Original Research Article

Sleep, Stress Management, and Internet Use among Nursing Students in Saudi Arabia

Abstract

Background: Good sleep quality and quantity are crucial for ensuring a successful academic life for university students. Stress is a part of university students' academic life. Internet addiction is particularly a problem among young adults and undergraduate students.

Method: The study explored sleep patterns, stress management, and Internet use in 114 nursing students from a nursing college in Saudi Arabia. A self-administered questionnaire collected data on sociodemographic characteristics, sleep patterns, stress management, and Internet use. Data were collected over two weeks at the beginning of the spring semester in 2018.

Results: Results showed that only 16.3% of the students slept for ≥8 hours daily. The main cause of students' stress was exams (89.4%) and 38.5% used the Internet for >6 hours daily.

Conclusions: Further studies are recommended to assess the correlation of university students' sleep patterns with academic performance, effects of different coping strategies to alleviate stress, and Internet addiction.

Keywords: Sleep patterns, stress management strategies, Internet use

Introduction

Sleep is considered a vital aspect of cognitive health restoration, particularly for university students and academic personnel; moreover, it is important for successful academic performance and personal functioning in university students (Ala et al., 2013). Sleep affects information processing and retention, learning ability and capability, and memory recall (Schlarb, Friedrich, et al., 2017). In addition to the number of hours spent sleeping, the time at which people sleep is crucial for adequate daytime functioning (Schlarb et al., 2019; Schlarb et al., 2017). Disordered sleep is considered a complex condition and has a significant impact on physical and mental health, cognition, learning, and overall wellbeing (Liddiard et al., 2017). Uninhibited

Up to 60% of all college students suffer from poor sleep quality, and a small number of them meet all criteria of insomnia and its related disorders (Schlarb, Friedrich, et al., 2017). Students' enrollment at universities is associated with numerous factors, including academic obligations and requirements, a new and exciting social atmosphere, and changes in sleeping circumstances, which contribute to changes in sleep hours and habits (Qidwai et al., 2010). Most sleep specialists concur that although adults require from 6–8 hours of sleep daily, sleep patterns in young adults differ from those of their adult counterparts in several ways including the need for long sleep duration (Gray & Watson, 2002).

University students are at high risk of developing sleep disorders such as difficulty falling asleep, insomnia, waking frequently at night, and nightmares. Poor sleep quality hurts activities of daily living and academic performance in university students (Schlarb, Friedrich, et al., 2017; Schlarb et al., 2012).

According to Thawabieh and Qaisy (2012), psychological well-being is negatively related to levels of stress among university students, and the use of positive coping strategies for stress exerts significant positive effects on psychological health. Stress is considered one of the main concerns affecting university students, as they experience academic stress resulting from exposure to different methods of teaching and learning, varying academic requirements, and unique social and professional relationships with peers and faculty members. In addition, stress could prevent university students from focusing and enjoying learning, behaving cordially, and using their special abilities (Thawabieh & Qaisy, 2012).

Cumulative and unresolved stressors contribute to anxiety, disappointment, depression, substance abuse, and violence. Stress has become common and is considered a critical issue in university students; however, it can be controlled via stress management strategies (Chen et al., 2009).

The Internet is a particularly significant resource for university students' education and entertainment. Numerous academic institutions and universities provide Internet access to their students and faculty members. Moreover, there are various learning materials entrenched on the Internet, and students can access information quickly (Hossain et al., 2016). Many researchers have shown that university students use the Internet to gather information; send and receive emails or texts; chat; download music, movies, or images; shop; and play games (Alshammari, 2014).

Internet addiction, or excessive use of the Internet, is a worldwide problem that emerged with the rapid development of advanced technology. It is an issue in all age groups, but particularly among teenagers and undergraduate university students. Recently, high levels of Internet overuse, which is considered a type of behavioral addiction, have been reported in university students (Alshammari, 2014). Moreover, adolescents who engage in Internet overuse are at a high risk of serious psychological disorders such as depression (Ko et al., 2012).

