# The Factors Influencing The Incidence Of Insomnia In The Students Of Tsmu

## Prithvi Saravanabawan 1, Arun Venkiteswaran 2, Dr.Siddhant Solanki 3, Ashwinsai Ameelan 4, Yenuli  Siribaddana 5

*Faculty Of Medicine, Tbilisi State Medical University*
*Faculty Of Medicine, Tbilisi State Medical University*
*Faculty Of Medicine, Tbilisi State Medical University*
*Faculty Of Medicine, Tbilisi State Medical University*
*Faculty Of Medicine, Tbilisi State Medical University*

**Abstract:**
*Sleep is essential for overall health and well being, however medical students often face challenges in the form of insomnia or sleep related disorders. This cross sectional study investigates the factors influencing the incidence of insomnia in medical students at Tbilisi State Medical University during the 2022-2023 academic year.*
*Using an online questionnaire, data was collected from 174 respondents with self reported insomnia, and processed with spreadsheet software. The questionnaire collected demographic information, data regarding sleeping patterns, and asked respondents to choose 'yes' or 'no' for each factor and its effect on their self reported insomnia. After applying inclusion and exclusion factors 122 responses were used for analysis. Chi-square analysis was conducted to verify the statistical significance of the data with (p=0.002002).*
*The study revealed a high prevalence of 70.11% of respondents reporting sleeping difficulties. 71.30% of respondents reported excessive workload to be the most significant factor contributing to the incidence of their insomnia. 68% of respondents reported  mental health issues, (including anxiety and depression), and 65.5% reported improper sleep hygiene (including daytime napping and irregular sleep schedules) to play a role in the incidence of their insomnia. Social media and entertainment platform usage (59.8%) and stimulant consumption (48.4%) were comparatively less prominent but still noteworthy contributors to insomnia. The study also found that the majority of respondents (59.8%) experience onset related insomnia, while (40.4%) experience maintenance related insomnia.*
*This study found excessive workload to be the factor that most influenced the incidence of insomnia in medical students at Tbilisi State Medical University. This can be attributed to increased academic load a medical student has to face, and worry of academic performance.  Proper sleep hygiene, mental health support, and workload adjustments are suggested to decrease the incidence of insomnia amongst medical students at Tbilisi State Medical University.*
**Keywords:** *Insomnia, Medical Students, Excessive Workload, Mental Health Issue, Sleep Hygiene, Academic Performances*

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## I.    INTRODUCTION:

Sleep is essential for normal physiological functioning and good health of the human body, and lack of sleep can manifest as increased stress, mood disorders, performance deficits, and reduced quality of life [1]. Medical students are no exception to this, they are especially vulnerable to poor sleep and sleep related disorders [2]. Given the damaging effects of lack of sleep, knowledge of the factors that surround it can help them make decisions which will improve their general wellbeing and academic performance.

Improper sleep can be categorized into seven major forms, with insomnia being the most common. According to the International Classification of Sleep Disorders - Third Edition, insomnia is understood to be a disorder of sleep initiation or maintenance, despite adequate environment and opportunity results in daytime consequences. [3]

The lack of a good night's sleep is known to cause anxiety, change in mood and poor performance. It's also understood that insomnia and mental health issues share a bidirectional relationship [6]. With medical students more likely to be impacted by mental health issues [2], there are high chances for their sleep to be impacted. This increases the incidence of insomnia, which was seen during the COVID-19 pandemic [7]. This also leads to a vicious situation where students may choose to combat daytime sleepiness with stimulants such as

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caffeine further worsening their sleep cycle [8]. Excessive stimulant intake, such as caffeine from coffee or energy drinks can lead to further development of insomnia [5].

Improper sleep hygiene such as daytime sleeping can also contribute to sleeping difficulties [9]. This is observed among students choosing to take daytime 'naps' to get rested after an improper night's sleep, which further damages their sleep schedules, and increases the incidence of insomnia. The use of social media, entertainment platforms, and looking at screens for an extended period of time, has also shown to cause sleeping difficulties, [10].

