

## **Prevalence of Disturb Sleep Cycle among University Students in Karachi: A Cross-Sectional Study**

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### **ABSTRACT**

*Sleep problems among university students are common Sleep deprivation can have a negative impact on academic performance, mental health, and overall well-being. A questionnaire was administered to assess sleep quality and sleep patterns. Data analyzing was done using both descriptive and inferential statistics. Multivariate logistic regressions were performed to identify predictors of poor sleep quality. These will cross-sectional survey which will be conducted through Pittsburg sleep quality index (PSQI). Data will be collected through convenience sample of 188 universities students through Power Analysis and Sample Size System (PASS), age ranging from 17 to 28 years both male and female. The factual investigation for our examination will be done by utilizing SPSS programming variant 29 for Windows. The confidence interval 95% and margin of error will be set at 5%. The qualities of the example would sum up utilizing means and standard deviations (SD) for nonstop factors and frequencies with percentages for unmitigated factors. The Questionnaire designed was Pittsburg sleep quality index (PSQI) for the evaluation of disturb sleep cycle among universities students in Karachi. Out of 188 participants, the research shows that, about 51.1% of the students got >7 hours of sleep, while also 18.1% of students got 5 hours of sleep daily. The majority of students face difficulty in falling asleep within 10 minutes of the time and took 30 minutes to fall asleep about 41.5% of the population. Deep sleep cycle have p-value is more than 0.05; hence homogeneity assumption of the variance is met have a mean that spread of data within each combination of factors should be roughly the same. Finally, the study shows the strong correlation in poor sleep latency among universities students in Karachi. Showing sleep duration of 5-6 hours and 30 minutes of sleep latency.*

**Keywords:** Disturb sleep cycle, Pittsburg's sleep quality index (PSQI), sleep pattern.

### **INTRODUCTION**

Sleep problem are most common recently among university these days. Which that are going the affects their health, and academic performance.<sup>1</sup> The prevalence of inadequate sleep and erratic sleep-wake patterns, which have become well-documented in adolescent populations, is also concurrently high among undergraduates.<sup>2</sup> Lack of fall asleep has detrimental effects on one's health and is an important threat to public health. Students at universities frequently experience sleep disruptions, which negatively impact their general well-being and ability to perform.<sup>3</sup> One of the essential everyday activities and a major contributor to overall health is getting enough sleep. Sleep is beneficial to bodily processes,

equilibrium, and quality of life.<sup>4</sup> A naturally occurring circadian problem called delayed sleep phase syndrome (DSPS) usually manifests itself in the subsequent quarter of living. Sleep-onset restlessness and trouble getting up at the appointed hour in the early hours are the hallmarks of DSPS.<sup>5</sup> There was a strong correlation found between students who had DSPS and BISS + DSPS and everyday classroom disorder, such as lateness, absences, somnolence in class, and disruption with studying.<sup>6</sup> Juvenile sleep patterns are influenced by a variety of factors, including age, ethnicity, lifestyle choices, family values, and sociocultural norms. The definition of sleep issues is influenced by adolescent habits of sleeping.<sup>7</sup> Sleep and wake habits alter significantly as kids grow from childhood to adolescent, owing to both internal and external developmental changes. It has been demonstrated that these changes cause adolescents in countries of the West to have similar changes in sleep phase (delayed sleep initiation) and inadequate sleep.<sup>8</sup> It has been shown that low levels of sleep and drowsiness throughout the day are linked to coronary artery disease, vehicular crashes, subpar academic performance, and mental anguish.<sup>9</sup> The detrimental consequences of insomnia are widely known. Nevertheless, not much research is being done on how common these issues are among undergraduates in the United States. Estimating the incidence and kinds of disruptions researched is challenging due to problems with design that are prevalent in the few studies that have been done.<sup>10</sup> Age-related sleeping routines typically result in interruption, limiting sleep throughout the academic period. Asian teenagers tended to have more problem with falling asleep that were later than their classmates, from North America and Europe, which led to a decrease in overall time spent asleep on nights off from school and an increased likelihood of excessive daytime drowsiness.<sup>11</sup> A disturbing and concerning symptom that can impair medical students' ability to learn is low levels of sleep. Among the key elements influencing the degree of sleeping is sleep maintenance. The Qazvin University of Medical Sciences, conducted a study to show the relationship among medicine students' sleep sanitation behaviors and their sleeping conditions.<sup>12</sup>

