

Summary of: The Kushida Index as a screening tool for obstructive sleep apnoea-hypopnoea syndrome

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VERIFIABLE CPD PAPER

FULL PAPER DETAILS

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Objectives To test the validity of the Kushida Index for screening for sleep apnoea in a West of Scotland adult population. **Methods** Specific intra-oral measurements and respiratory polysomnography were carried out on 71 patients in this prospective study. The intra-oral measurements were applied to the Kushida formula to obtain a value for the Kushida Index. This value was compared to the diagnosis obtained using polysomnography in the conventional manner. **Results** The sensitivity of the Kushida Index in this present study was 68% (95% CI 50–81) and the specificity was 71% (95% CI 52–84). The positive predictive value was 71% and the negative predictive value was 67%. The Mallampati score, Epworth sleepiness score and enlargement of the tongue, soft palate or tonsils were not statistically significantly related to a diagnosis of sleep apnoea ($p > 0.05$). **Conclusion** With the limited sensitivity and specificity of the Kushida Index demonstrated in this study, this test cannot be recommended as a screening tool for sleep apnoea in a West of Scotland population.

EDITOR'S SUMMARY

The diversity of activity within dental practices in recent years has been quite marked. Even a decade ago the likelihood of practices being involved in smoking cessation, Botox applications or treatment for snoring and sleep apnoea was small but has grown enormously. What has also needed to increase is the co-operation between dental team members but also between other dental and medical specialists in order to provide a joined-up service to patients as well as a continuity of professional monitoring and care.

In terms of the diagnosis of snoring and/or obstructive sleep apnoea-hypopnoea syndrome the borderline between what is possible and accurate in dental practice and what needs to be undertaken in collaboration with a specialist facility, in this case a sleep clinic, is quite crucial if the correct diagnosis is to be made. This study throws some doubt on the previous findings for the applicability of the Kushida Index in this

context, although maintains the value that treatment in the dental context can provide.

This need for co-operative interdisciplinary working should not be a barrier to dentists becoming involved in wider aspects of healthcare and patient wellbeing. In fact, on the contrary, the ability to be able to offer a greater range of therapies is to the advantage of both the patient and the dentist, particularly for the latter in terms of professional satisfaction and greater engagement of knowledge, skill and experience. Indeed the challenge of learning more about the aetiology, pathology and management of conditions such as these provide an often welcome stimulus in a world that might otherwise have become routine and somewhat limited. It is, however, prudent to always work within one's limits and the boundaries of individual knowledge and competence. In this context the need for thorough research and appropriate support is of greater importance still and this study serves to

further illuminate the extent of our current knowledge base while questioning its validity in certain vital aspects.

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 212 issue 1.

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IN BRIEF

- Outlines the possible role of the dentist in screening for obstructive sleep apnoea-hypopnoea syndrome (OSAHS).
- Assesses the validity of screening for OSAHS using the Kushida Index by dentists in the West of Scotland.

COMMENTARY

There is a wealth of evidence showing that oral appliances that hold the mandible forward during sleep are an effective management method for certain patients with snoring and obstructive apnoea-hypopnoea syndrome (OAHS). The treatment of choice for OAHS has been continuous positive airway pressure (CPAP). In recent years, however, the use of oral appliances has been recommended for mild OAHS as well as for patients with moderate or severe OAHS who cannot comply with CPAP.

The diagnosis and management of sleep disordered breathing disorders such as OAHS is the remit of the physician, usually a specialist in respiratory medicine. Diagnosis is usually confirmed by means of a sleep study in a hospital environment using multi-channel monitoring of parameters such as breathing, blood oxygen saturation and blood pressure. Interpretation of data needs special expertise.

The dentist who chooses to help manage patients who snore is faced with the dilemma of knowing whether his/her patient has simple snoring or OAHS. Sleep studies are expensive, time consuming and inconvenient. It would be impossible and unnecessary for all individuals who snore to be investigated in this way.

Screening for disorders should ensure that at-risk individuals are identified and are offered further appropriate investigation and management.

The present study is an example of research collaboration between dentists and respiratory physicians and

investigates the reliability of the Kushida Index as a screening tool for OAHS. The index is based on parameters readily measured by dentists. It was previously shown to have good validity in populations in the USA and Brazil. It cannot be recommended for routine use on the basis of this study

Dentists who provide oral appliances for snoring should ensure that they are indemnified by their dental protection organisation^{1,2} and follow authoritative guidelines for good practice.³

Good co-operation between dentists and respiratory physicians and further collaborative research is needed in this interface between medicine and dentistry.

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1. Dental Protection Ltd. Snoring and obstructive sleep apnoea syndrome. Position statement available online at <http://www.dentalprotection.org/uk/news/positionstatements/snoring> (accessed 19 December 2011).
2. Dental Defence Union. Personal communication, 19 December 2011.
3. Stradling J, Dookun R. Snoring and the role of the GDP: British Society of Dental Sleep Medicine (BSDSM) pre-treatment screening protocol. *Br Dent J* 2009; **206**: 307-312.

AUTHOR QUESTIONS AND ANSWERS

1. Why did you undertake this research?
Dentists are in a good position to screen patients for OSAHS as they regularly see patients for routine examinations. The consequences of undiagnosed OSAHS are significant. This research was undertaken to assess if a dentist could use this previously established screening tool to accurately screen patients for OSAHS.

2. What would you like to do next in this area to follow on from this work?
The Kushida Index is a simple screening tool that dentists can use, but this study failed to corroborate it as a robust screening tool for OSAHS. If the tool was effective the next step would be to carry out a large scale primary care-based study, however, in view of the negative findings of the study the authors would suggest alternative methods of screening are used. All practitioners should work in liaison with a sleep specialist and refer as appropriate.