

Original Research Article

Prevalence of excessive daytime sleepiness and its determinants among college students in Chengalpattu district, Tamil Nadu

Narendranath R., Soumya Agadi, Divya I., Suriya Deva A.*

Department of Community Medicine, Chettinad Hospital and Research Institute, Chettinad Academy of Research and Education, Chengalpattu, Tamil Nadu, India

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*Correspondence:

Dr. Suriya Deva A.,

E-mail: devasuriya1@gmail.com

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ABSTRACT

Background: Our body needs sleep for better functioning both physically and mentally. Sleep deprivation and daytime sleepiness are common problems related to sleep among the general population. College students are more prone to such problems. In this study, our aim is to assess the prevalence of daytime sleepiness among college students and to identify the factors responsible for the same.

Methods: We conducted a cross-sectional study in the Chengalpattu district to assess the prevalence of excessive daytime sleepiness among college students from various courses including Architecture, Medical, and Para-medical students. A pre-tested, pre-designed, and modified questionnaire along with Epworth sleepiness scale (ESS) was used for data collection for the period of 3 months. The sample size we achieved was 422. Data analysis was done using SPSS version-22 software.

Results: The prevalence of daytime sleepiness among our study participants were 32% (135) and most of them were facing sleep disturbances due to mobile and laptop usage, stress and overthinking, and other reasons like night studies, spending time with friends was 56% (76), 31% (42), 11% (14) respectively.

Conclusions: Daytime sleepiness, disturbed sleep, inadequate sleep hygiene was highly prevalent among college students. It is creating various impacts on academics and driving. Disturbed sleep and EDS are caused by a host of reasons and have numerous negative impacts both physically and mentally. Irregular sleep schedules affect learning, memory, and performance, night studies may also affect the intrinsic aspects of sleep.

Keywords: Daytime sleepiness, Sleep deprivation, College students

INTRODUCTION

Our body needs sleep for better functioning both physically and mentally. Sleep deprivation and excessive daytime sleepiness (EDS) are common problems related to sleep among general population.¹ College students are more prone to such problems; they are getting affected in a very common way. Sleep pattern differs in different subjects. It varies with age, occupation, physiological and psychological states, and some types of psychiatric and physical illnesses.² Most of the normal adult's sleep hours

range between 7.5 to 8.5 hours. The Quality of life is adversely affected by sleep deprivation and also it provokes many systemic illnesses. Daytime sleepiness, or difficulty in maintaining a desired level of wakefulness, is frequently viewed by the general population as a common experience and predictable consequence of insufficient sleep.³

The essence of daytime sleepiness is difficulty in maintaining a desired level of wakefulness. Nowadays daytime sleepiness was frequently viewed among

individuals in the general population as a common experience, often as the predictable consequence of insufficient sleep time. Daytime sleepiness can cause limitations in reaction time and vigilance, cognitive functioning, subjective fatigue, logical reasoning, work tasks and driving, workload and memory recall.⁴

The most common attributable factors for daytime sleepiness were mobile phone usage, night time smartphone awakenings, coffee intake, night time studies, stress etc.⁵ Adolescents and young adults were mostly referred to as 'night owls' because of their delayed circadian preference and they were experiencing increased daytime sleepiness when compared to the general population. Sleep deprivation was the most common cause of daytime sleepiness among college students, especially adolescents and the young aged population. Our rationale for conducting this study was to assess various factors for daytime sleepiness among college students.

The objectives of the study are to determine the prevalence of excessive daytime sleepiness among college students in southern Chennai and to assess the factors associated with excessive daytime sleepiness among college students.

METHODS

We conducted a cross-sectional study in the Chengalpattu district to assess the prevalence of excessive daytime sleepiness among college students from various courses including Architecture, Medical, and Para-medical students. Our study period was 3 months between May 2022 to July 2022. The study setting was colleges from our urban field practicing area. We assessed the daytime sleepiness among students of Chettinad Academy of Research and Education who were above 18 years and who gave consent for participation from various courses including Architecture, Medical, and Para-medical students. Students who had chronic diseases and neurological problems were excluded from the study. Students who were not willing to participate are also excluded from the study. From the previous study done by Chandrani Issac the prevalence of daytime sleepiness among college students in the year 2020 was 57.4%.⁵ By using the formula, the sample size was estimated to be 422. We followed the convenient sampling method. A pre-tested, pre-designed, modified questionnaire along with the Epworth sleepiness scale was used for data collection.⁶ The questionnaire was pretested by a pilot study and its results were not included in the analysis and all necessary amendments were made before using it in the data collection. Ethical clearance was obtained before the start of the study. Data collected were entered into a Microsoft excel sheet. Data analysis was done using SPSS version-22 software. For association chi-squared test was used. A p value less than 0.05 was considered statistically significant.

