THE RELATIONSHIP BETWEEN SLEEP QUALITY AND ACADEMIC PERFORMANCE AMONG THE INSTITUTE OF HIGHER EDUCATION (IPTA) STUDENTS IN TERENGGANU, MALAYSIA

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Abstract

Sleep deprivation has a variety of negative consequences on individuals, including exhaustion, hypersomnia, and effects on neurocognitive function in students such as problems concentrating, remembering things, processing information, learning, speaking, and understanding. Sleep problems and sleep disorders significantly impact the academic success of university students. This research used quantitative research design using a survey research approach, which involves 113 students from three different universities in Terengganu, Malaysia namely Universiti Malaysia Terengganu, Universiti Sultan Zainal Abidin (campus Gong Badak) and Universiti Technology Mara, Kuala Terengganu. Quantitative methods are suitable to help researchers in determining the number of students who do not get enough sleep. The data collection method used in this survey was a Google Form and form link was distributed through private social networks such as WhatsApp and Telegram. The collected data will be analyzed using software SPSS to find out the mean average amount. The findings of the average mean revealed that social factors have the biggest impact on how well students sleep, with an average mean of 2.68 Furthermore, not getting enough sleep has several negative consequences on students' psychological health, with an average mean of 1.97. Inadequate sleep clearly affects students' emotions, which has a severe impact on their academic performance. Future studies should examine the effectiveness of improving sleep as well as students' academic performance by introducing a sleep intervention program in universities in Malaysia.

Keywords: Sleep, Academic Performance, Health, emotion, Sleep Deprivation

INTRODUCTION

Sleep is a very important part of human life because it helps keep our minds healthy and makes our lives better (Alotaibi, Alosaimi, Alajlan, & Abdulrahman, 2020). Sleep is important in

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children, teenagers and adults (Bruce, Lunt, & McDonagh, 2017). Healthy sleep routines help to regulate multiple mental abilities (learning, remembering, problem solving, decision making and attention), mental health, metabolic health- obesity, type 2 diabetes, and cardiovascular disease. Good sleep quality helps lower the chances of accidents caused by being tired or sleepy, such as accidents at work and accidents involving vehicles. The American Academy of Sleep Medicine (AASM) and Sleep Research Society (SRS) also recommend that adults acquire sleep 7 or more hours per night regularly and 7 to 8 hours of sleep for older adults to avoid chronic disease (Ohayon et al., 2017)

Sleep deprivation has a variety of negative consequences on individuals, including exhaustion, hypersomnia, and effects on neurocognitive function in students such as problems concentrating, remembering things, processing information, learning, speaking, and understanding. Sleep is necessary for memory consolidation (helping us recall what we've learnt easily), which is important for academic achievement. Students need a better sleep-in order to achieve higher CGPA. This study is supported by previous research conducted by Maheshwari and Shaukat (2019), there is a relationship between sleep quality and the academic achievements of students because students experiencing poor sleep quality face high academic pressure, causing them to force themselves to study under pressure to get good marks in exams.This study aims to explore the relationship between sleep quality, health, emotion, and academic performance among IPTA's students in Terengganu, Malaysia.

Sleep quality have become serious issues in academic research over the last decade. Sleep problems and sleep disorders significantly impact the academic success of university students. Students often use devices and gadgets late at night, which may disrupt their sleep patterns. Excessive use of smartphones not only results in sleep problems but also contributes to physical inactivity. High stress can also cause sleep disturbances. The covid-19 pandemic has negatively impacted students' academic performance because students are navigating a changing educational experience, with remote learning and asynchronous courses in many cases, while also dealing with stress from the pandemic's personal effects. Many students experience insomnia and anxiety during this time because of having too many assignments. Most lecturers assign many assignments to replace quizzes that are typically given in face-to-face classes because it allows them to assess students' understanding more easily of everything taught during online classes After post-Covid-19, the quality of student's sleep is also poor because they might go back to full face-to-face education. Students who participate in extracurricular activities mostly have difficulty completing assignments and leaving assignments to the last minute. End up, they stay up all night and prepare for work. This study aims to explore the relationship between sleep quality, health, emotion, and academic performance among IPTA's students.

