

# INFLUENCE OF SOCIAL FACTORS ON OBSTRUCTIVE SLEEP APNEA SYNDROME ON ROMANIAN POPULATION

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**Keywords:** OSAS, AHI, marital status

**Abstract:** Obstructive sleep apnea syndrome (OSAS), one of the most common sleep pathologies, occurs in middle-aged and elderly people, in those with increased body weight, in those associated with short stature, in those with upper respiratory airways reduced in dimensions, with deformations of the craniofacial mass, in men, in negroid and hispanic race, but also in those with a family history of obstructive sleep apnea. This study was conducted at the "Marius Nasta" Institute of Pneumophysiology on a group of 101 patients from the diagnosis of OSAS. There was a much higher OSAS frequency among males, 51-60 year olds, those with stable life partners, those in the urban environment and those with a high educational level

## INTRODUCTION

Sleep apnea syndrome (OSAS) is one of the most common conditions that occur during sleep. It implies the occurrence of recurrent obstructive recurrent episodes in the oropharynx, resulting in the absence or reduction of airflow.(1)

Although in recent years the number of polygraphy and polysomnography laboratories has been increased in order to diagnose the disease, OSAS remains undiagnosed in a high percentage, with some studies supporting even 93% of men and 82% of women with moderate and severe OSAS.(2,3)

OSAS severity is stratified using apnea-hypopnea index (AHI). AHI quantifies the number of apnea and hypopnea episodes in one hour, along with the degree of oxygen saturation. Depending on the AHI value, OSAS is classified in mild form (AHI has a value between 5 and 14 episodes per hour), moderate OSAS (AHI is between 15 and 30 episodes per hour) and severe OSAS (AHI is greater than 30 episodes per hour).(4)

OSAS prevalence among the general population is estimated at 3-7% among males and 2-5% among women.(3,5) Studies show the maximum frequency of OSAS at age of 55, then reaching a plateau after age 65.(6) Up to 65 years of age, OSAS is more common in males, after that the frequency is higher in women.(6,7) Also, Duran et al. showed that moderate and severe form of OSAS is more common in males compared to females, with the average frequency in males being 14.2% versus 7% in females, and in severe OSAS frequency in men being of 6.8% for women, of only 2.9%.(8)

## PURPOSE

In this study, it was attempted to identify the social factors and their impact on the risk of occurrence of OSA

## MATERIALS AND METHODS

A prospective observational study was conducted within 12 months at "Marius Nasta" Institute of Pneumophysiology Bucharest on a group of 101 patients from the time they were diagnosed with OSAS. The entire group studied was characterized in terms of patient gender, age, civil

status, background, educational level, and OSAS severity. At the start of the study each patient signed the consent that allowed me to use personal data. The ethics commission of "Marius Nasta" Institute of Pneumophysiology also approved the study. The statistical data were systematized in the form of synoptic tables, their presentation being accomplished through graphs of various types (sectorial graphs, columns etc.). Statistical processing was performed with the IBM SPSS program and the Excel application (from the Microsoft Office 2010 package). The graphical representation of the results was done with the IBM SPSS program.

## RESULTS

**Distribution of patients by gender:** In the group of 101 patients diagnosed with OSAS, the high frequency of the disease among the 83 men represented 82.2%, compared with women, in a percentage of 17.8%, according to the literature.

**Figure no. 1. Distribution of patients in the study group by gender**



**Distribution of patients by age group:** It can be seen that the average age of the sample members was 53.77 (years), with the standard deviation of 11.98 (years). The distribution has a slightly negative asymmetry, indicating a slight left shift of the average age of 53.77 versus the median of 54. Based on the

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asymmetry and vaulting coefficients, the age distribution of the patients can be approximated by a normal one, testing the normal character of the distribution of data on the age of the sample members was also performed by Kolmogorov - Smirnov and Shapiro-Wil normality tests (the significance level is  $0.727 > 0.05$ , indicating in this respect the normal distribution of the patients' age).

Table no. 1. Descriptive statistics - batch of study

Age	
Median Value	53.77227723
Standard Error	1.19212608
Median	54
Absolute	47
Standard Deviation	11.98071883
Sample Variance	143.5376238
Vaulting Excess	0.094496302
Asymmetry Coefficient	-0.203756198
Value Range	61
Minimum Range	23
Maximum Range	84
Value Sum	5431
Number of values	101
Level of significance (95.0%)	2.365144128

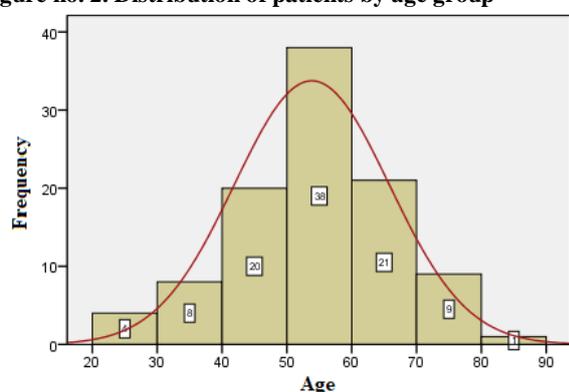
Table no. 2. Normality tests for the age factor