### **Rationale of Research**

The disturbed sleep cycle among university students stems from a combination of academic pressures, social activities, irregular schedules, and increased screen time. These factors disrupt circadian rhythms, leading to difficulty falling asleep, frequent awakenings, and overall poor sleep quality. Additionally, stress, anxiety, and lifestyle choices exacerbate this issue, creating a vicious cycle detrimental to students' well-being and academic success. Addressing these underlying causes through education, support services, and lifestyle adjustments is essential for promoting healthier sleep habits among university students.

The objective of this study as to determine the prevalence of disturb sleep pattern among university students.

### **Research Objective**

To identify the prevalence of disturb sleep cycle among university students of Karachi.

### **METHODOLOGY**

**Study Design:** A cross-sectional study on prevalence of disturb sleep cycle among university students of Karachi.

**Sampling Techniques:** Convenience sampling was employed in this study to examine the prevalence of disturb sleep cycle among university students of Karachi. The selection of convenience sampling was based on its feasibility and accessibility to people that were interested and able to take part. An organized questionnaire is sent out to students at different universities. This technique made it possible to rapidly collect information from a wide range of pupils, giving understandings of the similarities and differences in sleep disturbances.

**Outcome Measure:** Pittsburgh sleep quality index (PSQI) Questionnaire was used. It is a self-rated questionnaire that assesses sleep quality over a one-month period. The PSQI is widely used in research and clinical settings to evaluate sleep quality in various population. The chosen outcome measures comprehensively assess the prevalence of disturb sleep cycle among university students of Karachi.

**Data analysis procedure:** The factual investigation for our examination will be done by utilizing SPSS. The confidence interval 95% and margin of error will be set at 5%. The qualities of the example were summed up utilizing means and standard deviations (SD) for nonstop factors and frequencies with percent-ages for unmitigated factors.

**Ethical Consideration:** This study ensured informed consent through written consent forms and clear explanations of the research purpose and procedures. Participants' confidentiality was maintained throughout the study and secure data storage. The study's benefits outweigh potential risks, and no conflict of interest.

**Reliability:** The reliability of PSQI is 0.7.

## RESULT

This chapter presented a detailed discussion about the statistical tests performed in this research to assess the developed hypotheses that based on how extensively Assertiveness to prevalence of disturb sleep cycle as dependent variable are influenced by an independent variable which is age of respondent. Extensively, this research has also segmented into another sub-group of population i.e. gender aiming to make this research as multi-dimensional assessment of deep insight of reasons of assertiveness to prevalence of disturb sleep cycle.

Chart-1 shows One-hundred Eighty-eight respondents have examined for research consist with five (05) age-brackets i.e., 03 respondents (1.6% of population) are 14-17, 47 respondents (25.0% of population) are 18-20, 110 respondents (58.5% of population) are 21-23, 26 respondents (13.8% of population) are 24-26 and 02 respondents (1.1% of population) are 27-30.

