

Comparison of Hindi version of Epworth Sleepiness Scale (ESS) and Berlin Questionnaire (BQ) to established English version for analysis of Sleep disturbed breathing (SDB)

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Abstract

Background

Obstructive Sleep Apnea (OSA) is a highly prevalent but under diagnosed condition in India. Polysomnogram (PSG) is the diagnostic test but poses several limitations in our country due to prohibitive cost, requirement of admission, skilled and trained staff.

Sleep questionnaires offers a cheap and easy alternative to overnight PSG and can be used as a screening tool for triage of patients for sleep study.

Objective

1. To validate the Hindi version of Epworth Sleepiness Scale (ESS) and Berlin Questionnaire.
2. Comparison of Hindi and English version of the same Questionnaire.
3. Usefulness of the Hindi Questionnaire to evaluate SDB in Hindi speaking English illiterate population.

Methods

1. A Hindi version of ESS and Berlin Questionnaire was prepared by the Authors.
2. On the basis of random selection using a double blind technique we distributed the Hindi and English version to patients referred to us for evaluation of SDB.
3. If patient was illiterate in either of the language; questionnaire in other language was given.
4. Data recording and analysis of the sleep interview was performed for 430 patients over a period of 18 months.

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Results

1. Hindi literate patients and illiterate patients – 200
2. Bilingual patients – 180
3. Non Hindi non English speaking patients – 50 (18- Kannad; 19- Telgu; 13- Marathi)
4. Correlation of Hindi sleep interview to overnight PSG – 85%

Conclusion

Sleep interview in the mother tongue of the subject is a cheap and effective alternative to the standard English counterpart.

Routine screening of patients in Hindi dominant belt, patients should be subjected to the Hindi sleep study questionnaire on an OPD basis.

Keywords: SDB, ESS, Berlin Questionnaire, OSA, PSG.

Introduction

India is a multi-linguistic society. Despite Hindi being our national language, people still prefer to talk in their mother tongue and their local dialect which differs from region to region. SDB is being diagnosed with increased frequency in interior regions of India where Hindi remains the predominant language of the masses, unlike English- which has become a regular mode of communication in Metropolitan cities.

SDB has been shown to play a very important role in pathogenesis of several cardiovascular and respiratory diseases. Guidelines recommend a sleep interview as a screening tool for the patients of SDB. ESS and BQ given at the time of sleep interview have demonstrated benefit in diagnosing SDB. Therefore we designed a randomised controlled trial to evaluate the validity of these questionnaires in our national language Hindi.

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द एपवोर्थ स्लीपिनेस स्केल स्कोर (ईएसएस):

परिस्थिति:	झपकी आने की संभावना:
1. बैठना और पढ़ना	0= कभी नहीं झपकी आये
2. टेलीविजन देखना	1= कभी कभी झपकी आ सकती है
3. बिना कुछ करते हुए किसी व्यस्त जगह पर बैठना	2= थोड़ा ज्यादा झपकी आ सकती है
4. बिना रुके 1 घंटे तक गाड़ी में सवारी करना	3= बहुत ज्यादा झपकी आ सकती है
5. दोपहर में लेटना अगर परिस्थिति इजाजत दे	
6. बैठे हुए किसी से बातें करना	
7. दोपहर खाने के बाद चुपचाप लेटना बिना शराब पिये	
8. गाड़ी में जब कुछ मिनट के लिए ट्रैफिक में रुके हों	

बर्लिन क्वेश्चनेयर:

