



# The Knowledge of Sleep Medicine among Dental Interns in Northern Jordan

Mustafa Alkhader<sup>1</sup> Rami Saadeh<sup>2</sup>

<sup>1</sup>Department of Oral Medicine and Oral Surgery, Faculty of Dentistry, Jordan University of Science and Technology, Irbid, Jordan

<sup>2</sup>Department of Community Medicine, Public Health and Family Medicine, Faculty of Medicine, Jordan University of Science and Technology, Irbid, Jordan

**Address for correspondence** Mustafa Alkhader, BDS, PhD, JBOMR, Department of Oral Medicine and Oral Surgery, Faculty of Dentistry, Jordan University of Science and Technology, Irbid 22110, Jordan (e-mail: mmalkhader@just.edu.jo).

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## Abstract

**Objectives** The diagnosis and treatment of patients with sleep disorders are the most challenging issues in dentistry. The aim of this study was to assess the knowledge among dental interns in Northern Jordan about sleep medicine and sleep disorders.

**Materials and Methods** This cross-sectional study was performed using the Assessment of Sleep Knowledge in Medical Education (ASKME) questionnaire. The questionnaire was given to 88 dental interns (52 females and 36 males) in Northern Jordan. Chi-squared test was utilized for data analysis.

**Results** The mean score of the ASKME questionnaire was 12 out of 30 (40%). The majority of dental interns (88.6%) correctly answered  $\leq 50\%$  of the questions. No association was found between gender and score results.

**Conclusions** Dental interns in Northern Jordan have a low level of knowledge about sleep medicine and sleep disorders. Dental faculties should provide courses related to sleep medicine throughout undergraduate education.

## Keywords

- ▶ sleep medicine knowledge
- ▶ dental interns
- ▶ ASKME questionnaire

## Introduction

The high prevalence of sleep disorders that affects all age groups has led to an abundant use of sleep medication.<sup>1</sup> There are over 80 different sleep disorders classified by the International Classification of Sleep Disorders-3 (ICSD-3), which can be diagnosed and treated effectively.<sup>2</sup> These sleep disorders vary in their effect on the human body, usually resulting in lower quality of life, morbidities, and even mortality. For example, obstructive sleep apnea (OSA), which is a common sleep problem affecting ~4% of middle-aged males, has been associated with several serious medical comorbidities such as hypertension, coronary artery disease, stroke, and diabetes.<sup>1</sup> Training and education in the field of sleep medicine are crucial, as conditions such as sleep apnea can be life threatening, if left undiagnosed.<sup>2</sup>

Sleep disorders are common among the Jordanian population. Khassawneh et al reported that the risk of sleep apnea is ~16.8% among Jordanians attending primary care clinics, and patients at risk should be referred for further evaluation<sup>3</sup>

In Jordan, there are two state-supported universities that serve as a platform to obtain the Bachelor Degree of Dentistry (BDS), namely “Jordan University” in Amman and “Jordan University of Science and Technology” in Irbid. The certificate is awarded upon the successful completion of 3 theoretical years and 2 clinical years, along with a 1-year internship to legally practice dentistry in Jordan. Knowing that sleep disorders have a significant impact on the health and well-being of society, it is unfortunate that these topics are not addressed in the curriculum during the first 2 years of study, and barely taught during clinical training. Health care professionals are responsible for the overall health of their patients, regardless

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of specialty. They require a competent level of knowledge and skills to identify sleep disorders and refer them to the specialized entities. Dentists are among those professionals who have a frontline opportunity to identify, diagnose, and even contribute in treating such patients.<sup>4</sup>

Patients at risk of developing OSA can be identified by dentists by careful examination in dental clinics.<sup>4,7</sup> Many oral findings and oral risk factors that have been linked with OSA include increased size of tongue, tonsils, uvula, and soft palate.<sup>5,8</sup> Furthermore, systemic diseases associated with OSA can also result in other oral manifestations such as dental caries and periodontitis.<sup>9</sup> Another equally important point is that the treatment of many OSA patients can be performed by dentists or dental specialists.<sup>8</sup> The fabrication of oral appliances for mandibular advancement or performance of simple surgical procedures can result in successful treatment of OSA patients.<sup>8</sup> These signify the importance of the knowledge of sleep medicine to dentists and dental students.

Several studies have assessed the knowledge of sleep medicine,<sup>1,4,10-14</sup> including studies conducted in the Middle East.<sup>1,4,12,14</sup> According to these studies, medical students, dental students, and primary care physicians possess poor knowledge of sleep medicine. However, no study had been conducted in Jordan. Therefore, the aim of this study was to assess the level of knowledge of dental interns training in Northern Jordan about sleep medicine and sleep disorders.