**Chart 1: Age-wise population:** Showing break-up of population w.r.t. age brackets of respondents.

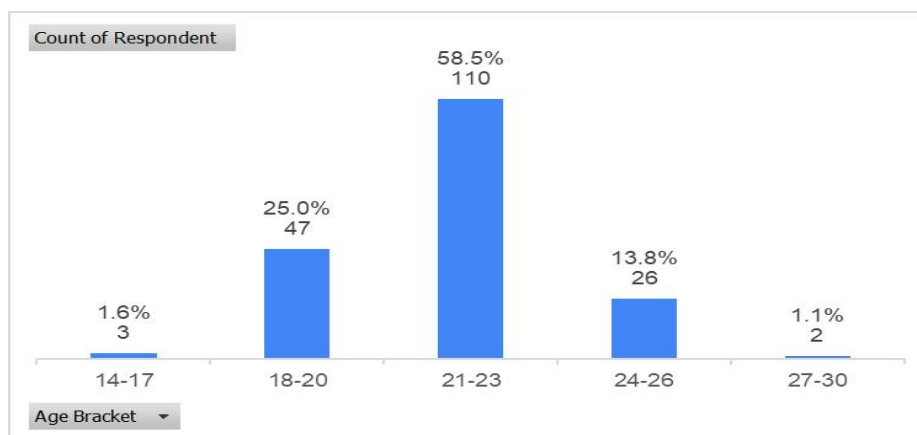


Chart-2 showing that One-hundred Eighty-eight respondents have examine for research consist with two (02) gender i.e., 94 respondents (50% of population) are female whereas 94 respondents (50% of population) are male.

**Chart 2: Gender-wise Population:** Showing break-up of population of respondents w.r.t. gender.

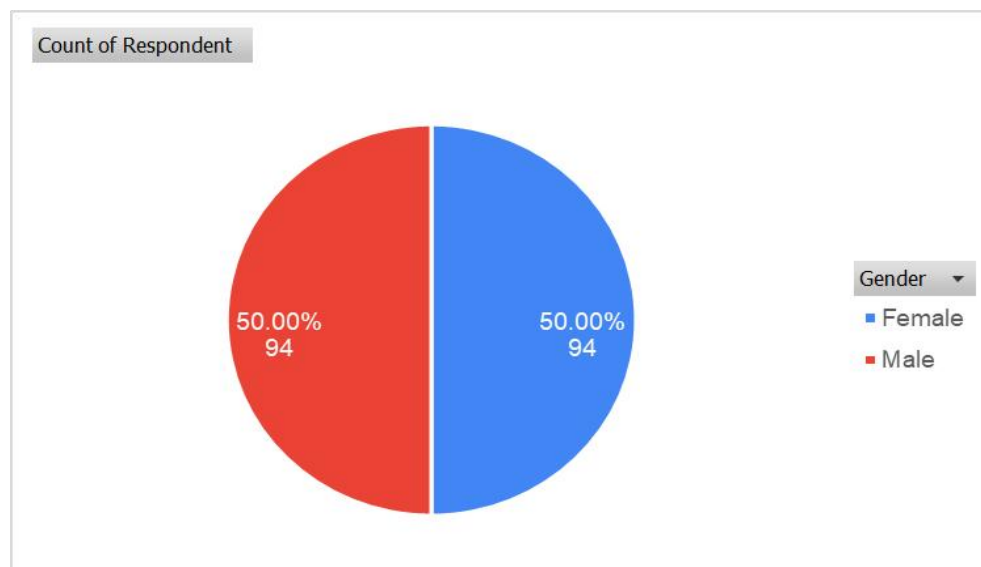
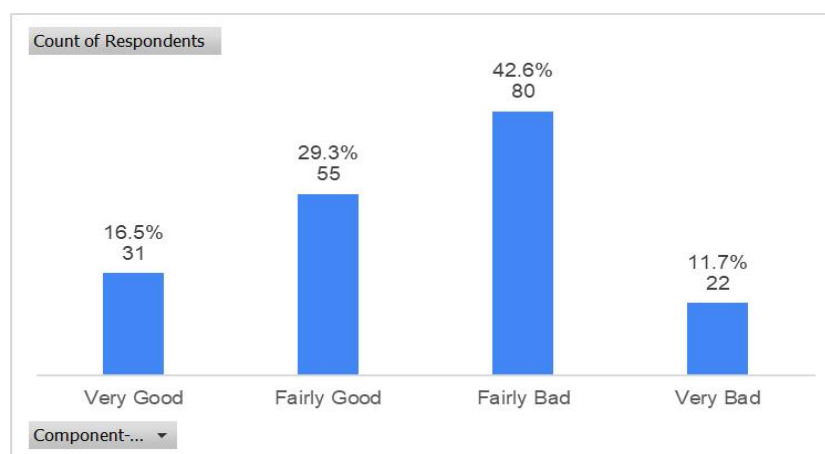


