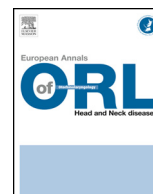




Available online at  
**ScienceDirect**  
[www.sciencedirect.com](http://www.sciencedirect.com)

Elsevier Masson France  
**EM|consulte**  
[www.em-consulte.com/en](http://www.em-consulte.com/en)



Original article

## Awareness of obstructive sleep apnea-hypopnea syndrome among the general population of the Lorraine Region of France

F. Arous<sup>a</sup>, J.-M. Boivin<sup>a,b</sup>, A. Chaouat<sup>c,d</sup>, C. Rumeau<sup>a,e</sup>, R. Jankowski<sup>a,e</sup>, D.T. Nguyen<sup>e,\*</sup>

<sup>a</sup> Faculté de Médecine de Nancy, Université de Lorraine, 54000 Nancy, France

<sup>b</sup> CIC-P Inserm-CHRU de Nancy, Allée du Morvan, 54500 Vandœuvre-lès-Nancy, France

<sup>c</sup> Département de Pneumologie, Hôpitaux de Brabois, CHRU de Nancy, Rue du Morvan, 54500 Vandœuvre lès Nancy, France

<sup>d</sup> Equipe de recherche EA7298 INGRES, Faculté de Médecine, Université de Lorraine, 9 Rue de la Forêt de Haye, 54500 Vandœuvre Lès Nancy, France

<sup>e</sup> Service d'Otorhinolaryngologie – Chirurgie Cervico-Faciale, CHRU de Nancy – Hôpital de Brabois, Bât Louis Mathieu, Rue du Morvan, 54500 Vandœuvre les Nancy, France

### ARTICLE INFO

**Keywords:**

Obstructive sleep apnea-hypopnea syndrome  
Questionnaire  
Awareness  
Symptoms  
Complications

### ABSTRACT

**Objective:** Obstructive sleep apnea-hypopnea syndrome (OSAHS) seems to be underdiagnosed. The aim of this study was to assess awareness of OSAHS among the general population of the Lorraine Region of France.

**Methods:** A descriptive epidemiological study was carried out from July to November 2015 in the Lorraine Region, using an anonymous questionnaire that assessed knowledge of OSAHS-related symptoms and complications. The survey was also circulated on the Internet via social media. Exclusion criteria comprised age under 18 years, refusal to fill out the questionnaire and linguistic barrier.

**Results:** 1307 subjects filled out the survey: 1020 on paper format and 287 via the Internet. About two-thirds of the population recognized a majority of symptoms. However, there was a significant lack of knowledge of complications, especially cardiological and neurological. Suffering from OSAHS, having had higher education, and being under 40 years of age, were factors linked to better awareness of the syndrome. Internet respondents also showed better awareness.

**Conclusion:** Despite encouraging results regarding OSAHS symptoms, the general population showed limited awareness of its complications. Innovative educational campaigns must be organized to inform practitioners and the general public about the disease and raise awareness of its complications.

© 2017 Elsevier Masson SAS. All rights reserved.

## 1. Introduction

Obstructive sleep apnea-hypopnea syndrome (OSAHS) shows prevalence of about 7% in middle-aged adults [1,2]. First reports date back to the 18th century, but it was not until the 1970s that OSAHS became a focus of interest [3]. Since then, increasing study of the disease has brought together different specialties, due to the diversity of symptoms and complications.

OSAHS is underdiagnosed, in both France and the US [2,4]. Symptoms are not very specific, complicating diagnosis and thus delaying treatment initiation with consequent onset of complications, mainly cardiological and neurological [5,6].

In recent years, education and training programs have targeted general practitioners, improving their awareness of OSAHS, with encouraging results. A 2007 study of general practitioners showed

improvement over results from 2002, particularly in regard to knowledge of its complications [7]. A 2011 study of army physicians confirmed these findings [8]. But what about the general public's awareness of OSAHS? Have the campaigns conducted so far raised general awareness, as has been the case for breast cancer and diabetes? The aim of the present study was to assess awareness of OSAHS in the general population in the Lorraine Region of France, in order to better target future campaigns.

## 2. Materials and methods

The study used a strictly anonymous questionnaire, based on the previously published "Guidelines for clinical practice in OSAHS in adults" [9].

A pilot study was run on about 20 subjects to test the understanding and acceptability of the questions in the general population. This led to including a "don't know" response option, as many items had gone unanswered. This modification improved the response rate in the final questionnaire.

\* Corresponding author. Tel.: +33 03 83 15 54 09.  
E-mail address: [dt.nguyen@chru-nancy.fr](mailto:dt.nguyen@chru-nancy.fr) (D.T. Nguyen).

The questionnaire had two main focuses: symptoms and complications. There were 14 items concerning suggestive OSAHS symptoms (11 real, plus 3 distractors) and 13 possible complications (7 real, plus 6 distractors). For each item, “yes”, “no” and “don’t know” responses were possible. Sociodemographic data were also collected in multiple choice format. Questionnaires with more than 10% of unanswered items were discounted.

### 2.1. Study population

The survey was conducted from July to November 2015 in the Lorraine Region of France, in 2 formats: paper and electronic.

Numerous towns and villages in the region were targeted, specifically downtown sites (shops, street cafés, malls, etc.), train stations and other such places. Persons encountered in the ENT department of the Regional Hospital Center of Nancy, such as: patients with scheduled consultations and other admitted patients, including accompanying persons, etc., were also questioned. Consequently, participants from throughout the Lorraine Region were included.

