

The Correlation between Sleeping Patterns and Academic Performance for TAU Medical Students

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Abstract

Sleep is very essential to promote proper functioning as human beings. Yet, in the “medical society”, whether as a student or practitioner, it’s a known fact that a lot of individuals struggle with different types of sleep disorders of varying degrees. Recent studies have been able to shed light on the detrimental effects of inadequate sleep on the general health and productivity of a person. The Circadian rhythm dictates the body’s natural bedtime-wakeup schedule. The better the quality of sleep, the less likely we are to experience significant daytime sleepiness. When a student has to do 8 courses, go to school for 10 hours and do extracurricular activities like volunteering, the time it will take to cover all of those tasks, sleep seems almost impossible for medical students. Regardless of whether previous students, now practitioners, were able to complete these tasks does not indicate that there is no problem. It is important we research this correlation because we need to know if this aspect in our day-to-day lives affects our outcome in academics. As students, we are expected to do a lot in a short span of time and pass exams with flying colours. As such, we must investigate one of the proposed factors that leads to poor academic performance in students. For the purpose of this research, our sample community would be limited to Texila American University Students in MD1-MD4.

Keywords: Academic, Medicine, Performance, Pittsburgh, Students, Sleep.

Introduction

Sleep is one of those activities that we take for granted, and its importance for daily functioning is easily undermined. It is a beneficial activity that we easily trade without a doubt, sometimes for a night out or to try and meet an impending deadline. However, some have not realized that without this ‘basic foundation for all activities, we would not be able to do any of the things we consider more important efficiently. Sleep is an important part of daily human routine, and it is as essential to survival as food and water. It is an important aspect of life that must take place in order to prepare for the activities to come [1]. A lack of adequate sleep can also be denoted as Sleep Deprivation. In an article written by E.Suni and reviewed by Dr. A. Dimitriu, the term sleep deprivation refers to achieving less

amount of sleep that a person requires, which differs in age and daily activities. For adults’, the average amount of sleep ranges from seven to nine hours. Some noticeable short-term impacts of sleep deprivation are lack of energy, poor or risky decision making, worsened memory, reduced attention span, and slow thinking. The long-term impact compromises our physical and mental health [2].

Yet, in the “medical society”, whether as a student or as a practitioner, it’s a known fact that a lot of individuals struggle with different types of sleep disorders of varying degrees. Recent studies have been able to throw more light on the detrimental effects of inadequate sleep on the general health and productivity of a person. In the literature on medical students, sleep experience poor sleep due to the demand for high

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academic performance, stress, and anxiety related to medical school. The better the quality of sleep, the less likely we are to experience significant daytime sleepiness, which would decrease daytime productiveness. When a student must do 8 courses, go to school for 10 hours and do extracurricular activities such as volunteer, the time it will take to cover all of the work given in class, study, and sleep seems almost impossible for medical students. Regardless of whether previous students, now practitioners, were able to complete these tasks does not indicate that there is no problem. Most likely, their performances in school would have been so much better if they had considered the importance of sleep as much as they should have.

It is important we research this correlation and necessary that we investigate one of the proposed factors that leads to poor academic performance in students. For the purpose of this research, our sample community would be limited to Texila American University Students in MD1-MD4.

The aim of our research was to assess the effects of the sleeping patterns among TAU medical students and to see if there is a correlation between sleep patterns and academic performance. Our objectives also are as follows:

1. To describe the sleeping patterns of students ranging from MD1 to MD4 at TAU.
2. To identify the possible factors associated to sleep disorders among the students.
3. To assess the association between the student's PSQI scores and the student's academic performance.

Methodology

This research aims to assess the effects of sleeping patterns on academic performance.

Study Design

A cross-sectional study was used to assess the students of Texila American University on their sleep habits and the effects these habits had on

their daily performance, and resultantly an idea of the importance of sleep was put forward.

Questionnaires in the form of online forms were used to extend the reach of the data collection. The computed questionnaires were made easier to compile and analyse the data as the Google Forms software did some preliminary graphing. This method was quick to fill out and produced large amounts of data to be analysed. The drawbacks of this included the fact that it could not be verified that the information submitted by the students is factual, and they could manipulate the research. Also, questions may have been interpreted differently by different students.