Studies examining the incidence of sleeping issues in medical students also highlight increased academic pressure, examinations, late night internet usage, mental health problems and excessive daytime sleepiness [2], [4]. The factors influencing the incidence of insomnia can be broadly classified into five main factors, i.e (i) mental health issues, (ii) stimulant consumption, (iii) improper sleep hygiene, (iv) use of Social Media and other Entertainment Platforms and (v) excessive workload. This study aims to investigate the level to which these five factors listed above impact the incidence of insomnia in medical students at Tbilisi State Medical University, during the 2022-2023 academic year.

## II.    MATERIALS AND METHODS:

Study Design

In this study, a cross sectional study design was used, to determine the factors that influence the prevalence and incidence of insomnia among medical students in Tbilisi State Medical University. The study was conducted with a 3 part questionnaire. The first section collected demographic information. The second section asked respondents to gauge the impact that self declared insomnia had on their lives. The third section presented respondents with 5 factors, and participants were asked to rate 'yes' or 'no' for each factor, if they believed that it contributed to the incidence of their self reported insomnia. To access the second and third section, respondents had to answer 'Yes' to the question 'Do you think you have chronic sleeping difficulty (insomnia) at night?'

Data collection

Data was collected through the convenience sampling method, by distributing the questionnaire online with an Online Query Generator . The questionnaire was disseminated through contacts and university distribution mechanisms such as batch WhatsApp groups and emails through the official university channels. Effort was taken to ensure that the data collected was as diverse as possible.

Demographic information collected through the questionnaire consisted of name, sex, year of study and age. To verify the response, respondents were asked to share their name, which was then discarded and separated from the data once authenticity had been established. Following this, all personal identifiers were removed, and data was anonymized before statistical analysis.

Sampling method

A total of 174 responses were received, and accounting for the inclusion and exclusion criteria, 122 responses were deemed valid and used for analysis. The inclusion criteria for was as follows, (a) the participant had to be an active student of Tbilisi State Medical University, (b) the participant had self-reported to having insomnia at night. The exclusion criteria was as follows: (a) anyone who is not an active medical student at Tbilisi State Medical University. (b) Individuals with a history of diagnosed sleep disorders other than insomnia.

Participant Consent and Information

Prior to starting the questionnaire, participants were asked for their explicit informed consent regarding the collection and management of the data collected during the study. The amended Helsinki Declaration was followed during the study's execution. Participants were not paid for their involvement in the study, and there were no associated expenditures.

Statistical Analysis

Statistical analysis was done using online resources (socscistatistics.com) and (quantpsy.org). Graphs and tables were created with online statistics software. All tests gave a p-value of less than 0.05, which was calculated by a chi-square table.

The p-value calculated for this study measured at (p=0.002002) suggesting a 0.2% chance that the relationship between the factors taken in this study (mental health, stimulant consumption, improper sleep hygiene, social media, workload) and insomnia is coincidental, therefore rejecting the null hypothesis (factors show no relevance to insomnia), in favor of the alternative hypothesis (factors show relevance to insomnia).

Additionally, chi-square analysis for p values were conducted between individual factors such as social media and workload (p=0.00001), mental health and stimulant consumption (p=0.003473); both of which

produced a result of below p=0.05 strongly suggesting that the factors are empirically related to each other in favor of the alternate hypothesis.

# III. RESULTS:

TABLE 1: Illustration of participants' Gender, Academic Year, Attribution to Insomnia, Satisfaction with Current Sleeping Pattern And Hours Slept Per day in a normal week of university.

Participant Characteristics:

       Participant Characteristics are presented in Table 1. Among the 122 responses that fit the inclusion and exclusion criteria, 57 were Male (46.7%) and 65 were Female (53.3%). Distribution amongst the years of education were: 1st Year - 15 (12.30%), 2nd Year - 37 (30.30%), 3rd Year - 19 (15.60%), 4th Year - 17 (13.90%), 5th Year -12 (9.80%), 6th Year - 22 (18%). The youngest respondent was 17 years old and the oldest respondent was 28; and the average age of the respondents was 21 years old.

