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PREVALENCE OF EXCESSIVE DAYTIME SLEEPINESS (EDS) AMONG MEDICAL STUDENTS

Srihari Ramamoorthy*, Manikandan Mohandas, Prema Sembulingam, Vimala Rani Swaminathan

Department of Physiology, Madha Medical college and Research Institute, Kundrathur, Chennai,Tamil Nadu,India.

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***Author for Correspondence**
Srihari Ramamoorthy
Department of Physiology, Madha Medical college and Research Institute, Kundrathur, Chennai,TamilNadu, India

ABSTRACT

Excessive daytime sleepiness (EDS) is a common symptom shared by recent lifestyle modification-induced sleep disorders. Literature shows increase in EDS among medical students worldwide. This study aims at estimating the prevalence of EDS among medical students in southern part of south India. Participants were healthy volunteers of male (65) and female (56) students between the age group 18-25yrs (n=121). EDS was diagnosed using Epworth Sleepiness Scale. Results showed that overall prevalence of EDS was to be 30.57%. Among this males were 52.06% and females were 47.10% showing that females had better sleep quality than males. The study concludes that prevalence of EDS is higher among medical students in this part of the country compared to the north India (17.30%). It requires early detection of EDS and timely intervention to avoid physiological and psychological complications.

Keywords: Excessive Daytime Sleepiness (EDS), Epworth Sleepiness Scale (ESS), Medical students.

INTRODUCTION

'Sleep is a normal physiological process which is necessary to provide normal psychological and physical rest and other measures of well being' [1]. Recent lifestyle modifications characterizes an era of excessive exposure to stress in the form of work load, academic performance etc., which in turn disturbs sleep pattern of individuals. Poor sleep is related to various sleep disorders like Obstructive sleep apnea (OSA), Narcolepsy, Restless leg syndrome, chronic sleep deprivation and Circadian rhythm disorders. These conditions impair

the quality and quantity of nocturnal sleep and share a common symptom - Excessive daytime sleepiness (EDS) [2]. Thus EDS is a symptom and not a disease/disorder by itself.

EDS is 'sleepiness in a situation when an individual would be expected to be awake and alert' [3]. EDS is characterized by persistent daytime sleepiness even after adequate quantity of night sleep, which may be due to disturbances in sleep like snoring, sleep apnea, restless leg movements etc., which compels the individual to nap repeatedly during daytime. This leads to many complications like impaired memory and cognition, decreased work performance, increased chances of vehicular accidents etc., Epidemiological studies have shown prevalence of EDS to be 12% in Americans [4] and 2.5% in Japanese [5]. Among Koreans EDS was found to be 4.5% in men and 3.2% in females [6**].**

EDS have been commonly reported among IT professionals, industrial shift workers [7,8,9], professional drivers [10] and night shift workers [11]. Healthcare professionals are also subjected to frequent stress in the form of shift duties, work burden etc., which predisposes the sleep disturbances [12]. Similarly, medical students were also subjected to huge academic stress, work load, shift postings and performance pressure making them prone to EDS [13, 14]. Actually there are earlier reports to prove this fact. Rodrigues et al [15] reported EDS to be 39.5% in Brazilian medical students. Zailinawati et al [16] showed EDS to be 35.5% in Malaysian medical students. A study conducted in Northern part of India reported EDS to be 17.3% among their institutional medical students [14]. There is a dearth of study regarding the prevalence of EDS among medical students in South India. Hence, this study proposes to explore the Prevalence of EDS among medical students in this part of the country.

METHODOLOGY

The study was performed in Madha Medical College, Chennai, India. It was a cohort study based on a questionnaire [17] and approved by The Institutional Ethics Committee (IEC). The study procedure was explained to the participants and an informed consent was obtained.

Participants were normal, healthy male (65) and female (56) volunteers from MBBS course of Madha Medical College with age range of 18-25yrs (n=121) excluding those with sleep disorders, neurological disorders, endocrine disorders, cardio-respiratory disorders, chronic renal failure and those under medications for some reason or other.

EDS is diagnosed using "Epworth sleepiness scale" (ESS) introduced by Dr. Murray Johns of Epworth Hospital in 1991; Melbourne. It is a standard questionnaire used to assess sleep related disorders in an individual. ESS is an effective instrument used to measure excessive daytime sleepiness. It differentiates between average sleepiness and excessive daytime sleepiness (EDS) that requires intervention.

ESS has 8 questions and total of 24 points which requires the subject to rate his/her chance of falling asleep on a scale of increasing probability from 0-3 for eight different situations. 0 signifies no dozing, 1-mild chance of dozing, 2-moderate chance of dozing and 3- high chance of dozing. The participants were scored as no EDS if the total score is <10 and presence of EDS if the total score is ≥10. Based on the total score of ESS, the EDS students will be identified [17].

RESULTS

Analysis revealed that 30.57% (total score ≥10) were reported to have EDS and 68.59% were not found to have EDS (total score <10). (Fig-1).

