

Assessment of Influence of Screen Time on Quality of Sleep among Dental Students

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ABSTRACT

Background: In this modern era, the usage of electronic gadgets by the students to update the knowledge in their respective fields become inevitable. The current study was designed to assess the sleep quality and its association with screen time among dental students. **Methods:** 275 dental students of both the genders in the age group of 18 to 23 years were included in the study. The quality of sleep was assessed using self-administered questionnaire (PSQI) and its association with screen time was correlated statistically. PSQI score was categorized into two groups ≤ 5 good sleep and >5 poor sleep quality. Screen Time was categorized into ≤ 2 normal & >2 high. **Results:** Prevalence of poor sleep quality was found among 49.8% of total students and increased screen time was found among final year students (91.4%). Irrespective of the academic year there was a strong association between screen time and quality of sleep which was statistically significant. (p value- 0.000). **Conclusion:** In the study there was a significant association observed between poor sleep quality and increased duration of screen time. The usage of devices with screen should be limited to improve the overall health and academic performance of the college students.

Keywords: Pittsburgh Sleep Quality Index (PSQI), Screen time (ST), Sleep quality.

INTRODUCTION

College life is the transitional period where a teenager matures to a responsible adult both physically and mentally. During this time, the usage of electronic gadgets and accessibility to various social platforms has increased for personal and academic purpose.

Sleep is a physiological state of reversible unconsciousness in which brain is less responsive to external stimuli. It is needed for physical and psychological wellbeing of a person and important for optimal biological functioning of our body. Sleep is important for consolidation of memory and cognitive function. Secretion of many endocrine hormones like growth hormone, melatonin and prolactin depends on the sleep-wake cycle. The duration of sleep requirement depends on the age.^[1] Recommended sleep duration for age group ≥ 18 years is 7-9 hours per day.^[2] During adolescence it was found out that there is dramatic maturational changes in sleep pattern and its neurobiological regulation. Adequate sleep will enhance academic performance, but college students are unaware of the importance of sleep on the physical health, mental health and learning. Poor sleep in adolescence may trigger many psychosomatic disorders in their latter

part of life.^[3] It has been observed that young adults tend to be more awake in evening hours, along with that they have difficulty in sleep initiation and insufficient sleep during night and also with day time sleepiness.^[4] Nowadays insufficient sleep has become a public health issue.^[5] Among the causes for sleep disturbances, screen time and light emitting devices used during late hours plays a major role.

Screen time (ST) is the amount of time spent using a device with a screen such as a smartphone, computer, television, or video game console.^[6]

Sleep and screen time have an impact on each other which will affect the physical and mental wellbeing of an individual which in turn affect their academic performance. Due to advancement of teaching learning devices in this modern era, the increase in screen time by the college students is inevitable.

In this study we decided to assess the quality of sleep and to correlate with the screen time in dental students. We used standardized questionnaire (PSQI) to assess the quality of sleep. Screen time usage was obtained by using separate questionnaire.

Aim:

To assess the influence of screen time on quality of sleep among dental students.

Objectives:

1. To assess the sleep quality among dental students.
2. To evaluate the screen time among them.
3. To correlate the screen time and the quality of sleep among them.

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MATERIALS AND METHODS

The study was started after getting Institutional human ethical committee clearance. This observational study was carried out in the Department of Physiology, Sathyabama Dental College, Chennai. 275 students of both the genders from first year to interns, within the age group of 18 to 23 years were involved in the study.. Students below 17years and with history of adenoids, tonsils and sleep disorders and on other medications were excluded from the study. After obtaining informed written consent they were addressed year wise and given detailed instruction about the components of the PSQI and made to fill the questionnaire.

The quality and pattern of sleep were assessed by using Pittsburgh Sleep Quality Index (PSQI) questionnaire under seven components – subjective sleep quality, sleep latency, sleep duration, sleep disturbances, habitual sleep efficiency, use of sleeping medications and day time dysfunction over past month.

The data collected were entered in the Microsoft excel sheet.

PSQI score was categorized into two groups ≤ 5 good sleep and > 5 poor sleep quality.

ST was categorized into ≤ 2 normal & > 2 high.

RESULTS

Categorical variables were expressed as frequency and percentages. Continuous variables were expressed as mean and standard deviation (SD). χ^2 test and correlation was used for statistical analysis. p-value of < 0.05 was considered statistically significant. SPSS statistical package 20.00 was used for statistical analysis.

Table 1: Total number of study participant according to year & gender (n=275)

Year of study	Male	Female	Total
1st year	14	81	95
2nd year	0	42	42
3rd year	0	35	35
4th year	2	45	47
Interns	2	54	56
Total	18	257	275

[Table 1]: 275 students were participated in the study. Among them first year students were 95(34.5%), second year were 42(15.3%), third year were 35(12.7%), fourth year were 47(17.1%) and interns were 56(20.4%). Total females were 257(93.5%) and male were 18(6.5%)

Prevalence of high screen time was found among 87.6% of students in that 1st year showed 89.5%, 90.5% in 2nd year, 88.6% in 3rd year ,91.5% in 4th year and 78.6% in interns.

[Table 2]: Prevalence of high screen time was found among 87.6% of students, in that 89.5% in 1st year,

90.5% in 2nd year, 88.6% in 3rd year ,91.5% in 4th year and 78.6% in interns.

