

Anxiety Level, Sleep Quality and Physical Activity among Malaysian University Students in the Klang Valley during COVID-19 Pandemic

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ABSTRACT

Introduction: The movement control order (MCO) imposed by the government during the COVID-19 pandemic has caused several changes for all individuals including the university students. Some of the changes include lifestyle, physical activity and sleep quality that influence mental health especially the anxiety level of university students.

Objective(s): This study aims to assess the association between anxiety level, sleep quality and physical activity among Malaysian university students in the Klang Valley during COVID-19 pandemic.

Methodologies: Data from 367 Malaysian university students were collected using a convenient sampling method in this web-based cross-sectional survey. Anxiety level, sleep quality and physical activity were assessed using the Generalized Anxiety Disorder-7 questionnaire (GAD-7), Pittsburgh Sleep Quality Index (PSQI) and International Physical Activity Questionnaire-Short Form (IPAQ-sf), respectively.

Results: About one-third of the university students have mild anxiety (28.9%) and another 28% reported having moderate anxiety. Slightly more than half (52%) of the students reported poor sleep quality, majority of them (73%) were physically active, and a significant association was found between anxiety and sleep quality ($\chi^2=50.13$, $p<0.05$) of the university students.

Conclusion: The results showed that university students were experiencing some sort of anxiety and have poor sleep quality, nevertheless they were active physically during the movement restriction period due to COVID-19 pandemic. Considering the findings, it is important to introduce activities and programmes that promote mental health and sleep quality among university students so that their overall health status could be improved.

Keywords: COVID-19; MCO; anxiety; sleep quality; physical activity

INTRODUCTION

In Malaysia, COVID-19 was first detected on 25 January 2022 (Shah et al., 2020), and the government has implemented the Movement Control Order (MCO) to reduce the transmission of COVID-19 outbreak. The mandatory closure of universities and social distancing (lockdown) action brought a major impact on the lifestyle and mental health of university students (Mattioli et al., 2020). Anxiety is a normal process in life, but it could impair the life functioning of an individual when it becomes serious, which can be categorised as a disorder or illness (Maideen et al., 2015). Numerous studies have shown that the anxiety level of an individual increased during the COVID-19 pandemic, and it is the main mental health issue affecting university students in Malaysia (Na et al., 2021; Twenge and Joiner, 2020).

The COVID-19 pandemic has changed the daily habits and behavior patterns of many individuals such as the normal life routines including mealtime and physical activity that lead to alterations in circadian rhythm and reduce sleep quality (Altena et al., 2020; Morin et al., 2020). Based on a study by Gupta et al., (2020), lockdown disrupts sleep cycles, resulting in a later start to sleep, shorter nocturnal sleep duration, and more daytime naps. Also, the MCO due to COVID-19 pandemic has contributed to a marked decrease in physical activity level and an increase in sedentary behaviors of many individuals (Ammar et al., 2020; Castañeda et al., 2020).

Unhealthy lifestyles increase the tendency of mental health issues such as depression and anxiety (Boni et al., 2020). According to the Anxiety and Depression Association of America (2021), anxiety and sleep are

associated interactively as anxiety can induce sleep problems and sleep deprivation can cause anxiety disorder. On the other hand, World Health Organization (2020) suggested that regular physical activity can help in reducing depression and anxiety symptoms.

This study aims to assess the anxiety level, sleep quality and physical activity, as well as to determine the association between anxiety, sleep quality and physical activity among Malaysian university students in Klang Valley during the COVID-19 pandemic.

METHODOLOGIES

2.1 Participants and Study Design

This was a cross-sectional study, and the study sample comprised Malaysian university students (aged 18 to 35 years) studying in universities located in the Klang Valley during the COVID-19 pandemic. They were recruited using a convenience sampling method and the survey was conducted between 24 January 2022 and 17 April 2022 using Google Forms. The online questionnaires link and QR code were shared with participants via selected social media (Facebook, Instagram, and LinkedIn) and communication platforms (WhatsApp group and Telegram group). This study has obtained an ethical clearance from the Institutional Ethics Committee, UCSI University (IEC-2022-FAS-011), and informed consent was obtained from participants prior to the start of the study.

2.2 Questionnaires

A set of questionnaires (Google Forms) consisting of four sections were prepared and participants were required to complete them virtually. In the first section, social-demographic information was collected. The second section assessed the anxiety symptom of university students by using the Generalized Anxiety Disorder-7 questionnaire (GAD-7). GAD-7 consists of seven items based on different anxiety-related conditions, each item was given four options including “not at all”, “several days”, “more than half of the days”, “nearly every day”, corresponding to score of “0”, “1”, “2”, and “3”, respectively. The score of the seven items was summed up and categorised into four categories including the “norm” (0 to 4), “mild anxiety” (5 to 9), “moderate anxiety” (10 to 14) and “severe anxiety” (15 to 21), respectively (Spitzer et al., 2006). The third section adopted Pittsburgh Sleep Quality Index (PSQI) to assess the sleep quality and disturbances of the participants (Buysse et al., 1988). PSQI scale consists of a total of 19 questions (five questions that were supposed to be rated by the bed partner or roommate were not included in this study) and can be classified into seven components and yielding a global score range from 0 to 21. A cut-off point of 5 and above on the PSQI was used to determine poor sleep quality. The last section is the physical activity assessment that adopted the International Physical Activity Questionnaire-Short Form (IPAQ-sf), IPAQ-sf consists of seven questions covering

four domains to measure the time spent engaging in physical activity (vigorous, moderate, and walking) and sedentary behavior (sitting). The scoring of IPAQ-sf was based on the official IPAQ scoring protocol (IPAQ Research Committee, 2005).

