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## Evaluation of excessive daytime sleepiness among first year medical undergraduates

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### Abstract

**Background:** Excessive daytime sleepiness (EDS) may be defined as the reduced ability to stay awake and alert during normal daytime hours, resulting in lapses of sleepiness or sleep. Medical students are especially vulnerable to EDS due to the huge academic burden they are subjected to.

**Aims and objectives:** The present study was aimed at determining the prevalence of excessive daytime sleepiness among medical undergraduates.

**Materials and methods:** This study was a cross sectional descriptive study conducted in the department of physiology, Vinayaka Missions medical college and hospital, Karaikal. The study procedure was explained to the students and written informed consent was obtained. "Epworth sleepiness scale" (ESS) was used to diagnose EDS.

**Results:** A total of 94 participants were included in the study. 42 were male and 52 were female participants. Out of 94 participants, 35(37.23%) were found to have day time sleepiness. Further, among the participants who had day time sleepiness, male were found to be predominant which accounted for 21.28% followed by female participants (15.96%).

**Conclusion:** There is a need to educate the students about sleep hygiene practices through educational sessions and workshops conducted by experts.

**Keywords:** Excessive daytime sleepiness, medical undergraduates, ep worth sleepiness scale

### Introduction

Sleep is a reversible state of mind and body during which consciousness is altered, voluntary muscles are relaxed and sensory activities are inhibited. Sleep is needed to induce obviate the strain occurred throughout the assorted daytime activities. It is a supply of diversion from day to day stress and a state of mind denoted by a short lived lack of consciousness additionally as reduced vigilance and responsiveness<sup>[1]</sup>. Good quality sleep is essential for health and life quality in all people and is related to several factors including environmental factors, social life, general health status, and stress<sup>[2]</sup>.

Excessive daytime sleepiness (EDS) may be defined as the reduced ability to stay awake and alert during normal daytime hours, resulting in lapses of sleepiness or sleep. The occurrence of isolated EDS in the general population is estimated to be between 2.5% and 18%, depending on the quantification method used<sup>[3]</sup>. However, when co-morbidity is present debilitating sleepiness may be more common and the impact on public health becomes significant<sup>[4]</sup>.

Frequently, a cause of EDS cannot be identified, but there are many contributing factors, most commonly those which disturb sleep quality or quantity. Other risk factors for EDS include age, depression, shift work, metabolic and hormonal conditions and obesity. EDS is a cardinal symptom for hypersomnia of central origin; it is highly prevalent in sleep disorders and multiple other health conditions<sup>[5]</sup>.

Medical students are especially vulnerable to EDS due to the huge academic burden they are subjected to. College students also sacrifice sleep for studies, completing assignments and other academic activities. Thus variance in sleep schedule is common in college students. Irregular bed time is associated with poor sleep quality and decreased sleep time. With ongoing sleep deprivation (getting two to three hours less sleep than optimal), individuals develop a sleep debt<sup>[6]</sup>. If the sleep debt continues over 5 to 10 days, alertness at a maximum potential is often impaired. Their general performance, and particularly cognitive performance, becomes verifiably worse. Sleep debt also leads to slower response times, altered mood and

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motivation, and reduced morale and initiative. Sleep debt arising from sleep deprivation (shift work, prolonged work hours, etc.) is one of the most common causes of EDS [7]. Previous studies associated poor academic performance with EDS among medical under graduates [8]. The present study was aimed at determining the prevalence of excessive daytime sleepiness among medical undergraduates.

### Materials and methods

This study was a cross sectional descriptive study conducted in the department of physiology, Vinayaka Missions medical college and hospital, Karaikal. The study was conducted during December 2018. The study procedure was explained to the students and written informed consent was obtained.

“Epworth sleepiness scale” (ESS) was used to diagnose EDS. It is a standard questionnaire introduced by Dr. Murray Johns of Epworth Hospital in 1991; Melbourne. ESS consists of 8 questions. This scale targets the students’ tendency to fall asleep in 8 different situations and was scored accordingly (0=never doze, 1=slight chance of dozing, 2=moderate chance of dozing, 3=high chance of dozing). A cumulative number of all items produces a score between 0-24) [9].

The students were also informed not to mention their name or roll number on the questionnaire provided, so that they feel free to give true information. The returned questionnaires were checked for completeness.