## Materials and Methods

### Study Population

This was a cross-sectional study conducted between March and April 2019. The target population was dental interns in Northern Jordan, training in Jordan's Ministry of Health dental centers or university dental centers. The total number of participants was 88 interns (52 females and 36 males).

### Questionnaire

Interns' knowledge about sleep medicine was assessed via the Assessment of Sleep Knowledge in Medical Education (ASKME) survey, which is a validated tool for the assessment of medical students' knowledge about sleep disorders.<sup>15</sup>

As English is the primary language of study for dental schools in Jordan, students did not require an Arabic translation of the questionnaire. The survey consisted of 30 questions that assess knowledge of sleep disorders in the following areas: (1) basic sleep principles, (2) circadian sleep/wake control, (3) normal sleep architecture, (4) common sleep disorders, and (5) the effects of drugs and alcohol on sleep. For each question, three choices were available in the format of "true," "false," or "I don't know." Correct answers were summed up into a percentage. A hard copy of the questionnaire was distributed to all interns and collected after a short interview. Consent to participate in the study was obtained verbally from participants. The study was conducted in accordance with the Helsinki Declaration and the institutional review board ethics of Jordan University of Science and Technology (JUST).

### Statistical Analysis

Descriptive statistics were used to demonstrate the distribution of demographic information and knowledge about sleep disorders. Chi-squared test was used to compare the sleep knowledge scores between females and males. The results were considered statistically significant if  $p$ -value  $\leq 0.05$ . Statistical Package for the Social Sciences, IBM version 23 (SPSS Inc.; Chicago, Illinois, United States) software was used for data analysis.

## Results

All participants were dental interns with a mean age of  $23 \pm 1$  year. Females represented 59% (52 out of 88) of the sample. The mean score of correctly answered ASKME questionnaire was 12.1 ( $\pm 4.15$ ) questions out of 30 questions, which represents 40%. The mean score for female interns was slightly higher than that of males ( $12.48 \pm 4.5$  vs.  $11.6 \pm 3.6$ ). There was no association between gender and score results. The majority of dental interns (88.6%) correctly answered  $\leq 50\%$  of the questions. The percentage of correct answers obtained for each question in the ASKME survey is summarized in **Table 1**.

## Discussion

The results demonstrated a limited level of knowledge about sleep medicine among Jordanian dental interns, which seems to be attributed to the deficiency of education and training provided during their dental school education. Early diagnosis of patients with sleep disorders is very important in the success of treatment and positive outcomes.<sup>2,15</sup> The results of this study are alarming, as many of these interns will be practicing soon after the end of their internship training period. Both genders failed to correctly answer more than 50% of the questions, despite the slight difference among the two. The absence of statistical difference between both is expected, due to receiving the same curriculum during their dental education.

Similar to this study, knowledge about sleep medicine was low among medical students in selected Saudi Medical Schools,<sup>1</sup> and the mean score of the ASKME questionnaire was  $10.39 \pm 4.44$  out of 30, which is close to the score obtained in this current study. Findings of other studies<sup>4,11,13</sup> also showed the low level of knowledge about sleep medicine and sleep disorders. A direct comparison with this study is not possible, since different kinds of questionnaires were used.

Contrary to the lack of gender difference in ASKME knowledge, sleep medicine knowledge among medical students in seven Egyptian medical faculties illustrated significantly higher scores of knowledge ( $p = 0.0180$ ) for female students (12.3) compared with male students (11.7).<sup>14</sup> It is interesting, however, that our findings also showed higher knowledge scores for female students as in the Egyptian study.

In Jordan's dental education, there are no specific courses in the curriculum that discuss sleep medicine in depth. However, in postgraduate courses such as prosthodontics, students are

**Table 1** The percentage and number of correct answers for each question of the ASKME questionnaire given to dental interns

