



Assessment of Sleep Quality and its Relationship to Social Media Use Among Medical Students

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Abstract

Study Objectives This study attempted to assess sleep quality among medical students and examine the relationship between social network use and sleep quality.

Methods Descriptive cross-sectional study, enrolling medical students of King Abdulaziz University and Batterjee Medical College. The Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality.

Results Of the 702 medical students who responded to our survey (410 females and 292 males), more than 66% suffered from poor sleep quality. Approximately 92.3% of the surveyed students used electronic devices before they fell asleep, and 88.4% used these devices for social networking purposes. Female students were found to suffer more than male students, and they also reported spending more time on social networking sites before sleeping ($p = .006$).

Conclusion This study suggests that students who reported poor sleep spent an average of 64.38 min on social networking sites before sleeping; this duration was negatively associated with medical students' sleep quality.

Keywords Sleep quality · Medical students · Social media use

Introduction

Sleep is a physiological process that is important for mental and physical health and quality of life [1, 2]. Sleep is important for learning and memory consolidation [3, 4]. Adequate sleep leads to effective learning behavior and minimizes human error [5, 6]. A study in the USA showed that sleep difficulties in university students are twice the rate as that in the general population [7]. Regional studies in Saudi Arabia showed that poor sleep quality is common in medical students [6, 8, 9].

Sleep deprivation can produce depression- or anxiety-like symptoms, including poor mood, irritability, low energy, poor judgment, and other signs of psychological dysfunction [10–14], and impact cognitive functions and alertness [6, 15].

In fact, one report demonstrated that sleep-deprived students performed worse on attention, memory, and problem-solving tasks than their peers who regularly got a good night's sleep [16, 17]. Furthermore, sleep has strong links with the study and practice of medicine, as it affects the quality of patient care [18–23]. Many studies have demonstrated a correlation between poor sleep and low academic performance among students [24, 25] and medical students [19].

Social networks have substantially expanded in recent years, with over half of adults worldwide reportedly using social media platforms [26]. Fifty-six percent of the US population has a profile on at least one social networking site, and the number of individuals using social networks has increased from 8% in 2005 to 73% in 2013 [27]. The term pathological technology use or problematic Internet use, an individual's inability to control his or her use of the Internet, causes marked distress and/or functional impairment and has been described in the psychological literature [28, 29]. Medical students' sleep quality may be influenced by social network use, considering its pervasiveness. According to one report [30], 98.9% of medical students used online social networks, and another study [31] found that 12.8% of resident medical staff used Facebook, compared with 64.3% of medical students. Prior reports demonstrated a relationship between

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overuse of electronic media and sleep disorders [18, 27]. Other data showed an association between Facebook dependence and poor quality of sleep [32]. A study at the Gulf Medical University showed that students who used social networking sites had poorer sleep quality than students who did not [33]. Another study at the University of Adelaide in Australia showed that one in five adolescents reported bedtime delay because of electronic media usage and that pathological social media users reported significantly more sleep problems than nonpathological users [34]. In addition to these findings, sleep is related to daytime functioning, working memory, mood, and students' academic performance, and a lack of it interferes with their interpersonal interactions [35, 36]. Thus, considering that social networks are a significant part of many individuals' lives, in this study, we aim to examine the influence of social networks on medical students' sleep quality to help them better manage their routines. We hypothesize that medical students who spend more time using social networks will have poor sleep quality.

Methods

Study Design This cross-sectional study was carried out at the Faculty of Medicine at King Abdulaziz University and Batterjee Medical College. Ethical approval was obtained from the Committee of Ethics and Research at King Abdulaziz University, Faculty of Medicine. A self-report printed questionnaire that included items on socio-demographic data, sleep routines, and the Pittsburgh Sleep Quality Index (PSQI) was distributed by the research group throughout the school campuses in a group setting to recruit medical students. Participants volunteered to join the study.

Study Population Participants were medical students from the Faculty of Medicine at King Abdulaziz University and Batterjee Medical College, Jeddah, Saudi Arabia.

Dependent Variable Sleep quality was measured by the Pittsburgh Sleep Quality Index (PSQI) [37], which assesses subjective sleep quality, latency, duration, efficiency, disturbances, use of sleep medication, daytime dysfunction, and perception about the importance of sleep. This scale was devised to provide a standardized measure of sleep quality. It quantifies the quality of participants' sleep obtained over the previous month using 19 self-assessed items, grouped into seven components and weighted from 0 to 3. The overall score ranges from 0 to 21, with higher scores indicating poor sleep quality. Individuals scoring less than five are considered good sleepers. An overall PSQI score > 5 was considered as a cutoff. The PSQI's validity and reliability were obtained [37].