Sample age - Normality tests						
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Age	.068	101	.200*	.991	101	.727

\*. This is a lower bound of the true significance.  
a. Lilliefors Significance Correction

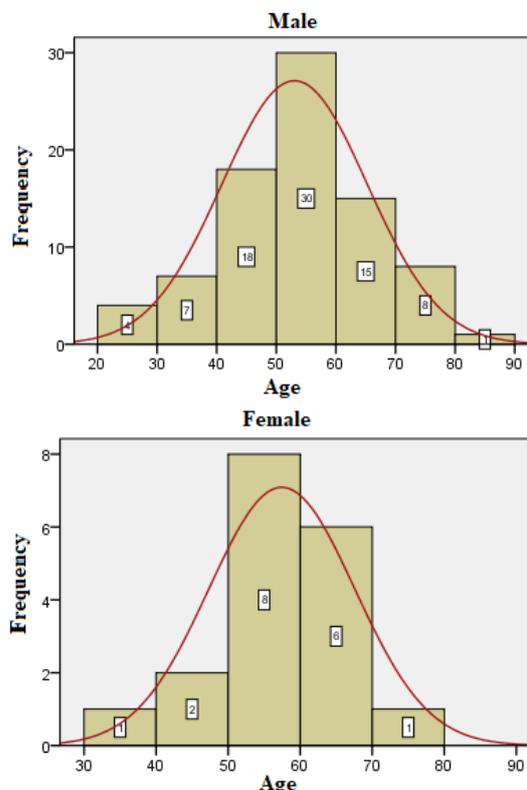
Regarding the OSAS distribution by age, the maximum frequency of the disease is observed in patients aged 51-60 years (37.62%). In fact, OSAS has been increasing since the age of 41, with 19.8% of patients in the study group, this frequency being also high for patients aged 61-70 years (20.79%), the rate of disease decreasing in patients aged between 70-80 years (8.9%).

Figure no. 2. Distribution of patients by age group



For male patients in the entire sample, the mean age was 52.96 (years), with a standard deviation of 12.26 (years). For females, the mean age was 57.5 (years), with a standard deviation of 10.05 years. Based on the asymmetry and vaulting coefficients, the age distribution of male patients can be approximated by a normal one, while the age distribution of female patients is different from the normal one - is tilted to the right and sharper than the normal distribution. This deviation from normal character is also explained by the small size of the female patient sample of 18.

Figure no. 1. Distribution of patients by age and gender (a - male, b - female) for the whole group



Regarding OSAS frequency by age and gender, the maximum diagnosis frequency of this disease was found in patients aged 51-60 years for both men, 36.14% and women, 44.44%.

**Distribution of patients by marital status:** In terms of marital status, the sample was divided into four categories: married, unmarried, divorced and widowed, highlighting a major proportion of married persons in the sample as a whole (81.2%), a possible explanation is given by the fact that people who do not have a stable life partner sleep on their own, and are often unaware that they suffer from this medical condition, which delays their medical consultation. At the opposing end, married patients who are being warned by their partner, especially on the existence of snoring and sleep apnea, come to the doctor more quickly, thus allowing for the earlier diagnosis of this condition.

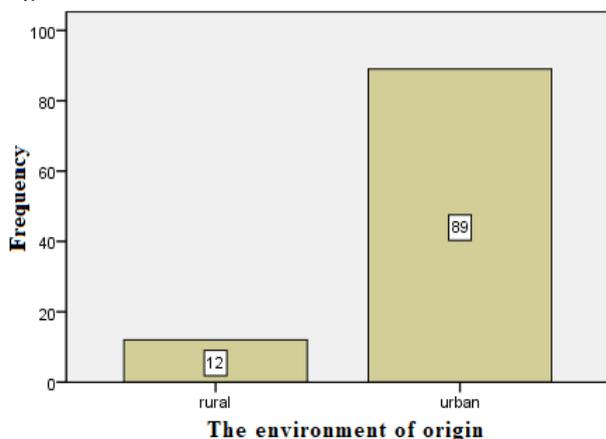
Figure no. 4. Distribution of patients by marital status



**Distribution of patients according to the environment of origin:** From the point of view of the

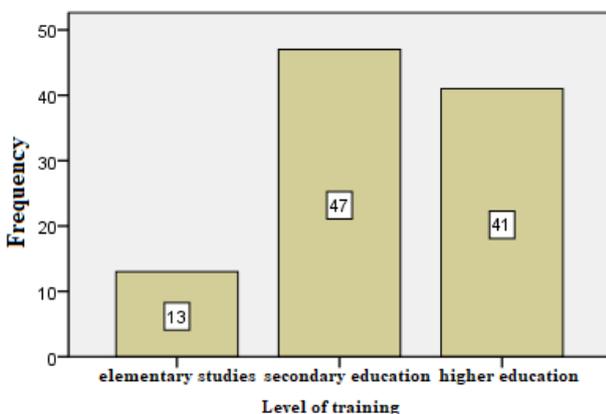
environment, the sample was characterized by two categories: urban and rural. Thus, the high percentage of urban patients (88.1%) compared to those in rural areas (11.9%), a phenomenon explained by the higher number of medical cabinets in the urban area, could be noticed, which also allows for greater addressability of the population from this environment to medical offices and specialized services compared to those in rural areas.

