Original article

Knowledge of health professionals about obstructive sleep apnea syndrome in a private hospital in Recife

Conhecimento de profissionais de saúde sobre síndrome da apneia obstrutiva do sono em hospital particular do Recife

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ABSTRACT | INTRODUCTION: Obstructive sleep apnea syndrome is characterized by recurrent complete or partial obstruction of the upper airways during sleep. Difficult to diagnose, it requires interdisciplinary attention from professionals working in the hospital network. **OBJECTIVE:** To evaluate the knowledge of health professionals regarding obstructive sleep apnea syndrome. **MATERIALS AND METHODS:** This is a cross-sectional, descriptive, quantitative study, carried out in a large private hospital in the city of Recife. To assess the level of knowledge of health professionals, a self-questionnaire was applied. Statistical analysis was performed using public software developed by the Centers for Disease Control and Prevention, EPI Info in version 7.2.4.0. **RESULTS:** A total of 82 professionals participated in the study, including 22 nurses, 31 physiotherapists, 5 speech therapists and 24 doctors. Nursing knowledge showed a statistically significant difference in relation to other professions, in terms of the number of correct answers, with 63.45% of correct answers (p=<0.001). It was also found that the "diagnosis" category presented the lowest average number of correct answers among the evaluative categories (prevalence, anatomical structures, risk factor, signs and symptoms, diagnosis, and treatment). **CONCLUSION:** The level of knowledge about obstructive sleep apnea syndrome is low among the different categories of health professionals, which can lead to underdiagnosis and undertreatment. More dissemination and training on the topic need to be carried out.

KEYWORDS: Obstructive Sleep Apnea. Knowledge. Health Professionals. Quiz.

RESUMO | INTRODUÇÃO: A síndrome da apneia obstrutiva do sono é caracterizada pela obstrução completa ou parcial recorrente das vias aéreas superiores durante o sono. De difícil diagnóstico, exige uma atenção interdisciplinar dos profissionais que atuam na rede hospitalar. **OBJETIVO:** Avaliar o conhecimento de profissionais de saúde a respeito da síndrome da apneia obstrutiva do sono. **MATERIAIS E MÉTODOS:** Trata-se de um estudo de corte transversal, descritivo, quantitativo, realizado em um hospital particular de grande porte do município do Recife. Para avaliar o nível de conhecimento dos profissionais de saúde, foi aplicado um auto-questionário. A análise estatística foi realizada pelo software público desenvolvido pelo centers for disease Control and Prevention, EPI Info na versão 7.2.4.0. **RESULTADOS:** Um total de 82 profissionais participaram do estudo, sendo 22 enfermeiros, 31 fisioterapeutas, 5 fonoaudiólogos e 24 médicos. O conhecimento da enfermagem apresentou diferença estatisticamente significante em relação as outras profissões quanto ao número de respostas corretas, apresentando 63,45% de acertos (p=<0,001). Verificou-se, também, que a categoria "diagnóstico" apresentou a menor média de acertos dentre as categorias avaliativas (prevalência, estruturas anatômicas, fator de risco, sinais e sintomas, diagnóstico e tratamento). **CONCLUSÃO:** O nível de conhecimento sobre a síndrome da apneia obstrutiva do sono é diverso entre as diversas profissões de saúde e conteúdos avaliados, o que pode levar a subdiagnósticos e subtratamentos. Mais divulgação e capacitação sobre o tema precisam ser realizadas.

PALAVRAS-CHAVE: Apneia Obstrutiva do Sono. Conhecimento. Profissionais de Saúde. Questionário.

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1. Introduction

Obstructive sleep apnea syndrome (OSAS) is the main pathology among those that generate changes in sleep quality. It is characterized by apnea and hypopnea caused by repetitive collapse of the upper airway during sleep. Highly prevalent and underdiagnosed, airway obstruction caused by this condition leads to sleep fragmentation, increased sympathetic activity, systemic inflammation, and oxidative stress.[1]

Even in developed countries, OSAS has a low diagnostic index, and it is estimated that 82% of men and 93% of women have not been diagnosed. In developing countries, there is also a lack of resources used in public health, directly impacting health centers' capacity to guarantee a diagnosis and treatment of condition.[2,3]

