Objective: To assess the awareness level of primary care physicians of obstructive sleep apnea syndrome during patient-physician encounters.

Design: A prospective study using a standardized patient approach, conducted between December 2001 and March 2002. Ten sleep experts reviewed and approved the checklist questionnaire.

Setting: Primary care clinics of Clalit Health Care Services, in the central region of Israel.

Participants: Thirty physicians (100% compliance) randomly selected (matched by age, sex, board certification) from the 261 primary care givers in the region.

Intervention: A standardized patient incorporated into the physicians’ daily practices.

Results: From the original checklist questionnaire, we identified 2 related question areas that at least 90% of sleep experts would pursue in light of the presenting scenario, “Do the patients snore, choke, or stop breathing in sleep?” and “Does the patient have sleepiness, unrefreshed sleep/fall asleep at undesirable times?” During the unstructured interview, only 10% of the physicians asked 3 or more questions. More than 85% of primary care physicians identified the need for polysomnography evaluation (27 physicians) or continuous positive airway pressure (26 physicians) treatment for obstructive sleep apnea syndrome. However, only 16% and 50% discussed possible complications of obstructive sleep apnea syndrome such as motor vehicle and work accidents and cardiovascular events, respectively.

Conclusions: Primary care physicians cannot identify a common disorder associated with cardiovascular and neurobehavioral disease and could not identify the sleepiness as a source of dangerous driving. While understanding the algorithms for the diagnosis of sleep apnea, physicians cannot identify the patients for whom the diagnostics are needed. Education programs need to be developed to increase the level of suspicion of obstructive sleep apnea syndrome among practicing primary care physicians. Activities can be monitored and evaluated over time in the daily practice by standardized patients.

Educational Objective: Increased awareness level of obstructive sleep apnea syndrome among primary care physicians, through publications and educational programs, monitored by standardized patients.

Key Words: Awareness level, standardized patient, sleep disorders, primary care physician, obstructive sleep apnea syndrome.

Citation: Reuveni H; Tarasiuk A; Wainstock T et al. Awareness level of obstructive sleep apnea syndrome during routine unstructured interviews of a standardized patient by primary care physicians. SLEEP 2004;27(8): 1518-25.

INTRODUCTION

SLEEP DISTURBANCES MAY OCCUR IN AS MANY AS 30% TO 40% OF ADULT INDIVIDUALS, causing excessive daytime sleepiness and a decrease in quality of life and imposing a medical risk to patients and economic repercussions, including decreased work productivity. Medical attention from sleep specialists is sought primarily by spouses of patients as a result of self-diagnosis and not because their condition has been detected by their primary care physician. Therefore, when the bed partner of a subject suffering from sleep disorders, especially obstructive sleep apnea syndrome, approaches a primary care physician complaining about the spouse, the level of suspicion is expected to be high. Although the scope of the problem is large, sleep disturbances continue to be poorly recognized by primary care physicians for information retrieval.

Cues drawn from sleep history obtained during unstructured patient interviews, as well as other clinical cues, are vital diagnostic prompts in recognizing sleep problems. Few studies have used standardized patient methodology to evaluate sleep problems during patient interviews. This is a powerful tool for evaluating clinical competence and addressing quality of care and training across sites. This approach evaluates and tests the clinical competence of medical students and residents as part of the well-established structured objective clinical evaluation methodology. The aim of this study was to assess the awareness level of primary care physicians of sleep disorders, especially obstructive sleep apnea syndrome, by using a standardized patient approach. We used questions that could be included in a patient interview by primary care physicians to identify sleep-disorder problems and possible contributing factors. A standardized patient was incorporated into the physician’s daily practice and was interviewed as a typical spouse living with a subject reporting sleep abnormalities. The interview focused on history fundamental to the diagnosis in a standardized manner.

Disclosure Statement
This is not an industry supported study. Drs. Reuveni, Tarasiuk, Wainstock, Ziv, Elhayany, and Tal have indicated no financial conflicts of interest.

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Accepted for publication July 2004
METHODS

Study Design

The study was prospective and descriptive. This study was conducted in primary care settings of Clalit Health Care Services (the largest health maintenance organization in Israel, with 3,500,000 enrollees) in the central district of Israel. This region includes 261 primary care physicians, 109 of whom are board certified in family medicine and 152 who are not specialists. Among the board-certified physicians, 65 are men, and among the nonspecialists, 63 are men.