वर्ग 1	वर्ग 2	वर्ग 3
1. क्या आप खर्राटे लेते हैं? <input type="checkbox"/> हाँ ** <input type="checkbox"/> नहीं <input type="checkbox"/> पता नहीं	6. क्या आपको सोने के बाद थकान महसूस होती है? <input type="checkbox"/> लगभग रोजाना ** <input type="checkbox"/> हफ्ते में 3 - 4 बार ** <input type="checkbox"/> हफ्ते में 1 - 2 बार <input type="checkbox"/> महीने में 1 - 2 बार <input type="checkbox"/> कभी नहीं	9. क्या आपको उच्च रक्त चाप की शिकायत है? <input type="checkbox"/> हाँ ** <input type="checkbox"/> नहीं <input type="checkbox"/> पता नहीं
2. आपके खर्राटे कितने तेज हैं ? <input type="checkbox"/> मेरे खर्राटे मेरी साँसों जितनी तेज हैं <input type="checkbox"/> मेरे खर्राटे मेरे बात करने जितनी तेज हैं <input type="checkbox"/> मेरे खर्राटे मेरे बात करने से ज्यादा तेज हैं <input type="checkbox"/> मेरे खर्राटे बहुत तेज हैं **	7. क्या आप सो उठ कर थकान महसूस करते हैं? <input type="checkbox"/> लगभग रोजाना ** <input type="checkbox"/> हफ्ते में 3 - 4 बार ** <input type="checkbox"/> हफ्ते में 1 - 2 बार <input type="checkbox"/> महीने में 1 - 2 बार <input type="checkbox"/> कभी नहीं	10. BMI \geq 30
3. आप खर्राटे कितनी बार लेते हैं? <input type="checkbox"/> लगभग रोजाना ** <input type="checkbox"/> हफ्ते में 3 - 4 बार ** <input type="checkbox"/> हफ्ते में 1 - 2 बार <input type="checkbox"/> महीने में 1 - 2 बार <input type="checkbox"/> कभी नहीं	8. आप गाड़ी चलाते वक़्त कितनी बार झपकी लेते हैं? <input type="checkbox"/> लगभग रोजाना ** <input type="checkbox"/> हफ्ते में 3 - 4 बार ** <input type="checkbox"/> हफ्ते में 1 - 2 बार <input type="checkbox"/> महीने में 1 - 2 बार <input type="checkbox"/> कभी नहीं	
4. क्या आपके खर्राटे से दूसरों को परेशानी होती है? <input type="checkbox"/> हाँ ** <input type="checkbox"/> नहीं		
5. क्या किसी ने आपकी साँस में बीच बीच में रुकावट देखी है? <input type="checkbox"/> लगभग रोजाना ** <input type="checkbox"/> हफ्ते में 3 - 4 बार ** <input type="checkbox"/> हफ्ते में 1 - 2 बार <input type="checkbox"/> महीने में 1 - 2 बार <input type="checkbox"/> कभी नहीं		

Results

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Patient Feedback

	Epworth sleepiness score		Berlin Questionnaire		Significance (p' value)
	English	Hindi	English	Hindi	
Understandability	4.5	4.5	4	4	< 0.01
Correlation with disease	3	4	4	4	< 0.01
Understanding of the disease (new information)	2.5	4.5	2.5	4.5	< 0.01

Discussion

OSA is a highly prevalent but under diagnosed condition in India. PSG is the diagnostic test but poses several limitations in our country due to prohibitive cost, requirement of admission, skilled and trained staff.

Sleep questionnaires offers a cheap and easy alternative to overnight PSG and can be used as a screening tool for triage of patients for sleep study. The prevalence of sleep disturbed breathing in India⁽⁶⁾ has been found to be about 19.5% in healthy urban males (35–65 years of age). In a study done in Pakistan which was based on Berlin Questionnaire, the prevalence was found to be between 10 to 12.4 %.^{7,8}

In our present study we have translated the standard ESS and BQ into Hindi, the predominantly spoken language in Malwa region. We conducted the study in 400 subjects and gave the Hindi version to 200 patients.

Study	Mean ESS score
Dosi et al	8.3 ± 2.1
Banhiran et al ¹	9.9 ± 5.3
Bloch et al ²	13 ± 5.1
Tsara et al ³	11.3 ± 5.1
Izci et al ⁴	12.6 ± 6
Chung et al ⁵	13.2 ± 4.7

The most common symptom observed in Hindi ESS was lying down for an afternoon nap, which may be explained due to the fact that our study population included upper middle class and higher strata individual from a business background.

	High Risk	% of correlation	Low Risk	% of correlation
PSG*/ BQ** (English)	95/135	70.37%	30/45	66.67%
PSG*/ BQ** (Hindi)	98/142	69.01%	36/58	62.06%
PSG*/ ESS*** (English)	95/147	64.62%	30/53	56.60%
PSG*/ ESS*** (Hindi)	98/148	66.21%	36/52	69.23%

Moderate and severe OSA subjects= High risk Subjects

*Polysomnography ** Berlin Questionnaire *** Epworth Sleepiness Score

Our data showed comparable results and diagnosed SDB with comparable efficacy using ESS and SDB.

We demonstrated comparable co relation between Hindi and English questionnaires equivalent to that seen in other studies where translation of English version to regional language was validated.

We have conducted our study at a single center and our questionnaire will require multi-center testing for final validation. With our Hindi version of the ESS and BQ we also faced problems with the non-Hindi non-English speaking populations, which further demanded translation into their regional languages. Co-relation of the sleep interview in Hindi language of all the patients with PSG could not be done due to lack of machinery and attached financial constraints.

Conclusion

Sleep interview in mother tongue is a cheap and effective alternative to the standard English counterpart.

For routine screening of patients in Hindi dominant belt, Hindi sleep study questionnaire on an OPD basis should preferably be used.

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