

Assessment of Sleep Quality among College Students: Influence of Internet Usage

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ABSTRACT

The present study aimed to assess the sleep quality among college students studying in Mysuru. The sample consisted of 169 students, aged between 18 and 22 years, pursuing various courses. These students were selected through simple random sampling from Mysuru city, Karnataka. The students completed the Pittsburgh Sleep Quality Index (PSQI, 1989), a scale that measures global sleep quality. The data were analyzed using the chi-square test, Pearson's product-moment correlation, and independent samples t-tests. The results revealed that the majority (53.3%) of students had poor sleep quality, while only 46.7% had healthy sleep quality. Internet usage during weekdays significantly and negatively influenced subjective sleep quality and total PSQI scores. Internet usage during weekends significantly and negatively affected sleep duration, sleep efficiency, and total PSQI scores. Gender did not have a significant influence on sleep quality.

Keywords: *Sleep quality, College students, Internet usage*

Sleep is a necessary and essential aspect of human physiology. It is not only important for proper functioning but also crucial for maintaining mental health and enjoying the "good quality of life." A study by Taheri et al. (2004) found that poor sleep quality leads to significant weight gain. They also discovered that sleep deprivation causes disturbances and fluctuations in appetite-regulating hormones, which later result in poor appetite. Cappuccio et al. (2011) revealed that people who lack sleep are more prone to heart attacks and strokes compared to those who sleep 7–8 hours. Spiegel, Leproult, and Van (1999) observed that younger men who reduced their sleep to 4 hours for 6 days developed symptoms commonly seen in pre-diabetic patients. A recent study by D'Souza and Samyukta (2018) highlighted poor sleep quality among college students. Sleep is not just related to physical health but also to mental health. A study by van der Helm, Guar, and Walker (2010) showed that people with insufficient sleep have difficulty recognizing emotions such as happiness and anger, and their ability to analyze social emotions is also impaired.

College life brings many new and stressful challenges, including increased freedom, self-responsibility, an unorganized lifestyle, variable schedules, repeated deadlines, dormitory living, and social and academic obligations. To cope with these challenges, students often alter their sleeping habits, leading to the loss of valuable sleep hours, which are instead spent

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socializing, using the internet, and engaging in other activities. In the public health domain, sleep quality plays a major role. Despite widespread knowledge about sleep and its quality, sleep-related disorders are becoming increasingly common, especially among young adults and the elderly. Poor sleep quality has become a global public health problem (Araújo et al., 2013). As of now, sleep duration has been found to decrease with age, and the highest prevalence of poor sleep quality occurs among older adolescents. The prevalence of poor sleep quality among adolescents and young adults ranges from 10% to 40% worldwide. In China, research by Xu et al. found that the highest prevalence of poor sleep quality was in the 16–20-year age group (18.6%), followed by those aged 21–25 years (17.1%), and 10–15 years (15.2%). In Shanghai, a study on children and teenagers revealed that the average age at which insufficient sleep began was 11.5 years, with female subjects sleeping less and going to bed later. A meta-analysis of adolescent sleep patterns showed that sleep time decreases with age by an average of 14 minutes per day on school days and 7 minutes per night on non-school days. Studies have also shown that teenagers sleep about 1.5 hours longer on weekends compared to weekdays.

This study focuses on adolescents attending college. Important risk factors related to poor sleep quality among college students include family financial status, parents' educational background, and family structure. Additionally, insufficient sleep among college students has been linked to daytime sleepiness and poor academic performance. Psychological factors such as stress, anxiety, and depression significantly contribute to poor sleep quality among adolescents. Sleep deprivation and daytime drowsiness are common among college students. College life presents new challenges, such as adapting to a new social and competitive environment, which can have both positive and negative effects on students' well-being. Factors such as social pressures, family separation, financial concerns, and academic stress also contribute to sleep deprivation. Lack of sleep affects learning, memory, and executive functioning, including overall physical health. Studies show that insufficient sleep (less than 6-7 hours per night) can result in significant cognitive impairments, such as reduced concentration, memory, and reasoning abilities, as well as daytime dysfunction, increased accident rates, and poor academic performance (Voelker, 2004).