The main risk factors for OSAS are: male sex, age over 50 years, overweight (approximately 50% of patients with OSAS have a body mass index > 30kg/m²), craniofacial changes such as maxillary and/or mandibular hypoplasia.[4] Other factors include small oropharyngeal diameter, increased soft tissues of the pharynx, increased cervical diameter, nasal changes, hyperplastic palatine tonsils, modified Mallampati index classes III and IV (inadequate relationship between the base of the tongue and the oropharynx), changes in soft palate, uvula and tonsil pillars and conditions associated with muscle relaxation or weakness, such as neuromuscular diseases.[5-7]

Since OSAS is a prevalent and underdiagnosed disease, even more so in hospitalized patients, intermittent hypoxemia and transient hypercapnia, resulting from the condition, can be confused with the signs of other diseases that commonly lead to hospitalization, such as respiratory and cardiac insufficiencies. This can lead to diagnostic errors and inappropriate treatments.[8]

Research shows that up to 40% of hospitalized patients have moderate and high risk of OSAS, and that the difficulties of orotracheal intubation, hospitalization frequencies and readmissions in this group are greater. Therefore, the absence of a previous diagnosis of OSA at the time of hospitalization increases the risk of adverse events and morbidity.[9,10]

A study with Latin American countries investigated the level of knowledge of newly graduated doctors through the validated questionnaire, OSAKA, which assesses knowledge and attitudes about OSAS; the study brought unsatisfactory numbers concerning the level of knowledge about OSAS.[10] Several health graduate courses, from different institutions, do not offer sufficient knowledge about OSAS in their curricula and professionals interested in this subject need to undertake complementary postgraduate courses.[11-13]

It is essential to understand the knowledge of professionals about this subject, in order to create appropriate educational initiatives. In this perspective, the present study aims to evaluate health professionals' knowledge about obstructive sleep apnea syndrome.

2. Materials and methods

This is a cross-sectional, descriptive, quantitative study, conducted in a large private hospital, located in the metropolitan region of Recife/PE, registered under the CAAE: 49133721.0.0000.5569.

Data collection took place through a questionnaire based on the literature consulted and the OSAKA9 questionnaire, which evaluates the knowledge of doctors about OSAS. The questionnaire consisted of two blocks of questions: block A contained questions related to the sociodemographic data of the research participants, while block B aimed at evaluating the knowledge of health professionals about the signs and symptoms of OSAS, as well as diagnosis and treatment. The structure of the questionnaire had the following categories: one assertion for Prevalence (Question 1 – Q1), two for Anatomical Structures (Q2 and Q3), one for Risk Factor (Q4), seven for Signs and Symptoms (Q5, Q6, Q7, Q8, Q9, Q10 and Q11), five for Diagnosis (Q12, Q13, Q14, Q15 and Q16), two for Treatment (Q17 and Q18).

After approval of the Research Ethics Committee, data collection began. From the information of the human resources (HR) sector of the hospital, the recruitment of health professionals (nurses, physiotherapists, speech therapists and doctors) was carried out in an individualized, personalized approach during each professional's working day. No sample calculation was performed, working with the total number provided by HR.

After acceptance, the professionals signed the Informed Consent Form – ICF and were invited to answer the self-administered questionnaire. The research questionnaire on OSAS was applied individually, being delivered to the participant, who filled out the items. The application occurred on the days of regular activity of the professionals, with an estimated time to answer the questionnaire of 10-15 minutes. The questionnaire consisted of two blocks: block A for sociodemographic data collection and related to professional training and block B for testing knowledge about OSAS, where the interviewee could answer the questions with the options: "true" (T), "false" (F) and "Don't Know" (DK). Professionals who were on sick leave and/or vacation during the data collection period and those who did not complete the questionnaire or refused to answer were excluded.

The data obtained were organized in a database in Microsoft Office/ Excel version 2018 for further analysis. Statistical analysis was performed by public software developed by centers for disease control and prevention, EPI Info in version 7.2.4.0. Initially, descriptive statistics were performed using frequencies (categorical variables) or by means with the respective standard deviations or median with interquartile interval. The comparison of groups was performed by the chi-square test in the case of categorical variables and by parametric or non-parametric methods for quantitative variables (depending on the normal distribution or not of the sample). In all analyses, a $p<0.05$ was considered significant.

