



Research Article

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## ***Obstructive Sleep Apnea in Primary Health Care Settings***

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### **ABSTRACT**

**Background:** Obstructive sleep apnea (OSA) despite being the most common type of sleep disorder, may present a myriad of clinical features, ranging from simple fatigue and lack of concentration to per-sonality changes and heart diseases. The association between the genetic, physiological built, so-cial status, and behaviour plays the major role in disease risk factors diagnosis and management plans. The most often used treatment method of OSA is Continuous Positive Airway Pressure (CPAP) aimed at monitoring respiratory effort and Apnea-Hypopnea Index (AHI) measuring the number of apnea and hypopnea events per hour of sleep or the Respiratory Disturbance Index (RDI). **Objective:** The focus of this paper is providing a review on obstructive sleep apnea, different treatment ap-proaches and the recent perspectives with regard to family physicians' enrolment in management and modulation of pain in OSA patients. **Methodology:** PubMed database was used for articles selection using the keywords obstructive sleep apnea, its evaluation, management, and diagnosis. **Conclusion:** In summary, family doctors and primary care providers play a major role in controlling OSA and are involved in dealing with CPAP, AHI measurement and RDI. Obstructive sleep apnea re-quires a high cost which may further contribute to late detection, complications deterioration, and increasing in the drop of follow-ups. Increasing awareness of the primary care providers especial-ly family physicians would help to avoid such outcomes. OSA remains a common condition that requires attention, identification, and more directed research.

**Key words:** Obstructive sleep apnea, Family physician care, Management.

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### **INTRODUCTION**

Obstructive Sleep Apnea (OSA) is the most common type of sleep apnea which affects around 2-4 % of the adult population, with the highest prevalence in middle-aged men [1]. This disease may reveal many clinical features, ranging from lack of concentration to personality changes and heart diseases. Therefore, the role of family physician is critical in identifying these symptoms and raising his clinical suspicion in order to not miss these patients and provide the best management plan for them. As the current management is set by the sleep specialists, the role of family physician gets even highlighted towards simplifying and communicating all the available treatment options to his patients, which will result in further compliance and overall better outcome. In this paper, we will review pathophysiology, clinical features, diagnosis, and management aspect of this disease with special focus on the primary physician setting.

## METHODOLOGY:

PubMed database was used for articles selection using the following keywords: obstructive sleep apnea, and its evaluation, management, and diagnosis. With regard to the inclusion criteria, the articles were selected based on inclusion of one of the following topics: OSA evaluation, OSA management and diagnosis. Exclusion criteria were all other articles which did not have one of these topics as their primary endpoint, or repeated studies, and systematic reviews or meta-analyses.

## DISCUSSION

Currently, the primary care physicians play an important role in identifying, managing and further referring of patients having symptoms of Obstructive Sleep Apnea (OSA) which is the main variety of sleep apneas [1]. The main pathophysiological mechanism behind the disease is a repetitive interruptive breathing pattern as a result of extensive muscular relaxation of the upper airway, starting from mouth, nose and pharynx leading to intermittent airflow blockade during sleep. These blockades lead to the lack of oxygen level that reaches the brain, and as a result the brain will send signals to wake the patient up as a response to the intermittent drop in the O<sub>2</sub> level. This is noted by some patients to occur repeatedly on the same night, impacting heavily their sleep pattern and thus lifestyle. Repeated apnea and sleep disruption alters body metabolic balance, organs' functions—primarily the brain and cardiovascular system— leading to clinical co-morbidities known as OSA syndrome [2]. Patients with co-morbidities such as congestive heart failure, severe obesity, ageing, diabetes, and swollen tonsils are at higher risk of OSA. Moreover, there are many risk factors that studies proven to be associated with the disease including male-gender, middle age, neck size, obesity, menopause, race (Asians and non-white), untreated nasal obstruction disorders, and genetic predisposition [3]. GP appointments and follow-ups of those co-morbid patients make it an important setting for earlier screening and detection of the undiagnosed OSA.

