

Sleep medicine services in Saudi Arabia: The 2013 national survey

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Abstract:

BACKGROUND: We conducted this national survey to quantitatively assess sleep medicine services in the Kingdom of Saudi Arabia (KSA) and to identify obstacles that specialists and hospitals face, precluding the establishment of this service.

MATERIALS AND METHODS: A self-administered questionnaire was designed to collect the following: General information regarding each hospital, information regarding sleep medicine facilities (SFs), the number of beds, the number of sleep studies performed and obstacles to the establishment of SFs. The questionnaire and a cover letter explaining the study objectives were mailed and distributed by respiratory care practitioners to 32 governmental hospitals and 18 private hospitals and medical centers in the KSA.

RESULTS: The survey identified 18 SFs in the KSA. The estimated per capita number of beds/year/100,000 people was 0.11 and the per capita polysomnography (PSG) rate was 18.0 PSG/year/100,000 people. The most important obstacles to the progress of sleep medicine in the KSA were a lack of trained sleep technologists and a lack of sleep medicine specialists.

CONCLUSION: The sleep medicine services provided in the KSA have improved since the 2005 survey; however, these services are still below the level of service provided in developed countries. Organized efforts are needed to overcome the identified obstacles and challenges to the progress of sleep medicine in the KSA.

Key words:

Polysomnography, quantitative assessment, sleep disorders center, sleep medicine service, sleep technologists

Sleep medicine services are new in the Kingdom of Saudi Arabia (KSA). In the early and mid-1990s, Pulmonologists in the KSA used overnight pulse oximetry to diagnose obstructive sleep apnea and titrated continuous positive airway pressure blindly in symptomatic patients.^[1] The use of proper Level I full polysomnography (PSG) in the KSA started relatively recently. A survey that quantitatively assessed sleep medicine services in the KSA 8 years ago revealed that sleep medicine was underdeveloped compared with services in developed countries.^[2] Since that time, the services have expanded, new centers have been opened and many specialists have joined the field.

In addition, the Saudi Commission for Health Specialties (SCFHS) has recognized sleep medicine as an independent specialty and plans are in place to establish a national training program in the sleep medicine specialty.^[3] However, before starting such a program, it is important to ensure that there are sufficient numbers of specialized trainers and adequate training facilities. To achieve this goal, the currently available services must be assessed. We therefore conducted this national survey to quantitatively reassess sleep medicine services in the KSA and to identify obstacles that specialists

and hospitals face, precluding the establishment of this service.

Materials and Methods

A self-administered questionnaire and a cover letter were mailed and distributed by respiratory care practitioners to 32 major governmental and military hospitals and 18 major private hospitals and medical centers in all regions of the KSA. The letters were addressed to the sleep medicine facilities (SFs) in hospitals that have such a service and to the medical directors in hospitals that are not known to have a sleep medicine services. The questionnaire was initially mailed in January 2013. In March 2013, another set of questionnaires was mailed to centers that did not respond to the first survey. Centers that did not respond to both surveys were contacted by telephone or E-mail to obtain the needed information. The study was approved by our institutional review board and objectives of the study were explained to all participating centers and hospitals.

Questionnaire

A modified questionnaire from a previous study was used.^[2] This questionnaire collected general information about each hospital, information

about SFs, the number of beds and the number of sleep studies performed per week. To quantitate the service provided, we calculated the per capita number of PSG studies by dividing the number of sleep studies performed per year by the country's population (26,000,000 citizens).^[4] We used the American Academy of Sleep Medicine (AASM) criteria to define sleep disorder centers (SDCs) and sleep laboratories for sleep-related breathing disorders (SBDs).^[5]

The returned questionnaires were coded and entered into a spreadsheet before analysis. The data are expressed as the mean \pm standard deviation.

