

Original Article

Identifying Excessive Daytime Sleepiness Using Epworth Sleepiness Scale in a Normal Healthy Population – A Pilot Study

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Abstract

Introduction: Excessive daytime sleepiness (EDS) is a common sign in obstructive sleep apnoea syndrome which is often missed during routine screening. Epworth Sleepiness Scale (ESS) is simple, reliable tool to assess daytime sleepiness. Thus, the aim of the study is to identify excessive daytime sleepiness using ESS in a normal healthy population. **Methods:** 40 Volunteers aged 30-70 yrs, without history of Diabetes, Coronary Artery Disease and diagnosed sleep disorders who are capable of comprehending the sleep questionnaire (Epworth sleepiness scale) were recruited. Informed consent and institutional ethical clearance was taken before start of the study. **Results:** EDS is seen among 10% of the subjects. ESS score in males and females were 4.42 ± 4.1 and 3.50 ± 2.2 respectively with p value 0.425 suggesting no significant difference in ESS score between males and females. BMI was comparable between males and females. No correlation was found between BMI and ESS. **Conclusion:** Epworth sleepiness scale can be recommended to the practising physician to screen the patients for EDS a sign of OSA (obstructive sleep apnoea).

Key words: Excessive daytime sleepiness, Epworth Sleepiness scale, Obstructive sleep apnoea, obesity.

Introduction

Excessive daytime sleepiness (EDS) and fatigue are the common complaints the patient frequently present to the health care professionals.^[1] It is a symptom not a disease or disorder characterised by persistent daytime sleepiness even after adequate quantity of night sleep which may be due to disturbances in sleep like snoring, sleep apnoea etc which compel the patient to nap during daytime.^[2] EDS may be a warning sign of sleep disordered breathing which is often unrecognised in the clinical practices.^[3] Studies have shown that EDS may be associated with poor performance at work place which will affect the quality of

life with serious economic consequences. Importantly sleepy drivers are at increased risk of road traffic accidents and industrial accidents.^[4] OSA (Obstructive sleep apnoea) is a common sleep disorder characterised by episodes of apnea and /or hypopneas which occur for 10s or longer, often accompanied by decreased oxygen saturation and EEG detected arousals from sleep. Sleep disordered breathing may be associated with various neurological and cardiovascular co morbidities.^[5]

Polysomnography (PSG) is considered the gold standard for diagnosing OSA, since it is difficult and resource-intensive to perform among patients attending Primary health centre. Epworth Sleepiness scale has been developed as a screening tool for OSA.^[6] The Epworth Sleepiness Scale (ESS) is a simple, self-administered questionnaire that has been used by several researchers, clinicians and sleep specialists to measure daytime sleepiness or as a screening tool to assess sleep apnoea or OSA.^[7]

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Since excessive daytime sleepiness is a common sign of sleep disordered breathing, screening of middle aged adults in the age group of 40-70 yrs is important to detect the under diagnosed /unnoticed OSA. Thus the aim of the study is to determine the EDS using Epworth Sleepiness Scale in normal population aged between 30-70 yrs.

Objective

- To determine excessive day time sleepiness, a common sign of Obstructive sleep apnoea among normal healthy population using Epworth Sleepiness questionnaire
- To correlate BMI and ESS among normal healthy population.

Material & Methods

This is a descriptive cross sectional study carried out in adults (both males and females) in the age group of 30-70 yrs. Institutional ethical clearance and informed consent was obtained. Individuals capable of comprehending sleep questionnaire were included in the study. Subjects with history of Diabetes Mellitus, coronary heart diseases and pregnant females were excluded. The data was collected by self-administering the questionnaire to the middle aged adults which consists of two parts. First part recorded the demographic information like age, sex & education. Weight and height was recorded .Body mass index was calculated. Second part was Epworth Sleepiness scale (ESS) which is one of the most reliable scales for evaluating sleepiness. The questionnaire asks the subjects to rate his /her probability of falling asleep on a scale from 0-3 for different eight situations. These scores of eight questions are added together to obtain a single number. A number in the 0 -9 ranges is considered to be normal while the numbers 10 and above range indicate expert medical advice should be taken or not.