Sleep deprivation can have serious effects on various bodily processes, including endocrine, immune, metabolic, and cardiovascular functions. The extent of these effects depends on the severity of the sleep deprivation (Teter et al., 2006; Buboltz, 2002). The reduction in sleep quality and duration is linked to increased demands from work and social status, lifestyle changes, greater technology use, smoking and drinking, caffeine consumption, changes in diet, and alterations in physical activity (Al-Hazzaa et al., 2012; Calamaro et al., 2009). Studies show that the quality of sleep is crucial for emotional and physical growth during adolescence, which, in turn, affects learning, attention, concentration, and other cognitive functions (Friedman et al., 2009; Snell et al., 2007). The negative impact on mood and behavior caused by sleep deprivation hinders students' ability to think clearly and concentrate on various activities, which affects their academic performance.

In India, there has been a rise in the use of mobile applications and computer programs, many of which are available for free or at minimal cost. Young adults, in particular, are heavy users of these technologies, which is a significant factor contributing to poor sleep quality. Since few studies have been conducted on this topic, the present study aims to investigate the extent of sleep quality among college students and how certain demographic factors influence it. It is hypothesized that college students experience poor sleep quality, and that internet usage significantly impacts this.

METHOD

Sample

The sample for the study was selected from various colleges of Mysuru city. A total of 169 college students studying in Arts, Science and commerce disciplines were randomly selected. They were distributed with questionnaire- PSQI-Pittsburg Sleep Quality index long with demographic details. Additional data was collected on number of hours of internet usage during weekdays and weekends on an average.

Tools employed

The Pittsburgh Sleep Quality Index (1989): The Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds, Monk, and Berman, 1989) was used to evaluate the sleep quality of the selected samples. This scale consists of 18 items, which are self-reported by respondents. The items measure seven major factors related to sleep quality, with scores ranging from 0 (no difficulty) to 3 (severe difficulty). These factors include sleep duration, sleep disturbance, sleep latency, daytime disturbance, habitual sleep efficiency, sleep quality, and the use of sleep medications. The sum of these factors provides an overall score, referred to as the global sleep quality index, which ranges from 0 to 21. Reliability measures indicate that the PSQI generally has high internal consistency ($\alpha = .80$ to $.85$) and strong test-retest reliability ($r = .85$ to $.87$). The PSQI also demonstrates acceptable concurrent validity, as scores are highly correlated with other subjective measures of sleep quality ($r > .69$).

Procedure: Initially, permission to collect data was obtained from the relevant authorities of the educational institutions. Once permission was granted, the first author briefed the students about the study and obtained informed consent. The PSQI, along with demographic details, was administered to the college students. They were asked to complete the relevant sections and provide responses to the PSQI items. Upon collection, the data were screened for completeness, scored, and entered into a computer for analysis. The data were analyzed using Pearson's Chi-square test, Pearson's product-moment correlation, and independent samples t-tests. Table 1 presents the results of Pearson's chi-square test for levels of sleep quality and the association between gender and sleep quality levels. Table 2 shows the results of the product-moment correlations between various components of the PSQI and internet usage hours during weekdays and weekends. Table 3 presents the results of independent samples t-tests for mean differences between genders.

RESULTS

Table 1

Distribution of the selected sample by levels of sleep quality and gender and the results of chi-square tests

Sleep quality		Gender		Total
		Male	Female	
Healthy	Frequency	45	34	79
	Percent	44.6%	50.0%	46.7%
Poor	Frequency	56	34	90
	Percent	55.4%	50.0%	53.3%
Test statistics		$X^2_{(Overall)} = 0.716; .p = .397$		
		$X^2_{(gender)} = 0.484; .p = .531$		

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Out of 169 students, the majority (53.3%) reported poor sleep quality, with 90 students in this category, while 79 students (46.7%) reported having healthy sleep quality. The chi-square test revealed no significant difference in the frequency of healthy and poor sleep quality ($X^2 = 0.716$; $p = 0.397$). Additionally, a non-significant association was found between gender and sleep quality levels ($X^2 = 0.484$; $p = 0.531$), indicating that the sleep quality patterns were similar for both male and female college students.