Among the groups, males showed increased prevalence of EDS (52.06%) than females (47.10%). (Fig. 2)

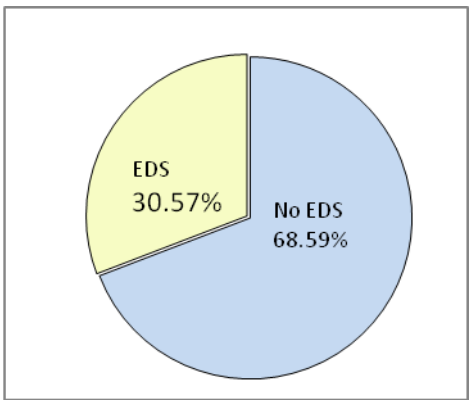

Fig. 1: Overall prevalence of EDS

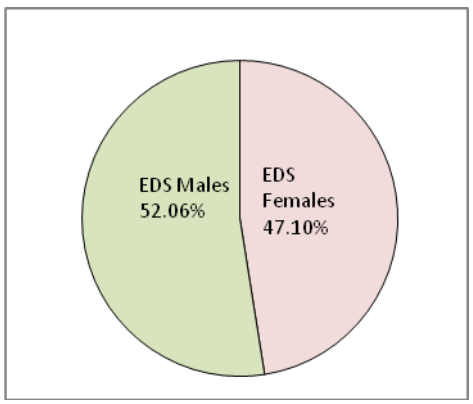

Fig. 2: Gender wise distribution of EDS

Question wise analysis of the data showed the following results

- Sitting and reading – Higher number of students reported moderate dozing (36.36%) and least number reported no dozing (12.39%).
- Watching TV - Higher number of students reported no dozing (60.33%) and least number reported severe dozing (0.8%).

- Sitting inactive in a public place - Higher number of students reported no dozing (44.63%) and least number reported severe dozing (3.31%).
- As a passenger in car for an hour - Higher number of students reported mild dozing (34.71%) and least number reported severe dozing (17.36%)
- Lying down in the afternoon - Higher number of students reported mild dozing (82.64%) and least number reported severe dozing (40.50%).
- Sitting and talking to someone - Higher number of students reported no dozing (87.60%) and least number reported moderate dozing (2.47%).
- Sitting quietly after lunch without alcohol - Higher number of students reported moderate dozing (34.71%) and least number reported no dozing (19.01%).
- In car while stopping in traffic for few minutes - Higher number of students reported no dozing (80.99%) and least number reported severe dozing (1.65%).

Table 1: Dozing percentage in different situations

Situations	No Dozing (%)	Mild Dozing (%)	Moderate Dozing (%)	Severe Dozing (%)
Sitting and reading	12.39	35.53	36.36	15.70
Watching TV	60.33	26.45	12.39	0.8
Sitting inactive in a public place	44.63	38.02	14.05	3.31
As a passenger in car for an hour	26.45	34.71	21.49	17.36
Lying down in afternoon	57.85	82.64	45.46	40.50
Sitting and talking to someone	87.60	6.61	2.47	3.30
Sitting quietly after lunch without alcohol	17.36	28.93	34.71	19.01
In car while stopping in traffic for few minutes	80.99	16.53	8.26	1.65

Indicates highest prevalence

Overall analysis showed that majority of the participants didn't suffer from EDS (41.49%), which is confirmed with the general prevalence rate. Table 2.

Table 2: Overall dozing patterns

Overall dozing pattern	Percentage (%)
No dozing	41.49
Mild dozing	28.84
Moderate dozing	18.75
Severe dozing	10.91

DISCUSSION

The current study was aimed to estimate EDS prevalence among medical students in Chennai. Among the participants higher percentage (30.57%) were reported to have EDS which was almost consistent with previous studies [15, 16]. However our results appeared comparatively higher than North Indian medical students which showed a prevalence of EDS to be 17.3% [14]**.** We presume the higher prevalence estimated in our study could be due to the huge academic load [13], frequent shifts, anxiety that our medical students are facing throughout. Also males seem to have more EDS than females which are similar to North Indian studies [14]**.** Sleep disorders were found to be more common in males than in females [18, 19, 20]**.** The reason for this was believed to be increased BMI, waist-hip ratio and neck circumference in males that lead to the development of sleep disturbances [18, 19]**.** In our previous study, we showed that male sex hormone – testosterone was one of the reasons to influence sleep disorders in males [20]**.**

Dozing was not highly reported while watching TV or when in a public place/group. This may be because when the mind is pre-occupied with some or other activities chances of dozing may be reduced. Mild dozing was reported in states like lying down in afternoon, travelling as passenger in car which indicated that sleepiness occurs more when the individual is alone without any pre-occupation. The same may be the reason for the report of moderate dozing as the highest category while sitting quietly after lunch and sitting and reading alone.

Interestingly, in our study 3 participants (2.47%) with chronic sinusitis were found to have EDS. various reasons were put forth for prevalence of EDS in sinusitis. One of them were increased secretions of cytokines which is an inflammatory mediator [21].Another reason was increased mucous infiltration in para-nasa sinuses which may lead to frequent nasal discharges, dull ache and heaviness in facial area accompanied with mouth breathing which may lead to EDS. Thus in our 3 sinusitis participants also we presume that these may be the reason for the attack of EDS.

EDS is found to be associated with increased inflammatory markers such as TNF α and IL-6 [21]. If these cytokines remain chronically it will predispose an early onset of systemic disorders like Diabetes Mellitus, Hypertension etc., Also individuals with EDS were reported to have psychological problems like irritability and decreased quality of interpersonal relationships [14]. All these factors can ultimately impair the quality of life and reduce the lifespan of the affected individual. This can be prevented by early lifestyle modifications with the complete understanding and co-operation of the affected individuals

CONCLUSION

The current study shows an increased prevalence of EDS among medical students. Students with EDS are more prone for sleep and associated disorders. Also, awareness on sleep disorders is lacking among medical students and physicians which may be rectified by updating sleep medicine [22].

FUTURE GOAL

Further consequences of EDS can be prevented by referring the identified participants to concern physician for further evaluation and treatment which inturn will help to improve status of healthcare education and healthcare delivery.

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