Independent Variables These comprised medical students' demographic characteristics, including age and gender, and factors affecting sleep quality, including year of study and electronic device usage for social media before sleep.

Statistical Methodology This study was analyzed using IBM SPSS. Simple descriptive statistics are used to define the characteristics of the study variables through a form of counts and percentages for the categorical and nominal variables, while continuous variables are presented by means and standard deviations. To establish a relationship between categorical variables, this study used the chi-square test. An independent *t* test and one-way ANOVA were used to compare means of more than two groups. Lastly, a conventional *p* value < 0.05 was the criteria to reject the null hypothesis.

Results

The estimated total number of medical students at the Faculty of Medicine at King Abdulaziz University and Batterjee Medical College is 1500 students. A total of 702 medical students (410 female and 292 male), or 46.8% of the total medical student population, responded to the study questionnaire. Participants' mean age was 21.34 years (SD = 1.99; Table 1). Of these, 246 were from the basic years (second and third years), and 456 were from the clinical years (fourth to sixth years). A significantly higher number of medical students were poor sleepers: 67.1% (*n* = 471) had poor sleep

Table 1 Socio-demographic participant data

Variables	Frequency (percent)
Gender	
Male	292 (41.6)
Female	410 (58.4)
Total	702 (100)
Marital status	
Married	28 (4.0)
Single	671 (95.6)
Total*	699 (99.6)
Phase	
Basic	246 (35.0)
Clinical	456 (65.0)
Total	702 (100)
Medical school	
KAU	523 (74.5)
Batterjee	179 (25.5)
Total	702 (100)

KAU King Abdulaziz University

* Total < 702 due to question left unanswered by some students

quality, and only 32.9% ($n = 231$) were found to be good sleepers. According to the global distribution of PSQI scores, the majority of the study population falls into the poor sleep quality category, with a mean of 7.17 ($SD = 3.14$), a mean of sleep latency in minutes of 34.5 ($SD = 35.8$), and a mean of 5.71 h ($SD = 1.66$) for the average sleep duration (actual sleep time) of participants per day. A significantly greater number of female students (71.22%) had poor sleep quality than their male counterparts (61.3%; $p = .006$). A larger number of basic-year students had poorer sleep quality (73.58%) than clinical-year students (63.6%; $p = .007$; see Table 2).

The study revealed that 92.3% of the sample population used electronic devices before they fell asleep, and 88.4% of them used these devices for social media. On average, they spent 56.68 min surfing social media sites before they slept ($SD = 51.6$).

A significant relationship between duration of electronic device use before sleep and sleep quality was observed. The mean duration of electronic device use among poor sleepers (mean = 64.38 min, $SD = 56.64$) was significantly longer than that of good sleepers (mean = 40.77 min, $SD = 34.17$; randomized t test, $p < .05$, 95% CI 15.48–31.74). Moreover, our sample of students with fewer hours of sleep used social networking sites for longer than those with more sleep, and based on the PSQI categorization. A negative correlation was found between sleep quality (duration) and electronic device duration of use ($p < 0.05$; Fig. 1). The relationship between sleep latency, which is the actual time spent in bed before sleep, and the duration of electronic device use for social media before sleep were significant. A positive correlation was found between sleep latency and duration of electronic device use ($r = .246$, $n = 675$, $p < .05$; see Fig. 2).

Discussion

Sleep is considered a crucial aspect of individuals' lives as it contributes to their mental and physical well-being; thus, good

Table 2 Sleep quality by gender and medical school year*

Variables	PSQI		<i>p</i> value
	Good sleep (<i>N</i>)	Poor sleep (<i>N</i>)	
Gender			
Male	38.7 (113)	61.3 (179)	.006
Female	28.8 (118)	71.2 (292)	
Phase			
Basic	26.4 (65)	73.6 (181)	.006
Clinical	36.4 (166)	63.6 (290)	

PSQI Pittsburgh Sleep Quality Index, *N* numbers

*The data are presented as percentage unless otherwise specified

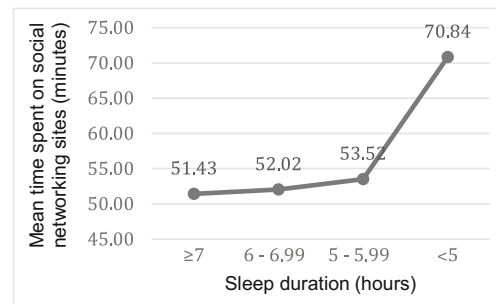


Fig. 1 Illustrates the negative correlation between sleep quality (duration) and electronic device duration of use. One-way ANOVAs were found to be significant ($p < .05$)

sleep quality is vital for medical students, since it may affect the quality of patient care they provide. Sleep is affected by a variety of internal and external factors, such as age, gender, marital status, socioeconomic status, grade point average, year of study, living and sleeping conditions, smoking, coffee drinking, exercise, anxiety, and use of sleep medication, as evidenced by prior detailed studies [27].