RESULTS

In our study, the total number of participants was 422(n), with a 100 percent response rate. We found that majority of the students were from medical (44.6%) and nursing (44.3%). Most of the students were male (67.8%) and the remaining 32.2% were female students. Hostellers were the major part of our study (73.7%) and the rest 26.3% were day scholars (Table 1).

Table 1: Descriptive characteristics of college students (n=422).

| S. no. | Category | Total (n=422) | Percentage (%) |
|-----------|----------------------|---------------|----------------|
| 1. | Course | | |
| | Architecture | 18 | 4.3 |
| | Medical | 189 | 44.6 |
| | Nursing | 187 | 44.3 |
| | Pharmacy | 16 | 3.8 |
| | Others | 12 | 3 |
| 2. | Year of study | | |
| | First year | 70 | 16.7 |
| | Second year | 98 | 22.9 |
| | Third year | 110 | 26.2 |
| | Fourth year | 90 | 21.4 |
| | Fifth year | 54 | 12.8 |
| 3. | Gender | | |
| | Male | 286 | 67.8 |
| | Female | 136 | 32.2 |
| 4. | Residence | | |
| | Day scholar | 111 | 26.3 |
| | Hostel students | 311 | 73.7 |

Table 2: Distribution of sleep profile of the participants (n=422).

| S. no. | Category | Total (n=422) | Percentage (%) |
|-----------|---------------------------------|---------------|----------------|
| 1. | Sleep duration/day | | |
| | Less than 6hrs | 161 | 38.2 |
| | 6-8hrs | 217 | 51.4 |
| | More than 8hrs | 44 | 10.4 |
| 2. | Disturbed sleep | | |
| | Yes | 298 | 70.6 |
| | no | 124 | 29.4 |
| 3. | Daytime sleepiness | | |
| | Yes | 289 | 68.6 |
| | No | 133 | 31.4 |
| 4. | Sleep scale scoring | | |
| | 0-7 (normal daytime sleepiness) | 184 | 43.7 |
| | 8-9 (mild EDS) | 103 | 24.3 |
| | 10-15 (moderate EDS) | 124 | 29.2 |
| | 16-24 (severe EDS) | 11 | 2.8 |

Table 2 shows about the sleep duration, sleep pattern, sleep disturbances along with sleep scoring with ESS scale. Participants with mild and moderate scores from ESS were considered as people with excessive daytime sleepiness. Almost 51.4% participants had sleep duration per day for 6-8 hours. Majority (70.6%) people experiencing disturbed sleep and around 68.6% reported that they are getting day time sleep episodes. With sleep scoring system, 32% of the participants had excessive daytime sleepiness.

Some of the major causes of excessive daytime sleepiness were identified as mobile/laptop usage at bedtime (63.6%), night studies (41.4%), spending time with friends at night time (56.7%) mostly hostellers, coffee or other caffeinated drinks at night (17.3%) and stress/overthinking at night (26.1%) (Table 3).

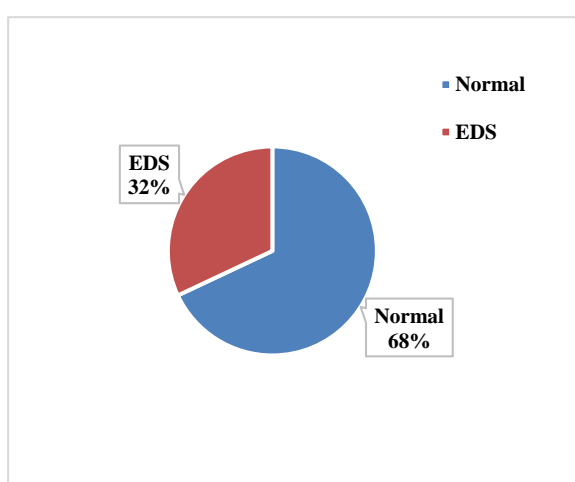


Figure 1: Percentage of participants with excessive daytime sleepiness (n=422).