### Interpretation of ESS

0-5: Lower normal daytime sleepiness

6-10: Higher normal day time sleepiness

11-12: Mild excessive daytime sleepiness

13-15: Moderate excessive daytime sleepiness

16-24: Severe excessive day time sleepiness [9].

A pilot study of 12 students were randomly selected to test the study questionnaire, estimate time needed for study and to identify difficulties in comprehending the questionnaire before conducting the main study.

**Inclusion criteria:** First year medical undergraduates were included in the study.

**Exclusion criteria:** Those with sleep disorders, neurological disorders, endocrine disorders, cardio-respiratory disorders, chronic renal failure and those under medications for some reason and incomplete questionnaire forms were excluded from the study.

Statistical analysis was performed by using simple percentage method.

### Results

A total of 94 participants were included in the study. 42 were male and 52 were female participants. Out of 94 participants, 35 were found to have day time sleepiness. Further, among the participants who had day time sleepiness, male were found to predominant which accounted for 21.28% followed by female participants (15.96%).

### Interpretation of ESS

ESS score	Male(n=42)	Female(n=52)	Total
Lower normal day time sleepiness(LNDS)0-5	2	10	12 (12.77%)
Higher normal day time sleepiness (HNDS) 6-10	20	27	47 (50%)
Mild excessive day time sleepiness(MEDS) 11-12	11	8	19 (20.21%)
Moderate excessive day time sleepiness (MOEDS) 13-15	5	6	11 (11.70%)
Severe excessive day time sleepiness (SEDS)16-24	4	1	5 (5.31%)

### Discussion

In our study, 37.23% were found to have day time sleepiness. The reported prevalence percentage was similar to previous study conducted by Jamaan *et al* (37%) [10]. The reported prevalence is in comparison with studies done in Pakistan (39.5%) and Malaysia (35.5%) [11, 12]. Study conducted by Goen *et al*, showed extremely low prevalence of excessive day time sleepiness EDS (10%) [13]. Bahamman AS *et al*. [14] showed that 22.4%. Our study results are in contrast with the study results of Pagnin *et al* from Brazil (63%) [15].

Adequate sleep is vital for optimal physical and mental health, growth, learning, memory, and academic performance in children and adolescents. Sleep disturbance and insufficient sleep duration are associated with daytime sleepiness and a range of poor health outcomes [16].

In our study, EDS was found to be the predominant in males compared to females. While marginal differences were observed between genders regarding the percentage of sleepy subjects, male subjects tended to score significantly higher overall. This is in accordance with other studies that have proposed a higher basic wake drive in women, resulting in less sleepy behavior and relatively lower scores in the traditional ESS [17]. Abdulghani *et al*. showed a high prevalence of sleep disorder in the medical students, especially in female students and a significant relationship between abnormal ESS scores, total sleeping hours, and academic performance was found [18].

Various causes may be behind excessive daytime sleepiness. Researchers have found that university students who had lower nocturnal sleep duration or an irregular sleep-wake schedule were more likely to report daytime sleepiness [19]. However, Lund *et al* found no association between sleep duration and daytime sleepiness, inferring that the association may have been diminished by daytime napping and other factors such as poor time management or irregular sleep patterns. [20] In this context, it has been suggested that the investigation of factors affecting daytime sleepiness should include other sleep hygiene and lifestyle factors, including tea or coffee consumption and sleep environment variables such as temperature, light and noise [21].

Lack of sleep has a negative effect on medical students both in their education and medical practice. This is agreed upon by physicians who consider sleep deprivation as a cause of person’s bad mood and misconduct [22]. Also class timings maybe a factor for altered sleep patterns. The resulting poor sleep quality may lead to depression and/or anxiety in medical students which can affect their overall performance [23].

Limitations of the present study are as follows, While ESS questionnaires have been used to assess sleep quality and ESS in most studies, its value in terms of multi-dimensionality casted doubts on its clinical usefulness [24]. The sample size may not be large enough for the findings to be generalized. Limited variables were considered in this study. In this study, no attempt was made to associate academic performance with

EDS.

In conclusion, there is a need to educate the students about sleep hygiene practices through educational sessions and workshops conducted by experts. Medical graduates should be assessed for sleep problems and maladaptive sleep hygiene practices. Those requiring advice should be referred to a sleep clinics for expert advice and also further studies are required to associate EDS with academic performance.

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