Chart-3 showing that one-hundred Eighty-eight respondents have examine for research consist with four (04) states of sleep latency based on Pittsburg sleep quality index (PSQI) i.e., 31 respondents (16.5% of population) are tagged as very good latency, 55 respondents (29.30% of population) are tagged as fairly good latency, 80 respondents (42.6% of population) are tagged as fairly bad latency and 22 respondents (11.7% of population) are tagged as very bad latency.

**Chart 3: Sleep latency:** Showing break-up of population w.r.t. sleep latency among respondents.



Following table shows the correlations between variables of our research data. Directions of relation among all variables are positively correlated except sleep efficiency to use of sleep medication showing that these two components have negative or inverse relationship; however, this co-relation persist only by

8.2%. The highest inter-relative variable is observed in the sleep quality to ability to Global PSQI i.e. of 64.6% respondents showing that most influencing factor for prevalence of deep sleep is sleep quality.

**Table 1: Correlation Analysis of PSQI components:**

PSQI Components	Sleep Quality	Sleep Latency	Sleep duration	Sleep Efficiency	Sleep Disturbance	Use of Sleep Medication	Daytime Dysfunction	Global PSQI
Sleep Quality	1	0.348	0.379	0.181	0.407	0.272	0.461	0.646
Sleep Latency	0.348	1	0.108	0.180	0.541	0.109	0.335	0.522
Sleep duration	0.379	0.108	1	0.442	0.193	0.067	0.244	0.602
Sleep Efficiency	0.181	0.18	0.442	1	0.074	-0.082	0.175	0.443
Sleep Disturbance	0.407	0.541	0.193	0.074	1	0.283	0.439	0.562
Use of Sleep Medication	0.272	0.109	0.067	-0.082	0.283	1	0.245	0.322
Daytime Dysfunction	0.461	0.335	0.244	0.175	0.439	0.245	1	0.597
Global PSQI	0.646	0.522	0.602	0.443	0.562	0.322	0.597	1

Following table shows that both dimensions of results have derived from a normal distributed population for assessment of prevalence of Deep sleep cycle as value of the Shapiro-Wilk test is greater than 0.05 for both gender and for all five age-brackets.

**Table 2: Normality Test**

Prevalence of Disturb Sleep Cycle		Shapiro-Wilk
Age Bracket	14-17	0.750
	18-20	0.755
	21-23	0.731
	24-26	0.728
	27-30	Constant
Gender	Male	0.744
	Female	0.744

The following table showing that VIF of all 07 components in questionnaire is <10 which shows there is no collinearity and data is acceptable for performing the statistical analyses.

**Table-3: Multicollinearity Values**

Model – Global PSQI	VIF
Sleep Quality	1.564
Sleep Latency	1.523
Sleep duration	1.432
Sleep Efficiency	1.314
Sleep Disturbance	1.709

Use of Sleep Medication	1.165
Daytime Dysfunction	1.447

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Deep sleep cycle has p-value is less than 0.05; hence homogeneity assumption of the variance is not met which means our data sample are not homogenous and fit-for analysis. Whereas population of age bracket for assessment of prevalence of Deep sleep cycle have p-value is more than 0.05; hence homogeneity assumption of the variance is met have a mean that spread of data within each combination of factors should be roughly the same.