Table 3: Factors associated with excessive daytime sleepiness among the participants (n=422).

| S. no. | Factor | N (%) | Chi-square | P value |
|-----------|-------------------------------------|------------|------------|-----------|
| 1. | Mobile/laptop usage at night | | | |
| | Yes | 268 (63.6) | 68.81 | 0.00001* |
| No | 154 (36.4) | | | |
| 2. | Night studies | | | |
| | Yes | 175 (41.4) | 210.15 | 0.1324 |
| No | 247 (58.6) | | | |
| 3. | Spending time with friends | | | |
| | Yes | 239 (56.7) | 33.43 | 0.000003* |
| No | 183 (43.3) | | | |
| 4. | Coffee intake at night | | | |
| | Yes | 73 (17.3) | 20.35 | 0.107 |
| No | 349 (82.7) | | | |
| 5. | Stress and overthinking | | | |
| | Yes | 110 (26.1) | 0.574 | 0.989 |
| No | 312 (73.9) | | | |

*P value below 0.05 was considered as statistically.

DISCUSSION

In our study, most of the study participants were medical and nursing students. The majority were second and third-year students who were residing at the hostel and among them, the majority were males when compared to day scholars and female participants.

Our study showed that 32% of the subjects reported excessive daytime sleepiness whereas the remaining 68% didn't show the same. EDS and disturbed sleep were the important factors affecting the quality of sleep. In the study by Dinis and Braganca they reported that poor sleep quality induces depression among study participants and causes excessive daytime sleepiness when compared with people who had better sleep quality.⁷

According to ESS scores, our study showed that 32% of overall participants had excessive daytime sleepiness and the rest 68% had normal ESS scores. In the previous study conducted by Balousha 34.4% had abnormal ESS scores and the rest 65.6% had normal scores. The quality of sleep also deteriorated with the abnormal ESS scores. Better quality of sleep is associated with positive physical and mental health among college students.⁸ In a similar study conducted by Kaur, 45% of the study participants observed Excessive Daytime sleepiness.⁹

Among the study participants, we noticed that the most common cause of EDS was the use of mobile and laptops at night, and spending time with friends were found to be statistically significant. Other common causes were the consumption of coffee/tea before going to sleep which leads to disturbed sleep at night and stress. Shelley conducted a similar study and he found that the causes and consequences of EDS were consumption of alcohol, inadequate sleep hygiene, and intake of caffeine. We found that the use of cell phones during bedtime was associated with a higher frequency of poor sleep quality and EDS.¹⁰

Poor sleep quality paves way for inadequate academic performance and stress. People who are following 6-8 hrs of sleep per day doesn't experience any form of EDS. Only those who had less than 6 hrs of sleep per day had fatigue and EDS, which makes them weaker both physically and mentally, thus students couldn't concentrate during class hours. These reasons affect their academic performance and attention level.

In our study most of the participants were second and third-year students and they showed EDS, the reasons were late-night socializing as most of them were hostel students, and mobile usage before going to sleep. Similarly, Johnson et al conducted a study and found that second-year medical students were experiencing disturbed sleep, and falling asleep during class hours. And also we found that Academics and driving two/four-wheelers were affected.¹¹ In a similar study conducted by Ramos, participants with moderate or high perceived

stress and depressive symptoms are more likely to have Excessive daytime sleepiness.¹²

Limitations

Self-response bias may arise in this study as the participants may respond falsely or inaccurately in fear of their college management.

CONCLUSION

Daytime sleepiness, disturbed sleep, and inadequate sleep hygiene were highly prevalent among college students. It is creating various impacts on academics and driving. Disturbed sleep and EDS are caused by a host of reasons and have numerous negative impacts both physically and mentally. Many college students were sleep-deprived because they go to bed very late and woke up early. Physiologically, adolescents and young adults tend to have disturbed sleep and they are called night owls. Irregular sleep schedules affect learning, memory, and performance, night studies may also affect the intrinsic aspects of sleep.

RECOMMENDATION

College students require at least 8hrs of sleep per day to cope up with their day-to-day activities and better academic performance. In such a way they should improve their sleep quality at night, by avoiding late-night socializing, smartphone usage, night studies etc. Optimum sleep quality helps them to maintain their physical as well as mental stability.

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