

Association Between Sleep Quality and Mental Illness Among Undergraduate Students

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ABSTRACT

Introduction: Understanding the association between sleep quality and mental illness is indeed crucial for promoting the well-being of undergraduate students and addressing potential challenges before they become clinically significant. There is an association between sleep quality and mental health, and disruptions in one can affect the other. Thus, this study was conducted to examine the association between sleep quality and mental illness among undergraduate students.

Methods: A cross-sectional study was conducted using a probability simple random sampling method among 347 International Islamic University Malaysia undergraduate students from February to April 2022. The data was collected using a self-administered questionnaire via Google Form. Two questionnaires were used in this study, Pittsburgh Sleep Quality Index for sleep quality and DASS-21 for mental health status.

Results: The study findings showed that 176 individuals (50.7%) experience mild sleep difficulty, moderate levels of depression (23.3%), extremely severe levels of anxiety (13.3%), and moderate levels of stress (14.4%).

Conclusion: These findings highlight the importance of promoting good sleep habits for the overall students' well-being.

Keywords: Undergraduate student; Poor sleep quality; Mental illness; Depression; Anxiety; Stress..

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INTRODUCTION

Understanding the association between the quality of sleep and mental health is pivotal for the development of effective interventions and treatment strategies. Despite the availability of effective care, many individuals still encounter stigma and discrimination associated with mental health issues. The association between sleep quality and mental illness has been extensively documented (1). In particular, among undergraduate students, both the overall duration of sleep and the quality of sleep significantly influence mental health, with poor sleep commonly associated with depression and anxiety symptoms (2). Additionally, poor sleep quality has been strongly linked to a range of mental health issues, and it plays a significant role in the development, exacerbation, and management of various conditions such as post-traumatic stress, eating disorders, and psychosis (3). The authors added that worsening sleep problems can lead to mental illness symptoms and daytime distress. The earlier study's findings indicate an association between symptoms of mental health and insufficient sleep (2). Moreover, an estimated 20–40% of individuals with mental health conditions are believed to experience sleeplessness (4). The authors also noted that deteriorating sleep patterns can contribute to the manifestation of symptoms of mental illness and distress during daytime hours.

Although numerous studies have explored the intricate relationship between sleep quality and mental illness, identifying the precise reasons for their connection remains challenging due to the complex nature of this relationship. Moreover, improving sleep quality has similar positive effects on individuals with clinically confirmed mental health conditions and those without such diagnoses, demonstrating the potential benefits of enhancing sleep quality for overall mental well-being (3). Recognizing and addressing the interplay between sleep quality and mental health is crucial not only for the well-being of undergraduate students but also for their academic success. These three studies (2–4) have examined the relationship between sleep quality and mental illness, providing valuable insights, but the exact reasons behind their connection remain challenging to determine. Therefore, this study aims to

determine the association between sleep quality and mental illness where both mental health and sleep quality are essential components of a comprehensive student welfare strategy.

METHODS

A quantitative cross-sectional study was conducted between February and April 2022 and involved 347 International Islamic University Malaysia undergraduate students. The Raosoft sample size calculator was used in this study, with a 5% margin error, 90% confidence interval, 3565 of total population size, and 50% response rate. Hence, the required minimum sample size for this study was 347 participants.

The questionnaire consists of 3 main sections which include sociodemographic characteristics of respondents such as age, gender, faculty of study and year of study. The sleep quality was assessed by Pittsburgh Sleep Quality Index (PSQI) (5). The PSQI is a 19-item self-rated questionnaire for evaluating subjective sleep quality over the previous month (5). The 19 questions are combined into 7 clinically derived component scores, each weighted equally from 0-3. The 7 component scores are added to obtain a global score ranging from 0-21, with higher scores indicating worse sleep quality. using a cut-off score of 5 as “good sleepers”.