Onset or Maintenance:

       The study focused on two types of insomnia, and respondents were asked to choose if they experience difficulty falling asleep (onset related insomnia) or maintaining sleep (maintenance related insomnia). Majority of the respondents (n=73 , 59.8%) reported that they experienced difficulty falling asleep while (n= 49 , 40.2%) of the respondents reported difficulty maintaining their sleep.

Sleep Satisfaction and Impact on Life:

       Participants reported their satisfaction with current sleeping patterns as follows: Very Satisfied - 3 (2.50%), A little satisfied - 14 (11.50%), Neutral - 28 (23%), A little dissatisfied - 39 (32%), Very Dissatisfied - 38 (31.1%). Majority of participants (63.1%) were a little or very dissatisfied with their current sleeping patterns.

TABLE 2: Illustrating the Impact of Self Reported Insomnia on the lives of Participants

| Impact of Self Reported Insomnia on Life (TABLE 2) | | | | |
|---|---|---|---|---|
| Rating | Impact on Learning (Frequency) | Aggregate (Learning) | Impact on Social Life (Frequency) | Aggregate (Social Life) |
| 1 | 2 | | 1 | |
| 2 | 6 | 20 | 10 | 21 |
| 3 | 12 | | 10 | |
| 4 | 17 | | 18 | |
| 5 | 16 | | 19 | |
| 6 | 17 | 73 | 12 | 69 |
| 7 | 23 | | 20 | |
| 8 | 14 | | 16 | |
| 9 | 9 | 29 | 10 | 32 |
| 10 | 6 | | 6 | |

Impact on Learning:

       Respondents were asked to rate the impact of their self reported insomnia on their learning, with 1 indicating minimum impact and 10 indicating maximum impact. The data was aggregated and then divided into 3 divisions. These divisions were minimal impact (from 1 - 3) which 16.39% (n=20) participants selected, moderate impact (from 4 - 7) which 59.83% (n=73) participants selected, and severe impact (from 8-10) which 23.77% (n=29) participants selected. Majority of the participants (n=23) selected a rating of 7.

Impact on Social Life:

       Respondents were asked to rate the impact of their self reported insomnia on their social life, with 1 indicating minimum impact and 10 indicating maximum impact. The data was aggregated and then divided into 3 divisions. These divisions were minimal impact (from 1 - 3) which 17.21% (n=21) participants selected, moderate impact (from 4 - 7) which 56.55% (n=69) participants selected, and severe impact (from 8-10) which 26.22% (n=32) participants selected. Majority of the participants (n=20) selected a rating of 7.

TABLE 3: Factors influencing the incidence of insomnia

| Factors | YES | Percentage | NO | Percentage |
|---------|-----|-----------|-----|-----------|
| Mental Health | 83 | 68% | 39 | 32% |
| Stimulant Consumption | 59 | 48.40% | 63 | 51.60% |
| Improper Sleep Hygiene | 80 | 65.60% | 42 | 34.40% |
| Social Media | 73 | 59.80% | 49 | 40.20% |
| Excessive Workload | 87 | 71.30% | 35 | 28.70% |

Mental Health Issues:
When asked to report if mental health factors played a role in the incidence of their self reported insomnia, (n=83, 68%) of participants said yes, while (n=39, 32%) said no. Anxiety and depression were mentioned as examples of mental health factors, however, the specifics of which mental health issue the respondent may be suffering from, or the status of their diagnosis was not collected.

Stimulant Consumption:
When asked to report if stimulant consumption played a role in the incidence of their self reported insomnia, (n=59, 48.4%) of participants said yes, while a majority (n=63, 51.6%) said no. Specific data of which stimulants, such as coffee, or energy drinks, nor the time and frequency of consumption were collected.