Thirty physicians were randomly selected from the 261 primary care physicians and matched by age, sex, and board certification (15 specialists [9 men] and 15 nonspecialists [5 men]). Ten physicians graduated from Israeli medical schools, and 20 from Eastern European medical schools. Twelve physicians (40%) were older than 50 years of age (see Table 1).

Development of the Standardized Patient Scenario

First, the most common sleep disorders were identified. Then a panel of sleep specialists and family practitioners, experienced in case development for simulated patients, developed a typical scenario to assess recognition of sleep disorders in primary care practices (Appendix). The case scenario included common and nonspecific complaints that can be presented by a patient’s spouse, suggesting, among other possibilities, sleep disorders. The presented symptoms included excessive daytime sleepiness, morning headaches, reduced work and mental functioning, and recent involvement in motor vehicle accidents.

Development of a Checklist Questionnaire

A checklist of 15 questions (Appendix Part I) was completed by the standardized patient at the end of the encounter with the primary care physician. These questions were identified according to “guidelines for recognizing sleepiness problems in your patients.” This questionnaire included samples of questions that can be used in a patient interview by primary care physicians to identify problem sleep disorders and possible contributing factors. The questions in Part I of the Appendix were grouped into 3 categories: (1) general questions that were considered to be nonspecific to sleep disorders (questions 5 and 8), (2) questions related to sleep disorders in general (questions 1-4, 6, 7, 9, and 10), and (3) questions related to obstructive sleep apnea syndrome (questions 11-15). The score of stage I ranged from a minimum of 0 to a maximum of 15. Part II of the questionnaire included 3 open-ended questions related to the physician’s asking about a diagnosis of obstructive sleep apnea syndrome and possible treatments and consequences of sleep disorders. The score in this part ranged from a minimum of 0 to a maximum of 14. Part III of the questionnaire included physician demographics and education in sleep disturbances.

The Checklist Questionnaire

The standardized-patient assessment was done based on previously described methodology using the most important questions a doctor should include in an encounter with a spouse with the presented scenario. The sleep questionnaire was accomplished by approaching 10 sleep experts; all are members of the Israeli Sleep Society and have practiced sleep medicine for at least 3 years (range 3-30 years). Three sleep experts are board certified by the American Board of Sleep Medicine. Sleep experts received the scenario and checklist via email and were requested to return the completed checklist within 10 days. The specialists were informed that the scenario, as given in the Appendix, was presented by an actor to primary care physicians during an encounter as described.

Specialists were asked to rate the questions presented in the checklist into 2 categories with “high” or “low-moderate” relevance to the scenario. In addition, they were asked to suggest a main diagnosis and up to 3 additional diagnoses that could be related to the scenario. Sleep experts were given the option to recommend additional questions for each part of the checklist questionnaire that might strongly direct them toward the suggested diagnosis. No consistent additional question was recommended; therefore, we used the recommended checklist of 15 questions (Appendix Part I). For the purpose of determining the valid questions for this scenario, all questions were rated equally. Finally, a checklist question (Appendix Parts I and II) was considered valid only if an agreement of at least 90% was noted among sleep experts.

Training the Standardized Patient

One of the investigators (TW), a 26-year-old married woman, served as the standardized patient, ie, “Mrs. Lee.” In order to acquire the relevant questions asked about sleep disorders, the investigator underwent training sessions with a sleep specialist and learned to respond in a systematic and identical manner to various possible questions and answers. In addition, before initiation of the study, the investigator met with 2 family practitioners and practiced all components of her session, including the technical issues of completing the study checklist after each encounter; minor changes were made in the case scenario in order to improve presentation.

Study Protocol

Each doctor who participated in the study was approached by telephone by 1 of the investigators (TW) and was asked if he or she would be willing to take part in this study. No mention was made of sleep disturbances throughout the initial phone interview (Appendix). The doctors were promised anonymity and that their personal details would be kept confidential. After scheduling an appointment, the investigator came to the doctor’s office during working hours; introduced herself as the standardized patient; and, after receiving the doctor’s permission, started the interview by telling the doctor (without mentioning sleep disturbances) that

<table>
<thead>
<tr>
<th>Table 1—Characteristics of the study versus general population</th>
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<tbody>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>Population</td>
</tr>
<tr>
<td>(N=261)</td>
</tr>
<tr>
<td>Age, ≥ 50/50, y</td>
</tr>
<tr>
<td>Board certified, yes/no</td>
</tr>
<tr>
<td>Sex, men/women</td>
</tr>
</tbody>
</table>