The mental illness symptoms were assessed by 21 items self-report depression, anxiety and stress (DAS-21) questionnaire (6) which score rate from 0 to 3 for each item. Each item scale has four response options ranging from 0 (did not apply to me at all) to 3 (applied to me much, or most of the time). The 7 elements on the scales are graded on a Likert scale from 0 to 3 (0: “Did not apply to me at all,” 1: “Applied to me to some degree or some of the time,” 2: “Applied to me to a considerable degree or a good part of the time,” and 3: “Applied to me very much or most of the time”). Depression, anxiety, and stress scores are measured by summarizing the scores of the related items. Because the DASS-21 is a shorter version of the 42-item original DASS, the score for each subscale must be multiplied by 2 to calculate the final score. The final score were classified into: “normal, mild, moderate, severe, or

extremely severe". The questionnaires were distributed to the participants via Google Form. The questionnaire form was distributed using google form via email along with the information sheet and consent form. The inclusion criteria were undergraduate students from year one to year four of studies at International Islamic University Malaysia, Kuantan Campus. The study excludes student who had undergone psychiatry treatment. The data that has been collected in this study was kept and remains anonymous. Ethical approval was obtained from the International Islamic University Malaysia Research Community (IREC) (IREC2023-KON/NURF11).

RESULTS

Table 1 displays the sociodemographic data of the participants. The majority of the participants were female (71.2%) and male (28.8%). Most of the participants from Faculty of Nursing (33.4%), Faculty of Allied Health Sciences (25.9%), Faculty of Science (17%), Faculty of Medicine (12.1%), Faculty of Dentistry (6.1%) and Faculty of Pharmacy (5.5%). Most of the participants were from year 3 (33.1%), year 4 (21.0%), year 2 (20.2%), year 1 (19.9%) and year 5 (5.8%).

Table 1: Sociodemographic data (n=347)

Variables		Frequency (n)	Percentage (%)
Gender	Male	100	28.8
	Female	247	71.2
Age	19 - 21	121	34.9
	22 - 24	212	61.1
	25 - 35	14	4.0
Kulliyah	Faculty of Nursing	116	33.4
	Faculty of Pharmacy	19	5.5
	Faculty of Dentistry	21	6.1
	Faculty of Medicine	42	12.1
	Faculty of Allied Health Science	90	25.9
	Faculty of Science	59	17.0
Year of study	Year 1	69	19.9
	Year 2	70	20.2
	Year 3	115	33.1
	Year 4	73	21.0
	Year 5	20	5.8

Sleep Quality

The Pittsburgh Sleep Quality Index (PSQI)

Table 2 presents the descriptive statistics of the Pittsburgh Sleep Quality Index (PSQI), which is divided into seven components. The PSQI first component; self-reported sleep quality, 29

(8.4%) participants reported very good, 202 (58.2%) fairly good, 99 (28.5%) fairly bad, and 17 (4.9%) very bad. The PSQI second component reported that sleep latency was 118 (34.0%) shorter, and 68 (19.6%) longer sleep latency. The PSQI third component sleep duration, the majority of participants, 142

(40.9%) reported having 5-6 hours of sleep, followed by 86 (24.8%) more than 7 hours, 80 (23.1%) less than 5 hours and 39 (11.2%) 6 to 7 hours of sleep. The PSQI fourth component; habitual sleep efficiency (HSE), revealed that 234 (67.4%) had more than 85%, 72 (20.7%), 26 (7.5%), and 15 (4.3%) reported having 75-84%, 65-74%, and less than 60% of habitual sleep efficiency, respectively. The PSQI fifth component sleep disturbances showed that only 10 (2.9%) very severe, 117 (33.7%) severe, 212 (61.1%) mild, and 8 (2.3%) no experience of sleep disturbances. The PSQI sixth component the usage of sleeping medication, reported only 8 (2.3%) respondents reported using medication to sleep in the past week, as none of

them had any mental illness or psychiatric problems. The majority of respondents, 320 (92.2%) reported not using any medication to sleep. The PSQI seventh component: daytime dysfunction, revealed that 26 (7.5%) were extremely severe, 82 (23.6%) were severe, 165 (47.6%) slightly severe, and 74 (21.3%) had no daytime dysfunctions. The participants were categorized into four groups based on the total score of seven components: no sleep difficulty, mild sleep difficulty, moderate sleep difficulty, and severe sleep difficulty. Majority of the participants have mild 176 (50.7%), moderate 165 (47.6%), severe 5 (1.4%), and no sleep difficulty 1 (0.3%).