In addition, university students and their physical and mental health are of concern and the focus of global attention, in particular for nursing students, as the role of student nurses in health maintenance and promotion is of prime significance. Among overall health promotion services, nurses play a specific role: they are often expected to be role

models for their patients. Nurses serve as role models of health-promoting lifestyles and as leaders for health promotion in communities (Al-Kandari & Vidal, 2007). Furthermore, teaching about a healthy lifestyle is one of the most effective techniques of fostering health promotion among nurses. Therefore, this study aimed to explore sleep patterns, stress management, and Internet use among nursing students.

Research Question

What are nursing students' sleep patterns, stress management strategies, and patterns of Internet use?

Methods

Research Design

A quantitative descriptive design was conducted to accomplish the aim of the study.

Setting

The study was conducted at King Saud bin Abdulaziz University for Health Sciences

Sample

The study sample included all Level-4 female nursing students (N = 114) completing their second academic semester. We chose to assess Level-4 students' practices, as they are at the beginning of their university careers. No information related to healthy sleep patterns, stress management strategies, or Internet addiction hazards was provided to the students. Data were collected during the spring semester of the 2017-2018 academic year.

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Comment [A2]: Any specific reasons for selecting only female students?

Inclusion Criteria

The inclusion criteria were being Level-4 nursing students, attendance at a lecture hall at the time of data collection and consenting to participate in the study. The exclusion criterion was nursing students at other levels.

Data Collection Tool

Following an extensive review of the literature and related research papers, the researcher developed a structured self-administered questionnaire to collect data regarding student practices related to sleep patterns, stress management strategies, and Internet use. The questionnaire included four sections as follows.

Section I: Sociodemographic Characteristics

Section 1 collected data regarding sociodemographic characteristics including age, marital status, and place of residence.

Section II: Sleep Pattern Assessment

This section included twelve statements designed to clarify students' sleep patterns, and measured the number of hours spent sleeping, sleep quality, sleep disorders, the presence of fixed sleep and wake times, special rituals at bedtime, and afternoon naps (responses: usually, sometimes, and rare).

Section III: Stress Management Assessment

Comment [A3]: What is its meaning and why chosen only level-4 nursing students? Please Clarify.

Comment [A4]: What about students' current mental health status and psychological health-related issues such as depression and other psychiatric or psychological problems? Please explain about it.

Comment [A5]: What about economical status of the participants?

This section assessed students' stress management strategies and included three subsections. **a)** Causes of stress (12 items). Participants were required to choose one or more of the twelve items that caused them stress. **b)** Experiences related to stress (10 items). Examples of these items are as follows: "I maintain meaningful and positive relationships with others," "I spend time with a close friend whenever possible," and "I take some time off to relax each day" The responses were categorized into usually, sometimes, and rarely. **c)** Different strategies used to manage stress (15 items). These items included dancing, reading, praying, eating, or crying. Participants were required to choose one or more responses from the list.

Section IV: Internet Use Assessment

This section included two parts. **a)** One statement to identify the number of hours of Internet use per day (including Facebook, Twitter, WhatsApp, Messenger, searching, chatting, watching movies, etc.). The participants were required to choose the total number of hours of daily Internet use from the following: 1-2, 3-4, 5-6, or more than 6 hours. **b)** Ten statements assessing students' patterns and effects of Internet use including interference of the Internet with students' sleeping hours, studying hours, academic performance, eating and nutrition, effects of the Internet on stress and mood, Internet use hours exceeding intended use,

and going online before completing other tasks. Students responded "Yes" or "No" based on their experience.

The validity of the questionnaire was evaluated via revision conducted by a panel of seven nursing faculty members in psychiatric, medical-surgical, and community health nursing. The reliability of the questionnaire was assessed by using test-retest before data collection, and Cronbach's α was .901. A pilot study was conducted with ten students to assess the clarity and applicability of the questionnaire. The necessary revisions were then completed, and these ten students were excluded from the main study. Data were collected over two weeks at the beginning of the spring semester in 2018.

