



Original article

Development of the obstructive sleep apnea knowledge and attitudes (OSAKA) questionnaire[☆]

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Abstract

Study objectives: To develop and validate a questionnaire that assesses physicians' knowledge and attitudes about obstructive sleep apnea (OSA): the Obstructive Sleep Apnea Knowledge and Attitudes (OSAKA) questionnaire.

Design: Questionnaire study.

Setting: Physicians associated with the Washington University Physicians Network.

Participants: Twenty physicians in the pilot testing and 115 physicians in the final testing of the instrument.

Interventions: Physicians completed the OSAKA questionnaire containing sections regarding knowledge about OSA (18 items), attitudes about OSA (five items), and demographics of the study participants.

Measurements and results: Knowledge scores ranged from 0 to 18 (mean \pm SD = 13.3 \pm 2.8). Individual knowledge items did not differ significantly by gender or by whether or not respondents had completed subspecialty training. The five attitude items were significantly correlated with one another. Knowledge scores correlated with the 5-item attitude scale. There was a negative correlation between age and knowledge ($r = -0.368$, $P < 0.001$) and between age and the single attitude item pertaining to physicians' confidence in managing patients with OSA ($r = -0.198$, $P = 0.036$); thus, the older the respondent, the lower the knowledge score and the less confident they were in managing patients with OSA.

Conclusions: The OSAKA appears to be a useful instrument to measure physicians' knowledge about OSA, their views on its importance as a clinical disorder, and their confidence in identifying and managing patients with this disorder.

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Keywords: Obstructive sleep apnea; Questionnaire; Knowledge; Attitudes

1. Introduction

Obstructive sleep apnea (OSA) is a common disorder that affects 2–4% of the adult population [1]. When unrecognized and untreated, OSA is associated with daytime hypersomnolence, cognitive impairment, systemic hypertension, pulmonary hypertension, myocardial infarction, cardiac arrhythmias, stroke, and increased risk of motor vehicle crashes [2–4]. Despite the high prevalence and clinical significance of OSA, primary care physicians are not always skilled at identifying the disorder [5–7]. This is not surprising given the limited amount of formalized sleep

education provided in US medical schools [8,9]. Several recent studies have suggested that educational interventions for physicians are needed in order to improve the identification and treatment of patients with OSA [5–7,10].

In order to develop educational strategies for physicians, it is useful to first ascertain their baseline familiarity with OSA. Once this has been accomplished, educational programs about OSA could be developed to specifically address any areas of weakness in the physicians' knowledge base. To assess the immediate outcome of such an educational intervention on physicians, OSA knowledge could again be measured following the intervention. To date, no tools have been developed and validated to measure OSA knowledge. One survey instrument, 'The ASKME Survey' [11], is a well-validated tool that assesses physician knowledge about sleep, but does not focus exclusively on OSA. In this article, we describe the development and

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validation of a questionnaire to assess physicians' knowledge and attitudes regarding the identification and management of patients with OSA: the Obstructive Sleep Apnea Knowledge and Attitudes (OSAKA) questionnaire.

2. Methods

The OSAKA questionnaire is a self-administered paper-and-pencil questionnaire that takes less than 10 min to complete. It consists of 18 true–false statements about OSA; 'don't know' is a third response choice, scored as an incorrect response. Using a 5-point Likert scale, respondents are further asked to rate their level of agreement with five statements regarding the importance of OSA and their ability to identify and manage patients with OSA. Information regarding demographic data is also collected. The development and testing of the instrument is described in detail subsequently.

2.1. Initial item selection

Relevant domains for the knowledge section of the questionnaire included: (1) epidemiology, (2) pathophysiology, (3) symptoms, (4) diagnosis, and (5) treatment. Twenty-four statements about OSA, distributed among these five domains, were presented in a true/false format. 'Don't know' was included as a third response choice in order to minimize the effect of guessing by the respondents. All 'don't know' responses were scored as incorrect responses.

In addition to the knowledge-based questions, four attitude items were included in the questionnaire. These items were

1. Obstructive sleep apnea is an important clinical disorder.
2. It is important to identify patients at risk for obstructive sleep apnea.
3. I feel comfortable identifying patients at risk for obstructive sleep apnea.
4. I am confident in my ability to manage patients with obstructive sleep apnea.

