Obstructive Sleep Apnea and the role of primary care physicians in its management: A Pakistani perspective

Alishba Khan[1], Muhammad Mohsin Ali[2], Salman Ayyaz[1], Asif Hanif[1]

[1]Department of Pulmonology and Critical Care, King Edward Medical University, Lahore

[2]Department of Internal Medicine and Allied Specialties, King Edward Medical University, Lahore

Address for correspondence
Muhammad Mohsin Ali
Department of Internal Medicine and Allied Specialties King Edward Medical University, Lahore.
Email: mohsinali@kemu.edu.pk

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Abstract

Objective: Sleep apnea is a common sleep related breathing disorder with a prevalence ranging from 10 to 12.4% in Pakistan. It is commonly associated with obesity and otolaryngological disorders, with cardiovascular complications such as hypertension and dyslipidemias. If unrecognized and untreated, obstructive sleep apnea (OSA) can lead to cardiovascular and neurologic sequelae. Given the dearth of trained sleep physicians in Pakistan, there is a need for primary care physicians to step up and play a role in the screening, referral, and management of OSA. For this, education and training of general practitioners and creation of a proper referral system can play an important role, eventually decreasing disease morbidity and associated complications of socioeconomic strain.

Keywords: Obstructive Sleep Apnea; Primary Care Physicians; Family Medicine; Sleep Disorders

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Introduction

Obstructive sleep apnea (OSA) is one of the commonest sleep related breathing disorders characterized by obstructive apneas, hypopneas and/or respiratory effort-related arousals caused by repetitive collapse of the upper airways during sleep. If it remains unidentified or misdiagnosed, eventually OSA leads to a multitude of cardiovascular and neuropsychiatric implications, including daytime sleepiness, morning headaches, depression, psychosis, systemic and pulmonary hypertension and cardiac arrhythmias.

A study from US conducted in 2017 showed the prevalence of OSA to range from 9 to 38% with a higher fraction belonging to the male population.[1] Similar studies show the prevalence in Asian population to range from 2.1 to 7.5%.[2] Studies to identify the disease burden in Pakistan are lacking, although one conducted in Karachi at a single center tertiary care hospital using the Berlin Questionnaire showed that 10 to 12.4% of the population has a high risk of OSA.[3]

Apart from the classical clinical history (trouble sleeping, snoring, choking during sleep, day time sedation), OSA typically occurs in obese and overweight individuals with a large neck circumference (≥17 cm) or with craniofacial abnormalities such as retrognathia. Studies have shown higher incidence of dyslipidemias in OSA patients, with a significant association reported between severity of apnea and high triglyceride levels.[4] For diagnostic purposes, both subjective and objective assessment can be done; the former includes various scales for quantification of sleeping disorders, such as the Epworth Sleepiness Scale (ESS) or the Berlin Questionnaire; for definitive diagnosis, however, polysomnography, more commonly known as a sleep study, is the gold standard, in which the number of apneic-hypo apneic episodes per hour are recorded as AHI (apnea-hypopnea index).[5]

This narrative aims to bring attention to this ignored and often undiagnosed disorder in Pakistan and to provide a rationale for the role of primary care physicians (PCPs) in its diagnosis and management. OSA is an unwanted brunt to Pakistan's already

meager healthcare resources. Estimates showed that while 12.4 million dollars were spent on diagnosing and treating this condition in the US in 2015, more than 4 times of this amount would be spent in taking care of undiagnosed or misdiagnosed individuals.[6] With only 2.6% of the GDP being spent on health, Pakistan does not possess sufficient resources to be able to cope with additional disease morbidity and mortality due to a preventable cause.

Review

PCPs are the first step in the line of patient care both in terms of diagnosis and management. In 2016 there were 159,074 registered general practitioners (GPs) in Pakistan, with a GP to population ratio of 0.80 per 1000.[7] Physicians have a unique relationship with their patients: one that involves both cognitive care, including information gathering and dissemination, patient education and expectation management; as well as emotional care.[8] General practitioners are usually the first point of contact of patients with a healthcare professional - not only do they provide care 'closer to home,' but they also possess crucial information about the patients socioeconomic, personal, and medical issues, and hold the 'key' to proper specialist referral.

Studies have been conducted globally to identify major risk factors for OSA, and to assess the knowledge of PCPs as well as the possible role they can play in its management. In a study from Saudi Arab, out of 223 PCPs who participated, about one quarter did not even consider asking about sleep as an important part of history taking. 'Similarly one study from Africa reported that most PCPs were not aware regarding the use of CPAP as the first step in managing severe OSA.[10] In a study from Pakistan involving general practitioners at a pulmonology CME program, 18% of PCPs wrongly prescribed sedatives to patients of OSA, and 55% were unaware of the association of OSA with obesity and hypertension.[11] Moreover, 25.4% of the physicians in a study in Saudi Arab were not aware of the proper referral of a patient with OSA.[9]