2.3 Data Analysis

All the data were analysed using Statistical Package for Social Sciences (SPSS) version 20.0. Descriptive statistics were performed to obtain the frequency, percentage, mean, and standard deviation. Chi-square test was performed to assess the association between anxiety and sleep quality, sleep quality and physical activity as well as anxiety and sleep quality. The significance level was set at $p < 0.05$.

RESULTS AND DISCUSSION

3.1 Sociodemographic Characteristics of Participants

Table 1 shows the sociodemographic characteristics of 367 subjects recruited with a mean age of was 21.64 years old. More than half of the subjects were female (58.3%) and Chinese ethnic group (60.8%), respectively. Majority of the subjects (84.5%) were pursuing an undergraduate study programme and more than of the subjects (58.9%) were having their study on-campus (physical mode) as the MCO has been relaxed by the government.

Table 1: Social-demographic characteristics of study subjects (n=367)

Social-demographic characteristics	n (%)
Age (year, mean \pm SD)	21.64 \pm 2.27
Gender	
Male	154 (41.7)
Female	214 (58.3)
Ethnicity	
Malay	107 (29.2)
Chinese	223 (60.8)
Indian	30 (8.2)
Other	7 (1.9)
Current Mode of Study	
Physical	216 (58.9)
Virtual	151 (41.1)
Study Programme	
Pre-University	39 (10.6)
Undergraduate	310 (84.5)
Postgraduate	18 (4.9)

Note: n, number; SD, Standard Deviation.

3.2 Generalized Anxiety Disorder (GAD)

During the COVID-19 pandemic, only about one-quarter of the study subjects (24%) had normal anxiety level whereas the majority of the study subjects (76%) experienced mild to severe anxiety (Figure 1).

Of the study subjects who experienced anxiety, 28.9% experienced mild anxiety, 28% reported to have moderate anxiety followed by about one-fifth (19.1%) had severe anxiety. A study conducted by Hooper et al. (2021) that involved 16 different universities in Malaysia found quite a similar prevalence of anxiety level among university students (30.5% mild, 21.1% moderate and 26.1% severe anxiety). During the COVID-19 pandemic, the university students' anxiety level is exacerbated by abrupt changes to their study environment and a decline in physical social engagement and the feeling of worry about the personal health and health of their loved ones (Lee et al., 2021).

3.3 Sleep Quality

Among the 367 subjects, half (52%) of them had poor sleep quality while 48% had good sleep quality, as shown in Figure 2. Du et al., (2021) and Bosi et al., (2021) also reported that 49.5% of Malaysian and 53.4% of Turkish university students were having poor sleep quality. Kocavska et al. (2020) suggested that lockdown or better known as movement control in the Malaysian context affects sleep quality inconsistently and the effect of COVID-19 on sleep quality may differ critically across participants. Interestingly, the present study reported a lower prevalence of poor sleep quality compared to the studies that were assessing the sleep quality of Malaysian university students before the COVID-19 pandemic, which ranged from 59.6% to 70.6% (Mohd et al., 2018; Nurismadiana and Lee, 2018; Said et al., 2020).

3.4 Physical Activity

Figure 3 shows about three-quarters (73%) of the study subjects were physically active with a high proportion having high physical activity level (40.3%) followed by a moderate physical activity level (32.7%) and a low physical activity level (27%). A similar prevalence of 75% Malaysian adults were physically active as reported by the National Institutes of Health Ministry of Health Malaysia in 2019.

3.5 Association among Anxiety, Sleep Quality and Physical Activity

Table 2 shows the association between GAD level and sleep quality along with the association between GAD level and physical activity. A significant association was found between sleep quality and the level of anxiety ($\chi^2=50.13$, $p<0.05$) among Malaysian university students. A study in Malaysia had reported a similar result, where students with poor sleep quality were more likely to experience anxiety than those with high sleep quality (Mohamad et al., 2021). This study result was supported by Peltz et al., (2016) that found a significant bidirectional relationship

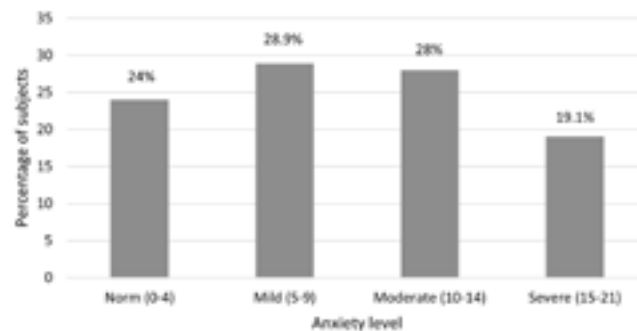


Figure 1: Distribution of anxiety levels based on GAD classifications among the study subjects (n=367)