Physicians were asked to rate the extent of their agreement with each of the four items using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

2.2. Expert consultation for face validity of items

To establish face validity of the knowledge and attitude items, we consulted a panel of seven experts in sleep medicine, including physicians, nurses, and health researchers. The panel members were asked to rate each knowledge and attitude item for relevance using a 4-point scale (1 = not relevant, 2 = slightly relevant, 3 = relevant, and 4 = extremely relevant). Items were considered for

inclusion in the questionnaire if 85% or more of the expert panel gave them a score of 3 or 4. After the panel review, the questionnaire consisted of 20 knowledge items and four attitude items, some of which were changed or reworded on the basis of panel members' comments.

2.3. Pilot testing and item selection

This 24-item OSAKA questionnaire was piloted by two groups of physicians ($n = 20$) associated with the Washington University Physicians Network (WUPN). One group consisted of internal medicine hospitalists at Barnes-Jewish Hospital and the other of physicians attending a WUPN-sponsored lecture on OSA (the questionnaire was administered to this group of physicians prior to the OSA lecture). The OSAKA questionnaire and the protocol for instrument testing were approved by the Washington University Medical Center Human Studies Committee. A cover letter distributed with the questionnaire described the purpose of the questionnaire and informed the potential participants that, by returning the completed OSAKA questionnaire, they were giving their implied consent for participation in the study. Twenty physicians returned completed questionnaires for this pilot study.

Following the initial pilot testing, two knowledge items were eliminated from the questionnaire because all respondents answered them correctly (no variance in responses), leaving a total of 18 knowledge items. A fifth attitude item was added to the final OSAKA questionnaire: 'I am confident in my ability to manage patients on CPAP therapy'. The third attitude item was reworded to say, 'I feel *confident* identifying patients at risk for obstructive sleep apnea'. Since we did not expect disagreement with either of the first two attitude items (i.e. that OSA was *not* an important clinical disorder or that it was *not* important to identify patients with OSA), the wording and response choices were changed to allow respondents to indicate perceived level of importance rather than level of agreement. The items on the revised questionnaire are found in Appendix A.

The revised 23-item OSAKA questionnaire (see Appendix A) was subsequently mailed to 236 physicians associated with WUPN. The questionnaire also included several demographic items at the end of the survey. The physicians were asked to mail back the completed questionnaires. Eight weeks after the initial mailing, reminder letters and OSAKA questionnaires were sent to physicians who had not yet responded to the first mailing. Questionnaires returned after the first or second mailing were included in the analysis. None of the physicians recruited for this study had participated in the pilot testing of the measure.

2.4. Data analysis

Statistical tests were performed using SPSS 10.0.7 (SPSS, Inc., Chicago, IL, 2000). All tests were two-tailed

with a level of significance at $P < 0.05$. A total knowledge score was computed for each respondent, with ‘don’t know’ responses being counted as an incorrect response. We used factor analysis with varimax rotation to assess whether the five attitude items loaded on one or two factors. This analysis was followed by reliability analysis to assess internal consistency of factor items using Cronbach alpha. Pearson product-moment correlations tested the significance of the relationships among the continuous variables. One-way analysis of variance (ANOVA) tested the significance of differences in knowledge, attitudes, years in practice and age grouping by gender, specialty during residency training, and whether or not the physicians followed their residency programs with subspecialty training.

3. Results

A total of 115 physicians (96% MD, 4% DO; mean age 45 years; 27% women) completed and returned questionnaires for a 49% response rate after two mailings. Most respondents were internists, pediatricians, or family practitioners; two were psychiatrists, one completed residencies in both medicine and pediatrics, and one did not indicate a residency specialty. These latter four respondents were excluded from analysis along with three respondents who did not indicate either their age or number of years in practice, leaving a sample size of 108. Mean age \pm standard deviation (SD) of the sample was 45 ± 10 years old (range 29–75). Mean number of years in practice was 15 ± 10 years (range 1–46). Other characteristics of the sample are found in Table 1.