Previous research stated that student's lifestyles also affect the quality of the student's sleep such as smoking and drinking alcohol. Smoking on a nightly basis is primarily associated with increased insomnia severity and shorter sleep duration. Patterson et al. (2019) reported that smokers who experience insomnia will find it difficult to get to sleep well. Cigarettes include a variety of dangerous nicotine chemicals that can have negative effects on the human body including high blood pressure and increased heartbeat. Smartphone use and alcohol use can disrupt students' sleep cycle. Besides, time spent doing schoolwork and studying may be a significant barrier to sleep among students. The heavy workload causes them to stay up at night

to tasks, to the point of neglecting their health. Another study showed that stress and sleep have an impact on each other which is sleep deprivation can exacerbate stress and high stress can also cause sleep disturbances (Irwin, 2008). Individuals who do not get good sleep will experience stress compared to individuals who get enough sleep. Social factors also correlated with sleep quality. Healthy social relations positively affected sleep because good social relationships are related to the physical health of an individual. Furthermore, students' behavior and lack of sleep knowledge were identified as risk factors for poor sleep quality. Moreover, Pittsburgh Sleep Quality Index was widely used in past studies to study sleep quality. PSQI is used as a method to find out the level of individual sleep satisfaction whether the individual gets a good or poor sleep.

OBJECTIVES

The aim of this study is to explore the relationship between sleep quality, health, emotion, and academic performance among IPTA's students. Two objectives formulated to achieve the aim of this study are describe as follow:
I.   To determine factor for the lack of quality sleep among IPTA students in Terengganu, Malaysia
II.   To identify effects of sleep quality on student's health, emotions, and academic performance

METHODOLOGY

This research conducted by quantitative approach using a survey which involves 113 students from three different universities in Terengganu, Malaysia namely Universiti Malaysia Terengganu, Universiti Sultan Zainal Abidin (campus Gong Badak) and Universiti Technology Mara, Kuala Terengganu. The quantitative approach is suitable to help researchers in determining the number of students who do not get enough sleep. The technique that was used in this study was nonprobability sampling method which is purposive sampling and snowball. The purposive sampling is based on the criteria that are conditions for selecting sample that is students who suffer from lack of sleep and participants were selected through snowball sampling which is respondents who have the required characteristics of the study are approached through acquaintance with previous respondents. The data collection method used in this survey was a Google Form, form link was distributed through private social networks such as WhatsApp, and Telegram. This questionnaire is made in bilingual to make it easier for students to understand the content of the questionnaire. The collected data will be analyzed using software SPSS to find out the mean average amount.
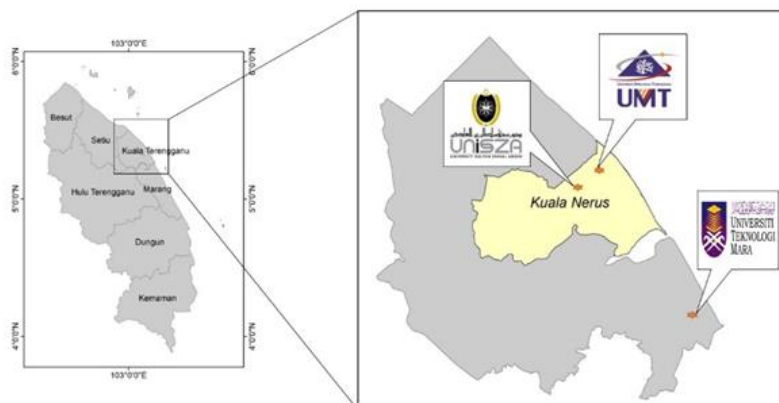
Figure 1: Location of Research

