ORIGINAL ARTICLE

Hindi Version of Epworth Sleepiness Scale: A Validity Study

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Abstract

Introduction: Excessive daytime sleepiness (EDS), an important symptom of several chronic sleep disorders, can be evaluated with subjective and objective measures. Epworth Sleepiness Scale (ESS) a subjective measure of EDS, has been used in many countries after translation into local language. The present study aimed to translate it into Hindi and validate it for use in Hindi speaking population in India.

Method: The ESS was translated into Hindi with minor modifications. The original and modified versions were administered to 42 subjects, 21 were normal healthy controls and 21 patients with sleep disorders. The ESS 1 and ESS 2 were compared in both groups using Spearman's correlation.

Results: The ESS 1 and ESS 2 had very good correlation in each group ($p < 0.001$). Though there were minor differences in response to certain questions, the ESS total score did not change significantly.

Conclusion: The modified, Hindi version of ESS was found to be reliable and valid. This can be used to evaluate sleepiness in Hindi speaking population of our country.

Keywords: *Epworth Sleepiness Scale, Excessive Daytime Sleepiness, Validity.*

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Excessive Daytime Sleepiness (EDS) is an important symptom of several chronic sleep disorders including Obstructive Sleep Apnoea and narcolepsy.[1] This lead to accidents and psychosocial problems.[2, 3] EDS can be evaluated with both subjective and objective measures.

Epworth Sleepiness Scale (ESS) is an easy to administer and the most popular subjective measure of EDS. This is a self administered, 8 item questionnaire, developed to estimate the subjective daytime sleepiness in adults[4]. Of the objective methods the Multiple Sleep Latency Test (MSLT) [5] is most widely used. The MSLT however requires a laboratory set up with expertise in conducting & evaluating the test. Thus is costly and cumbersome. This facility is not available at all centers, particularly in our country. The association between ESS score & mean sleep latency has been reported to be v. variable.[6]

The tendency to nap in different situations may be influenced by social and cultural factors. The ESS has been previously translated into Spanish and German [7, 8] and its use has been found to be unaffected by cultural and language factors. In a pilot study in our population the ESS was found to be inapplicable in a number of subjects as some are illiterate, majority do not have a car, others do not watch television and many do not drink alcohol at lunch. As sleep disorders are increasingly being recognized in our country, it is useful to have a validated subjective measure of EDS. Thus the present study aimed to modify and validate the ESS for Indian

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population.

Methods

A total of 42 subjects formed the study group.

There were 21 normal subjects, who were hospital staff or healthy relatives of patients presenting to Clinical Neurophysiology Laboratory and 21 patients who presented to the sleep disorders clinic, department of Neurology, All India Institute of Medical Sciences, New Delhi, India.

Modification of ESS

The ESS was translated into Hindi by the author. The sentence structure, presentation and scoring of the Hindi version resembled those of the English version.

Several colleagues were consulted to develop the modified ESS so as to convey the same meaning. Minor modifications were made such as traveling in a bus instead of car, doing housework (instead of reading) etc. Annexure 1 and 2. All subjects were asked to fill both versions of ESS. (Standard and the modified one) ESS 1 and ESS 2

Statistical Method

The data was entered using Excel spreadsheet, Mean and SD were calculated for continuous variables,

The ESS 1 and 2 were compared using Spearman's correlation.

All statistical analysis was done using stata 7.0 (inter coded version), P <0.05 was considered as statistically significant.

Results

Subject characteristics –

The control group of 21 subjects included 8 males and 12 females.

The mean age was 25.3 ± 8.87 years. The mean BMI was 20.7 ± 2.3, and the total sleep time of 7.6 ± 1.3 hours.

The patients group of 21 subjects included 19 men and 2 women. The mean age was 40 ± years 17.3 years. The mean BMI was 26.1 ± 5.9 and total sleep time of 6.5 ± 2.5 hours. Table-1

Table 1: Demographic details of controls and patients evaluated

	Control	Patients
Age (yrs) mean (SD)	25.33 (8.86)	40.04 (17.29)
Wt.(kg) mean (SD)	54.66 (8.40)	70.38 (20.23)
Ht.(cm) mean (SD)	162 (7.33)	162.7 (14.07)
BMI mean (SD)	20.74 (2.35)	26.14 (5.90)
Neck-circum (cm) Mean (SD)	33.42 (2.42)	37.09 (4.54)
Total Sleep Time (hrs) mean (SD)	7.63 (1.39)	6.52 (2.57)
ESS 1 mean (SD)	4.61 (5.82)	10.66 (8.92)
ESS 2 mean (SD)	4.57 (5.95)	10.19 (8.56)

Table 2: ESS 1 and ESS 2 in all subjects

No	Gp.1		Gp.2	
	ESS 1	ESS 2	ESS 1	ESS 2
1	3	6	0	0
2	13	13	0	0
3	2	2	21	21
4	0	0	16	15
5	3	3	12	10
6	9	9	14	14
7	0	0	3	3
8	2	0	13	13
9	0	0	17	16
10	6	3	4	4
11	3	3	24	24
12	6	6	19	18
13	24	24	19	18
14	0	0	19	18
15	3	1	0	0
16	4	7	1	1
17	3	4	1	1
18	0	0	19	19
19	4	3	1	1
20	12	12	0	0
21	0	0	21	18

Group 1 - Controls, Group 2 -Patients with Sleep Disorder
ESS 1 - Original version of ESS, ESS 2 - Modified version

Consistency

Comparison between the two ESS scores in each group was used to assess the correlation. Each group had value

of 0.98 ($p<0.001$). Minor differences were noted in response to certain questions, such as few subjects reported feeling sleepy while sitting in the bus & not in car and vice versa, some reported feeling sleepy while reading and not while doing fine work with hands. The ESS total score however varied by few points and was not sufficient to change category from normal to abnormal or vice versa.

Discussion

The present study revealed that the modified version of ESS was reliable, easy to administer and had good correlation with the original version.

ESS is a much cheaper tool and easier to administer than the MSLT. Though MSLT is considered by some to be an objective measure of EDS, others have found no association between the ESS scores and MSLT.[9, 10] The two possible explanations for this could be as the two methods are assessing two different "constructs" of daytime sleepiness and also ESS examines an individuals sleep propensity in real-life situations and MSLT estimates the physiological sleep tendency in a Lab.

Though the ESS has a low sensitivity and specificity for screening of OSA, but it is useful to assess patients with narcolepsy [11], idiopathic hypersomnolence, and conditions associated with EDS (eg. Parkinson's Disease) [12, 13].

In conclusion, the modified version of ESS is a reliable and valid one. The minor modifications did not produce much charge in the semantic meaning. The version can be used in the community to evaluate subjects, drivers, patients who are illiterate and have sleep disorders associated with EDS.

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