Table 1
Characteristics of the sample ($N = 108$)

	<i>n</i> (%)
Gender	
Female	29 (26.9)
Male	79 (73.1)
Degree	
MD	104 (96.3)
DO	4 (3.7)
Residency training	
Internal medicine	55 (50.9)
Pediatrics	37 (34.3)
Family practice	16 (14.8)
Subspecialty training	
Yes	25 (23.1)
No	79 (73.1)
Not indicated	4 (3.7)

3.1. Knowledge

Knowledge scores ranged from 0 to 18 (median = 13; mean \pm SD = 13.2 ± 2.8). Ten items received incorrect answers from 17 to 51% of the respondents, who either answered incorrectly or indicated that they did not know. The remaining eight items were answered incorrectly by 10% or fewer respondents (ranging from 4 to 10%). None of the items were answered correctly by everyone. The internal consistency of items on the knowledge scale was high, with a Cronbach alpha of 0.76.

Individual knowledge items did not differ significantly by gender or by whether or not respondents had completed subspecialty training, but 12 knowledge items differed significantly by type of residency training (Table 2). The differences occurred primarily between providers in medicine and pediatrics; items pertaining to treatment and prevalence of sleep apnea in adults were more likely to be answered correctly by providers in medicine, and the item specifically pertaining to sleep apnea in children was more likely answered correctly by providers in pediatrics. In addition, total knowledge scores differed significantly by type of residency training, with pediatricians scoring lower overall compared with medicine and family practice providers (mean scores 11.3 vs. 14.3 vs. 14.0, respectively; $F[2, 105] = 17.2, P < 0.001$). In post hoc tests, respondents in each of internal medicine ($P < 0.001$) and family practice ($P = 0.002$) scored significantly higher compared with respondents in pediatrics.

3.2. Attitudes

The five attitude items were significantly correlated with each other (Table 3). Principal components factor analysis of these five items resulted in two factors: a 2-item factor pertaining to the importance of OSA and its diagnosis (Cronbach alpha = 0.92) and a 3-item factor pertaining to physicians’ confidence in identifying and managing patients with OSA (Cronbach alpha = 0.75). A factor analysis forcing all five items on one factor was also run; this resulted in high factor loadings for each of the items on one factor and acceptably high internal consistency of items on that factor (Cronbach alpha = 0.79). Factor loadings for each analysis are shown in Table 4. An attitudes-toward-OSA scale score was computed using the mean of all five items. In addition, two subscale scores were computed using the three items relating to confidence and the two items relating to the importance of OSA and its diagnosis.

Although neither the 5-item attitude scale nor the 2-item subscale measuring the importance attributed to OSA and its diagnosis differed significantly by gender, men reported being more confident compared with women (means 3.2 vs. 2.8, respectively, $P = 0.023$) on the 3-item confidence scale. In addition, both the 5-item attitude scale and the 3-item confidence subscale differed significantly by type of

Table 2
Knowledge items that differed by type of residency training

	Internal medicine (n = 55)	Pediatrics (n = 37)	Family practice (n = 16)	P
Item 2. Uvulopalatopharyngoplasty is curative for the majority of patients with obstructive sleep apnea				
Correct response (<i>false</i>)	45 (81.8)	11 (29.7)	22 (75.0)	<0.001
Item 3. The estimated prevalence of obstructive sleep apnea among adults is between 2 and 10%				
Correct response (<i>true</i>)	34 (61.8)	16 (43.2)	14 (87.5)	0.037
Item 5. Obstructive sleep apnea is associated with hypertension				
Correct response (<i>true</i>)	49 (89.1)	23 (62.2)	11 (68.8)	0.001
Item 6. An overnight sleep study is the gold standard for diagnosing OSA				
Correct response (<i>true</i>)	55 (100.0)	33 (89.2)	16 (100.0)	0.019
Item 8. Laser-assisted uvuloplasty is an appropriate treatment for severe OSA				
Correct response (<i>true</i>)	35 (63.6)	12 (32.4)	13 (81.3)	<0.001
Item 10. The most common cause of obstructive sleep apnea in children is the presence of large tonsils and adenoids				
Correct response (<i>true</i>)	39 (70.9)	36 (97.3)	14 (87.5)	0.024
Item 13. Untreated obstructive sleep apnea is associated with a higher incidence of automobile crashes				
Correct response (<i>true</i>)	54 (98.2)	28 (75.7)	16 (100.0)	<0.001
Item 14. In men, a collar size 17 inches or greater is associated with obstructive sleep apnea				
Correct response (<i>true</i>)	33 (60.0)	8 (21.6)	12 (75.0)	0.001
Item 15. Obstructive sleep apnea is more common in women than men				
Correct response (<i>false</i>)	38 (69.0)	20 (54.1)	12 (75.0)	0.040
Item 16. CPAP is the first line therapy for severe obstructive sleep apnea				
Correct response (<i>true</i>)	46 (83.6)	20 (54.1)	12 (75.0)	0.004
Item 17. Less than five apneas or hypopneas per hour is normal in adults				
Correct response (<i>true</i>)	40 (72.7)	11 (29.7)	9 (56.3)	0.002
Item 18. Cardiac arrhythmias may be associated with untreated OSA				
Correct response (<i>true</i>)	55 (100.0)	32 (86.5)	15 (93.8)	0.021