Results

A total of 50 hospitals and medical centers in the KSA were contacted. In total, 45 completed questionnaires were returned (90.0%). Among the surveyed medical facilities, 16.3% had >600 hospital beds in total, 30.2% had 301-600 beds, 41.9% had 101-300 beds and 2.3% had <100 beds. The survey identified 19 SFs in the KSA (12 government and 7 private SFs). All SFs were in three major cities, Riyadh (7 SFs), Jeddah (7 SFs) and Dammam (5 SFs). Using the AASM definitions for SDCs and SDB laboratories,^[5] 16 were defined as SDCs and 3 were classified as SDB laboratories. Sleep studies on children were performed in only seven facilities. The number of sleep medicine specialists (defined as doctors who completed a minimum of 6 months of formal full-time fellowship training in sleep medicine) in the surveyed hospitals was 37. Nevertheless, the number of sleep specialists could be overrated as some specialists may work in more than one SF. Seven hospitals reported having pediatric sleep medicine specialists. However, only five SFs had certified sleep technologists and four facilities had Saudi technologists.

Of all PSG studies performed, 80.5% were for patients with SBDs, 7.2% for periodic limb movement disorder, 4.8% for narcolepsy, 6.8% for insomnia and 0.7% for other reasons. The total number of beds assigned for sleep medicine services was 32. The number of beds in each facility ranged from 1 to 6, with a mean of 1.1 beds. The distribution included 1 bed (63.2%), 2 beds (26.3%) and >2 beds (10.5%). Based on a population of 26,000,000, the estimated per capita number of beds/year/100,000 people was 0.11 and the per capita PSG rate was 18.0 PSG/year/100,000 people. Table 1 compares the results of the current survey with the findings of the 2005 survey. There was an increase in the number of SFs, beds and specialists. Moreover, Figure 1 shows the main obstacles

Table 1: A comparison between the results of the 2005 and 2013 surveys

| Measured variables | 2013 survey | 2005 survey |
|--|-------------|-------------|
| Number of sleep medicine facilities | 19 | 9 |
| Facilities providing pediatric sleep medicine services | 7 | 2 |
| Sleep medicine specialists | 37 | 19 |
| Beds | 32 | 14 |
| Beds/100,000 people | 0.11 | 0.06 |
| PSG/year/100,000 people | 18.0 | 7.1 |

PSG=Polysomnography

facing the establishment of SFs in the 2013 survey compared with the 2005 survey. A lack of trained sleep technologists and a lack of sleep medicine specialists remained the primary barriers. Administratively, 89.5% of the SFs were included in a pulmonary department.

Discussion

This survey follows the recognition and accreditation of sleep medicine and sleep technology as independent specialties by the SCFHS. The survey provides an estimate of the available services in the KSA, which will assist health authorities in the planning of the number of future facilities required and will aid the assessment of the need for and ability to start a specialty fellowship program in sleep medicine.

Our results show an increase in SFs, the number of beds designated for sleep medicine/100,000 people and the number of specialists in the KSA since the 2005 survey. This improvement can be attributed to numerous factors, including increasing evidence linking sleep disorders to serious medical problems and the increased awareness of the general public, administrators, practicing physicians and trainees regarding sleep disorders and their consequences.^[6] Nevertheless, the services are still underdeveloped compared with services in developed countries. Table 2 shows a comparison between sleep medicine activity in the KSA and other countries.^[7-10] Although the number of beds/100,000 people has doubled, this number is still far lower than in developed countries. Based on available data and waiting lists for sleep studies,^[2,11] it appears that sleep disorders are prevalent among Saudis. Although the prevalence of different sleep disorders in the KSA is comparable with the prevalence in Western countries,^[11] the available services do not match those in developed countries.

