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PREVALENCE AND MANAGEMENT OF SIMPLE SNORING AND SLEEP APNEA SYNDROME: A CROSS SECTIONAL STUDY

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ABSTRACT:

Purpose: The aim of this study was to determine the prevalence of snoring and sleep apnea syndrome (SAS) and to describe the management of these patients.

Methods: We conducted a cross-sectional study at the Ear, Nose and Throat service. The study was conducted from January to March 2014. Data collection was performed using the questionnaire of Sleep Group of the French Society of Otolaryngology.

Results: The sex ratio Male / Female was 0.7. The mean age was 40.4 years. Four percent of consultants had snoring as the main reason for consultation. The prevalence of snoring was 56% (95% CI [49.1to 62.9]). The duration of snoring was more than one year among 42% of snorers. The occurrence of apnea was noted in 26% of the respondents. Daytime sleepiness was assessed by the Epworth score. This score was greater than 10 in 35%. SAS was confirmed in 10% of our sample (95% CI [5.8 to 14.2]). The treatment was continuous ventilation with positive pressure among 60% of patients, mandibular advancement device in 30% and surgical septoplasty in the remaining 10%.

Conclusion: We found a prevalence of 56% of simple snoring, while only 4% of patients consulted for this reason. Furthermore, 10% of the sample had SAS. Our study elucidated the underestimated diagnosis of SAS. We insist on the importance of diagnosis and proper management of this condition.

Keywords:

Cross-sectional study; Prevalence; Sleep apnea syndrome; Snoring.

INTRODUCTION

Snoring is an inspiratory noise occurring during sleep [1]. Low daytime sleepiness and an Apnea Hypopnea Index (AHI) less than 10/h differentiates between simple snoring and sleep apnea syndrome (SAS) [2]. SAS is characterized by an AHI greater than 10/hour with excessive daytime sleepiness [3]. This is a factor of morbidity and mortality from cardiopulmonary complications as well as road accidents. Its prevalence is 5% in the adult population [1-3]. Prevalence data are missing in our Moroccan context, hence the importance of the study which aims to determine the prevalence of snoring and SAS in our consultation. The second purpose was to describe the management of these patients.

METHODS

Research design:

A cross-sectional prevalence study was carried out between January and March of 2014 at a university hospital, tertiary referral center, after approval of the ethics committee.

Patient sample:

We have collected a representative sample of 200 patients seen at the Ear, Nose and Throat (ENT) department of Ibn Rushd University Hospital in Casablanca. We have included all of the patients above 14 years who consult for all ENT diseases. Exclusion criteria were age under 14, deaf mutes and patients refusing to be included in the study.

Data collection:

Data collection was performed using the valid questionnaire from sleep group of the French Society of Otolaryngology (table I) [4]. The variables studied are, among others, socio-demographic characteristics, ENT and medical history, the main reason for consultation, sleep patterns, daytime and nighttime clinical signs of snoring and SAS. We divided our patients into two groups. The first group included all patients who have the score of Epworth sleepiness more than 10. The second group

included patients who have the score less than 10.We conducted a sleep polygraph when we suspect a SAS (The first group).

Table I: Epworth sleepiness score.

Situations*	Score**
Sitting and reading	…/3
Watching television	…/3
Sitting inactive in a public place (e.g. a theatre/meeting)	…/3
As a passenger in a car for an hour with no break	…/3
Lying down in the afternoon (when possible)	…/3
Sitting and talking to someone	…/3
Sitting quietly after lunch without alcohol	…/3
In a car, while stopping for a few minutes in traffic	…/3
Total	**…/24**

*How likely are you to doze off or fall asleep during the following situations, in contrast to just feeling tired?

** For each of the situations listed below, give yourself a score of 0 to 3, where:

0 = Would never doze;

1 = Slight chance;

2 = Moderate chance;

3 = High chance.

Statistical analysis:

The data set was analyzed using excel software and Epi-info in collaboration with the Laboratory of Medical Informatics. We conducted a descriptive analysis using Epi Info.

RESULTS

Socio-demographic and disease history:

We collected the data of 200 patients. The sex ratio M / F was 0.7. The mean age was 47.4 years with a standard deviation of 15.9 (Table II).

Table II: Socio-demographic characteristics of the study population.

Socio-demographic characteristics	Patients	
	Number =200	%
Sex		
Male	079	39.5
Female	121	60.5
Age (year old)		
14	05	02.5
15-17	50	25.0
18-29	51	25.5
30-39	31	15.5
40-49	41	20.5
50 and more	22	11.0

Smoking and Alcohol use was noted respectively in 20% and 15% of cases. Respondants reported otologic disease in 10% of cases, rhinologic disease in 8% of cases and head and neck disease in 19% of cases. Diabetes was reported in 22% of participants and hypertension in 9%. Snoring during sleep was reported in 56% of our patients.

Prevalence and duration of snoring:

Four percent of consultants have snoring as the main reason for consultation. The prevalence of snoring was 56% (95% CI [49.1to 62.9]). Its frequency and intensity were variable; 11% of patients always snore while 16% of them often snore (Figure 1). Our study showed that 56% of patients also had difficulty in falling asleep. Seventeen percent of our snorers had this disorder every night. Snoring has lasted more than one year in 75% of snorers (Figure 2).