Number (%) of respondents in each specialty answering items correctly (N = 108).

residency training ($P < 0.001$ for each). In post hoc tests, respondents in each of internal medicine ($P < 0.001$) and family practice ($P = 0.001$) scored significantly higher compared with respondents in pediatrics. No differences in attitudes were observed among those having completed subspecialty training.

3.3. Association between knowledge and attitudes

Knowledge scores correlated with the 5-item attitude scale (Table 3) and with the 3-item confidence subscale ($r = 0.504$, $P < 0.001$), but knowledge was not significantly associated with the 2-item subscale measuring the importance of OSA and its diagnosis ($r = 0.143$, $P = 0.140$).

3.4. Associations with age and years in practice

There was a negative correlation between age and knowledge ($r = -0.361$, $P < 0.001$) and between age and the single attitude item pertaining to physicians' confidence in managing patients with OSA ($r = -0.200$, $P = 0.038$). However, the associations between age and each of the two attitude subscales and the 5-item scale were not statistically significant.

Not surprisingly, because of the strong association between age and years in practice, there also was a significant negative correlation between number of years in practice and knowledge ($r = -0.381$, $P < 0.001$). Similar to the lack of association between age and attitudes, the number of years in practice was not associated with any single attitude item, either of the two subscales, or 5-item attitude scale.

Table 3
Correlations among attitude items and between attitudes and knowledge (N = 108)

	1	2	3	4	5	6
1. Importance of OSA as clinical disorder	1.000					
2. Important to identify patients with OSA	0.850 [§]	1.000				
3. Confident identifying at-risk patients	0.371 [§]	0.394 [§]	1.000			
4. Confident managing patients with OSA	0.360 [§]	0.295 [‡]	0.510 [§]	1.000		
5. Confident managing patients on CPAP	0.301 [‡]	0.213 [*]	0.421 [§]	0.569 [§]	1.000	
6. Mean attitude score	0.761 [§]	0.719 [§]	0.741 [§]	0.755 [§]	0.704 [§]	1.000
7. Knowledge	0.136	0.139	0.499 [§]	0.397 [§]	0.341 [§]	0.422 [§]

* $P < 0.05$. † $P < 0.01$. ‡ $P < 0.005$. § $P < 0.001$.

Table 4
Factor loadings of attitude items ($N = 108$)

Attitude items	Two-factor solution (rotated factor matrix)		One-factor solution
	Factor 1	Factor 2	Factor 1
Importance of OSA as a clinical disorder	0.227	0.925	0.803
Important to identify patients with OSA	0.153	0.952	0.768
Confident identifying at-risk patients	0.692	0.325	0.725
Confident managing patients with OSA	0.844	0.174	0.730
Confident managing patients on CPAP	0.843	0.064	0.654

Note: Bolding indicates items correlating highly with each factor.

On average, men were older than women in the sample (47 years vs. 41 years, respectively; $P = 0.009$) and had been in practice longer (16.5 years vs. 11.2 years, respectively; $P = 0.014$). Respondents who had completed subspecialty training after residency also were older (50 years vs. 44 years, respectively; $P = 0.002$) and had been in practice longer (19.4 years vs. 13.4 years, respectively; $P = 0.010$) compared with those who did not. In addition, differences in age and years in practice differed by type of residency training; respondents in internal medicine were younger (43 vs. 49 vs. 47; $P = 0.015$) and in practice fewer years (11.8 vs. 18.6 vs. 18.1; $P = 0.002$), on average, compared with those in pediatrics and family practice, respectively.