Values are number of physicians. P value was determined by χ² test.
she is playing the role of Mrs. Lee. The doctor was instructed to
ask questions about the medical history and her husband’s symp-
toms (Appendix). During the case presentation, the physician
was encouraged to ask as many questions as needed. The stan-
dardized patient was instructed not to volunteer a specific sleep
problem but, if asked about sleep, to answer the physician’s ques-
tions. The standardized patient was instructed to answer all ques-
tions, including non–sleep-related questions, which were
answered in a neutral manner. For instance, if the primary care
physician asked about “high blood pressure problems or any
medication,” the investigator answered that her husband did not
suffer from blood pressure problems. When the primary care
physician asked “sleep-relevant question(s),” he or she received
a reassuring answer. If the primary care physician asked about
“snoring,” the answer was that the patient did snore. When the
doctor asked 1 of the 15 listed questions (Appendix Part I), the
question was marked. At the end of this stage, the doctor was
informed that the patient suffers from sleep disturbances and then
was asked 3 questions (Appendix Part II). Before answering
questions b and c in part II of the Appendix, the doctor was fur-
ther informed that sleep-lab reports indicated that the patient has
obstructive sleep apnea syndrome. Then the doctors were asked
about recommended treatments, complications, and dangers of
sleep disorders. At the conclusion of the interview, the doctor was
asked for personal or demographic information and about previ-
ous training in sleep disorders and his or her impression of the
interview process.

Data and Statistical Analysis

Numbers of the questions asked by physicians (Appendix Part I)
were arbitrarily divided into 2 levels: low to moderate (percentile
27-87) and high (96-100), according to the percentile of the
distribution of the physician’s answers marked on the check-
list. A physician’s number of questions asked (Appendix Part II)
was arbitrarily divided into 3 levels: mild (percentile 7-23), mod-
erate (percentile 40-53), and high (percentile 87-100). The num-
bers of questions asked by the physicians were analyzed accord-
ing to the country where their medical education was completed,
sex, age, and board certification in family medicine.

All data were analyzed using an SPSS software package (ver-

tion 11.1; SPSS, Inc., Chicago, Ill). Mann-Whitney tests were
used to determine the statistical significance of age, sex, board
certification, and country where medical education was complet-
ed on the number of questions asked. A discriminative test was
done on the first part of the questionnaire to determine which of
the questions from the list were most likely to be asked. The null
hypothesis was rejected at the 5% level.

RESULTS

Ten sleep experts (8 men and 2 women), who had all practiced
sleep medicine for at least 3 years, agreed that the main diagno-
sis presented in the scenario was compatible with obstructive
sleep apnea syndrome. The two additional main differential diag-
noses were depression (80%) and hypothyroidism (40%). The
sleep experts did not recommend any additional questions be
included in the checklist questionnaire (Appendix Part I)

Table 2 shows the 5 questions of the 15 checklist questions pre-

<table>
<thead>
<tr>
<th>Identified Questions*</th>
<th>Sleep Experts’ Responses (n = 10)</th>
<th>Primary Care Physicians’ Responses (n = 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9 (90%)</td>
<td>1 (3.3%)</td>
</tr>
<tr>
<td>3</td>
<td>9 (90%)</td>
<td>8 (26.7%)</td>
</tr>
<tr>
<td>11</td>
<td>10 (100%)</td>
<td>2 (6.6%)</td>
</tr>
<tr>
<td>12</td>
<td>10 (100%)</td>
<td>2 (6.6%)</td>
</tr>
<tr>
<td>13</td>
<td>9 (90%)</td>
<td>2 (6.6%)</td>
</tr>
</tbody>
</table>

Identified Questions – according to sleep experts.
*Question number from Part I of the Appendix.

Table 3—Knowledge level of primary care physician to obstructive
sleep apnea syndrome according to identified questions asked by sleep
experts

<table>
<thead>
<tr>
<th>Identified Questions*</th>
<th>Sleep Experts (n = 10)</th>
<th>Primary Care Physicians (n = 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Ia</td>
<td>2</td>
<td>27 (90%)</td>
</tr>
<tr>
<td>Part IIb</td>
<td>1</td>
<td>26 (86.6%)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>11 (36.6%)</td>
</tr>
<tr>
<td>Part IIC</td>
<td>1</td>
<td>6 (20%)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>15 (50%)</td>
</tr>
</tbody>
</table>

Identified questions – according to sleep experts.
*Question number from Part II of the Appendix.