Figure no. 5. Distribution of patients by environment of origin



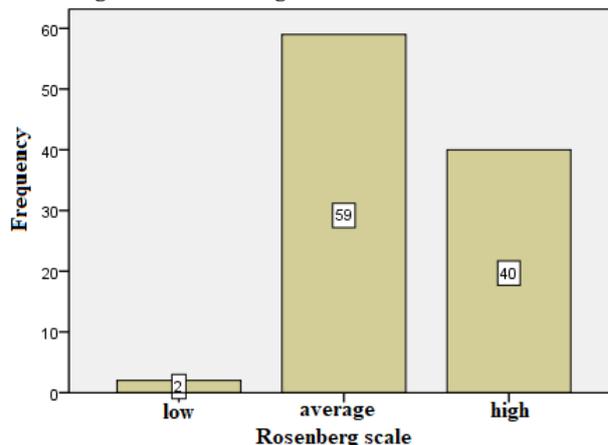
**Distribution of patients according to the educational level:** Regarding the characterization of the sample in terms of the educational level, the sample was characterized by three variables, namely the level of studies: elementary, secondary and higher. The high percentage of patients with secondary education (46.5%) and higher (40.6%) compared to those with elementary studies (12.9%) was observed, thus revealing the addressability to a much higher physician among the patients with an increased educational level.

Figure no. 6. Distribution of patients according to the educational level



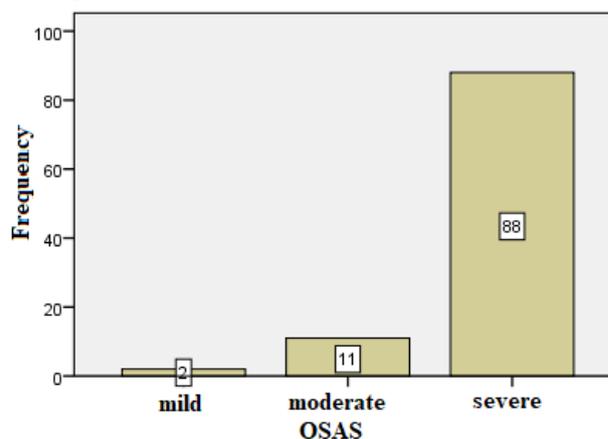
**Distribution of patients according to the Rosenberg Scale:** The patient's self-esteem was achieved using the Rosenberg scale, according to which patients are divided into three categories: low, medium and high-stakes. At the level of the studied group, a high percentage of patients with medium self-esteem (58.4%) and higher self-esteem (39.6%) was revealed, which shows that the patients concerned with themselves are more often addressing the physician in order to diagnose this condition.

Figure no. 2. Distribution of patients in the study group according to the Rosenberg scale



**Distribution of patients according to OSAS severity:** From the point of view of the degree of OSAS severity, classified in the mild, medium and severe, most patients, 87.1% were diagnosed in an advanced form of OSAS. This can be explained by the fact that patients are rarely aware of the existence of OSAS, the symptoms being present even for years without diagnosis, during which the patient may become conditioned with fatigue and drowsiness associated with significant sleep disturbances.

Figure no. 3. Distribution of patients according to OSAS severity



**CONCLUSIONS**

OSAS is more commonly diagnosed in males, with a very high percentage of males in the study group, 82.2% compared with women, 17.8%, data that is in line with the literature. This can be explained by the fact that men recognize more quickly the existence of symptoms such as snoring, repeated episodes of apnea. By comparison, women consider the snoring unladylike, thus often avoiding mentioning it, considering it humiliating.

Regarding the age of diagnosis of OSAS by age and gender, the maximum diagnosis frequency is 51-60 years for men, 36.14% and for women, 44.44%.

OSAS is more commonly diagnosed in patients who have a stable life partner, OSAS being found in a very high percentage of 81.2% in married patients compared to other patients who did not have a permanent life partner: unmarried, divorced, widowed. This is due to the patient's attention to nocturnal symptoms, such as snoring, apnea episodes, insomnia.

OSAS is more commonly diagnosed in urban patients (88.1%) than in rural areas (11.9%), due both to the lack of information and to the small number of specialized cabinets in rural areas, all leading to the low addressability of those in the rural area compared to the urban environment.

OSAS was also more commonly diagnosed in patients with secondary education (46.5%) and higher (40.6%) compared to those with elementary studies (12.9%), thus showing much higher access for those with a level educationally increased.

The high degree of OSAS severity, 87.1% of patients having severe OSAS at the time of diagnosis may suggest that patients may be affected for years without being aware of the condition, leading to aggravation of the disease, a phenomenon that supports the need to implement means education of both patients and healthcare professionals in diagnosing this disease.

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