Table 2: Sleep Quality (n=347)

Variables		Frequency (n)	Percentage (%)
Self reported sleep quality	Very good	29	8.4
	Fairly good	202	58.2
	Fairly bad	99	28.5
	Very bad	17	4.9
Sleep latency	Shorter	118	34.0
	Mild	77	22.2
	Moderate	84	24.2
	Longer	68	19.6
Sleep duration	More than 7 hours	86	24.8
	6 - 7 hours	39	11.2
	5-6 hours	142	40.9
	Less than 5 hours	80	23.1
Sleep efficiency	85%	234	67.4%
	75-84%	72	20.7%
	65-74%	26	7.5%
	Less than 60%	15	4.3%
Sleep disturbance	Very severe	10	2.9%
	Severe	212	61.1%
	Moderate	117	33.7%
	No	8	2.3%
Sleep medicine use	Use	8	2.3%
	Mild	12	3.5
	Moderate	7	2.0
	Not used	320	92.2%
Daytime dysfunction	Extremely severe	26	7.5%
	Severe	82	23.6%
	Slightly severe	165	47.6%
	No daytime dysfunction	74	21.3%

Total Pittsburgh Sleep Quality Index (PSQI) Score

categorized into four groups: 29 (8.4%) no sleep difficulty, 202 (58.2%) mild, 99 (28.5%) moderate, and 17 (4.9%) severe sleep difficulty.

Table 3 presents the total scores across the seven components, the participants were

Table 3: Total Pittsburgh Sleep Quality Index (PSQI) Score (n=347)

	Frequency (n)	Percentage (%)
No sleep difficulty	29	8.4
Mild sleep difficulty	202	58.2
Moderate sleep difficulty	99	28.5
Severe sleep difficulty	17	4.9

Prevalence of Depression, Anxiety, and Stress

Table 4 shows the prevalence of depression, anxiety, and stress. Most of the participants reported normal, 162 (46.7%), 49 (14.1%) mild, 81 (23.3%) moderate, 30 (8.6%) severe, and 25 (7.2%) extremely severe levels of depression.

As for anxiety, 150 (43.2%) reported normal, 60 (17.3%) mild, 55 (15.9%) moderate, 36 (10.4%) severe, and 46 (13.3%) extremely severe levels of anxiety. The stress score, most of the participants reported normal 228 (65.7%), 50 (14.4%) mild, 40 (11.5%) moderate, 23 (6.6%) severe, and 6 (1.7%) extremely severe levels of stress.

Table 4: Prevalence of Depression, Anxiety, and Stress

Variables		Frequency (n)	Percentage (%)
Depression	Normal	162	46.7
	Mild	49	14.1
	Moderate	81	23.3
	Severe	30	8.6
	Extremely Severe	25	7.2
Anxiety	Normal	150	43.2
	Mild	60	17.3
	Moderate	55	15.9
	Severe	36	10.4
	Extremely Severe	46	13.3
Stress	Normal	228	65.7
	Mild	50	14.4
	Moderate	40	11.5
	Severe	23	6.6
	Extremely Severe	6	1.7

Association Between Sleep Quality and Mental Illness

The use of the Pearson Chi Square test (Table 5) to examine the association between sleep quality (PSQI) and levels of depression, anxiety, and stress (DASS-21) reveals significant and moderate associations. The findings indicate a moderate association between sleep quality and stress scores, as evidenced by a Phi and Cramer's V test value

of 0.482. Similarly, depression and anxiety also demonstrate significant associations with sleep quality, with Phi and Cramer's V test values of 0.523 and 0.405, respectively. The study's results suggest a moderate association between poor sleep quality and higher levels of stress, depression, and anxiety among undergraduate students. The Phi and Cramer's V test values provide statistical support for the strength of these associations.