Primary Care Physicians

Thirty physicians (Table 1) were included in this study (100% compliance), with a mean age of 49.1 ± 9.4 years (median 50, range 35-60). The study population was matched (χ² test) by age, sex, and board certification to the total primary care physician population in the region tested.

Table 2 summarizes the number of questions asked by primary care physicians about obstructive sleep apnea syndrome. Only 10% (3) of primary care physicians asked 3 or more questions; 10% (3) of primary care physicians asked 2 questions, and 30% (9 physicians) asked only 1 question. Fifty percent of the physicians did not ask any of the valid questions. It is important to note that only 1 physician asked the following question: “Does the patient fall asleep during routine tasks or when driving?” The effect of variables such as board certification or place of education was negligible in determining the number of questions asked about obstructive sleep apnea syndrome.
Analyzing all the questions included in Part I of the Appendix (validated and nonvalidated questions) revealed that an average of 1.6 ± 1.8 questions per physician were asked (median 1, range 0-7). Board-certified physicians asked more ($P < .002$) questions (average of 2.7, range 0-7) compared with noncertified physicians (average of 0.7, range 0-2). The number of questions asked was higher among physicians reporting formal training in sleep disturbances during medical school (odds ratio = 1.71, $P < .05$). Physicians who were educated in Israeli medical schools asked more questions, compared with graduates of East European schools. Of physicians who asked a low number of questions, 85% were graduates of Eastern European schools, and among those with the highest number of questions asked, 70% were Israeli school graduates ($P < .003$). The number of questions asked was not affected by exposure to sleep disturbances in the professional literature or seminars or conferences.

Table 3 summarizes the number of questions asked by primary care physicians about obstructive sleep apnea syndrome. Twenty-seven and 26 physicians recommended the need for polysomnography evaluation and continuous positive airway pressure, respectively. However, 36.6% (11 physicians) would have discussed the need for “dietary consultation”; 16% (5 physicians) and 50% (15 physicians) discussed possible complications of obstructive sleep apnea syndrome such as motor vehicle and work accidents and cardiovascular events, respectively.

Analyzing all questions included in part II of the Appendix (validated and nonvalidated questions) revealed that the average number of questions per physician was 4.9 (median 5, range 2-7). Age and sex did not affect the questions asked from part II of the Appendix. Board-certified physicians, compared to noncertified physicians, asked 6 (range 4-7) and 3.8 questions (range 2-6), respectively ($P = .0001$). Graduates of Israeli medical schools, compared with graduates of Eastern European schools, asked 2.6 (range 0-7) versus 0.9 (range 0-3) questions per physician, respectively ($P < .02$).

**DISCUSSION**

We used questions aimed at identifying obstructive sleep apnea syndrome in patients during their encounters with a primary care physician. Using these questions in a simulated patient approach, we revealed that the number of questions asked about obstructive sleep apnea syndrome was low. Primary care physicians are in an ideal position to identify signs and symptoms of problem sleepiness and initiate appropriate care of the patient, including educating the patient about the dangers of functioning while impaired by sleepiness. The debate as to how many conditions general practitioners can screen for in primary care settings should encourage the development of screening questionnaires to help in lines of inquiry versus diagnosis of the common sleep problems.

It has been reported that only approximately 10% of patients with clinically significant sleep apnea syndromes are recognized. Clinical studies and consensus panels suggest that all health-care providers should be able to recognize and diagnose obstructive sleep apnea syndrome and other sleep disorders, together with the mandate that primary health-care providers gain the skills to obtain sleep histories essential to diagnosis. Special emphasis has been placed on the role of primary care physicians as “gate keepers,” but little is known about their level of knowledge of obstructive sleep apnea syndrome. The main findings of the current study demonstrate that only 10% of the physicians asked questions relevant to obstructive sleep apnea syndrome.