The questionnaire utilized both open-ended and closed-ended questions so that both qualitative data and quantitative data were collected. Questionnaires are economical and provide uniformity of responses.

A questionnaire in the format of a Google Form was distributed by a link to students in semester MD1 to MD4, which constitutes a large section of the entire population. The data collection was gathered from the responses of students who decided to participate. Their responses were compiled and subsequently analyzed.

Sample Approach

Population: The target population of this research was students of Texila American University.

Sampling frame: MD1, MD2, MD3, and MD4 students.

Sampling technique: We used all the information gathered because we had a limited number of responses.

Sampling Size: We had 24 responses. Due to the limited amount of responses, we used all 24 responses.

Recruitment Method/ Inclusion Criteria

Permission for the carrying out of this study was obtained from the research committee of the University. The inclusion criteria for this

research target students enrolled in semesters MD1, MD2, MD3, and MD4. The target population will be informed via emails or messages distributed in their classes' WhatsApp or Skype groups. Students will be asked to indicate their interest in participation over a two (2) day period, thus ensuring that their participation was by choice.

Exclusion Criteria

This research will exclude individuals who are not fully registered students of Texila American University, College of Medicine.

Data Collection

As discussed in the Study Design, the questionnaire link was distributed to each class from MD1 to MD4, and twenty-four (24) responses were collected in total.

Results

All students that participated in the research completed the consent before moving on to complete the questionnaire as well as the PSQI test.

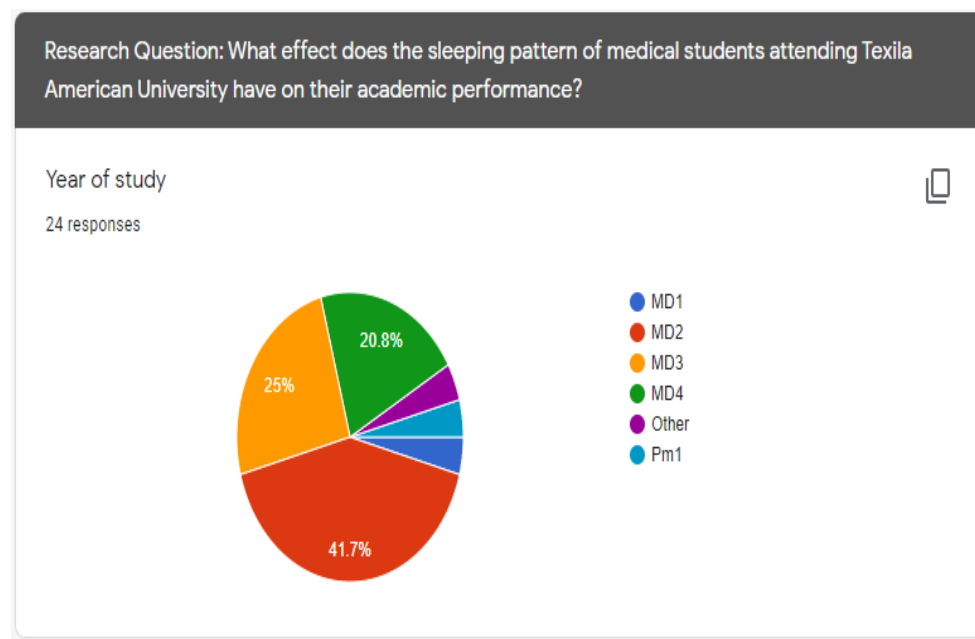


Figure 1. Questionnaire

We needed to establish if any of the participants had any chronic illnesses such as heart failure, arthritis or Parkinson's disease, or diabetes mellitus. 87.5% of participants indicated that they had no chronic illnesses, 8.3% of participants indicated that they do have chronic illnesses and 4.2% indicated diabetes mellitus. Participants were also asked if they were on any medications such as antihistamines or antidepressants that affect the sleep cycle. 8.3% of persons indicated yes, and 91.7% indicated no. Participants were asked if they experienced stress. 87.5% of persons indicated yes, and the remaining 12.5% indicated no. Participants were asked if they experienced

depression. 37.5% of persons indicated yes, and the remaining 62.5% indicated no. Participants were asked if they experienced anxiety. 4.2% of persons indicated yes, and 95.8% indicated no.