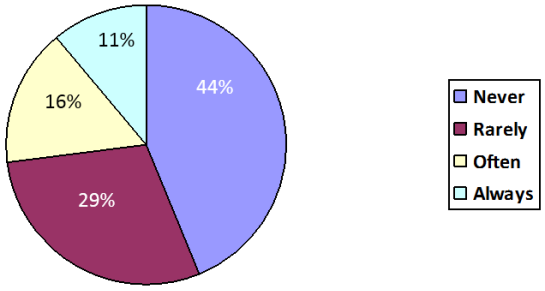

Figure 1: Prevalence of snoring during sleep according to the patient and his family.

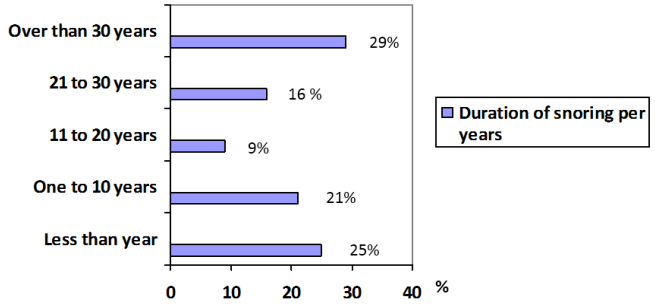

Figure 2: Duration of snoring per years according to the patient.

Night noise and Epworth score:

The night noise of snorers was troublesome for the entourage in 22% of cases. The occurrence of breathing apneas was noted among 26% of participants with varying frequencies (Figure 3).

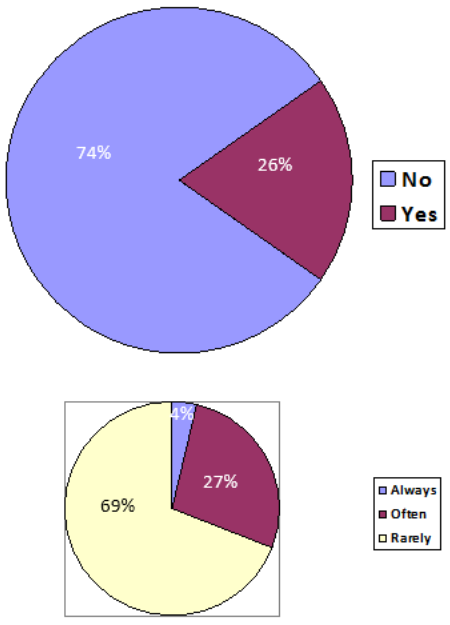

Figure 3: The prevalence of respiratory apnea (graphic above yes or no) and their frequency in the night (graphic below if apnea was present).

Daytime sleepiness was assessed by the score of Epworth. The score was higher than 10 in 35% of cases (Figure 4). A proportion of 65% of patients reported fatigue and morning headache, of varying degrees, which can be related to snoring or be the principal reason for consultation. The presence of an Epworth score of more than 10 and nocturnal apnea reported by the family of the snorers was noted in 20% of cases.

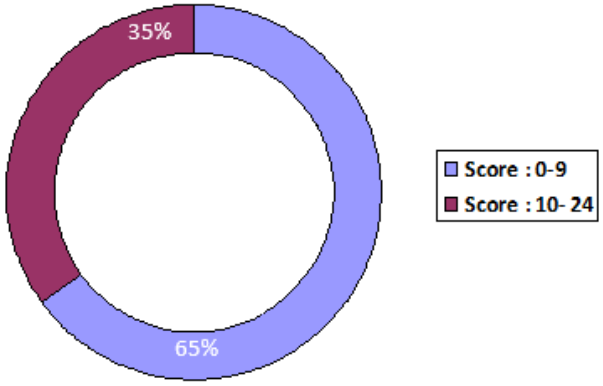

Figure 4: Epworth score (two groups of patients)

Paraclinical diagnosis and management of SAS:

We conducted a sleep polygraph in 35% of cases based on an Epworth score more than 10, apneas, morning headache and clinical suspicion of SAS. The remaining patients have not the morning headache (13%) or breathing apneas (8%). For that, sleep polygraph exploration has not indicated for them (21%). Polysomnography and endoscopy during sleep have not been made in our study.

SAS was confirmed among 10% of our sample (95% CI [5.8 to 14.2]).

The management of those patients consisted of continuous ventilation by positive airway pressure (CPAP) in 60% of cases. Thirty percent were treated by Advanced mandibular orthotic and 10% of patients underwent septoplasty because they have septal deviation. Allergic rhinitis was found in 12% of the snorers. The nasal polyposis and tonsillar hypertrophy were treated respectively in 4% and 10% of cases.

The evolution of treated patients is good within one year follow up. We assessed our patients by physical exam, polygraphy with CPAP (6%) and polygraphy with advanced mandibular orthotic (3%). Nasal corticosteroids were effective in all patients with allergic rhinitis.