We adapted a checklist questionnaire recommended by the National Center on Sleep Disorders Research Working Group. This questionnaire (Appendix) is aimed at investigating the recognition by primary care physicians of sleep disorders in primary care settings. We agree with the recommendation that, in order to achieve an accurate diagnosis of specific sleep disorders, further exploration is required and, possibly, evaluation by a sleep specialist. There are standard validated questionnaires for obtaining a sleep-apnea history. Based on the presented scenario, sleep experts reduced the suggested 15 questions to 5. Of those, 3 are compatible with previous standard validated questionnaires. These 5 questions, which represent excessive daytime sleepiness, accidents, snoring, and apneas, were found to be valid for screening, during history taking, for obstructive sleep apnea syndrome in our scenario. From the original checklist questionnaire, we have identified 2 related question areas that 90% of sleep experts would pursue in light of the presenting scenario, ie, “Do the patients snore, choke, or stop breathing in sleep?” and “Does the patient have sleepiness, unrefreshed sleep, or fall asleep at undesirable times?” In contrast, most primary care physicians completely missed asking these questions, and only 10% asked the questions sleep experts believed to be essential. In contrast to their inability to take a pertinent history for sleep apnea, the doctors had a better understanding of what the diagnostic and treatment algorithms should be (Table 3).

The present study supports the notion that primary care physicians are deficient in their ability to recognize the presence of obstructive sleep apnea syndrome in a simulated patient. Sleep history is typically neglected in the general history taken by internists and primary care physicians during patient-physician encounters, in and out of hospital settings and by pulmonologists. The real problem is a lack of appropriate education at all levels compared with that of other common and chronic disorders, such as asthma and diabetes, which have a prevalence and morbidity similar to those of sleep disorders. General practitioners identified more sleep apnea than did other specialties; however, only a few primary care physicians ordered polysomnography studies.

In contrast to these findings, of the primary care physicians in our settings who know that a patient suffers from obstructive sleep apnea syndrome, at least 85% recommended polysomnographic evaluation and treatment with continuous positive airway pressure. These findings guarantee that the patient will further consult sleep experts and will receive adequate treatment. However, the fact that only a minority (16%) of the primary care physicians would have discussed problems related to motor vehicle accidents with their patients and only half would have discussed cardiovascular events is troublesome. Clearly, primary care physicians could not identify a common disorder associated with cardiovascular and neurobehavioral disease and could not identify the sleepiness as a source of dangerous driving. While understanding the algorithms for diagnosis (Table 3) of sleep apnea, physicians cannot identify the patients for whom the diagnostics are needed. Therefore, history-taking skills for interviewing persons with sleep disorders must be emphasized in medical schools and in continuing education programs for internists and primary care givers, and the dangers of driving while sleepy must...
be reinforced many times, given that this may be the highest health risk.

Several recommendations are offered to improve physician knowledge about sleep apnea. (1) Sleep education, ie, training in the recognition of sleep disorders, should be expanded at all levels, including medical school curriculum and residency and postgraduate education and greater availability of teaching resources and materials\(^{13,14,37,38}\) in addition to weekend courses\(^{39}\) and short-term training programs.\(^{40}\) To date, few sleep-apnea education programs have been developed, instituted, and tested in a prospective randomized manner among health-care providers. Therefore, further studies are needed to develop the best comprehensive programs to promote sleep medicine knowledge. (2) A chart reminder should be used to increase the frequency of recorded sleep histories.\(^{41}\) (3) The Internet has been proposed as a possible tool to facilitate access to medical information.\(^ {15,17}\) For example, the American Academy of Sleep Medicine has initiated a Web site, which is designed for dissemination of education products developed under the auspices of the Sleep Academic Award program (www.aasmnet.org click on Professional/Community/Professional Resources/MEDSleep). This site is free and provides educators with an array of quality teaching material and assessment devices for education and the development of curricula for medical professionals. More than 95% of our study population has access to PubMed. However, only a small minority of primary care physicians use this source of information effectively.\(^ {15,42}\) We conducted a preliminary study to determine the number of publications, between 1993 and 2002, that are most relevant to the presented scenario. We used the medical subject headings (MeSH) in PubMed and the Journals Database option, identifying 21 journals (5 of the leading journals, ie, “The New England Journal of Medicine,” “British Medical Journal,” “Annals of Internal Medicine,” “Lancet,” and the “Journal of the American Medical Association,” and 16 in primary care disciplines). PubMed has been described as the most frequently accessed source for clinical information.\(^ {42}\) Thirty-seven publications were found in the 16 family and primary care medicine journals, and 243 publications were found in the leading journals; of these, 49% and 34% were published between 2000 and 2002, respectively.