Participants were asked to approximate how long they spent studying at night.

8.3% of participants spent less than an hour, and 8.2% of individuals spent five hours studying. They were then asked to rank what range their average grades fall into. 8.3% of participants indicated that their average grades fell within the range of 90-100%. 83.3% of participants indicated that their average grades fell within the range of 70-89%. 8.3% of participants indicated that their average grades

fell within the range of 50-69%. None of the participants indicated that their average grades fell within the range of below 50%.

Participants were asked to rate their sleeping environment on a scale of 1-10. There were 24 responses, and of that number, 1 person rated their sleep environment at a number of 1 (4.2%), no one rated their sleep environment at 2 (0%), 1 person rated their sleep environment at a number of 3 (4.2%), and 1 participant rated their sleep environment at a number of 4 (4.2%). 2 Participants rated their sleep environment at 5

(8.3%), 1 person rated it a 6 (4.2%), 4 persons rated their sleep environment at a number of 7 (16.7%), 4 persons also rated their sleep environment at a number of 8 (16.7%). With the highest number, 7 persons rated their sleep environment at 9 (29.2%) on the scale, and 3 persons rated their sleep environment at 10 (12.5%). We also needed to know if the participants were able to sleep through the night once they fell asleep, and 70.8% of persons indicated yes, and 29.2% indicated no.

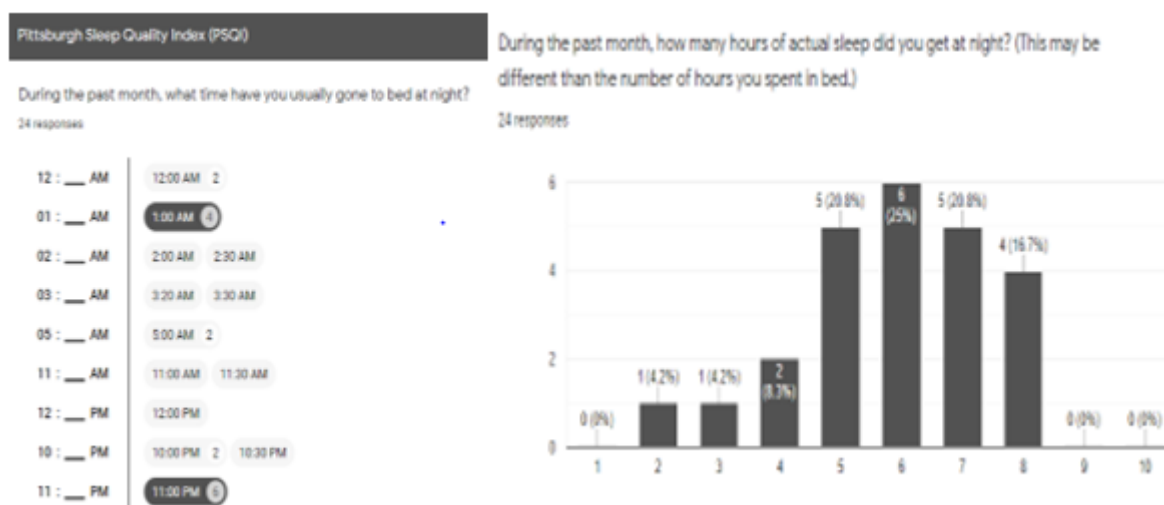


Figure 2. Pittsburg Sleep Quality Index

An important question answered by participants in this section of the questionnaire was what their usual wake-up time was in the past month. Most people woke up before 6:30 AM, with majority being at 8:00 AM and only a few people woke up by 12:00 PM. Other questions were asked, like how long in minutes it took for participants to fall asleep within the last month. 10 minutes had the highest number of responses however, 2 persons selected 10-15 minutes; 2 persons also selected 30 minutes. We then asked how often participants had trouble sleeping in the past month because they could not fall asleep within 30 minutes. The majority, 33.3% of participants, did not have trouble falling asleep within 30 minutes in the past month. However, other participants had trouble falling asleep within 30 minutes at least once or more times a week.