RESULTS

4.1 Respondents Demography

Table 1: Gender, Highest level of education, Years of study, University, and Cumulative Grade Point Average (CGPA)

Items	Frequency	Percent (%)
1. Gender		
Male	28	24.8
Female	85	75.2
2. Highest level of education		
Diploma	13	11.5
Undergraduate degree	95	84.1
Postgraduate degree	4	3.5
Others	1	0.9
3. Years of study		
First year	8	7.1
Second year	20	17.7
Third year	73	64.6
Fourth year	12	10.6
4. University		
University Malaysia Terengganu	58	51.3
University Sultan Zainal Abidin, Gong Badak	33	29.2
University Technology Mara, Kuala Terengganu	22	19.5
5. Cumulative Grade Point Average (CGPA)		
<1.99	0	0
2.00 - 2.44	1	0.9
2.45 - 2.99	9	8.0
3.00 - 3.45	59	52.2
>3.50	44	38.9
Total	113	100

Table 1 showed the respondents demographic profile of the current study. According to the data presented above, a total of 113 respondents participated in this study. After removing invalid data, there were a total of 28 male respondents (24 percent) and 85 female respondents (75.2 percent) in the study. The majority of responders are undergraduate student (84.1percent), followed by diploma (11.5%), postgraduate degree (3.5%) and others (PhD graduates) (0.9%). Most of them are third-year students, namely 73 respondents (64.6 percent), followed by second-year students (17.7 percent) with 20 respondents, and fourth-year students with 12 respondents (10.6 percent). Only 7.1 percent of first-year students responded, and there were only eight of them. Respondents were selected from students at three universities in the Kuala Terengganu area of Malaysia. 58 of the respondents (51.3 percent) were students at the University Malaysia Terengganu. 33 of the respondents (29.2 percent) were students from the University Sultan Zainal Abidin, and 22 respondents (19.5 percent) were students from the University Technology Mara, Kuala Terengganu. Most of the respondents scored well (52.2%; CGPA: 3.00–3.45) in their academic performance, followed by excellent (38.9%; CGPA: >3.50) and satisfactory (CGPA 2.00-2.44 (0.9%) and CGPA 2.45–2.99 (8.0%).

4.1.1 PITTSBURGH QUALITY INDEX (PSQI)

Table 2: Pittsburgh Quality Index (PSQI)

Statement	Mean
1. I have difficulty falling asleep	3.04
2. I fall into a deep sleep	2.31
3. I would like sleep more after wake up	2.07
4. My sleep hours are not enough	2.50
5. I am satisfied with my sleep	2.89
6. I wake up while sleeping	2.98
7. I had a bad dream	3.45
8. Cannot get to sleep within 30 minutes	2.85
9. I feel refresh after wake up	2.78
10. I wake up easily because of noise	2.46
11. I never had issues with my sleep	3.42
12. I never snore while sleeping	3.37

Scala: 1=Always 2= Very often 3= Sometimes 4 = Rarely 5 = Never

The mean of the Pittsburgh Quality Index (PSQI), an index to determine sleep quality of respondents, is shown in Table 2. The Pittsburgh Quality Index (PSQI) that has the highest mean score was I had a bad dream (3.45), followed by I never had issues with my sleep (3.42), I never snore while sleeping (3.37) and I have difficulty falling asleep (3.04). With a mean score of (2.07), the lowest mean consideration is that I would like sleep more than after wake up. The study discovered that sleep quality of students at each of the three universities varies; that is, some students have good sleep while others have poor sleep.