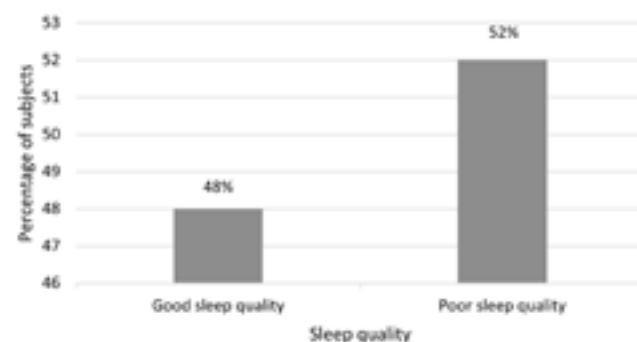


Figure 2: Distribution of sleep quality based on PSQI classification among the study subjects (n=367)

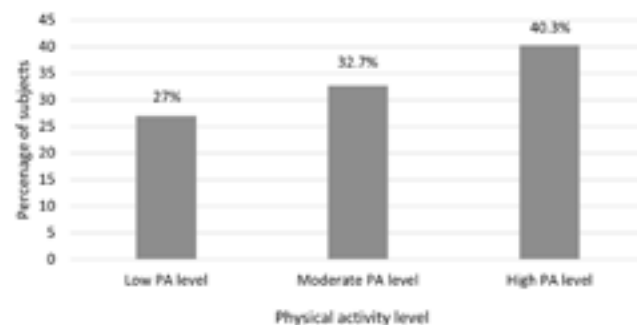


Figure 3: Distribution of physical activity level based on IPAQ scoring protocol among the study subjects (n=367)

between sleep and anxiety symptoms among university students, sleep quality. The anxiety-induced stress may further lead to hormonal, behavioral and autonomic responses that affect sleep quality (Staner, 2022), and on the other hand, poor sleep quality may lead to sleep problems dependent on anxiety (Orsal et al., 2012).

There was no significant association between physical activity level and level of anxiety ($\chi^2=9.43$, $p=0.151$) among Malaysian university students found in this study. A study by Selvakumar et al., (2022) reported a similar result in which physical activity and sedentary behavior

Table 2: Association between anxiety level, sleep quality and physical activity among study subjects

Demographic Data	Anxiety Level				Statistical significance
	Norm (n=88)	Mild (n=106)	Moderate (n=103)	Severe (n=70)	
Sleep quality					
Good sleep quality	68 (38.6)	50 (28.4)	42 (23.9)	16 (9.1)	$\chi^2=50.13$
Poor sleep quality	20 (10.5)	56 (29.3)	61 (31.9)	54 (28.3)	p=0.000*
Physical activity level					
Low	29 (29.3)	17 (17.1)	32 (32.3)	21 (21.2)	$\chi^2=9.43$
Moderate	27 (22.5)	41 (34.2)	31 (25.8)	21 (17.5)	p=0.151
High	32 (21.6)	48 (32.4)	40 (27.0)	28 (18.9)	

Note: n, number. *Chi-square test with significance at p<0.05.

Table 3: Association between sleep quality and physical activity (PA) among study subjects.

Variable	Low PA (n=99)	Moderate PA (n=120)	High PA (n=148)	Statistical significance
Sleep quality				
Good sleep quality	52 (52.5)	59 (49.2)	65 (43.9)	$\chi^2=1.865$
Poor sleep quality	47 (47.5)	61 (50.8)	83 (56.1)	p=0.394

Note: n, number. Association between variables using Chi-square test, p<0.05.

have no significant association with mental health among university students in Malaysia. However, the current finding was incongruent with most studies that reported a significant association between anxiety and physical activity (Chekroud et al., 2018; Ghrouz et al., 2019; Svensson et al., 2021). Multiple mechanisms such as the ability of physical activity to stimulate dopamine contributes to stress resilience and the protective effects of physical activity by reducing inflammation in an individual have been proposed to elucidate the association between anxiety and physical activity (Greenwood, 2019; Svensson et al., 2021). There was mounting evidence that more frequent physical activity was related to improve mental health even though the current research found no significant association between anxiety and physical activity. Hence, the advantages of continuing to remain active should not be disregarded.

3.6 Association among Sleep Quality and Physical Activity

There was no significant association between sleep quality and physical activity level ($\chi^2=1.895$, p=0.394) among Malaysian university students (Table 3). Previous study among university students from 23 countries revealed a similar result that no association was observed between vigorous physical activity and sleep quality (Pengpid and Peltzer, 2020). Another study involving 658 young adults by Kakinami et al., (2017) also found that physical activity was not associated with sleep quality or sleep quantity.

CONCLUSION

This study's findings indicated that the university students have some sort of anxiety and poor sleep quality,

but a physically active lifestyle during the MCO. Thus, creative health promotion strategies and interventions that are aligned with the new norms after the pandemic need to be planned and conducted to raise awareness and improve the mental health as well as the sleep quality of university students.

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