## DISCUSSION

The study conducted on medical students for determining the frequency of insomnia with the correlation among anxiety and inadequate sleeping across medical undergraduates. Anxiety (53%) and insufficient sleep (76%) proved to be quite prevalent, and there was a correlation that was statistically significant.<sup>13</sup> The Pittsburgh Sleep Quality Index (PSQI) was used in the present investigation to assess the undergraduate level of sleep among students in Karachi. The worldwide rating and its seven elements were contrasted between semesters. Teenagers and young adults are more likely to experience sleep problems (SD), which are characterized by sleep deprivation a lack of sleep, along with other sleep-related concerns. Among of the sleepest demographics of learners, undergraduates are especially prone to sleep disturbances.<sup>13</sup>

Teenage users of drugs frequently experience sleep disturbances. Liquor drinkers and cigarettes are more inclined to experience sleeplessness and hypersomnolence, accordingly. Based on studies, medical professionals can create focused, efficient programs to lower drug use, avoid sleep disruption, and encourage teenagers to have adequate rest.<sup>14</sup>

On our result showing, the higher prevalence of 'sleep difficulty' results among males (50%) compared to females (49.5%) suggests potential gender-related differences in sleep difficulty. This finding aligns with existing literature that often reports variations in sleeping characteristics between genders. The statistically significant association (P-value<0.005) emphasizes the relevance of considering gender-specific factors in assessing and addressing sleep difficulty issues.

However our studies slightly matches with this study conducted in Lebanon and Japan.<sup>15,16</sup> The current studies shows poor sleep cycle was concerning in that some medical learners reported taking medicine and then falling asleep. The majority of students studying medicine slept fewer hours than was advised, and overall regular circadian rhythm were particularly compromised.<sup>17</sup>

Examining further the other studies find out that, University students frequently have trouble sleeping, which can be brought about by a variety of socioeconomic factors, medical conditions, and educational demands. Undergrads, concentrated on medical education and restricted to specific areas. In spite of earlier research, a thorough assessment of the elements influencing university students' level of sleep requires highlighting aspects relevant to their academics. From the standpoint to encourage medical care, health for all depends on a recognition of characteristics.<sup>18</sup>

Additionally, the study's comprehensive analysis delved into the prevalence of disturb sleep cycle among universities students in Karachi. Amongst respondents slept for >7 hours, 51.1% exhibited sleep difficulty, contrasting with the 15.4% in the ≤5 hours group. The majority, comprising 51.1%, demonstrated results in the >7 hours group, while only 18.1% displayed in the 5-6 hours group. These disparities, illustrated in Fig-00, reveal the substantial impact of sleep disparities on chi-square's test outcomes.



Furthermore, the age-bracket-based analysis revealed intriguing patterns. Age group  $\leq 20$  (26.20%) have a lesser sleep difficulty than  $>20$  (73.80%) for chi-square test results ( $P\text{-value} < 0.001$ ). The medication-use-based analysis revealed intriguing patterns. Males (40.64%) have a higher usage of sleep medication than females (39.04%) for chi-square test results ( $P\text{-value} < 0.001$ ). These findings suggest a gender-specific susceptibility to the effects of prolonged sitting on chi-square test outcomes.

In conclusion, the current research's conclusion could indicate that undergraduates need to be regularly made understand the negative effects of getting not enough rest while the hazards could be mitigated if they make an effort to alter their habits and perceptual awareness.<sup>19</sup>

### **LIMITATIONS**

- The sample size were small.
- Only undergraduate's students were taken out in this research.
- The data were collected only from an online survey form.
- Limited universities were covered.

### **RECOMMENDATIONS**

Further researches should be done to find out the academics stress affecting the sleep pattern of the students. Greater consideration should be taken on bigger sample size covering different universities, to get a proper insight about the disturb sleep pattern. More studies should have to be conducted on sleep latency period. This research as done among the undergraduates students only, more studies have to be conducted among students of all ages to get the proper insight about the prevalence of disturb sleep cycle.

### **CONCLUSION**

The research shows that, about 51.1% of the students got  $>7$  hours of sleep, while also 18.1% of students got 5 hours of sleep daily. The majority of students face difficulty in falling asleep within 10 minutes of the time and took 30 minutes to fall asleep about 41.5% of the population. Finally the study shows the strong correlation in poor sleep latency among universities students in Karachi. The students should has encouraged to stop using their sleep one hour before going to bed.

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