4.2 Factor for the lack of quality of sleep among IPTA students in Terengganu, Malaysia

4.21 Social Factors

Table 3: Social Factors

Statement	Mean
1. I do not have family problems	3.01
2. Trouble with friends makes it difficult for me to sleep	3.58
3. Having problem with partner can be harder to fall asleep	3.67
4. Participation in others activities at night (Silat, sports training, etc.)	3.65
5. I often feel lonely	3.41
6. Financial stress effects my sleep schedule	3.51
7. Many hours I spend working for money every week	3.81

Scala: 1=Always 2= Very often 3= Sometimes 4 = Rarely 5 = Never

Table 3 demonstrates the social factors that contribute to inadequate sleep quality. The social factors that have the highest mean score was the hours spent working for money every week (3.81), followed by having problem with a partner can be harder to fall asleep (3.67). The study discovered that students take part-time jobs throughout the week to supplement their income because the money they have is not enough to pay for their living costs while they are studying at university. A disagreement with a partner can cause unpleasant emotions that prevent them from sleeping because they are too angry and frustrated. While statements I do not have family problem (3.01) and I often feel lonely (3.41) demonstrates that students encounter moderate levels of social problems. When there are no issues with their family, kids don't have to spend as much time alone because their loved ones are always there for them.

4.2.2 Technology

Table 4: Technology

Statement	Mean
1. Use of electronic media before going to sleep	1.68
2. I have slept less than 4 hours due to using gadgets	2.99
3. I feel tired during day time due to late night use of smartphones	2.84
4. Bedtime procrastination (watching movies, playing games, social media)	2.54
5. I never stop using gadgets until I fall asleep	2.99
6. Excessive use of technology while doing assignment disturbs my sleep	2.84

Scala: 1=Always 2= Very often 3= Sometimes 4 = Rarely 5 = Never

In table 4, the following section of this study examines the role that technological elements play in causing student insomnia. Statements I have slept less than 4 hours due to using gadgets and I never stop using gadgets until I fall asleep resulting the similar mean score (2.99). Besides, I feel tired during day time due to late night use of smartphones, and excessive use of technology while doing assignments also results in the same moderate mean grade (2.84). Many students use their phones before bedtime, which has become as routine as checking their social media feeds. Other than using a smartphone to find information to complete an assignment.

4.2.3 Lifestyles

Table 5: Lifestyles

Statement	Mean
1. Sleeping pills consumptions help me to fall asleep	4.45
2. I do not exercise for a week	3.12
3. Consume coffee make me hard to sleep	3.24
4. I often go out at night until after midnight	3.51
5. I do not smoke every day	2.99

Scala: 1=Always 2= Very often 3= Sometimes 4 = Rarely 5 = Never

Students who struggle with sleep frequently take sleeping tablets as an immediate solution. Therefore, sleeping pills consumptions help me to sleep get the highest mean score (4.45) while and consume coffee make me hard to sleep with moderate mean score (3.24) showed that there are some students who take coffee to help them stay awake at night and maintain mental focus so they can complete their task. In fact, there are also students who engage in excessive caffeine consumption, which is defined as drinking more than two cups of coffee per day to overcome fatigue. However, this causes them to quickly become dizzy, which leads to a loss of concentration. Statements, I do not smoke every day (2.99), and I do not exercise for a week (3.12) demonstrated the students do not maintain a healthy way of living.

4.2.4 Workload/ Assignments

Table 6: Workload/ Assignments

Statement	Mean
1. In a week, more than 3 times I sacrifice sleep time to complete assignments	2.66
2. I never leave assignment/task to the last minute	3.08
3. I do not have many assignments each week	3.25
4. I prepare a schedule to manage my study (assignment, reading, prepare for test)	3.01
5. I often pulling all night for test	2.71

Scala: 1=Always 2= Very often 3= Sometimes 4 = Rarely 5 = Never

Table 6 demonstrates how workload and assignment factors interfere with students' sleep quality. The average respondent views workload and assignments as moderate. Most students still have a lot of work to do because practically all assignments must be completed in groups and there is only one assignment for each topic. Additionally, students only need a week to finish the homework given, meaning they will not have to go without sleep for a few weeks and may start their own study plan soon. The statement I don't have many assignments each week showed a high mean rating of (3.25). With mean score of (2.66), the lowest mean consideration is that I sacrifice sleep time more than three times per week to complete assignment.

