CI 0.85 to 1.83; p<0.001). For sociodemographic data, only age and ethnicity showed significant association with stress (p=0.03).

Conclusion: Hence, it is evident that medical students had a higher perceived stress and poor sleep quality. A direct benefit to the health or well-being can be provided if we are able to determine the stress condition of a person and vice versa. Further research is needed to examine how stress would affect other aspects of a person's life. Thus, we hope people can start to take an early initiative to start improving their own condition, quality, and well-being.

Keywords: stress, sleep quality, medical students, depression, Anxiety and Stress Scale-21, Pittsburgh Sleep Quality Index.

Introduction

Stress is defined as the normal physical, emotional, and mental response towards changes and challenges faced (KKM, 2020). The frequency of medical students who suffer from stress is increasing due to intense study loads, academic challenges, exposure to competitive environment surroundings in meeting the expectations or demands of the improved medical fields. In response to the body's activation of the HPA

axis, stress increases cortisol levels and can interfere with sleep cycles, resulting in sleep disturbance. In short, stress levels can affect sleep quality, especially in people who are unable to regulate their stress. A study among adults in Selangor, Malaysia showed that 54.3% of the participants have high perceived stress (Kader, et al. 2014). A study done in Thailand by Calderon, Pupanead et al. (2021) had reported insufficient diet (57%), poor sleep (67%) and symptoms of depression (40%) associated with high perceived stress. Maheshwari, et al. (2019) reported that poor sleepers among students had significantly lower mean academic GPA ($p<0.0001$). Medical students in Saudi Arabia had a high prevalence of poor sleep quality (76%) and it was significantly associated with stress ($p<0.001$) (Almojali, et al. 2017).
This study aimed to find out how common stress is among students at the University of Cyberjaya, as well as the relationship between stress and sleep quality. It is expected that the findings would raise awareness of the importance of stress management in enhancing sleep quality among students at the University of Cyberjaya.

METHODOLOGIES

This cross-sectional study was conducted in University of Cyberjaya from August to October 2022 which included all students in the Faculty of Medicine, in UoC from Year 1 to Year 5 aged less than 30 who are Malaysian, excluding those who are part time working, and married . A total of 400 participants made up the study's sample size.
By using a convenience sampling method, the respondents were required to complete an online validated questionnaire that was shared over various social media platforms. The questionnaire was divided into three sections including personal identification and sociodemographic characteristics, Toronto Empathy Questionnaire, and Rosenberg Self-esteem Scale. Jeffrey's Amazing Statistics Program (JASP) was used to conduct the statistical study. The data was analyzed using descriptive statistics, independent t tests, linear regression, and ANOVA. All the data was considered statistically significant if the p value is less than 0.05.

Ethic Approval

Ethical approval for this study was obtained from the University of Cyberjaya Research Ethics Review Committee (CRERC). (Ref No: UOC/CRERC/ER/409). Data privacy and confidentiality was maintained, and the data collected were analyzed by the researchers purely for the purpose of the study.

RESULTS AND DISCUSSION

The response rate of our questionnaire was a total of 400 respondents accounting for 93 medical students from Year 1, 90 medical students from Year 2, 75 medical students from Year 3, 73 medical students from Year 4, and 69 medical students from Year 5.
Generally, the study was conducted to investigate the effect of stress towards sleep quality among students in University of Cyberjaya where our study has proven 81.4% of those exposed to stress level >14 had poor sleep quality with significant correlation between the 2 variables of p value <0.001 as displayed in Table 3 . Our result is found to be very similar and consistent with the study of Ahmed, Spogmai et al. (2015) conducted in Pakistan where the prevalence of poor sleep quality among stressed medical undergraduates was 82%. This is because stress experienced first affects the immune system in individuals and causes psychological, social and physiological negative consequences (Sebahat & Demet, 2020). Sleep disorder, which is one of the psychological responses to stressors, has a serious impact on the daily lives of individuals (Ozel Y et al., 2018).