This study identifies the major obstacles that challenge the progress of sleep medicine service in KSA. The obstacles to the progress of sleep medicine services in the KSA have not changed significantly since the last survey. A lack of sleep

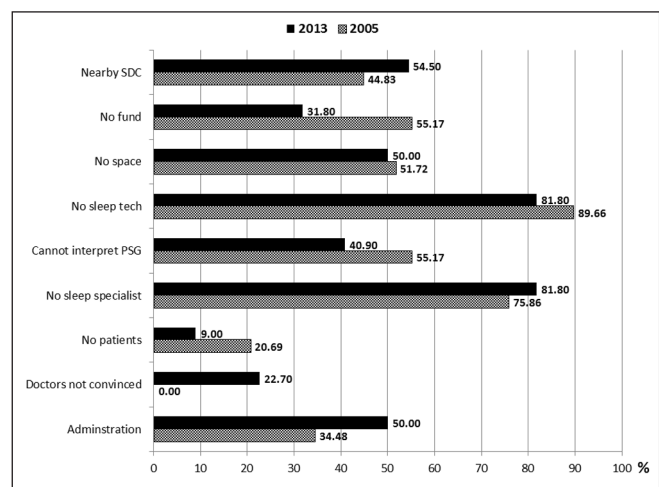


Figure 1: The most important obstacles facing by the establishment of sleep medicine facilities in hospitals that did not have sleep medicine services in the 2005 and 2013 surveys. More than one reason is possible. PSG=Polysomnography

Table 2: Sleep medicine services in Saudi Arabia compared with other countries

| Country | Population | No. of sleep facilities | No. of sleep beds | No. of beds/100,000 people | No. of studies/year | No. of studies/year/100,000 people |
|-------------------------------|-------------|-------------------------|-------------------|----------------------------|---------------------|------------------------------------|
| United States ^[10] | 280,000,000 | 1,292 | — | — | 1,170,000 | 427.0 |
| Canada ^[7] | 31,400,000 | 100 | 440 | 1.4 | 116,000 | 370.4 |
| Australia ^[7] | 18,970,000 | 65 | 244 | 1.3 | 53,500 | 282.0 |
| Belgium ^[7] | 10,000,000 | 50 | 150 | 1.5 | 17,716 | 177.2 |
| Spain ^[8] | 40,341,462 | 63 | — | 0.29 | 17,270 | 45.6 |
| United Kingdom ^[7] | 58,800,000 | 84 | 170 | 0.3 | 25,000 | 42.5 |
| Japan ^[9] | 126,686,000 | 146 | — | — | 23,184 | 18.3 |
| Saudi Arabia (2005) | 21,500,000 | 9 | 14 | 0.07 | 1,576 | 7.33 |
| Saudi Arabia (2013) | 26,000,000 | 19 | 32 | 0.11 | 4,680 | 18.0 |

medicine specialists and trained technologists remained the most important obstacles. On the other hand, difficulties in convincing the administration about the importance of sleep medicine service increased from 34% to 50%. Therefore, we need to convey a clear and evidence-based message to decision makers indicating the high prevalence of sleep disorders in the community, the associated serious comorbid conditions and their impact on morbidity and mortality.^[12]

A lack of sleep medicine specialists remains an important barrier to the establishment of SFs. This finding stresses the importance of establishing a national sleep medicine training program for physicians to meet the demand. This survey also indicates that we have a sufficient number of SFs and sleep medicine specialists in the country to start a national training program in sleep medicine under the umbrella of the SCFHS. The training program should stress the interdisciplinary nature of sleep medicine and the fact that sleep medicine includes many specialties. This program should be accessible to practitioners from related specialties and particularly pulmonology, neurology and psychiatry.^[13]

Only five SFs reported having certified sleep technologists and the remaining SFs recruited health allies from different backgrounds to perform the jobs of sleep technologists. Moreover, only four SFs had Saudi technologists. To overcome this obstacle, the institution of formal training programs for sleep technologists and the establishment of a national registration exam are necessary. The SCFHS recently recognized sleep technology as an independent specialty and provides accreditation pathways for classification as a sleep medicine technologist.^[3] Adequate incentives must be given to technologists from respiratory care and other allied health specialties to join this specific specialty.

In summary, the sleep medicine services provided in the KSA have improved since the previous survey, but there is still a service shortage compared with services in developed countries. Organized efforts are needed to overcome the identified obstacles and challenges to the progress of sleep medicine in the KSA. National training programs for physicians and technologists are needed to meet the demand and overcome this shortage.

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