4.3 Effects of sleep quality on student's health, emotions, and academic performance

4.3.1 Psychology health

Table 7: Psychology health

Statement	Mean
1. I never had any anxiety and depressed	3.31
2. Feeling down, depressed or anxiety	3.06
3. Feeling bad about yourself	2.98
4. Stress deprivation negatively affects my mood	2.85
5. Stress of mid-term exams leads me to sleep deprivation	2.90
6. Stress of final exams leads me to sleep deprivation	2.66

Scala: 1=Always 2= Very often 3= Sometimes 4 = Rarely 5 = Never

Table 7 shows the effects of sleep quality on student's psychology health. For the statement I never had any anxiety and depressed with a moderate score of (3.31), gives the impression that students are smart at controlling their emotions due to insufficient sleep. If they are unable to manage their emotional stress, it may have a severe impact on their academic performance and lead to poor performance on mid- and end-semester exams. Statements stress of final exams leads me to sleep deprivation (2.66) and stress of mid-term exams leads me to sleep deprivation (2.90) demonstrated how organizing a study schedule in advance makes students more ready to take a test.

4.3.2 Neurocognitive performance

Table 8: Neurocognitive performance

Statement	Mean
1. Poor sleep makes me forget things more easily	2.35
2. Less focus during lecture	2.46
3. Poor sleep makes me hard to think	2.50
4. Poor sleep cause me make a mistake at study	2.49
5. Poor sleep effects my understanding	2.48

Scala: 1=Always 2= Very often 3= Sometimes 4 = Rarely 5 = Never

Besides, neurocognitive performance effects on students 'sleep quality were mostly recorded as lowered mean, poor sleep makes me forget things more easily (2.35), followed by less focus during lecture (2.46) and poor sleep effects my understanding (2.48). However, there is an almost similar mean that poor sleep cause me make a mistake at study (2.49) and poor sleep makes me hard to think (2.50) respectively. It seems that sleep deprivation does not affect the neurocognitive performance of students.

4.3.3 Poor academic performance

Table 9: Poor Academic performance

Statement	Mean
1. Sleep deprivation negatively affects my academic performance	2.53
2. Sleep patterns affect academic performance	2.35
3. Poor sleep increased risk of academic failure	2.62
4. Poor sleep makes me feel sleepy in class	2.23
5. I never skip a class even lack of sleep	2.67

Scala: 1=Always 2= Very often 3= Sometimes 4 = Rarely 5 = Never

Lack of sleep is also thought to contribute to poor academic performance. According to table 9, I never skip a class even if I lack sleep (2.67), followed by poor sleep increasing the risk of academic failure (2.62), sleep deprivation negatively affecting my academic performance (2.53), sleep patterns affecting academic performance (2.35), and poor sleep making me feel sleepy in class, most of these were recorded as a lower mean. It is clear that not getting enough sleep only affects the academic performance of some students since there are still students whose grades are great even though they are not getting enough sleep.