An increase of more than 50% in the number of publications on sleep apnea syndromes was found\(^ {32}\) during the period from 1992 to 1996 in MEDLINE. The increase in publications was associated with an increase in the number of accredited sleep laboratories, as well as in the number of sleep publications in the medical literature. Thus, there has been a lack of emphasis on sleep disorders in primary care medicine journals in the past decade. This, in turn, partially explains the lack of level of suspicion of sleep disorders on the part of primary care physicians. (4) In one study, highly motivated experienced clinicians who had particular interests in promoting cardiovascular health did not seek information on obstructive sleep apnea while interviewing simulated patients.\(^ {18}\) It is expected that methods to increase motivation will influence the level of suspicion of sleep disturbances.

**Standardized Patient Approach**

A standardized patient is a nonphysician who has been trained to portray a specific patient case in a consistent standardized fashion. In the interaction with the examinee, the standardized patient presents the case history in response to the examinee’s questions and undergoes a physical examination.\(^ {42}\) This approach has been recommended as a “gold standard” (sensitivity 95%, specificity 85%) for the measurement of quality of care across primary clinics, although this technique has not been validated for sleep disturbance.\(^ {20,43}\)

We used 1 standardized patient and 1 scenario of a sleep disorder to assess awareness level. The location and timing of the interview were meant to produce an optimal and valid simulation of the patient-doctor environment. This scenario can be considered as “typical,” since it is common that the physician is initially approached by the spouse of a patient with sleep disorders. Only a few of the physicians asked relevant questions regarding sleep disorders. It is possible that due to lack of relevance or a busy clinic, the physician did not continue to ask for any additional information regarding sleep disorders. Questions regarding motor vehicle accidents (Appendix Part I, question 1, and Part IIc question 1) were ignored by most physicians. Therefore, educating physicians about questions regarding tiredness, lack of sleep, and accidents in a car or at work will clearly help to increase the potential of tracing sleep disorders.

**Study Limitation**

The checklist questionnaire was validated by the sleep experts via email, not by using a standardized patient. This scenario is commonly seen in the daily practice of sleep experts, and it is unlikely that the presence of the standardized patient would affect the results. We did not validate the reproducibility and accuracy of the actor’s score, since we used 1 investigator who served as “an actor.” This individual was provided with a checklist that included the main topics of her scenario. During the pilot study, a high degree of reproducibility was found. Properly trained standardized patients (more than 1 actor in multiple sites) compare well with an independent assessment of recordings of the consultations and may justify their use as a gold standard in comparing the quality of care across sites or evaluating data obtained from other sources, such as medical records and clinical vignettes.\(^ {20}\) It is unlikely that information about the study may have passed between members of the study group (which might disrupt the quality of the data) especially in the same clinical setting. This problem is of small magnitude, since appointments were scheduled consecutively in the same setting, and the study period was only 4 months. We did not examine the following as confounding factors affecting patient-physician encounter: length and number of questions asked, number of patients in the waiting room, time of day in which the interview took place, and physician motivation, all of which may potentially influence the doctor’s performance.\(^ {19}\) The knowledge-level portion of our questionnaire did not address the issue of medical school and postgraduate sleep education courses on our study population. However, due to the scarcity of sleep education material provided to physicians in general, we assume that this variable will not be significantly different among our studied population. A variety of comments were obtained from the physicians; some reported that they enjoyed this method of assessment while others did not approve of being “examined,” in part due to the fact that they did not like becoming “an experimental object.” All of our sleep experts agreed that the scenario could represent the spouse of a patient with obstructive sleep apnea syndrome. However, to further reinforce our
findings, additional studies are needed to find and compare a variety of scenarios designed for obstructive sleep apnea syndrome and the incentives and variables affecting the work load of primary care physicians during their actual practices.

Surprisingly, the issue of falling asleep at the wheel or what the doctors plan to do about this was poorly mentioned by primary care physicians. This issue is important and is another area to study. Depression can easily be included in the differential diagnosis of our scenario; indeed, 80% of sleep experts suggested this possibility in their differential diagnosis. However sleep experts did not recommend adding a question in Part 1 of the Appendix. The scope of depression is very large and recently was addressed in the literature by providing 2 questions for screening depression in general practice. Further studies are needed to implement discriminative questions regarding sleep and depression.