Ethical Considerations

Ethical approval for the study was obtained from the IRB committee at the King Saud Bin Abdul-Aziz University for Health Sciences and King Abdulla International Medical Research Center (approval No H-18-419812-114561). The participants who agreed to take part in the study were requested to sign an informed consent form, which incorporated detailed information regarding the research aims and objectives, the voluntary nature of participation, and their rights to withdraw from the study at any time throughout the study process without penalty or interference with their studies or grades. Confidentiality was ensured throughout the

study process, and the students were assured that all data would be used only for research purposes.

Data Collection Procedure

The questionnaire was distributed to all nursing students in a lecture hall, during their free time, and according to student availability. Each questionnaire took 20–30 minutes to complete, and the researcher was available to provide clarification and answer any questions.

Statistical Analysis

SPSS version 22 was used to analyze the students' data. Means and standard deviations were used to report continuous variables, and frequencies and percentages were presented for categorical variables.

Results

A total of 104 students participated in this study. The results showed that students' ages ranged from 18–23 years. Most of them (78.8%) were 20 years of age or older, while the remaining 21.2% were younger than 20 years. Additionally, all students were single and lived in Riyadh, Saudi Arabia.

The distribution of the number of hours that students usually slept showed that the proportion of those who slept for 5–5 hours per night was the largest (47%). Approximately one-third of participants (36.5%) slept for 6–7 hours per night and only 16.3% of students reported that they slept for ≥8 hours per night.

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Table 1 presents the distribution of students' sleep patterns. The results showed that more than half of the students usually took a nap in the afternoon or early evening, and an equal number usually felt that they had not slept enough almost every morning. Moreover, most students reported that they rarely went to bed at a fixed time each night or early every night.

The same table also indicates that less than half of the students sometimes felt that they had slept for long enough, and an equal number sometimes felt exhausted when they woke up in the morning. Additionally, more than a third of the students stated that they usually enjoyed a good night's sleep, and a similar number usually woke up early every morning. Moreover, some students experienced sleeping difficulties and followed special rituals at bedtime.

[Table 1 here]

Table 2 shows the experience of stress and its causes among the students. The results indicate that the main cause of students' stress was exams, followed by the burden of studying, poor time management, and the burden of the clinical setting. The least common cause of their stress was psychological problems, followed by social relationships and financial problems.

[Table 2 here]

The same table shows that the majority of the students usually believed that their lives had a purpose and looked

forward to the future. In addition, more than half of the students usually took time off to relax each day, maintained meaningful and fulfilling relationships with others, and felt content and at peace with themselves.

This table also indicates that more than a third of students spent time with close friends whenever possible and had special strategies to relieve their stress. Additionally, small proportions of students sometimes believed that their lives had a purpose and looked forward to the future. Moreover, less than half of the students rarely found it easy to show or share their emotions and feelings, while an equal proportion rarely believed that their lives had a purpose. Further, a small proportion rarely took time off to relax every day, look forward to the future, or felt content and at peace with themselves.

Table 3 illustrates the distribution of students' stress management strategies. The results showed that the most common strategy used by students to manage stress was Internet use, followed by reading the Quran, going to bed or sleep, eating, and watching TV or movies. Further, more than half of the students chatted with friends, listened to music, and cried to relieve stress, while the smallest proportion of students managed stress through housework or chores and cooking.

[Table 3 here]

Figure 1 illustrates the distribution of the number of hours during which students used the Internet. The results

showed that very few students spent 1–2 hours using the Internet daily, while more than a third used the Internet for 5–6 hours or >6 hours daily. In addition, less than a quarter of students spent 3–4 hours using the Internet daily.

[Figure 1 here]

Table 4 shows the distribution of students' purpose and patterns of Internet use. The results showed that similar proportions of students reported that their Internet use interfered with their sleep and that they usually stayed online longer than intended. Additionally, more than half of the students used the Internet before performing any other tasks. Moreover, most students reported that their Internet use interfered with their studies; stated that they felt satisfied, happy, and in a good mood while online; and using the Internet as a stress-relieving strategy. Further, more than half of students found life without the Internet boring, empty, and joyless; however, more than a third stated that their Internet use interfered with their academic performance and tried to conceal from others the number of hours they spent online.