The paper version of the questionnaire was handed out directly to random participants by the present authors, their professional networks, friends and relatives: anyone encountered in the above-mentioned public places was eligible, without prior selection, except for exclusion criteria. A short oral presentation of the study was made, and subjects were made aware that the questionnaire was voluntary. As the administration time was short, there were very few refusals (although the exact number was not recorded).

The electronic version of the questionnaire was created on the SurveyMonkey website and posted on Facebook by the present author (F.A), his professional networks, friends and relatives. Anyone seeing the document was free to respond. The questionnaire was programmed to prevent double entries by the same IP address, and each item required a response before going on to the next.

The studied population was the general population in the Lorraine Region of France. Exclusion criteria comprised age less than 18 years, refusal to participate, and language barrier.

### 2.2. Statistical analysis

Quantitative variables were expressed as mean  $\pm$  standard deviation, and qualitative variables as numbers and percentages. Subgroups were distinguished according to type of administration (paper versus electronic), educational level, age, and whether diagnosed with OSAHS. Qualitative variables were compared between subgroups using  $\chi^2$ , or Fisher’s exact test for samples  $<5$ . Analysis used the SAS v9.1 software (SAS Inst., Cary, NC). The significance threshold was set at  $P < 0.05$ .

## 3. Results

1307 subjects responded to the questionnaire: 1020 on paper and 287 via the Internet. Forty-nine were under 18 years of age, and were excluded. Mean age was  $44.7 \pm 17.3$  years (range, 18–86 years), with a female predominance (61.9%). Education level was predominantly higher education (50.8%), followed by high-school (31.4%), middle-school (9.4%) and primary school levels (8.4%). 1139 respondents (91.3%) had already heard of OSAHS. 108 (8.7%) suffered from it, 66 of whom were under treatment. The non-response rate on all items was less than 2%.

### 3.1. Awareness of OSAHS symptoms and complications (Fig. 1)

Fig. 1 shows the overall response results for OSAHS symptoms and complications. The best-known symptom was “respiratory breaks” (89%). “Daytime fatigue” and “non-restorative sleep” were

familiar to 78.7% and 76% of respondents, respectively. Obesity was recognized as a risk factor by 48%, while 30% of respondents considered it unrelated to OSAHS (“no” response). Nocturia was the least well-known symptom, with 21% correct responses and 58% of respondents considering it unrelated to OSAHS (“no” response). 70% of responses were correct regarding the distractors “vomiting on awakening” and “joint pain”.

Among the complications, a majority of responses regarding “cardiac arrhythmia” and “road accidents” were correct: 72% and 60% respectively. 40–50% of respondents were aware of the cardiovascular complications. The least well-known complications were increased risk of diabetes (13%) and risk of dementia (17%). Respiratory failure, a distractor, was considered a possible complication by 70% of respondents. For each complication, about one-third of respondents answered “don’t know”.

### 3.2. According to gender

Women gave significantly more correct responses regarding symptoms: daytime fatigue ( $P=0.044$ ), non-restorative sleep ( $P=0.046$ ), daytime somnolence ( $P=0.04$ ), concentration disorder ( $P=0.0018$ ), morning headache ( $P<0.0001$ ) and nocturia more than once nightly ( $P<0.0001$ ). However, there was no significant sex-difference for complications.

### 3.3. According to education level (Table 1)

Respondents with higher education had significantly better rates of correct responses. Only 4 out of 17 items showed no difference according to education level: snoring ( $P=0.46$ ), stroke ( $P=0.15$ ), high blood pressure ( $P=0.36$ ) and dementia ( $P=0.08$ ). Nocturia was the best-known symptom for respondents with only primary or middle-school education level.

### 3.4. According to age (Table 2)

Table 2 shows that symptoms and complications were better known by under-40 year-olds. Over-60 year-olds had, on average, poorer knowledge of OSAHS, although they were more aware of nocturia. There were no significant age-differences for daytime fatigue ( $P=0.09$ ), daytime somnolence ( $P=0.12$ ), diabetes ( $P=0.25$ ), high blood pressure ( $P=0.21$ ) or myocardial infarction ( $P=0.13$ ).

### 3.5. According to type of questionnaire administration (Table 3)

Internet respondents were predominantly female (68.2%, versus 60% of paper respondents;  $P=0.012$ ), with greater education level ( $P<0.0001$ ). They had more often heard of OSAHS: 95.8%, versus 89.9% of paper respondents ( $P=0.002$ ).

Internet respondents gave significantly more correct responses concerning symptoms, 7 of which showed predominantly correct responses: respiratory breaks, daytime fatigue, suffocating sensation during sleep, non-restorative sleep, daytime somnolence, concentration disorder, and morning headache (Fig. 2).

Internet respondents gave significantly more correct responses concerning 2 complications: stroke, and high blood pressure (Fig. 2).

### 3.6. According to respondents with OSAHS (Table 4)

There was a significant difference in symptom awareness according to respondents with OSAHS. Responses regarding snoring ( $P<0.0001$ ), daytime fatigue ( $P=0.0042$ ), daytime somnolence ( $P=0.0002$ ), non-restorative sleep ( $P=0.02$ ), concentration disorder ( $P=0.01$ ), nocturia ( $P<0.0001$ ), morning headache ( $P<0.0001$ ) and obesity ( $P=0.028$ ) were predominantly correct in the group of

Download English Version:

<https://daneshyari.com/en/article/5714212>

Download Persian Version:

<https://daneshyari.com/article/5714212>

[Daneshyari.com](https://daneshyari.com)