3. Results

The participants were 82 health professionals, with a mean age of 32.7 years. Most professionals had a specialization in intensive and respiratory care, 14 did not have any specialty and the rest had several specialties, including: cardiology, general surgery, dermatology, geriatrics, hepathology, nephrology, neurology, collective health, trauma-orthopedics, and urgency and emergency. The socio-demographic profile of the research participants is shown in Table 1.

Table 1. Socio-demographic and educational characteristics of professionals

Variables	N (82)	%
Sex		
Female	59	71.95
Male	23	28.05
Profession		
Nursing	22	26.83
Physiotherapy	31	37.8
Speech Therapy	5	6.1
Medicine	24	29.27
Hospital Sector		
Hospitalization unit	20	24.46
Intensive care unit	60	73.1
Intensive hospitalization/care unit	2	2.44

Source: the authors (2024).

Regarding block B of the evaluation of professionals' knowledge about OSAS, 13 items were answered correctly by at least 70% of respondents. The other 5 assertions had a range of correct answers from 26 to 64%.

Table 2 describes the mean of correct answers according to the categories of the questionnaire. The lowest average of correct answers for the diagnostic category is highlighted. No volunteer of the survey answered correctly all the assertions of the questionnaire.

Concerning the knowledge of professionals, as shown in Table 3, the groups of professions were compared, with a statistically significant difference ($p<0.001$).

The relationship between the sectors of activity and the index of correct answers did not present a significant statistical difference. The professionals of the hospitalization therapy units presented 74.5% of correct answers, in the intensive care units, it was 73.45% and those who worked in the two concomitant sectors presented 69.5% (Table 4). There were no correlations between the variables correct answers and time of performance in the different groups.

Concerning the time of work in the area and the number of correct answers, there was also no significant correlation, with nursing presenting an average of 9.20 years of work, physiotherapy 5.42 years, speech therapy 6 years and medicine 8.77 years (Table 5).

Table 2. Number of correct answers in the questionnaire by categories

	Questionnaire categories	
	Mean	%
Prevalence (Q1)	72.00	
		91.14
Anatomical Structures (Q2;Q3)	64.00	
		88.98
Risk Factor (Q4)	81.00	
		98.78
Signs and Symptoms (Q5, Q6, Q7, Q8, Q9, Q10, Q11)	65.00	
		88.27
Diagnosis (Q12, Q13, Q14, Q15, Q16)	38.00	
		73.76
Treatment (Q17, Q18)	70.00	
		92.09

Source: the authors (2024).

Table 3. Comparison of the percentage of correct answers among health professionals

Profession		Correct answers	
	N	%	p
Nursing	11.00	63.45	<0.001
Physiotherapy	13.00	73.67	
Speech Therapy	11.00	61.20	
Medicine	15.00	82.37	

Source: the authors (2024).

Table 4. Comparison of the percentage of correct answers according to the sector of activity

Sector of activity	Correct answers	
	%	p
Hospitalization unit	74.50	0.592
Intensive care unit	73.45	
Intensive hospitalization and care unit	69.50	

Source: the authors (2024).

Table 5. Comparison of the percentage of correct answers according to the time of work

Profession	Years	Correct answers (%)	p
Nursing	9.20	63.45	0.323
Physiotherapy	5.42	73.67	0.523
Speech Therapy	6.00	61.2	0.420
Medicine	8.77	82.37	0.095

Source: the authors (2024).

4. Discussion

The use of a questionnaire to investigate the knowledge of health professionals about OSAS was presented as an important instrument to understand in part the clinical practice of these professionals and point out the need of continuing education.

Among the themes that most presented incorrect answers, signs and symptoms, diagnosis and anatomical structures appear as the main distractions of knowledge. Studies estimate an average of time dedicated to training sleep disorders in medical schools in Australia (6.2 h), Italy (2.5 h), Ecuador (1.4 h), New Zealand dental schools (4.5 h), Dutch nursing and medical schools (< 5 h), thus receiving a very limited coverage in the disciplines or sleep disorders and their main alterations.[14-16]

In a multicenter study conducted by Bonanni et al.[17] with medical students, the time devoted to the study of sleep (32% of students interviewed) and lack of qualified staff (24% of students interviewed) represented two important barriers for the learning of sleep education.[7]

There are few studies in the literature that deal with the evaluation of the knowledge of non-medical professionals about OSAS, when compared to those that evaluate the knowledge of the doctors.[17] In 2006, Bian et al.[18] developed a questionnaire to assess dentists' knowledge about OSAS; the authors aimed to measure knowledge, opinion, educational resources, medical cooperation, and practice associated with OSAS, stimulating dentists to perform their role in the treatment of OSAS.