Table 2

Results of Pearson's product moment correlations between components of PSQI and Internet usage during weekdays and weekends

Components of PSQI		Internet usage hours	
		Weekdays	Weekends
Subjective sleep quality	Correlation coefficient	.156	.129
	P value	.043	.095
Sleep latency	Correlation coefficient	.122	.138
	P value	.114	.073
Sleep duration	Correlation coefficient	.055	.154
	P value	.479	.045
Sleep efficiency	Correlation coefficient	.091	.177
	P value	.242	.022
Sleep disturbance	Correlation coefficient	.127	.031
	P value	.101	.692
Use of sleep medication	Correlation coefficient	.067	.037
	P value	.386	.631
Daytime dysfunction	Correlation coefficient	.126	.029
	P value	.102	.709
Total PSQI scores	Correlation coefficient	.177	.169
	P value	.021	.028

Internet usage hours during weekdays were significantly and positively related to subjective sleep quality ($r = 0.156$; $p = 0.043$) and total PSQI scores ($r = 0.177$; $p = 0.021$). This indicates that higher internet usage was associated with poorer sleep quality. However, the remaining components of the PSQI were not significantly related to the number of hours of internet usage.

Regarding the relationship between weekend internet usage and PSQI components, significant positive relationships were observed between weekend usage hours and sleep duration ($r = 0.154$; $p = 0.045$), sleep efficiency ($r = 0.177$; $p = 0.022$), and total PSQI scores ($r = 0.169$; $p = 0.028$). This suggests that higher internet usage on weekends was associated with lower sleep quality in terms of sleep duration, sleep efficiency, and total PSQI scores. However, the remaining components of the PSQI were not significantly related to internet usage during the weekend.

Table 3

Mean scores of male and female students on various components of PSQI and results of Independent sample's t tests.

Components of PSQI	Gender	N	Mean	Std. Deviation	't' value	P value
Subjective sleep quality	Male	101	.80	.749	0.742	.459
	Female	68	.72	.619		
Sleep latency	Male	101	1.23	1.248	0.175	.861
	Female	68	1.19	1.448		
Sleep duration	Male	101	.65	.655	0.993	.322
	Female	68	.76	.794		
Sleep efficiency	Male	101	.17	.511	1.128	.261
	Female	68	.28	.770		
Sleep disturbance	Male	101	1.10	.592	0.111	.912
	Female	68	1.09	.663		
Use of sleep medication	Male	101	.43	.817	0.106	.915
	Female	68	.41	.868		
Daytime dysfunction	Male	101	.92	.821	0.268	.789
	Female	68	.96	.854		
Total PSQI scores	Male	101	5.29	3.235	0.227	.821
	Female	68	5.41	3.868		

Note: df=167

Gender of the students did not have significant influence over their sleep quality scores either in individual components of PSQI or total PSQI scores. All the obtained t values for the significance of mean difference between male and female students found to be non-significant.

DISCUSSION

Major findings of the study

- Majority of 53.3% of the students had poor sleep quality and only 46.7% of the students had healthy sleep quality.
- Internet usage hours during weekdays significantly and negatively influenced subjective sleep quality and total PSQI scores
- Internet usage hours during weekends significantly and negatively influenced sleep duration, sleep efficiency and total PSQI scores
- Gender of the students did not have significant influence over their sleep quality

The results of the present study clearly revealed that the majority of the college students in the selected sample did not have good sleep quality, highlighting the need for further research into this issue. Poor sleep quality can significantly impact mental health, which, in turn, may affect academic performance. Students who experience poor sleep may feel drowsy during college hours, leading to negative psychological and academic consequences. Siddiqui et al. (2016) noted that sleep deprivation affects an individual's mood, alertness, cognitive

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functions, and motor activity. They attributed these effects to factors such as internet use, social media engagement, and the consumption of central nervous system stimulants.

Since good sleep quality is a better indicator of overall health, psychologists, neurologists, educators, and policymakers need to develop concrete strategies to improve sleep quality, particularly among students, to mitigate the consequences of poor sleep. One key approach could be implementing sleep hygiene education (Siddiqui et al., 2016) to help students improve their sleeping habits, ultimately enhancing both their physical and mental health.

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Conflict of Interest

The author(s) declared no conflict of interest.

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