The same table shows that the proportion of students who used the Internet for social interaction was the largest, followed by those who used it for academic reasons, to send e-mails, and to listen to the Quran. The lowest proportion of students used the Internet to play games and read the news.

[Table 4 here]

Discussion

Sleep patterns exert considerable effects on physical health, mood stability, and cognitive functioning. The present study showed that approximately half of the nursing students lacked sleep, as they slept for only 4–5 hours per day, while most adults require 7–9 hours of sleep daily (Cappuccio et al., 2010). Consequently, more than half of the students felt that they had not slept for long enough almost every morning, and approximately half felt tired and exhausted when they woke up in the morning. Additionally, only small proportions of the students usually slept for a sufficient number of hours, went to bed early every night, and felt relaxed and well upon waking up in the morning.

These results are consistent with those reported by Zeek et al. (2015), who found that more than half of their participants reported sleeping for ≤6 hours each night and felt tired upon waking almost every day. The results are also consistent with those of Ali et al. (2013), who stated that, because of various academic requirements, students could not go to bed early or sleep for long enough to perform well during the day. Further, the findings support those of Scharb, Claßen et al. (2017), and numerous other previous studies (e.g., Nadorff et al., 2011; Taylor et al., 2011) which indicated that students showed symptoms of impaired subjective sleep quality. Recently, Lawson et al. (2019)

reported results indicative of poor sleep quality among university students.

In contrast, the present results are inconsistent with those of Gilbert and Weaver (2010) which indicated that participants slept for an average of 7.2 hours; however, 70% reported poor sleep quality and poor sleeping habits, which may be attributed to the change in lifestyle since 2010 and being online for a long time, especially at night.

Stress prevents college students from focusing on and enjoying learning, behaving cordially, and exposing their unique abilities. The present results suggested that exams, the burden of studying, poor time management, and the clinical setting were the main causes of students' stress. In addition, most students usually believed that their lives had a purpose, looked forward to the future, and felt content and at peace with themselves, which could be attributed to the fact that junior university students are at the beginning of adult life; have visions of the future; are full of hope, energy, and have many plans to achieve; and are exposed to open university communities wherein they can create meaningful relationships with peers, friends, and faculty members. In addition, the students frequently used eating, praying, reading the Quran, online interactions, and watching TV or movies as stress relief and management strategies.

The current results were consistent with those of Bukhsh et al. (2011) who showed that most of the university students

in their study reported that they received support from friends and family members when stressed and watching TV or movies and staying occupied with various activities of interest, reduced their stress. Similar results were reported by Bhargava and Trivedi (2018), who showed that students coped with stress by talking to family members, watching movies, playing games, and using the Internet; in contrast, the findings of the Bhargava and Trivedi (2018) study contradict the present findings regarding the causes of students' stress, as they showed that the main stressors for university students were psychological, financial, and career-related.

The results of many other studies are congruent with those of the present study, in that they demonstrated that academic burden and having numerous assignments to complete were the most frequently reported causes of student stress, and the main coping strategies were going to a movie or dancing (Agolla & Ongori, 2009; Bakhsh & Sayed, 2015; Mason, 2019; McGonigal, 2015). Furthermore, the findings of Ab Latif and Mat Nor (2019) are consistent with the results of the present study and showed that nursing students perceived heavy workload as one of their major stressors. Shdaifat et al. (2018) supported the present study and found that students reported that the most common sources of stress were assignments and workload, teachers and nursing staff, and the stress of taking care of patients.

The Internet is currently used for academic achievement, social and personal interactions, commercial and political purposes, and entertainment. The present study demonstrated that the proportion of students who spent >6 hours using the Internet daily was the largest. This interfered with their sleeping and studying, and they used the Internet for longer than intended; moreover, they felt satisfied and happy, and we are in a good mood when online and used the Internet before performing any other tasks. In addition, large proportions of students used the Internet for social interactions, academic purposes, sending emails, and listening to the Quran, while few used it to play games or read the news. This result could have occurred because students were required to submit numerous assignments to meet academic requirements and used the Internet to gain knowledge easily; in addition, being a woman in an Islamic country could have made them less involved in playing Internet games or reading the news.