DISCUSSION

Based on the average mean in figure 3 the factor of lack of sleep among IPTA students in Terengganu, Malaysia shows the highest influence is the social factor. Meanwhile, the effect of sleep quality has the highest impact on students' psychology health. Mean score (2.68) respondents believe that social factor significantly affects their ability to sleep. Social factors show that these factors disturb their sleep more than problems related to technology, lifestyles, and workload. Family's interactions are likely to have a positive and negative impact on how well students sleep. Students who have positive interactions with their family members sleep better, whereas those who have conflicts with their family may have poorer sleep quality. Individuals who receive less support from family members are more likely to suffer from sleep disorders than those who have good relationships with family members because family feud is a more accurate predictor of sleep disruption than family support (Xian et al., 2022).
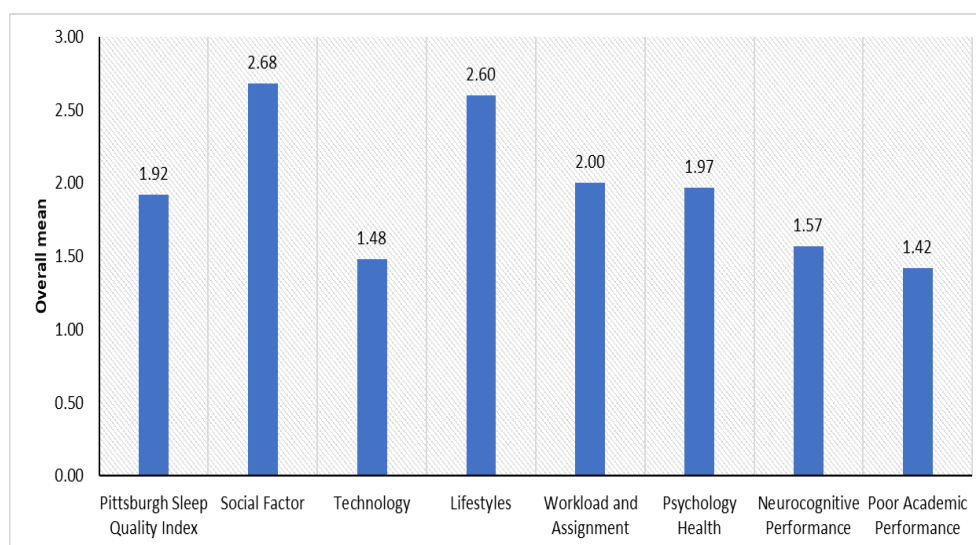
Figure 2: Overall mean of indicators

Furthermore, romantic relationships among students are a common occurrence on campus. However, the students' romantic relationships have turned into a few social problems, including promiscuity and, more seriously, severe emotional stress due to a lack of sleep. Couples who don't try to work out their problems, like fights or misunderstandings, are more likely to have trouble sleeping (Mesas et al., 2020). Mesas et al. (2020) stated that poor sleep can aggravate conflict by increasing negative mood or impairing partner perception. It is clear that the sleep of an individual is also linked to the attitude of the partner and the individual himself. Student performance depends on friends. However, conflicts with friends affect their academic performance and make it difficult for them to sleep because they worry about their arguments. Fights among college students are often associated with group projects. This is due to some of them being lazy and completing group assignments at the last minute. Besides, people who are often lonely need more social support from their family, friends, and partners so that they can sleep better over time (Gordon, Carrillo, & Barnes, 2021). Students feel alone because they live far away from their families. This makes it hard for them to talk to their families about the problems they face at university. So, it's very important that they get help from people close to them so they don't feel alone, which can affect their sleep and mental health.

Students working part-time jobs while going to university is a common thing in modern life, especially for students who go to university in cities. More than half of the respondents who filled out the survey said they worked part-time. Even though they already have scholarship (PTPTN, MARA and JPA) and financial aid for their studies, the rising cost of living in the city forcing students to work part-time. Most students work part-time jobs because they need extra money for their money for their own expenses. But students should be smart enough to split their time between learning and working. For weak students, it will affect their academic performance because they will have less time to study and do revision at home or in college. According to Verulava and Jorbenadze (2022), students who work will have problems balancing work and study. While for students who work part time hinder their academic

achievement and limit the time to study. Therefore, their enthusiasm for learning will decrease because the part -time job they are doing has caused them easily feel tired.

Students who involved in extracurricular activities (Silat, sports training, etc) more than 10 hours a week are more likely to feel sleepy during the day. Too many extracurricular events can hurt students' health because they can't get enough sleep at night because they are so busy. Even though participating in an extracurricular activity with colleagues at night reduces their sleep time, respondents are pleased to do so because they can gain new experiences. Extracurricular activities are good for their health, but if they do too many, it can affect how well they sleep and how well they do in college.

