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Review Article

Detection and screening of obstructive sleep apnea in primary care

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ABSTRACT

The most prevalent sleep-related breathing condition, obstructive sleep apnea (OSA), is linked to greater morbidity and poor cardiovascular outcomes. Even though sleep disorders are frequently present, primary care physicians hardly see or treat them. Better OSA symptom and intensity identification and classification to support OSA evaluation and diagnosis were the first outcomes of a task group of the American Academy of Sleep Medicine that produced quality metrics for the treatment of adult patients with the condition in 2015. The OSA screening tools (Berlin questionnaire, Epworth sleepiness scale, STOP Bang) have proven to be effective instruments for screening of sleep disorders. The present primary care practice approach for OSA screening and evaluation is disorganized and inadequate. Patients with OSA symptomatology are seen by primary care physicians, but they are not regularly screened, assessed, or referred to a sleep specialist. For the OSA screening assessments in general practice, more psychometric investigations are required. The findings from these investigations can be applied in real-world settings to improve OSA identification.

Keywords: OSA, Cardiovascular, Screening, Sleep disorders

INTRODUCTION

The most prevalent sleep-related breathing problem, OSA, is associated with higher morbidity and poor cardiovascular outcomes.[1] The various causes of OSA contribute to the pathological cardiac alterations that are linked with it.[2-4] It is thought that recurrent obstructive sleep episodes lead to interrupted hypoxia, which activates oxygen free radicals and triggers an oxidative response to stress. Atheroma development and circulatory disturbances may be caused by injury to the vascular wall, according to a simultaneous inflammation reaction.[5,6] According to epidemiologic research, uncorrected severe OSA places a significant cost on the healthcare infrastructure in terms of cardiovascular disease (CVD) and death.[4,7] A task committee of the American academy of sleep medicine (AASM) published

quality standards for the treatment of OSA cases. The first quality measure result is to enhance the identification and classification of OSA manifestations.[8] Sleep disorders are frequent, but general practitioners (GP) hardly ever confront them, according to a study by Bailes and colleagues of individuals in sleep clinics and main care (PCP).[9,10] As their concerns are persistent and challenging to explain, patients frequently do not inform their PCP about the effects of sleep disturbances, according to a Canadian population-based investigation.[11] Daytime functional issues or symptoms of sleeplessness are rarely acknowledged as outcomes of OSA.[10] In line with this, many GPs don't regularly check for or evaluate sleep disorders.[12,13] Patients who have established OSA susceptibility factors, like obesity and CVD, but who are not evaluated for symptomatology, directed to a sleep expert, or even checked for symptoms are not diagnosed with OSA or treated for it.[14] More training is required to identify people at high risk for OSA because GPs and other physicians struggle to recognize the sleep condition.

LITERATURE SEARCH

This study is based on a comprehensive literature search conducted on December 7, 2022, in the Medline and Cochrane databases, utilizing the medical topic headings (MeSH) and a combination of all available related terms, according to the database. To prevent missing any possible research, a manual search for publications was conducted through Google Scholar, using the reference lists of the previously listed papers as a starting point. We looked for valuable information in papers that discussed the information about detection and screening of OSA in primary care. There were no restrictions on date, language, participant age, or type of publication.