**CONCLUSION**

This study validated and evaluated questions relating to the workup of obstructive sleep apnea syndrome in primary care settings. The index of suspicion of obstructive sleep apnea syndrome is low. More time must be spent training patients and doctors to look for warning signs of common sleep disorders and assessing the risks associated with sleepy patients operating motor vehicles. New education programs need to be instituted and tested in a prospective, randomized, and homogeneous manner across health-care providers’ sites. The results of these activities can be monitored and evaluated over time by the standardized patient methodology.

**ACKNOWLEDGMENTS**

The authors wish to thank the anonymous reviewers for their comments, which gave excellent added value to this manuscript.

**REFERENCES**

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Part I. Awareness level (yes/no)

The phone introduction:

Investigator: “My name is _____; I’m a Physical Therapist, and a master’s degree student. We’re doing research about physicians’ attitudes towards OSCE examination technique. I would like to ask whether you would agree to participate in our research.” In some cases, the student was asked for more information about the standardized patient. Dr.: “What is OSCE?” Investigator: “OSCE stands for Objective Structured Clinical Examination, and it means that standardized patients are used in order to estimate knowledge and skills. In this way, there is no inconvenience to a patient and the situation is similar to situations in real clinics - in contrast to written tests.”

Dr.: “What do I have to do?”

Investigator: “If you agree to take part in this research, I will schedule an appointment in your clinic, like all other patients do, and will arrive like any other patient in your clinic.”

Dr.: “How long will this appointment be?”

Investigator: “Around 10 minutes, like a regular appointment.”

Dr.: “I agree.” Investigator: “Thank you.”

When arriving at the doctor’s office:

Investigator: “Hello. My name is _____ and I’m a Physical Therapist. I spoke with you on the phone last week about the research we’re doing and you agreed to take part in it. Do you remember?”

Dr.: “Yes. How can I help you?”

Investigator: “Let’s say from now that I’m Mrs. “Lee” and you are asked to act as my primary care physician. Well, lately my husband, Mr. _____...”

The scenario:

Mrs. Lee is the wife of a person who has been suffering recently from fatigue, reduction in work efficiency, morning headaches, inability to focus and a general reduction in mental function. Recently Mr. Lee was also involved in a car accident.

Check List Questionnaire: Check questions that the doctor asked:

Part I. Awareness level (yes/no)

1. Does the patient fall asleep during routine tasks or when driving?
2. Does the patient nap during the day, or more than once a day?
3. Does the patient complain of excessive daytime sleepiness and insufficient sleep?
4. Does the patient wake up many times in the night?
5. Does the patient consume medication, tobacco, alcohol?
6. How long does the patient sleep at night? What is the usual time to go to sleep and wake up?
7. Is the patient a shift worker?
8. Has the patient recently gained weight?
9. Does the patient wake up early in the mornings?
10. Does it take the patient more than 30 minutes to fall asleep at night?
11. Does the patient’s spouse complain about the spouse snoring and choking during sleep?
12. Did the patient’s spouse witness cessation of breathing episodes during sleep?
13. Does the patient snore?
14. Is there a family history of obstructive sleep apnea?
15. Does the patient wake up at night feeling breathless?

Part II Knowledge level (yes/no)

IIa. Assuming that according to the patient’s anamnesis and the physical examination, you decided that the patient suffers from sleep apnea only. For what other exams or lab tests will you refer the patient?

1. Blood tests: TSH, Hgb or blood gases.*
2. Sleep laboratory consultation.
4. Pulmonary function tests and consultation.

IIb. Assuming the polysonomography report shows that the patient has obstructive sleep apnea syndrome. What are the treatment options you may offer your patient?

1. Continuous positive airway pressure (CPAP) therapy.
2. Medications.
4. Behavioral treatment (by a psychologist).
5. Surgical procedure/others.

IIc. What possible complications of obstructive sleep apnea syndrome will you discuss with your patient?

1. Motor vehicle and work accidents.
2. Cardiovascular events.
3. Mental disturbances and depression.
4. Decrease in work productivity, work loss.
5. Sexual impotence.

Part III - Physician personal information

Age __________

Gender M/F

Years since graduation from internship: ____________

Country where education was completed: __________

Work place clinic: __________

For the following questions, answer: no, a little or a lot.

During medical school, did you study about sleep disorders?

Were you exposed to sleep disturbances in the: literature, seminars and conferences?

Please describe your impression from this interview (open question)

*Hgb – hemoglobin, TSH – thyroid-stimulating hormone