In a study conducted among attendants and visitors of patients at an outpatient department to determine the prevalence of OSA in Pakistan, the prevalence risk of population at high risk of developing OSA was found to be 10%, with higher rates associated with male gender, obesity, snoring, and presence of hypertension.[12] A recent study on 203 OSA patients at a tertiary center reported a high prevalence of severe OSA (50.7%), with increased severity linked with obesity, advanced age, increased daytime sleepiness, higher scores on the Berlin and ESS questionnaires, and high Mallampati grades; decreased Nadir saturation, total sleep time, and sleep latency on polysomnography were also linked with increased severity of OSA.[13] OSA also has extensive effects on the patient's physical as well as mental health. A study performed in a private sector hospital of Pakistan revealed that about 76% of their subjects with OSA were suffering from depression, most of whom were males.[14] Day time sedation followed by motor vehicle accidents leads to considerable mortality as well as morbidity and economic constrains.[6]

Simple techniques in both history taking and examination can be used for screening of the high risk population. History regarding sleeping pattern, snoring, consanguinity and medical co-morbidities; and examination of the patient's height, weight, BMI, neck circumference and skin fold thickness can reveal important clues about the presence and severity of OSA, and can be easily performed in the outpatient clinic.[5]

OSA has been recognized for its physical and socioeconomic debility, which has prompted the inclusion of sleep disorders in the medical teaching curriculum, so as to tackle the problem at a basic level. Although some medical institutes have developed curricular changes inculcating sleep and related disorders in basic medical education, certain barriers to adequate learning exist, including insufficient time given to this topic, and lack of qualified staff available for teaching.[15,16]

While the paucity of structured sleep specialty centers in Pakistan has been recognized,[17] little to no efforts have been made in actually establishing the required facilities. With the prevalence of obesity, hypertension and psychiatric disorders on the rise, recognizing the prevalence of OSA in our local population through adequate screening and treating it prior to development of complications is now more important than ever, to reduce both the population morbidity as well as the projected strain on the economy.

Recommendations

Keeping in view the prevalence of OSA in Pakistan, the paucity of specialized sleep physicians, and the influential role of GPs in the local community, the authors make the following recommendations for the development of a structured framework of screening, diagnosis and management of sleep disorders in the community.

Conclusion

Obstructive sleep apnea is an under diagnosed disease in Pakistan. It is associated with obesity, hypertension, presence of psychiatric disorders, and

Recommendations	Feasibility and Proposed Structure
Sleep education as part of medical school curriculum	Sleep education should be provided to medical students by making it a part of the Pakistani educational curriculum. The current medical curriculum for MBBS by the Pakistan Medical and Dental Council (available at:) only includes the study of sleep physiology, sleep apnea syndrome, and the biological role of sleep on behavior. A comprehensive curriculum needs to be devised regarding sleep and its disorders. This should include imparting sleep education across 6 domains (physiology/behavioral sciences, neurology, cardiology, otolaryngology, pulmonology and psychiatry), and coverage of major sleep disorders (insomnia, hypersomnia, parasomnias, circadian rhythm abnormalities, sleep apnea, sleep-related movement disorders and pediatric sleep disorders) for both adults and pediatrics.[15] [Level of evidence: C-LD]
Training programs for PCPs	Proper training programs and seminars should be held for PCPs, led by sleep specialists. Considering the lack of sleep specialists in Pakistan, webinars and video link programs would be more feasible, with consultations from international experts as well. Modules on sleep education for PCPs can lead to improvements in patient care comparable to trained specialists.[18] [Level of evidence: C-EO]
Screening Programs for OSA	The OSA50 is a simple, 4 question scale with a sensitivity and specificity of >80%, which can be easily applied in the outpatient setting such as a GP clinic. This assesses waist circumference (at level of umbilicus), with a cutoff of >102 cm for males and >88 cm for females to determine obesity; snoring; apneas (based on observation from another person); and age >50 years to diagnose OSA on a 10-point score. We propose the use of this simplified score to screen OSA in GP clinics and in primary care settings. Patients who are identified to be at risk for developing OSA should be then referred to a pulmonologist or sleep specialist for further workup and management. [Level of evidence: B-NR]
Appropriate referral system	Following risk stratification, PCPs should offer lifestyle advice to patients at low risk for OSA; while those at moderate to high risk should be referred to sleep specialists. For poorly compliant patients and in areas where referral is not possible, PCPs should counsel patients regarding weight reduction, one of the most important factors in preventing development of OSA. For development and maintenance of a referral system, a registry of respiratory physicians and sleep specialists should be maintained. The referral system should allow for direct communication between the PCP and specialist, and should also include direct and indirect sharing of medical information across the two. Well-defined referral networks, especially in integrated settings, can improve communication and care management.[20]
Establishment of sleep centers across the country	Currently the only sleep centers in Pakistan of international credibility exist in private sector hospitals. It would be futile to raise awareness in PCPs and lay grounds for a referral system, without creating well equipped sleep centers to deal with OSA. Polysomnographic studies are the gold standard for OSA diagnosis. Therefore, such centers should be established across all major tertiary care hospitals, with provision of trained technicians and sleep specialists.

poor sleep quality - all of which are prevalent factors in the Pakistani population. There is limited data about its epidemiology, and scarce resources for its diagnosis and management in the Pakistan population. With a rising disease burden projected to increase economic strain and population morbidity, it is the need of the hour to develop screening guidelines and referral systems for OSA in the local community. Primary care physicians are the key stake-holders in this process, and should be involved and encouraged to develop an understanding of sleep disorders and implement screening of OSA in their target patient population.

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