In another study that was developed at a pediatric rehabilitation center in the Netherlands, Hulst et al.[16] compare sleep health practices and knowledge about physiology, sleep disorders and hygiene among groups of medical professionals and a group of non-medical professionals, the latter consisting of physiotherapists, occupational therapists, speech therapists, social workers and psychologists. It was found that the medical group had a higher number of correct answers than the non-medical group[19], a result similar to that found in the present study, although none of the groups exceeded 50% of correct answers.

Despite the mean age (33 years) and the time of work (7 years), our findings did not show significant statistical differences when compared to a greater knowledge of OSAS. When we analyzed studies that dealt with years of work experience, we saw that this relationship appears with some frequency, in an inverse relationship, the higher the average age and/or time of work, the lower the number of correct answers. The study by Schotland et al.[9], which developed and validated the OSAKA questionnaire, observed a reduction in knowledge with increasing age or years of experience; the average age of participants was 45 years and the years of work was 15 years.

Another study that evaluated the knowledge of Latin American doctors, through the OSAKA questionnaire, with an average age of 45 years and average time of professional activity of 18 years, observed that about a third of the items of knowledge about epidemiology, diagnosis and treatment of OSA were answered incorrectly by more than 50% of all general practitioners.[10] Again, the inverse relationship between correct answers and level of experience is observed. One possible explanation for this is the increasingly frequent presence of the theme of OSAS, although still insufficient, in the curriculum in recent years.

Regarding the various hospital sectors, the Intensive Care Unit (ICU) and the surgical block are the sectors in which most remain monitored throughout their stay. One of the main signs of OSAS is hypoxemia during sleep and the fastest and most practical way we have to assess a desaturation is through continuous monitoring with pulse oximeter. Erwin et al.[20] evaluated the knowledge of nurses working in the surgical block regarding the screening and management of OSAS and found that less than 50% of respondents believed that patients with suspected OSAS increase hospitalization time and complication rates.

Approximately 73% of the professionals in our study worked in the ICU and although we believe that professionals working in sectors that have continuous monitoring, such as ICU and surgical block, are more likely to identify the signs and symptoms of OSA, the sector did not present significant statistical difference in relation to knowledge about OSAS.

Regarding the different number of volunteers per professional specialty, it is worth mentioning that the sectors under study have greater needs of doctors and nurses in the composition of the team, due to the dynamics of activities as researchers intervene directly in this limitation of the study.

Since OSAS is increasingly common and underdiagnosed, the evaluation of professionals' knowledge and the inclusion of educational programs in clinical practice may bring better results in patient care. The implementation of actions in education can improve the knowledge of professionals in action. Erwin et al.[20] evaluated the change of knowledge of nurses after an online educational program on the identification and evaluation of adults at risk for OSAS, thus observing a statistically significant increase in correct answers in the areas of clinical prevalence, associated high-risk conditions, signs and symptoms, screening tools and evaluation of clinical information, after the educational program.

The analysis of the professionals' domain on OSAS in this research pointed to the need to train these individuals to identify the signs and symptoms of the syndrome, intervene in the treatment and/or request help from a specialist in conducting the treatment.

5. Conclusion

The level of knowledge about obstructive sleep apnea syndrome is diverse among the various health professions and contents evaluated, which can lead to underdiagnoses and undertreatments. More dissemination and training on the subject need to be carried out to improve the quality of life of patients and reduce the risk of complications during hospitalization.

Despite finding lower success rates for the nursing group and speech therapy, it is not possible to conclude that this is due to a defection in academic training, once the analysis of curricular matrices and professional competences was not the object of study of this research.

Authors' contributions

Veras JLCA, Pires Neto FLS, Bezerra PGM, Lorena SB participated in the conception of the research question, methodological design, statistical analysis of the research data, interpretation of the results, writing of the scientific article. Veras JLCA and Pires Neto FLS were responsible for the data collection phase. All authors have reviewed and approved the final version and are in agreement with its publication.

Conflicts of interests

No financial, legal or political conflict involving third parties (government, companies and private foundations, etc.) has been declared for any aspect of the submitted work (including but not limited to grants and funding, participation in advisory board, study design, manuscript preparation, statistical analysis, etc.).

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