We also found that age 20 years and above is more stress compared to below 20 years old which might be due to progressively increased levels of stress as high as 40% by the end of the clinical training period (Neimi, 2006). Results of other studies in North America also suggest that mental health worsens after students join a medical school and remain poor throughout the course, especially in the transition from basic science teaching to clinical train-ing (Dyrbye L. ,2005). This is clearly seen in our study from Table 1, in which 20 years old is the age transition from preclinical to clinical years.

Moreover, our study shows females have higher levels of stress compared to male due to the fact that females complain more about the high load of the curriculum and are more liable to over complaint about physical, psycho-logical symptoms and face less job opportunities than males in eastern countries (Amir M, 2010). However, this is not very significant in our study.

Our study also revealed that there are significantly higher levels of stress in other ethnicity respondents (57.1%) compared to Malay (38%), Chinese (47.4%), and Indian (26.1%) respondents. This is supported by a study conducted in a private medical school in Malaysia by Fuad, Al-Zurfi et al. (2015) where other races had higher levels of stress (OR 1.71, 95% CI 0.35-3.87). Since other ethnicities are minorities in Malaysia, they can develop a higher level discrimination which may be due to the interplay of race and religion that creates a symbiotic relationship especially if the two are being framed together and legitimized by the state (Fox, 2000). American Psychological Association (2016) stated that discrimination is associated with higher reports of stress.

Meanwhile, a study conducted by Abdus, Raynuha et al. (2015) in University Kebangsaan Malaysia revealed that first year students had higher prevalence of stress which was contrary to our study where first year students (26.6%) had lower prevalence of stress compared to other batches. This could be due to our study that was conducted during orientation week of first year students where they have not started their lectures yet.

Table 1 Prevalence of stress status among students by sociodemographic characteristics

Sociodemographic Data	Stress Level		Total n (%)	P value
	≤ 14 n (%)	> 14 N (%)		
General	262 (65.2)	140 (34.8)	402(100)	
Age <20	59(75.6)	19(24.4)	78(19.4)	0.031
≥ 20	203(62.7)	121(37.3)	324(80.6)	
Gender Male	67(68.4)	31(31.6)	98(24.4)	0.445
Female	195(64.2)	109(35.9)	304(75.6)	
Ethnicity Malay	150(62)	92(38)	242(60.2)	0.038
Chinese	10(52.6)	9(47.4)	19(4.7)	
Indian	99(73.9)	35(26.1)	134(33.3)	
Others	3(42.9)	4(57.1)	7(1.7)	
Year of Study 1	69(73.4)	25(26.6)	94(23.4)	0.194
2	53(58.9)	37(41.1)	90(22.4)	
3	47(62.7)	28(37.3)	75(18.7)	
4	44(60.3)	29(39.7)	73(18.2)	
5	49(70)	21(30)	70(17.4)	

According to a study conducted by Ghoreyshi and Aghajani (2008) among medical students in Zanjan University Medical Students, a total of 224 students answered the questionnaire, with 133 (59.4%)

students evaluated to have good sleep quality and 91 (40.6%) poor sleep quality however in our study, it was revealed that the number of medical students that have poor sleep quality(66.4%) is twice of those who have good sleep quality(33.6%). This can be seen in Table 1.

Table 2: Prevalence of sleep quality status among students

Sleep quality	Prevalence (n)	Frequency (%)
Good	135	33.6
Poor	267	66.4
TOTAL	402	100

Table 3: Association between stress level and sleep quality

Stress level	Sleep quality			Odd Ratio (OR) (95% CI)	P-value	Chi-square
	Good n (%)	Poor n (%)	Total n (%)			
≤ 14	109(41.6)	153(58.4)	262(100)	1.139	<0.01	21.7
> 14	26(18.6)	114(81.4)	140(100)			

CONCLUSION

As a result of the study, it was found that the medical students in University of Cyberjaya had a high perceived stress and poor sleep quality. It was found that age and ethnicity show significant association with stress. The participants' sleep quality was found to be impacted as they were perceived with higher stress score >14. Thus, a direct benefit to the health or well-being can be provided if we are able to determine the stress condition of a person and vice versa. Further research is needed to examine how stress would affect other aspects of a person's life. Thus, we hope people can start to take an early initiative to start improving their own condition, quality, and well-being.

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