Table 5: Association Between Sleep Quality and Mental Illness

Variables	Category of sleep quality				<i>p</i> value	Phi & Cramer's V value
Mental illness	No difficulty	Mild difficulty	Moderate difficulty	Severe difficulty		
Depression						
Normal	1	119	41	1	0.000*	0.523
Mild	0	23	26	0		
Moderate	0	25	55	1		
Severe	0	8	22	0		
Extremely severe	0	1	21	3		
Anxiety						
Normal	1	101	47	1	0.000*	0.405
Mild	0	33	27	0		
Moderate	0	23	31	1		
Severe	0	13	23	0		
Extremely severe	0	6	37	3		
Stress						
Normal	1	148	78	1	0.000*	0.482
Mild	0	16	33	1		
Moderate	0	11	29	0		
Severe	0	1	19	3		
Extremely severe	0	0	6	0		

*P value is significant at 0.05

DISCUSSION

The findings from the study indicate a concerning prevalence of extremely severe depression, anxiety, and stress levels among the undergraduate participants. Specifically, 7.2% reported extremely severe depression, 13.3% reported extremely severe anxiety, and 1.7% reported extremely severe stress. These percentages align with a previous study by Asif et al. (7), suggesting a consistency in the high reported cases of severe mental health issues among this population. Additionally, the analysis of the Total PSQI score sheds light on the sleep difficulties experienced by the participants. Remarkably, 99.7% of the participants reported some level of sleep difficulty. This is in line with the findings of Sivertsen et al. (8), who also reported a high prevalence of sleeping problems and poorer

sleep quality among a similar population. The high percentage of participants experiencing sleep difficulties underscores the significance of addressing sleep-related issues among undergraduates students.

The association between sleeping problems and mental illness is highlighted in the study, drawing attention to the potential contribution of sleep difficulties to the development or exacerbation of mental health issues. This aligns with the observations made by Liu et al. (9), who noted a common association between sleeping problems and mental health challenges. It suggests a relationship between sleep quality and mental health, where poor sleep may contribute to mental health issues (3).

These findings underscore the importance of holistic approaches to student well-being, considering both mental health and sleep quality. Addressing mental health concerns and implementing interventions to improve sleep quality may be crucial for promoting the overall health and academic success of undergraduate students (4). Moreover, the study emphasizes the need for ongoing research and initiatives aimed at understanding and addressing the complex interplay between mental health, sleep, and academic life among this population should be carried out and interventions such as counseling or stress management should be implemented accordingly to improve sleep quality and academic performance.

In summary, the presented research findings emphasize the interconnectedness of mental health, psychosocial well-being, and sleep quality among undergraduate students. The call for collaborative efforts, early identification, and the integration of sleep quality into mental health interventions reflects a comprehensive approach to student well-being. Recognizing and addressing the complex interplay between sleep and mental health is essential for promoting a healthy and supportive academic environment. It is also recommended for the students to be exposed to the importance of having a good sleep quality. Establishing healthier sleep habits can significantly enhance the quality of sleep, thereby positively impacting academic performance in the long run.

CONCLUSION

In summary, this study sheds light on the prevalence of sleep challenges and mental health issues among undergraduate students. It underscores the importance of interventions that target sleep issues and enhance mental well-being, especially for students grappling with elevated levels of stress, depression, and anxiety. Moreover, acknowledging and dealing with sleep disruptions as integral components of a holistic mental health strategy is vital for effective prevention and intervention measures. Collaborative efforts and interdisciplinary research between professionals in sleep medicine and mental health are paramount in advancing our comprehension and enhancing outcomes for individuals grappling with these intricate challenges.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare with regard to this work.

AUTHOR CONTRIBUTION

AD: involved in drafting the manuscript, data collection, analysed the data, support with literature content and finalizing and editing the manuscript.

NEAH: involved in drafting the manuscript, data collection, analysed the data.

HO: involved in support with literature content and editing the manuscript.

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