Statistical analysis

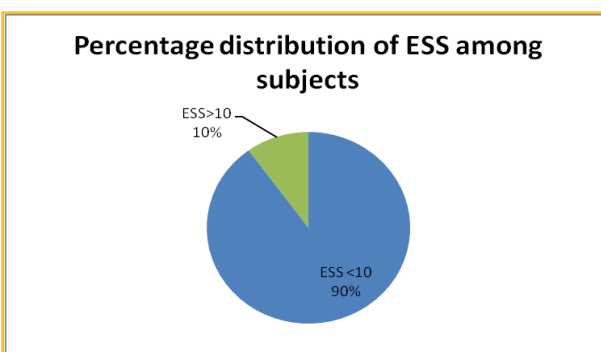
SPSS 20 was used for the statistical analyses. All continuous variables are ex-

pressed as mean \pm standard deviation. Descriptive statistics for the total sample was performed. Independent student t test was done to compare age, BMI and ESS score between males and females. Pearson correlation was done to correlate BMI and ESS scale. $p < 0.05$ is considered to be statistically significant.

Results

Out of 40 questionnaires distributed majority were males (60%) and females were (40%) whose age range from 30-70yrs with an average age of 42.10 ± 10.44 yrs.

Fig: 1 shows percentage distribution of ESS among the study population.



Among 90% of the study population ESS score was normal (<10) and only 10 % shows excessive daytime sleepiness with score above 10.

Table 1. Independent t test was done to compare Age , Body mass index(BMI) and ESS between males and females

Parameter	Males (n=24)	Females (n=16)	P value
Age(yrs)	43.13 \pm 12.4	40.56 \pm 6.4	0.454
Body mass index(Kg/m ²)	24.79 \pm 3.4	27.08 \pm 4.8	0.090
Epworth Sleepiness Score(ESS)	4.42 \pm 4.1	3.50 \pm 2.2	0.425

There was no significant difference for age among males and females. BMI was slightly increased among females compared to males but statistically non significant. ESS score was comparable between males and females. Pearson correlation does not show any correlation between BMI and ESS.

Discussion

The present cross-sectional study was done to assess the daytime sleepiness among the general population aged between 30-70 yrs using Epworth sleepiness scale. This study was conducted in 40 subjects who were age matched. In the present study about 90% of the individuals had normal sleep whereas 10 % especially males showed excessive daytime sleepiness. Our results consistent with Vashun et al which has prevalence rate of 15.3% among the general population.^[8] The mean ESS score was higher among males as compared to females but statistically non significant but Ahmad AN et al study showed statistically difference among males and females with males being more affected than females.^[9] Obesity is the factor which is consistently linked to daytime sleepiness with obese being twice at risk of EDS compared to non – obese individuals.^[4] In the present study females outweighed than males and their ESS score was comparable. Studies have shown that EDS is indirectly associated with high BMI, male gender, mid day napping and snoring which are the risk factors of OSA.^[9,10] The present study does not show any association between BMI and ESS which may be due to small sample size. ESS can be used as a screening tool to determine OSA among the general population who are often missed/ under diagnosed during routine health check up. Early identification and appropriate treatment of OSA can prevent the future complications. The present study has some limitation. First, sample size is small; second, this study being cross sectional could not demonstrate a causal relationship between EDS and OSA. Since, our study is to study prevalence of EDS our goal is achieved. Thirdly, it is a pilot study.

Conclusion

The prevalence of excessive daytime sleepiness among the adults aged 30-70 yrs was 10%. These Patients should be recommended to consult sleep specialist for the polysomnography which is the gold standard diagnostic tool for OSA. Clinicians must be aware that high ESS scores in obese males, particularly in the presence of snoring, may be an important indicator for the possible presence of OSA.

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