



## Association between sleep hygiene awareness and practice with sleep quality among Kuwait University students



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### ABSTRACT

University students are especially vulnerable to poor sleep quality. The aim of this study was to assess students' sleep hygiene awareness and sleep hygiene practices, and evaluate their sleep quality. The association of sleep quality with sleep hygiene awareness and practice was also explored. The median sleep quality score was 7; scores more than 5 indicate poor sleep quality. Hence, a large proportion of Kuwait University students experience a suboptimal level of overall sleep quality according to the Pittsburgh Sleep Quality Index criteria. Sleep hygiene knowledge among university students was relatively inadequate. Most respondents (60.9%) failed to recognize that taking a nap during daytime might be disruptive to sleep. Sleep quality was strongly correlated with sleep hygiene practice (Spearman rank correlation,  $r_s = 0.267, P < .001$ ) but not with sleep hygiene knowledge. Medical students showed poorer sleep hygiene awareness and poor sleep quality compared with students from other universities. Logistic regression analysis showed that female sex (adjusted odds ratio [OR] = 1.8,  $P < .001$ ), college (OR = 2.2,  $P < .001$ ), grade point average (OR = 2.8,  $P = .023$ ), and sleep hygiene practice score were independently associated with sleep quality after adjusting for confounders. In conclusion, a large proportion of Kuwait University students experience poor sleep quality. Therefore, the development of sleep hygiene education programs as an intervention and prevention strategy is recommended. This will improve students' knowledge on the importance of adopting healthy sleep hygiene practices for better sleep quality and enhanced academic performance.

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### Introduction

#### Sleep quality

Sleep quality represents a complex phenomenon. The elements that comprise sleep quality vary from one person to another, and so does their relative importance, making it a highly subjective matter. However, some aspects of sleep quality can be measured quantitatively, such as sleep duration, sleep latency, and number of awakenings.<sup>1</sup>

University students are especially vulnerable to sleep disturbances due to environmental factors, such as reduced parental guidance and freedom to choose their own bedtime, increased academic stress, and increased amount of time spent on studying or extracurricular activities. These factors are associated with a decrease in total sleep duration as well as deterioration in sleep quality.<sup>2</sup> Sleep quality is most commonly affected by stress and anxiety, which are

common among university students.<sup>1,3</sup> Poor sleep quality among university students was found to be significantly associated with female sex and drinking tea.<sup>4</sup> Another study among university students showed that poor sleep quality was associated with older age and being single but not with having children, or caffeine or tobacco use.<sup>5</sup> It was found that sleep hygiene practice was significantly associated with sleep quality, whereas sleep hygiene awareness level was not.<sup>6,7</sup>

A number of studies have shown that poor sleep quality is related to cardiovascular diseases and diabetes.<sup>8–11</sup> Furthermore, some studies concluded that sleep disturbances were significant predictors of psychiatric disorders, such as depression.<sup>3,12</sup> In the meantime, studies on university students showed that poor sleep quality is significantly related to physical and psychological diseases, as well as poor academic achievement and absenteeism.<sup>2,13–15</sup>

#### Sleep hygiene

Sleep quality is affected by *sleep hygiene*, a term that refers to a set of rules that promote better sleep. The principles of sleep hygiene

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vary from one source to another, but there is a list of generally accepted rules. Avoiding strenuous exercise within a short time before bedtime and not going to bed hungry or thirsty are beneficial to sleep quality. In addition, avoiding caffeinated products within 4 hours of bedtime, as well as alcohol, nicotine, and regular use of sleep medication, is also beneficial. Not taking naps during the day is also one of the principles of sleep hygiene. In addition, making sure that the environment is comfortable and suitable for sleeping, avoiding noisy places, setting time to relax before sleeping, and keeping a regular sleep schedule improve sleep quality.<sup>16,17</sup> The distinction between sleep hygiene awareness and sleep hygiene practice is whether or not people put their knowledge or awareness of sleep hygiene into practice. Sleep hygiene practices are recommended for people who participate in activities, consume substances, or sleep in environments that are not suitable for the initiation and maintenance of sleep. However, individual differences have to be taken into account when putting sleep hygiene in practice.<sup>17</sup>