Improper Sleep Hygiene:
Sleep hygiene is a multifactorial component and includes a wide spectrum of daily habits and constructs, including daytime sleeping, irregular sleep schedule, etc. When asked to report if improper sleep hygiene played a role in the incidence of their self reported insomnia, a majority (n=80, 65.6%) of participants said yes, while (n=42, 34.4%) said no.

Use of Social Media and other Entertainment Platforms
When asked to report if use of social media and other entertainment platforms played a role in the incidence of their self reported insomnia, (n=73, 59.8%) of participants said yes, while (n=49, 40.2%) said no. Detailed data about time of use, and the hours spent on the platforms were not collected. Instagram and Netlix were used as examples of such social media and entertainment platforms.

Excessive workload:
When asked to report if an excessive workload played a role in the incidence of their self reported insomnia, a significant majority (n=87, 71.3%) of participants said yes, while (n=35, 28.7%) said no. Excessive workload is one of the most attributed components to self reported insomnia among medical students in accordance with the data collected for this study.

## IV.    DISCUSSION:

In this cross sectional study, we aimed to identify the factors influencing the incidence of insomnia, in medical students at Tbilisi State Medical University. University students are at higher risk of sleeping problems [11], and this is reflected in our data, with 70.11% of our respondents self-reporting insomnia.

The factor that a majority of our participants reported to have a major effect on their sleep was excessive workload (71.30%), followed by mental health (68%) and improper sleep hygiene (65%). Furthermore, the average reported duration of sleep in a normal day of university from our study was 5.3 hours, which is lower than that reported by the meta analysis of 109 research papers at 6.5 hours [12].

With the average age of our respondents being 21, the majority of them are making the transition from adolescence to adulthood, which is a high risk group for sleep problems [11]. When asked to choose if their sleeping difficulty was onset related or maintenance related, the majority of our respondents (59.8%) chose onset. Improper sleep hygiene which includes daytime sleeping is a major contributor to onset related sleeping difficulties [9, 13] which 65% of our respondents reported as having.

Mental health and related issues such as anxiety and depression have long been known to cause difficulties with sleeping. [14] With 68% of our respondents indicating that they believe they have mental health issues, the link between mental health and sleeping difficulties can be established.

Two of the lower rated factors when it came to the incidence of self reported insomnia as reported by our respondents were social media (59.8%) and stimulant consumption (48.4%). We can presume that social media as such may not cause insomnia, but can develop feelings of anxiety or 'Fear of Missing Out', and exposure to a

screen may cause decreased melatonin secretion. These are in turn factors that may lead to the incidence of insomnia.

Having conducted this study, we encourage medical students of Tbilisi State Medical University and medical students all over the world to give greater importance to the quality of their sleep. Proper sleep hygiene is the easiest to develop and could result in improvement of self reported insomnia. In the future, to better understand insomnia in medical students, additional studies can be conducted with bigger sample sizes, and with more detailed questionnaires to gain a deeper understanding of the factors influencing the incidence of insomnia and ways to mitigate them.

Limitations:

Data collection was conducted through convenience sampling, so equal representation from all 6 years of the university was not available. Furthermore, the study did not collect specific details under each of the factors and did not use scientifically accepted scales for measuring insomnia or quality of sleep.

## V.    CONCLUSIONS

The study revealed that the prevalence of insomnia is 70.11% and excessive workload, mental health related issues and improper sleep hygiene are the major factors that influence the incidence of insomnia in medical students at Tbilisi State Medical University. The average sleep duration for medical students at Tbilisi State Medical University on a normal day of university is 5.3 hours. 59.8% of respondents reported difficulty falling asleep and had onset related insomnia. Data also revealed that insomnia impacts the social life and learning of medical students at Tbilisi State Medical University. Medical students should take measures to improve hours of sleep, seek mental health support, and with support from the university administration adjust their workload to improve their insomnia.

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