Sleep is important for learning and memory consolidation [16, 38] and is associated with academic performance [16, 39].

We assessed the sleep quality of 702 medical students from two medical schools in Jeddah, Saudi Arabia. The findings revealed that a significant number of medical students suffered from poor sleep quality (67.1%; $n = 471$). This finding is consistent with those of local and regional studies ranging between 30 and 74.2% [6, 8, 33]. Other studies conducted in Taiwan, the USA, and the United Arab Emirates also indicate that most college students suffer from sleep disturbances [2, 33, 40].

The mean of PSQI score in our study was 7.17, which is somewhat higher than the mean of 6.79 reported in another local study [6]. In comparison with other local studies, sleep duration in hours for this study was 5.7, as opposed to 4.9 [6, 8, 9]; sleep latency in minutes was 34.5, as opposed 40.27 [9] and 24.35 [6]. We did not appreciate a significant difference in sleep quality between groups of users of electronic devices

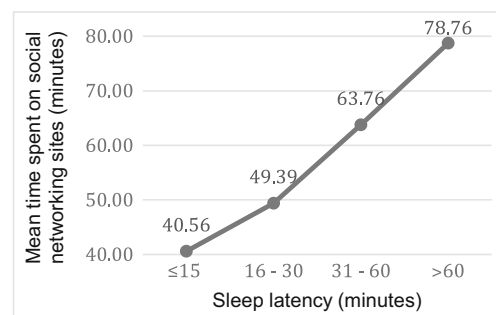


Fig. 2 Illustrates the positive correlation between sleep latency and duration of electronic device use for social media before sleep. One-way ANOVAs were found to be significant ($p < .05$)

(social network users and nonusers), which we attribute to the high percentage of medical students using electronic devices before sleeping (92.3%). Nonetheless, we found that the mean time of electronic device use, including social networks, was greater in the group with poor sleep quality than in the group with good sleep quality. Students who reported having poor sleep spent an average of 64.38 min online before falling asleep. Compared with their male counterparts, significantly more female medical students experienced poor sleep quality and spent more time on social networking sites.

Recently, social networks have grown exponentially, with an increasing number of medical students as users. Hence, we focused on assessing medical students' sleep quality and the impact of social networking [35, 36, 41, 42]. According to a study conducted in the southeastern USA, both medical students and residents use social networks, especially Facebook. This finding suggests that evidence-based data are crucial to informing the Accreditation Council on Graduate Medical Education dialogs, especially when considering online tools such as social networking sites in preparing future physicians [27]. Many studies have been published worldwide regarding the impact of computer use on sleep patterns [32, 34, 36, 41, 43–46], some of which have revealed that electronic device and social media use is related to sleep disturbances and poor sleep quality [32, 34, 44].

The biggest limitation of this study is that it relied only on self-reported data. In addition, errors may have been introduced due to the use of the PSQI, which is a subjective measure of sleep quality. Moreover, the study sample is not truly representative of the overall population of medical students around the world.

Conclusion

In conclusion, this study suggests that most medical students at King Abdulaziz University and Batterjee Medical College have poor sleep quality. Females and students in the basic years of their program experience more sleep quality issues than males and students in clinical years. A high percentage of students used social networks before sleep and spent a long time (nearly an hour) on this activity. We conclude that using social networks does not influence sleep quality per se, but the duration of usage might, such that the more time students spend on social networks, potentially lead to poorer quality of sleep. Based on our findings, we recommend conducting awareness campaigns on the importance of good sleep, its influence on students' performance, and ways to improve its quality. Moreover, further studies are needed in order to obtain conclusive answers and better understanding regarding the impact and correlation between usage of social networking sites at bed time and poor sleep quality.

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Compliance with Ethical Standards

Ethical approval was obtained from the Committee of Ethics and Research at King Abdulaziz University, Faculty of Medicine.

Conflict of Interest We affirm that the article is original, is not under consideration by another journal, and has not been published. No actual or potential financial or other conflict of interest exists relating to the submitted manuscript. The author transfers copyright in the event the work is published.

Abbreviations KAU, King Abdulaziz University; PSQI, Pittsburgh Sleep Quality Index; SD, standard deviation

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