There is no statistical significance among year of study and screen time.

Total screen time mean \pm standard deviation is 3.87 ± 1.286 . Mean screen time among each group of 1st year, 2nd year, 3rd year, 4th year and interns were 3.84 ± 1.188 , 4.14 ± 1.475 , 4.06 ± 1.282 , 3.87 ± 1.209 and 3.59 ± 1.345 respectively..

Table 2: Prevalence of Screen time among study participants (n=275)

Year	Screen time		χ^2 (df)	P value
	Normal (≤ 2)	High (> 2)		
1st year	10 (10.5%)	85 (89.5%)	5.528 (4)	0.237
2nd year	4 (9.5%)	38 (90.5%)		
3rd year	4 (11.4%)	31 (88.6%)		
4th year	4 (8.5%)	43 (91.5%)		
Interns	12 (21.4%)	44 (78.6%)		

Table 3: Pittsburgh Sleep Quality index (PSQI) among study participants (n=275)

Year	Pittsburgh Sleep Quality index among study participants		χ^2 (df)	P value
	Normal sleep quality (≤ 5)	Poor sleep quality (> 5)		
1st year	46 (48.4%)	49 (51.6%)	2.612 (4)	0.628
2nd year	21 (50%)	21 (50%)		
3rd year	15 (42.9%)	20 (57.1%)		
4th year	23 (48.9%)	24 (51.1%)		
Interns	33 (58.9%)	23(41.1%)		

[Table 3]: Prevalence of poor sleep quality was found among 49.8% of students, remaining students had good sleep. When analysing into different year wise poor sleep quality was found among 51.6% in 1st year, 50% in 2nd year, 57.1% in 3rd year, 51.1% in 4th year and 41.1% in interns. There is no statistically significant association between year of study and PSQI.

Pittsburgh Sleep Quality Index mean \pm standard deviation is 6.15 ± 3.401 . Among each group of 1st year, 2nd year, 3rd year, 4th year and interns were 5.92 ± 3.079 , 7.12 ± 4.407 , 6.74 ± 2.984 , 6.26 ± 3.089 , 5.34 ± 3.429 respectively

Table 4: Association between gender and PSQI and screen time among study participants (n=275)

Variables		Gender		χ^2 (df)	P value
		Male	female		
Screen time	Normal	5 (14.7%)	29 (85.3%)	4.224 (1)	0.4
	High	13 (5.4%)	228 (94.6%)		
PSQI score	Normal	10 (7.2%)	128 (92.8%)	0.222 (1)	0.637
	Poor	8 (5.8%)	129 (94.2%)		

Among females 94.2% had poor sleep and 94.6% had high screen time when compared to males. There is no statistically significant difference among

gender and PSQI. But screen time is statistically significant with gender (p value 0.05)

There is positive correlation($r=0.374$) between PSQI score and screen time and it is statistically significant (p value-0.000)

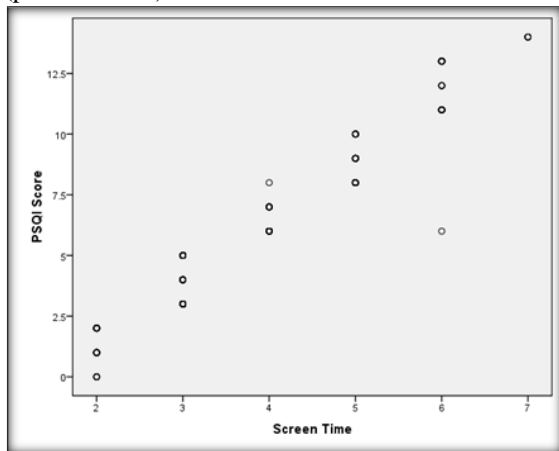


Figure 1: Scatter plot to show the relation between screen time and PSQI score

DISCUSSION

The usage of electronic gadgets has become increased tremendously in general population due to technological revolution. Among them the college students are more exposed to the screen both academically and socially. The screen time has an impact on sleep quality and daytime sleepiness.

In the study, around 49.8% of the students had poor sleep quality. A study in ten medical students has reported that two out of ten medical students suffer from poor sleep quality.^[7] In another study among undergraduates 62.6% had poor sleep quality.^[8] Similar data was obtained in a Lebanese study and about 96.4% of Brazilian students had poor sleep quality.^[9,10] Thus, the problem of poor sleep in college students has a public health importance.

Female college students have poor sleep quality and high screen time than males. Poor sleep quality was significantly higher in a Taiwanese study.^[11] Increase prevalence of poor sleep quality may be the unique hormonal and physiological make up of females.^[12] Gender difference regarding poor sleep quality begins at a very early age.^[13] Menstrual cycle changes affect the sleep pattern.^[14] More over female students browse study material which make them having increase chance of screen time. Blue light exposure from the screen will reduce the secretion of melatonin thereby decreases the onset of sleep, quality and duration of sleep.^[15]

Limitations:

The study was conducted only among dental students, can be done with others.

The subjective questionnaire was used for the study, instead of that android applications can be used to monitor the exact screen time of the participants.

CONCLUSION

In the study there was a significant association observed between poor sleep quality and increased duration of screen time.

Since acceptable screen time is up to 2 hours per day, the usage of devices with screen should be limited within this time to improve the overall health and academic performance of the college students.

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