Effect of lack of sleep among IPTA students in Terengganu, Malaysia shows the highest influence on students' psychology health with average mean (1.97) compared than neurocognitive performance (1.57) and poor academic performance (1.42). However, all indicators of the effect of inadequate sleep have low means, but psychology health having the greatest impact on the effect of inadequate sleep on students. Irregular sleeping patterns will cause the body to fatigue quickly and have a negative impact on the daily activities of the students. Stress can increase the risk of health issues like high blood pressure and affect daily activities and academics. Students who expected to get lower grades might have been more stressed, which in turn made them sleep worse (van der Heijden et al., 2018). The majority of students who revise at the last minute are going to stay up late the night before an exam, which will make them feel tired the next day and cause them to score poorly on the exam. Therefore, adequate sleep is necessary for maintaining focus, enhancing concentration, and enhancing academic performance.

Even though the mean value for poor academic performance indicates the lowest mean value, the majority of students state that insufficient sleep does not have a bad effect on their academic achievement. However, poor mental health has an effect on academic performance. Students today are dealing with mental health issues. Anxiety can make it tough for students to study or attend classes. Depression can make it difficult to concentrate and pay attention, which makes it hard for a student to stay focused or finish work on time. Students with better mental health feel like they can do well in university, which improves their academic success (Zada, Wang, Zada, & Gul, 2021).

Besides, the value of the Pittsburgh Sleep Quality Index also shows a mean value of (1.92) which shows that the sleep quality for students in three universities in Terengganu is still at a moderate level, which means that majority of students do not get good sleep quality because there are still students who experience poor sleep.

CONCLUSION

In conclusion, based on our findings, future studies should examine the effectiveness of improving sleep as well as students' academic performance by introducing a sleep intervention program in universities in Malaysia "Sleep Awareness" so that students can be exposed to the pros and cons of maintaining their sleep quality, as there are still many who are unaware of the dangers of sleep deprivation to their health, despite the fact that many students suffer from various chronic disease before old ages. Furthermore, sleep disorders should not be underestimated by college students. The problem of sleep disorders is frequently associated with poor academic performance among students. Academic performance plays a very

important role throughout their studies. Poor academic results will affect students' credibility to get the best job opportunities after they graduate. Therefore, students need to pay attention to the problem of sleep disorders to avoid its effects on their health, emotions, and academic performance. Mental health issues should be taken seriously because they can affect sleep quality of students. Awareness regarding those issues should be given to students widely.

LIMITATION OF STUDY

There are several limitations to this study, but these problems can be solved by more research in this area. This study used a Google Forms questionnaire to measure sleep quality, which is a limitation because it relies on participants to be more accurate and honest when answering survey questions. They may feel they have to answer questions with the "right" answers, or they may misremember how they slept. Future research could be improved by requiring participants to keep a daily updated sleep diary during the study period. This will ensure that the results received are more accurate and reduce the risk of recall bias.

The limitation of this study that needs to be taken into account is time. Future studies need to spend more time collecting data for their studies. With more data, the results that will be obtained will be more accurate and more reliable. Apart from that, the researcher suggested carrying out this test physically to ensure that the sincerity of the respondents in answering the questionnaire can be controlled. This is because, by disseminating the questionnaire online, there is a possibility that respondents will not respond in answering the questionnaire. Respondents may answer the questionnaire carelessly, which will reduce the reliability of the study results.

Finally, despite the small sample size (n=30) of this pilot study, the researchers are confident in their results because they match the results of other studies. Based on demographics, the sample used in this study has been considered representative of the entire community. But because the population is so small and focused, not much can be transferred. Finally, IPTA students from other states can be included in future studies to facilitate comparison and analysis.

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