DISCUSSION

Any age demographic can develop OSA, although post-menopausal females and older males have the highest rates.[15] In premenopausal women, OSA may go undiagnosed because its symptoms are frequently vague, such as lethargy, headaches, or sleeplessness.[16] According to a recent population medical survey, increased obesity levels are contributing to an increase in the prevalence of OSA in both males and females, and doctors must embrace a pro-active diagnostic technique.[17] The leading reason for death in the United States (US) is heart disease.[18] The American heart association and the national institutes of health have both underlined the importance of raising cardiovascular health standards countrywide. The US healthcare system is heavily burdened by OSA, which is linked to CVD and can aggravate concomitant disorders.[18-23] The AAFP, the US Preventative Task Force, and the Centers for Disease Control have not given guidelines for OSA testing or evaluation.[24] No significant internal or family practice associations have published OSA practice guidelines involving screening and evaluation. This indicates how poorly sleep is regarded in the medical field. Utilization of screening questionnaires for people with inexplicable daytime drowsiness is mentioned in the 2014 American college of physicians report.[3] Yet, daytime drowsiness is frequently not mentioned by OSA subjects, thus monitoring for further symptoms is necessary.[10] The US office of disease prevention and health promotion published healthy people 2020 recommendations in 2015, and "sleep health" was identified as a matter of priority. The following three goals are important for enhancing medical outcomes in people with OSA: (SH-1) raising the percentage of people with OSA symptomatology who seek medical treatment; (SH-2) lowering the number of road accidents caused by sleepy driving for100 million miles driven in the US; and (SH-4) raising the percentage of adults who get enough sleep.[25] There are frequently time constraints for screenings which are not advised because GPs must manage chronic illnesses as well as acute situations.[26] Greater OSA screenings in general practice are necessary to combat the prolonged effects of undetected OSA on the cardiovascular health. Positive airway pressure (PAP) treatment is regarded as the primary therapeutic modality for moderate to serious OSA, despite the fact that other alternatives for OSA have been found to enhance quality of life in patients with high adherence amounts. To lower amounts of drowsiness and enhance patients' quality of life, the AASM advises PAP treatment.[8] The relevance of screening for the sleep condition is highlighted by an appreciation of the advantages of OSA therapies.

A recurrent incomplete (hypopnea) or total (apnea) blockage of the upper airway, characterized by upper pharyngeal collapsing with continued attempts to breathe, is one of OSA's key characteristics.[27] These episodes, that can last 10 seconds or up to a minute, cause sleep interference and occasional desaturations in oxyhemoglobin concentrations. Obstructive REM sleep occurrences have been linked to reduced oxyhemoglobin desaturations in subjects with obesity.[28] An AASM task group classified daytime sleepiness as one of the indicators of the condition, along with loud snoring in between apneas, bouts of struggling for breath, and choking. The apnea hypopnea index (AHI), which quantifies how frequently a patient suffers obstructive occurrences during polysomnography (PSG) testing each hour, classifies a person's OSA intensity.[29] The range of AHI values is mild (5-15), moderate (15-30), and severe (30).[27,29,30] Most people with OSA experience daytime severe drowsiness, weariness, and a lack of energy after sleeping, and these characteristics are made worse by more regular apneic and hypopneic occurrences, which can be identified utilizing sensitive and targeted screening techniques.[29]

Any adult reporting OSA indications has to be screened for the condition.[29] "The act of doing a test on a person..to look for evidence of a disease" is the definition of screening. A mid-level caregiver (nurse practitioner and/or physician's assistant) or a clinician will most probably screen the patient in general practice settings to

see if they have OSA manifestations. Presently, OSA screening is done through the evaluation of systems procedure, but providers frequently omit inquiries to identify sleep disorders.[12,24] For individuals with higher susceptibility, screening must take place in the midst of a thorough checkup or as part of a regular health maintenance review.[29] When doing their review of systems, PCPs should concentrate on the indications and symptomatology of sleep disorders.[29] The patient's occupation needs to be discussed if they are mentioned as symptoms. A recent expert review board in the US has advised additional testing for any professional driver with a body mass index (BMI) of 33 or above.[31] For predicting OSA and deciding whether an evaluation is necessary, an OSA screening measure can be used. Early referral by general practitioners of symptomatic high-risk individuals to sleep experts was a part of an innovative treatment strategy in Australia.[32] In the US, there will be a greater requirement for sleep specialist services as OSA is more frequently detected. To manage the upsurge in patients, mid-level doctors can be recruited to specialize in sleep disorders. A "consensus" was established by the AASM clinical guidelines task force that the GP may inquire about a number of things in regular medical maintenance exams.[29] Inquiring about previous snoring and daytime tiredness is an unreliable and invalid approach, and it has not led to more people being sent to sleep doctors. GPs must select symptomatic, high-risk patients for referring to a sleep expert using a sensitive and precise measurement.