The next question asked how often participants had trouble sleeping in the past month because:

1. They woke up in the middle of the night or early morning. Few participants had trouble sleeping because they woke up in the middle of the night or early morning more or less than three times a week. Around 54.2% of participants did not have trouble sleeping because they woke up in the middle of the night or early morning during the past month.
2. They had to get up to use the restroom. 12.5% of participants had trouble sleeping in the past month because they had to get up to use the restroom less or more than three times a week, respectively. 29.2% of participants had trouble sleeping in the past month because they had to get up and use the

restroom once or twice a week. The majority, 45.8% of participants, did not have trouble sleeping in the past month because they had to get up and use the restroom.

3. They could not breathe comfortably. 4.2% of participants had trouble sleeping in the past month because they could not breathe comfortably three or more times a week. 8.3% of participants had trouble sleeping in the past month because they could not breathe comfortably less than once a week. 12.5% of participants had trouble sleeping in the past month because they could not reach comfortably once or twice a week. 75% of participants did not have trouble falling asleep in the past month because they could not breathe comfortably.
4. They cough or snore loudly. The majority, 87.5% of participants, did not have trouble sleeping in the past month because they snore or cough loudly. The remaining 12.5% of participants had trouble sleeping in the past month because they cough or snore loudly less than once a week and once or twice a week.
5. They felt too cold. 4.2% of participants had trouble sleeping in the past month because they felt too cold three or more times a week. 20.8% of participants had trouble sleeping in the past month because they felt too cold less than once a week. 20.8% of participants also said they felt too cold once or twice a week. With the majority, 54.2% of participants did not have trouble sleeping in the past month because they felt too cold.
6. They feel too hot. Out of 24 responses, 50% being the highest number did not have trouble sleeping due to feeling hot. 25% had trouble sleeping because they've felt hot less than once a week. 16.7% reported they have trouble sleeping once or twice a week due to feeling hot, and only 8.3% reported having trouble sleeping three or more times a week.
7. They have had bad dreams. 24 responses were submitted, with 14.15% being the lowest number stating that they had double

sleeping due to bad dreams once or twice a week and another 14.15% threw or more times a week. 25% say they've experienced trouble sleeping less than once a week during the past month and 66.7% being, the highest number, reported they've had no trouble sleeping due to bad dreams.

8. They have pain. 24 responses were submitted, with 58.3% being the highest had no issue sleeping because of pain. 20.8% experienced issues sleeping due to pain less than once a week. 16.7% experienced pain once or twice a week, and the remaining 4.2% experienced pain three or more times a week.
9. They have other reasons. Most participants, that being 79.2%, reported no issue sleeping due to other reasons.

We asked participants to recall the past month to answer how often they have taken medicine to help them sleep (prescribed/ OTC)? 24 responses were submitted 91.7% being the highest number have not taken any medications to assist with sleeping. 4.15% reported taking medications to aid in sleeping once or twice a week, while another 4.15% reported taking medications three or more times a week. Another question asked how often they had trouble staying awake while driving, eating meals, or engaging in the social activity? 24 responses were submitted, 66.7% being, the majority of participants stated they've had no trouble staying awake during the past month. 20.8% say less than once a week, they've had trouble staying awake. 8.3% reported once or twice a week, while 4.2% reported they've had trouble staying awake three or more times a week. We asked how much of a problem has it been for you to keep up enough enthusiasm to get things done? 24 responses were submitted 29.2% being the highest number of participants had only a very slight problem keeping up enthusiasm. 25% reported having no problem keeping enthusiasm, while another 25% had somewhat of a problem. The remaining 20.8% say they've had a very big problem keeping enthusiasm. The next question

asked participants to state how they would rate your overall sleep quality. 58.3% being the highest number, rated their overall sleep quality as good. 16.7% rated their overall sleep quality bad. 12.5% being the lowest number rated very good, and other 12.5% rated very bad.