| No. | Questionnaire   | n (%)     |
|-----|---|-----------|
| 1   | The need for sleep decreases in persons above 50 years of age   | 33 (37.5) |
| 2   | Melatonin is a natural body hormone that typically increases during nighttime hours   | 42 (47.7) |
| 3   | Dream sleep (REM) occurs more during the second half of the night   | 43 (48.9) |
| 4   | Sleeping longer on the weekends is recommended as a regular practice to make up for loss of sleep during the workweek             | 51 (58)   |
| 5   | Newborn infants spend ~16–18 hours per 24-hour period sleeping  | 75 (85.2) |
| 6   | Insomnia is twice as common in older men compared with older women  | 33(37.5)  |
| 7   | A young (preadolescent) child who regularly has trouble getting to sleep at night should be allowed to sleep later in the morning | 24 (27.3) |
| 8   | The typical age of symptom onset for narcolepsy is 40 years or older  | 11 (12.5) |
| 9   | The ability to sleep increases in persons above 50 years of age   | 46 (52.3) |
| 10  | Slow wave sleep is more prominent during the second half of the night   | 30 (34.1) |
| 11  | The amount of slow wave sleep increases in persons above 50 years of age  | 17 (19.3) |
| 12  | Episodes of sleepwalking tend to occur during the last third of the night   | 21 (23.9) |
| 13  | Episodes of REM sleep tend to lengthen throughout the night   | 33 (37.5) |
| 14  | Periodic limb movements during sleep are typically decreased during REM sleep   | 11 (12.5) |
| 15  | Hyperactivity among children can be exacerbated by inadequate sleep   | 40 (45.5) |
| 16  | Among alcoholics in recovery, sleep normalizes within 1 month of alcohol abstinence   | 11 (12.5) |
| 17  | Daytime napping is recommended for patients with difficulty initiating sleep  | 39 (44.3) |
| 18  | Weight loss is often indicated in the treatment of primary snoring or mild obstructive sleep apnea                                | 55 (62.5) |
| 19  | Slow wave sleep is enhanced following daytime exercise  | 51 (58)   |
| 20  | Chronic bed wetting among children responds to treatment with anticholinergic drugs   | 26 (29.5) |
| 21  | Nightmares are more common within the first 2 hours of sleep  | 41 (46.6) |
| 22  | Heart rate, respiration, and blood pressure are more variable during REM sleep compared with non-REM sleep                        | 37 (42)   |
| 23  | Antihypertensive drugs (namely, $\beta$ -blockers) may cause sleeping difficulties as a side effect                               | 45 (51.1) |
| 24  | Early morning awakenings among the elderly are often associated with changes in the timing of their biological rhythms            | 52 (59.1) |
| 25  | Alcohol can be beneficial in reducing the effects of jet lag  | 30 (34.1) |
| 26  | Night shift workers are more likely to fall asleep on the job compared with employees with regular, daytime hours                 | 64 (72.7) |
| 27  | Episodes of sleepwalking commonly occur during REM sleep  | 18 (20.5) |
| 28  | Menopausal women are at higher risk of developing symptoms of sleep apnea than premenopausal women                                | 45 (51.1) |
| 29  | An irregular sleep schedule can increase the incidence of sleepwalking in children  | 35 (39.8) |
| 30  | Symptoms of narcolepsy are related to seizure activity in the brain   | 9 (10.2)  |

Abbreviations: ASKME, Assessment of Sleep Knowledge in Medical Education; REM, rapid eye movement.

taught the treatment modalities for sleep apnea, specifically focusing on oral appliance therapy, in addition to limited topics about sleep medicine taught in physiology through learning the basics of sleep physiology. This signifies the low number of teaching hours in sleep medicine (2 hours) compared with the average total undergraduate teaching time (3.92 hours) in dental schools in Australia and New Zealand<sup>16</sup> or (4.5 hours) in dental schools in the United States.<sup>17</sup>

It is obvious that sleep medicine education has a lower priority in the curriculum of dentistry in Jordan, probably because of time constraints since the dental curriculum is full of many topics that range from basic sciences to advanced clinical courses, justifying for students their lack of time to

search for this topic and other similar important topics that are not included in the curriculum.

Although sleep medicine is not a main concern for dentists in general, it is still quite important for dentists to acquire enough knowledge about it because of their involvement in diagnosing and treating different sleep problems, such as OSA, sleep bruxism, and others.<sup>8,9</sup> At the internship level, sleep medicine is not considered a core educational requirement, while other specialties, such as pediatrics, periodontics, and endodontics, are considered more important.

Possible solutions to overcome this problem include increasing the number of lectures on sleep medicine during preclinical years, incorporating basic sleep science topics into

the curriculum of the clinical years in courses such as oral medicine and oral diagnosis, and integrating sleep history and physical signs examination into clinical examination. Almohaya et al<sup>1</sup> proposed alternative methods to integrate sleep topics into the existing curriculum blocks. They suggested covering sleep-related material in qualifying exams, which encourage the inclusion of sleep medicine in medical education and competency-based learning. The above can be implemented in Jordan's universities, as most medical schools use the same approach.

There are limitations to this study. A larger sample size that considers different demographic information is necessary, with extended focus on practicing dentists and not only interns. In addition, because the ASKME questionnaire scale had only three options (true, false, and I don't know), authors of this study couldn't guarantee that participants were not simply guessing the answers of the questions.

## Conclusions

The findings of this study indicate that sleep medicine education for dental students in Northern Jordan is inadequate. Dentists have a major role in screening, diagnosis, and management of sleep disorders. Poor knowledge in this area can have serious negative effects on the health of dental patients who remain undiagnosed when they visit their dentist. Therefore, it is essential to allocate a larger portion to teaching sleep medicine in dental school curriculums.

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### Conflict of Interest

None declared.

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