In a wide range of healthcare settings, OSA screening tools have been created to help medical professionals promptly check patients for mild to major OSA.[33-35] A cost-effective strategy to identify the existence of OSA and emphasize the necessity to send the patient to a sleep specialist is to use sensitive and specialized screening techniques. The existence of a condition is likely to be predicted by indicators with a large positive predictive value, whereas the lack of the condition is expected to be predicted by indicators with a large negative predictive value.

In order to detect OSA, pulmonologists and GPs created the Berlin questionnaire.[36] Three symptomatology groups are measured; the first includes five distinct questions about the occurrence (rarely to frequently) of snoring and sleep apneas. The second group includes a driving-related inquiry as well as four distinct inquiries about daytime sleepiness. If a patient chooses two options from the highest ranks, their scores for categories 1 and 2 are considered positive. There are two questions in the third group. When a patient's blood pressure is high (> 140/90 mmHg) or their BMI is high (>30 kg/m^2), the test results are good. If two or three of the areas are positive after scoring, the person is regarded as high-risk. The measurement was matched to home PSG assessment, and internal reliability testing revealed that while category 2 (daytime sleepiness) was lower, category 1 (snoring) was acceptable.[36] This survey, according to Chung et al. [37] and El-Sayed,[38] has greater degrees of sensitivity than specificity. According to Netzer et al the sensitivity and specificity values varied.[36] Constraints include low sensitivity and uneven amounts of positive and negative predictive values.[36,38] In general practice settings, this OSA screening tool has psychometric features.[39] The Epworth sleepiness scale was created as a quick way to gauge how sleepy adults are during the day.[40] The ESS is a concise instrument that asks the respondent to score their level of sleepiness during eight daily tasks on a range of 0 to 3 (0=no sleepiness, 3=high likelihood of sleeping). The eight questions are added up, and the greater the sum, the greater the absence of sleep (0-24). A result of 16 denotes extreme daytime drowsiness.[40] The ESS has been proven to have high internal consistency, inconsistent sensitivity and specificity scores, and be reasonably dependable in the context of test-retest.[35,38,41] The ESS has strong positive predictive values but lesser negative predictive values, according to El-Sayed. PCPs have utilized the ESS to detect patients who exhibit daytime sleepiness.[35] Since OSA intensity may not necessarily correspond with clinical sleepiness, using this alone could be disadvantageous.[34] To screen for OSA swiftly and succinctly in a pre-surgical population, the STOP OSA screening tool was created. Snoring, fatigue, obstruction, and hypertension are the four OSA prediction variables on a Yes/No scale.[42] The STOP questionnaire was successful in detecting OSA patients in a pilot research but adding four additional factors-BMI >35 kg/m, age >50, neck circumference >40 cm, and male sex the measurement's sensitivity.[35,38,42] Eight "yes/no" questions were included in the evaluation, resulting in the acronym STOP Bang.[42,43] For each "yes" response, the individual receives one point. Values span from 0 to 8, with a positive screen being a value of 3. El-Sayed stated that the STOP Bang's sensitivity was unchanged from the prior STOP model.[38] Greater values (AHI>5, sensitivity 0.836, AHI>15, sensitivity 0.923, AHI>30, sensitivity 1.0) have been demonstrated to be correlated with a person's OSA intensity.[37] Statistics on the STOP Bang's dependability in general practice settings are few. The limits of the psychometric statistics must be taken into consideration by researchers because to the variations in patient groups, demography, and nationalities.

CONCLUSION

In primary care, OSA screening and evaluation must take precedence. GPs must employ tests that correctly identify the existence of OSA. The STOP Bang and Berlin assessments are now the most accurate ways to determine whether someone has intermediate to serious OSA. OSA and CVD should be identified and treated as co-morbid disorders. The procedure of OSA evaluation in the primary care context has not been well documented in research. Investigation of the psychometric characteristics of OSA screening indicators in primary care practice would be a beneficial for scientific progress in the field of sleep medicine.

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