Sleep hygiene is one of the known and validated Behavioral Sleep Medicine treatments, which are non-pharmacological interventions for sleep disorders. It is also one of the principal interventions of Cognitive Behavioral Therapy for Insomnia (CBT-I). Previous studies have shown that CBT-I reduces problems in sleep onset and maintenance by more than 50%.<sup>18,19</sup> Hence, the practice of sleep hygiene behaviors has been indicated to improve sleep quality. However, it is a challenge to make the public and the relevant health care workers aware of the legitimacy of CBT-I as a treatment option and to establish the essential training programs where they are required.<sup>17</sup>

#### Rationale for conducting the study

We were motivated to conduct this study because of the importance of sleep quality to students in particular. A number of studies<sup>2,4,6,7,20,21</sup> concluded that more than 50% of university students reported having poor sleep quality. In addition, a study concluded that young adults had the poorest sleep hygiene awareness.<sup>22</sup> The importance of our study stems from the fact that it focuses on sleep hygiene, which is highly demanded to improve the quality of sleep among a very important subpopulation. In addition, it is the first study of its kind in the Gulf region.

#### Objectives of the study

This study aims to assess students' sleep hygiene awareness and practice using the validated Sleep Hygiene Awareness and Practice (SHAPS) questionnaire scale, to evaluate students' sleep quality using the Pittsburgh Sleep Quality Index (PSQI), and to examine the association between sleep hygiene awareness and practice with sleep quality and sociodemographic characteristics in college students.

## Methods

#### Study design and participants

The aim of this cross-sectional study was to assess students' sleep hygiene awareness and their sleep practices, and to evaluate their sleep quality. This study was conducted during the period September–October 2015. The target population comprised Kuwait University students. To represent the various sectors of education at Kuwait University, 5 of the 15 colleges were randomly selected: Arts, Business Administration, Law, Medicine, and Engineering. The number of students included from each college was proportional to the

number of students in each. Within each college, classes were randomly selected. Overall, the total number of students approached was 1385, of whom 1192 responded at a rate of 86.1% as shown in the following table:

Response and refusal rates of students in the 5 selected colleges:

College	Number approached	Number responded, n (%)	Refusal rate, n (%)
Arts	358	297 (83)	61 (17)
Business Administration	244	227 (93)	17 (7)
Law	255	180 (70.6)	75 (29.4)
Medicine	136	122 (89.7)	14 (10.3)
Engineering	392	366 (93.4)	26 (6.6)
Total	1385	1192 (86.1)	193 (13.9)

#### Sample size determination

The sample size was estimated in the planning stage of the study based on type 1 error of 0.05, test power of 0.90 (ie, type 2 error,  $\beta = .10$ ), and effect size 0.05.<sup>7</sup> The estimated sample size was 950, which was increased by 15% to 1150 to compensate for refusal to participate or incomplete questionnaires.

#### Ethical considerations

The study protocol and data collection instrument were reviewed and approved by the Department of Community Medicine. The Human Subject form and the research protocol were approved by the Ethics Committee of the Health Sciences Center, Kuwait University, and Ministry of Health Joint Committee. Prior to data collection, an informed consent was obtained from each participant and the study objectives were explained. Participants were also assured about confidentiality of collected information and that they were free to decline participation in the study. Permission for conducting the research was obtained from deans of the selected colleges.

#### Data collection and instruments

Each of the 5 members of the research team visited a college during the data collection period. Questionnaires were administered to all available students in the selected classes along with the consent form. Completed questionnaires were collected, and students who reported having any chronic disease or condition that affects sleep quality were excluded.

A self-administered structured questionnaire was developed in English and then translated to Arabic. To guarantee that the variables in the Arabic version provided the same meaning as the English one, a bilingual person translated the Arabic version back to English. The items in the questionnaire were adopted from a number of published articles.<sup>6,7</sup> The validated PSQI<sup>1</sup> was used to evaluate students' sleep quality, whereas SHAPS<sup>16</sup> was used to assess students' sleep hygiene awareness and practice. Regarding the PSQI questionnaire, a validated Arabic version was used (Khaled et al, 2009). The questionnaire consists of 22 questions and is categorized into 3 sections: baseline information, SHAPS questionnaire, and PSQI questionnaire.

#### Scale for assessment of sleep hygiene awareness and practice

The SHAPS questionnaire was used to assess students' sleep hygiene awareness and practice score.<sup>16</sup> To assess sleep hygiene awareness, a score of 1 was given for correct answers. If a student did not respond to a question, a score of 2 is given. A score of 3 is given for incorrect answers. The scale ranges from 12 to 36. High score indicates

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