DISCUSSION

The prevalence of simple snoring and SAS varies by regions from 19 to 50% (Table III) [4-29].

Table III: Prevalence of simple snoring (comparison between our study and literature).

Authors	Country	Year of publication	Prevalence %
Meslier and al [30]	France	2003	M: 69 ; F: 46
Stefanini and al [9]	Brazil	2012	42.8
Marin and al [12]	Spain	1997	49
Akintunde and al [13]	Nigeria	2012	50
Nita and al [5]	Romania	2012	44.1
Ozdemir and al [14]	Turkey	2005	37
Our study	Morocco	2015	56

Our sample of 200 consultants was studied to raise awareness of this disease and highlight its underestimation by the patients and its underdiagnoses by physicians. This is a public health problem but the majority of consultants are unaware of its importance [8, 9]. We have found a prevalence of 46% for simple snoring and 10% for SAS, while only 4% of our patients consult for snoring. One of the studies notes a 5% prevalence of SAS among civil servants aged between 30 and 60 years old [6]. However, it is recognized that the prevalence of SAS is even higher among the older population [4-7, 10-14]. The 47.4 years old mean age in our study may explain the prevalence of 10% of SAS as well as 4% of patients who seek treatment for their snoring disease. The maximum prevalence is noted for people between 60 and 70 years old [14-19]. Snoring is more common among men (57%) than women (37%) with a significant difference [13-17], nevertheless Ozdemir has not found a significant difference ($p > 0.05$) [14].

Tobacco intoxication complicates the initiation and maintenance of sleep as well as its quality which implicates daytime sleepiness [22]. Alcohol also worsens snoring. This is due to its relaxing effect on the pharyngeal muscles [20, 21]. A survey conducted by Franklin found that 24% of smokers and 20% of former smokers regularly suffer from chronic snoring against 14% of people who have never smoked [23]. ENT diseases such as allergic rhinitis, nasal polyposis are significant factors associated with snoring [24]. Allergic rhinitis in our study is Associated with snoring in 12% of cases. In France, Serrano conducted a study among 10,033 adults with nasal polyposis, 50.5% of them suffered from snoring [25]. In our study, 4% of participants had nasal polyposis among which 3% suffered from snoring.

The sleep polygraph recording coupled with clinical evidence allows a confirmed diagnosis of the severity of snoring [26, 27]. The daytime events suggestive of SAS are excessive sleepiness assessed by the Epworth scale [28]. The use of questionnaires has limitations hence the importance of objective measures such as test multiple sleep latency, but it is not routinely performed. [28] Pausing in breathing (apnea) is one of the most important symptoms in the diagnosis of SAS. The association with snoring and daytime sleepiness is a strong argument to suspect SAS and further explore it. The prevalence of respiratory pauses varies in different studies. A study in Hungary [20] conducted in 2010 reported that 37% of men and 21% of women reported loud snoring with breathing pauses during their sleep while a French study in 2007 showed that 5% of men and 2% of women have breathing pauses in their sleep [28-31]. These differences are related to the young and middle age population of the French study. In our study 26% of patients report breathing pauses while sleeping, 8% of them say that it happens either always or often.

A study conducted in 2006 in the US reported a strong existing relationship between a history of snoring and complaints of chronic fatigue (78%). 42% of patients who complained from snoring did not present chronic fatigue [29]. Neuropsychiatric disorders with depressive syndrome and sexual dysfunction are also related to SAS [29].

If snoring is isolated, SAS is an unlikely diagnosis and monitoring is sufficient. If nocturnal apnea and daytime sleepiness are present, a polygraph is justifiable for the diagnosis of SAS.

Cardiovascular complications of SAS are life threatening [30-33]. SAS is an independent risk factor for the occurrence of hypertension. The course of blood pressure is favorable in case

of treatment with continuous ventilation by positive airway pressure (CPAP) [34]. Coronary artery disease and myocardial infarction are more common in patients with SAS [4, 35].

The treatment is to be associated with lifestyle changes such as: weight loss, alcohol suppression, avoiding sedatives, tobacco cessation and postural treatment (sleeping in lateral decumbency) [36]. In our context, early diagnosis of SAS and its management are to be emphasized.

When the diagnosis is simple snoring, surgery involves removing excess of the the soft palate. Laser allows operating under local anesthesia and can be done in one session of 15 to 20 minutes. The results are not immediate so it takes two to three weeks to obtain silent nights. In case of failure of this technique, two therapeutic options are possible: mandibular advancement surgery and mandibular advancement device, as an alternative to surgery, which is inexpensive and unobtrusive [30-35].

CONCLUSION

Our study has elucidated the under diagnosed aspect of snoring and thus the underestimating of SAS in our Moroccan context. The prevalence of SAS to the ENT consultation is 10%. Nevertheless, only 4% of 200 patients consulted for snoring. We insist on the importance of diagnosis and appropriate treatment of patients as a whole and not to be limited to the main complaints of the patients which might hide other potentially serious but unrecognized conditions.

Conflict of interest: The authors declare no conflict of interest for this article.

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