4. Discussion

The OSAKA appears to be a useful instrument to measure physicians' knowledge about OSA, their views on the importance of OSA as a clinical disorder, and their confidence in identifying and managing patients with OSA. There was adequate variance in physicians' responses to the knowledge items (no single item was answered correctly or incorrectly by everyone), and the internal consistency of items on the 18-item knowledge scale and 5-item attitude scale was acceptably high.

We found that increased age or years of experience were significantly associated with less knowledge about OSA, its diagnosis and treatment. There have been previous reports dealing with the correlation between older age and less knowledge of guidelines for various medical conditions including HIV transmission/prevention [12], current primary-care issues for patients with HIV [13], and automobile safety for children [14]. Similarly, associations have been shown between physicians' age and practice patterns, with older physicians being less likely to adhere to treatment guidelines for patients with diabetes mellitus [15], to counsel patients about HIV prevention practices [12], to inform parents about automobile safety for children [14], and to comply with experts' recommendations for health promotion and disease prevention practices [16]. We and

others [13] believe this phenomenon may reflect, quite simply, more recent (and up-to-date) medical education of younger physicians.

We developed this questionnaire to help evaluate an educational intervention for residents being trained in the diagnosis and treatment of OSA. In a previous study, Haponik et al. [5] evaluated the frequency of obtaining a sleep history during a simulated patient interview. The purpose of the interview was to promote the patient's general health. Three groups of physicians ($n = 65$) were studied: experienced primary care practitioners, medical interns who had received prior instruction about sleep disorders, and medical interns who received no training. None of the experienced primary care practitioners, and only 13% of the medical interns with no prior sleep instruction, asked questions about sleep during these interviews. In contrast, 82% of the medical interns with prior sleep instruction asked about sleep. The authors concluded that a focused training program about sleep could indeed influence physician behaviors. We will therefore be conducting a study to evaluate the effectiveness of an educational intervention and use of a screening device to increase physicians' OSA-related screening behaviors.

We believe that improving physicians' knowledge about OSA is critical for improving OSA-related screening and treatment practices. Although there has been a clear call for the development of OSA educational programs by the sleep community [5,6,10], to date no programs have been developed, instituted, and tested in a prospective, randomized manner among primary care providers. We intend to use the OSAKA questionnaire in a needs assessment for developing OSA-related educational initiatives for inter-nists and other primary care practitioners. Others involved in physician education and/or interested in research about OSA-related screening and treatment might find this instrument to be useful as well.

Acknowledgements

The authors would like to thank the expert panel members for their valuable insight and support.

A.1. Appendix A**Obstructive Sleep Apnea Knowledge and Attitudes (OSAKA)**

Please answer the following questions true, false, or don't know (DK):

True **False** **DK**

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1. Women with obstructive sleep apnea may present with fatigue alone. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2. Uvulopalatopharyngoplasty is curative for the majority of patients with obstructive sleep apnea. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3. The estimated prevalence of obstructive sleep apnea among adults is between 2 and 10%. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4. The majority of patients with obstructive sleep apnea snore. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5. Obstructive sleep apnea is associated with hypertension. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. An overnight sleep study is the gold standard for diagnosing obstructive sleep apnea. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. CPAP (continuous positive airway pressure) therapy may cause nasal congestion. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8. Laser-assisted uvuloplasty is an appropriate treatment for severe obstructive sleep apnea. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 9. The loss of upper airway muscle tone during sleep contributes to obstructive sleep apnea. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10. The most common cause of obstructive sleep apnea in children is the presence of large tonsils and adenoids. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 11. A craniofacial and oropharyngeal examination is useful in the assessment of patients with suspected obstructive sleep apnea. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 12. Alcohol at bedtime improves obstructive sleep apnea. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 13. Untreated obstructive sleep apnea is associated with a higher incidence of automobile crashes. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 14. In men, a collar size 17 inches or greater is associated with obstructive sleep apnea. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 15. Obstructive sleep apnea is more common in women than men. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 16. CPAP is the first line therapy for severe obstructive sleep apnea. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 17. Less than 5 apneas or hypopneas per hour is normal in adults. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 18. Cardiac arrhythmias may be associated with untreated obstructive sleep apnea. |