As a family physicians, it is crucial to identify patients, which makes management and diagnoses more accurate and possibly lifesaving. Such patients may complain of frequent and disruptive snoring behavior, daytime sleepiness or fatigue, and a history of obesity or hypertension. These are the main pillars of the diagnoses and were proven in studies and even integrated clinically as what is firstly identified, and now known as Berlin questionnaire. There are multiple questions under each criteria; however, having two out of three criteria in a patient is interpreted as having a high risk of sleep apnea [4]. Moreover, there are other measures to determine the severity of the disease, mainly by Apnea-Hypopnea Index (AHI) representing the number of apnea events per hour of sleep or the Respiratory Disturbance Index (RDI) which adds respiratory effort related arousals. These two can be measured using special sleep studies (polysomnography), or with special home equipment and recording to count the apnea episodes (more than ten seconds) and the degree of oxygen desaturation in the blood. Mainly, in the cases of an AHI of more than five episodes per hour and when RDI is equal to or more than fifteen independently of the symptoms, we can easily diagnose OSA [5, 6]. Other symptoms that were reported in studies includes, morning headache, irritability, and a noted loss of concentration during the day. The most common symptoms among the patients of OSA is daytime sleepiness which is the hallmark of this disease. However, there are more impactful symptoms that can be reported, like impairing daily performance and activities which may result in endangering lives, specifically in drivers. In a study, sexual dysfunction was studied in relation to the patients with obstructive sleep apnea, and a positive association was revealed [7].

As a primary health care physician, the management of this disease starts with the risk factors, the patient needs to be instructed to major lifestyle modifications, like losing weight, cessation of smoking and alcohol, and modifications of sleeping habits (30-degree elevation of the upper body and sleeping on a side) [8]. However, with the advanced recent technology, there has been progress toward individualized management for OSA via in-depth details of the causes of OSA. The most common used treatment in the recent cases has been CPAP (continuous positive airway pressure) which is mainly used for moderate to severe disease. Moreover, there are currently a variety of options for clinicians as well as patients such as variable positive airway pressure (VPAP), nasal expiratory positive airway pressure (EPAP), oral appliances (splints), and even auto CPAP. However, in severe refractory, or life threatening cases, upper airway surgery may be suggested to patients as a treating option which is also known as sleep surgery targeting the anatomical causes of OSA with multiple surgeries possible [9]. Even though we have a variety of options, inappropriate management would result in reduced quality of life, development of accompanying diseases and other complications [10].

In fact, randomized control trial compared the management setting for OSA in primary care center with the specialist center and it was found that they are at the same level of beneficence to patients targeting daytime tiredness score monitored via Epworth Sleepiness Scale score [11]. However, untreated patients with obstructive sleep apnea are at higher risks of being deteriorated and can develop drug-resistant hypertension, heart diseases, arrhythmias, stroke and diabetes, all of which will further delay treatment modalities. Other complications that may be seen in first visit are impairment and deterioration in the nervous system, cognitive and neurobehavioral function, which result from the chronic delayed O<sub>2</sub> supplementation to the brain. Additionally, hypoxia increases the risk of micro systemic inflammation, atherogenesis clotting, and metabolic impairment.

Screening is targeted towards patients' symptoms with anamnesis following the STOP-BANG (snoring, tiredness, observed apnea, high blood pressure, body mass index, age, neck circumference, gender) questionnaire. These screening measures can be carried in a primary care setting, especially for highly risk groups, which provides a significant tool in discovering the untreated OSA, improving the disease prognosis, and eventually controlling and limiting complications for the family physicians.[1] It also helps in reducing the disease burden, major health costs, safety, and even economic consequences.[12] Every family doctor shall be able to have a high clinical suspicion for such cases in order to identify and monitor the patients' symptomatology and assess the risks of developing OSA syndrome. However, recent protocols suggest that family physician shall lay out the management plan for the patient before being referred for specialties of sleep studies and management. And the lack of a clinical approach or knowledge will eventually lead to a large number of cases to be missed or even under or misdiagnosed. The detection rate can be increased by educating the primary health care centers physicians about the condition by incorporating educational programs and lectures, and making contact with sleep specialists more feasible.[13]

## CONCLUSION

Obstructive sleep apnea is a disease that is relatively prevalent in the community with possible devastating complications and outcomes. In the primary care clinics, it is pivotal to identify the risk factors and apply the screening modalities which is proved effective even in the daily setting. Such involvement was heavily studied in the last 30 years in order to detect sleeping disorders, guide treatment, and facilitate the process of referral thus preventing the associated complications. However, the lack of screening measures application results in missing diagnoses, under treatment, and even some patients are left untreated. Lately, a variety of management modalities have been available for OSA, where CPAP is still considered as the golden line of treatment, other treatments still need further studies to establish their full effect on the course of the disease, which will provide possibly much cheaper options for patients. Further improvement with regard to the treatment processes with further studies and larger sample is the main stray for future breakthroughs in management; however, improving the general practitioner is of higher importance which can be done via educational programs and multidisciplinary approaches.

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