This next series of questions were directed to those with a bed partner or roommate. Of the 24 participants, 58.3% being the highest number, reported having no bed partner or roommate. 25% reported having a partner in the same room but not the same bed. 12.5% reported having a partner/roommate in another room, while 4.2% reported having a partner in the same bed. The questions asked: If you have a roommate or bed partner, ask him/her.

1. How often in the past month have you had loud snoring? 8.3% being, the lowest number of participants stated they've snored loudly once or twice a week during the past month. 91.7% being the highest, reported no loud snoring during the past month.
2. How often in the past month have you had long pauses between breaths while asleep? 24 responses were submitted, and 100% of participants reported no long pauses between breaths while asleep.
3. How often in the past month have you had leg twitching/ jerking while you sleep? 83.3% being the highest number, reported no leg twitching/ jerking while sleeping. 8.3% says less than once a week, they experience leg twitching/jerking while sleeping. 4.2% being the lowest number, says once or twice a week they experience leg twitching/ jerking while sleeping and another 4.2% reported leg twitching/jerking three or more times a week.
4. How often in the past month have you had episodes of disorientation or confusion during sleep? 91.7% being, the highest number, reported no disorientation or confusion during sleep. 4.15% says less than once a week they experience disorientation/ confusion, and another 4.15% reported they

experience disorientation/confusion once or twice a week.

5. How often in the past month have you had other restlessness while you sleep? 70.8% being, the highest number of participants reported no other restlessness during sleep in the past month. 8.3% stated once or twice a week, and another 8.3% says three or more times a week. 4.2% being the lowest number, reported they experience tossing and turning, another 4.2% reported change in sleeping position during the night, and another 4.2% says they don't know.

Ethical Consideration

Ethical consideration will be exercised during this research, the purpose of the research and how the findings will be used and documented will be presented to participants, and a full consent section will be included on the questionnaire for participants to fill in before data collection begins. The participant's information will remain confidential and anonymous, and respect for the dignity of research participants will be prioritised. No harm will be done to any respondents, both physical and psychological (stress, pain, or anxiety).

Discussion

This research aimed to assess the effects of the sleeping patterns among TAU medical students and to see if there is a correlation between sleeping patterns and academic performance, with the following objectives:

1. To describe the sleeping patterns of students ranging from MD1 to MD4 at TAU.
2. To identify the possible factors associated to sleep disorders among the students.
3. To assess the association between the student's PSQI scores and the student's academic performance.

According to this research findings, a high percentage of students go to bed unassisted (no tea, alcohol, hard drug, or medication), a good percentage of students. (58%) get good, quality

sleep, and over 80 % get an academic average of over 70%.

The above findings support the research article by [2].

But, seeing that up to 58% of research subject says they get quality sleep, and only about 37% gets up 7 – 9 hours, the required hours of sleep, according to the article written by E.Suni and reviewed by Dr A. Dimitriu, many factors may have influenced this outcome. We should also take cognizance of the fact that the research of the previously cited publications was carried out prior to online learning, while this research was done during the core of online learning. This can also be a large influencer of this research outcome.

Also, the expected number of participants was not achieved, and we had a smaller subject pool, thus leaving a large error margin. Secondly, the intended virtual interview was not carried out.

For the future purpose, the following suggestions may be considered:

1. The correlation between gender and sleep deprivation.
2. Sleep deprivation and stress, what percentage of stress is academic related?

Conclusion

Although our research centers around individuals sleeping patterns and its effects on their academic performance, we cannot dismiss the fact that some of our participants would have other factors, such as family issues and finances,

to name a few, which would affect their performances in school. This is one of the major drawbacks of our research, but regardless it is still an area that needs to be looked into as regards Texila students. The results of our research can help in educating the students on better ways to maximise and manage their time properly and not forego sleep. This would help to produce maximal results in their exams.

Acknowledgement

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Conflict of Interest

Though every participant took part of their own free will, we were not able to ascertain if all the answers offered by the participants were honest.

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