Using the choices provided for each item below, please check the box that best describes your response:

A. As a clinical disorder, obstructive sleep apnea is:

Not important	Somewhat important	Important	Very important	Extremely important
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Identifying patients with possible obstructive sleep apnea is:

Not important	Somewhat important	Important	Very important	Extremely important
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C. I feel confident identifying patients at-risk for obstructive sleep apnea.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D. I am confident in my ability to manage patients with obstructive sleep apnea.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E. I am confident in my ability to manage patients on CPAP therapy.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

We are interested in any demographic factors that help predict obstructive sleep apnea knowledge. Please answer the following questions about yourself:

Gender: Male Female

Age: _____ years

Degree: M.D. D.O.

Year of medical school graduation: 19____

Type(s) of residency training Specify: _____

In what year(s) did you complete your residency training?: _____, _____

Any subspecialty training: Yes No
Specify type(s) _____

In what year(s) did you complete your subspecialty training (if applicable): _____, _____

Board certification: Yes No
Specify type(s) _____

Years in practice: _____ years

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Erratum

Erratum to “Development of the obstructive sleep apnea knowledge and attitudes (OSAKA) questionnaire”
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The author regrets that in the above published article an error occurred in Item 8 of Table 2. The corrected table appears below.

Table 2
Knowledge items that differed by type of residency training

	Internal medicine (<i>n</i> = 55)	Pediatrics (<i>n</i> = 37)	Family practice (<i>n</i> = 16)	<i>P</i>
Item 2. Uvulopalatopharyngoplasty is curative for the majority of patients with obstructive sleep apnea				
Correct response (<i>false</i>)	45 (81.8)	11 (29.7)	22 (75.0)	<0.001
Item 3. The estimated prevalence of obstructive sleep apnea among adults is between 2% and 10%				
Correct response (<i>true</i>)	34 (61.8)	16 (43.2)	14 (87.5)	0.037
Item 5. Obstructive sleep apnea is associated with hypertension				
Correct response (<i>true</i>)	49 (89.1)	23 (62.2)	11 (68.8)	0.001
Item 6. An overnight sleep study is the gold standard for diagnosing OSA				
Correct response (<i>true</i>)	55 (100.0)	33 (89.2)	16 (100.0)	0.019
Item 8. Laser-assisted uvuloplasty is an appropriate treatment for severe OSA				
Correct response (<i>false</i>)	9 (16.4)	2 (5.4)	0 (0.0)	<0.001
Item 10. The most common cause of obstructive sleep apnea in children is the presence of large tonsils and adenoids				
Correct response (<i>true</i>)	39 (70.9)	36 (97.3)	14 (87.5)	0.024
Item 13. Untreated obstructive sleep apnea is associated with a higher incidence of automobile crashes				
Correct response (<i>true</i>)	54 (98.2)	28 (75.7)	16 (100.0)	<0.001
Item 14. In men, a collar size 17 in. or greater is associated with obstructive sleep apnea				
Correct response (<i>true</i>)	33 (60.0)	8 (21.6)	12 (75.0)	0.001
Item 15. Obstructive sleep apnea is more common in women than men				
Correct response (<i>false</i>)	38 (69.0)	20 (54.1)	12 (75.0)	0.040
Item 16. CPAP is the first line therapy for severe obstructive sleep apnea				
Correct response (<i>true</i>)	46 (83.6)	20 (54.1)	12 (75.0)	0.004
Item 17. Less than five apneas or hypopneas per hour is normal in adults				
Correct response (<i>true</i>)	40 (72.7)	11 (29.7)	9 (56.3)	0.002
Item 18. Cardiac arrhythmias may be associated with untreated OSA				
Correct response (<i>true</i>)	55 (100.0)	32 (86.5)	15 (93.8)	0.021

Number (%) of respondents in each specialty answering items correctly (*N* = 108).

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