The findings of Hossain and Rahman (2017) supported the results of the present study and indicated that the Internet is a crucial tool used by students for education and entertainment. The current results were also in line with those of Ruzgar (2005), which showed that saving time and ease of work were the main reasons for Internet use among university students. Moreover, a study conducted at engineering colleges in the states of Punjab and Haryana in India showed that all respondents used the Internet frequently

(Kaur & Manhas, 2008), and Hossain and Rahman (2017) found that most respondents used the Internet almost every day for academic, communication, entertainment, and financial purposes. Numerous other studies have demonstrated that university students' Internet use was mainly for academic, educational, research, social media, or entertainment purposes, and the duration of Internet use ranged from 1 to 2 hours daily (Almarabeh et al., 2016; Chhachhar et al., 2013; Mostafa, 2011; Pempek et al., 2009).

In contrast, the findings of a study in Bangladesh contradicted the present results and showed that several factors, including the high cost of Internet connectivity, unavailability of power, and infrastructure concerns, obstructed Internet use (Sujatha, 2010). This may be explained by the fact that in Saudi Arabia, where economic and financial conditions are good, the reasonable cost of Internet connectivity proportionate to an individual's income and the availability of smartphones, laptops, and iPads have made long-term Internet use available and easily accessible. In the same context, Apuke and Iyendo (2018) stated that the rationale for internet utilization for academic and research purposes stems from the benefits derived, such as free access to online journals, magazines, and other information resources; moreover, Ali et al. (2013) reported that the main purpose of using the Internet was for study, recreation, relaxation and using social networking sites.

Conclusion

The present study showed that most students lacked sleep and felt exhausted upon waking. Regarding stress, exams and the burden of studying were the main causes of student stress, which could be relieved via different stress management strategies. Concerning Internet use, a considerable proportion of students spent >6 hours per day using the Internet, which interfered with their sleep and study, and they used the Internet mainly for academic, social media, or entertainment purposes.

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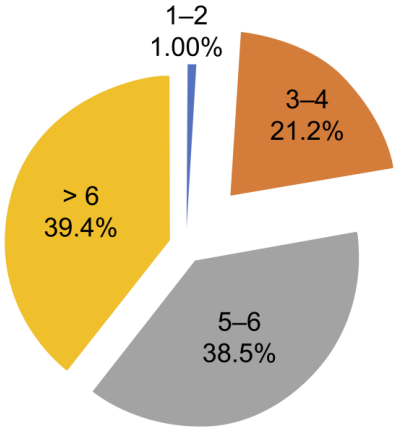
612 **Figure legend**

613 **Figure 1.** Numbers of hours during which students used the

614 Internet



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618 **Table 1**

619 *Distribution of students' sleep patterns*

Sleep pattern	Students (*N* = 104)					
	Usually		Sometimes		Rarely	
	n	%	*n*	%	*n*	%
1. I sleep for long enough.	10	9.6	48	46.2	46	44.2
2. I enjoy a good night's sleep.	38	36.5	33	31.7	33	31.7
3. I go to bed at a fixed time every night.	13	12.5	16	15.4	75	72.1
4. I go to bed early every night.	4	3.8	17	16.3	83	79.8
5. I wake up early every morning.	40	38.5	44	42.3	20	19.2

6. I take a nap in the afternoon or early evening.	64	61.5	23	22.1	17	16.3
7. I do not feel that I have slept for long enough almost every morning.	64	61.5	26	25.0	14	13.5
8. I do not have a good night's sleep, as I wake up once or twice at night.	25	24.0	37	35.6	42	40.4
9. I feel relaxed and well when I wake up every morning.	17	16.3	49	47.1	38	36.5
10. I feel exhausted when I wake up every morning.	30	28.8	48	46.2	26	25.0
11. I have sleeping difficulties/problems.	22	21.2	36	34.6	46	44.2
12. I have special bedtime rituals	35	33.7	27	26.0	42	40.4

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Table 2

Distribution of students' causes and experience of stress

Cause of stress	**Students (*N* = 104)**	
	n	**%**
1. Burden of studying	89	85.58
2. Different educational setup	50	48.08
3. Assignments	78	75.0
4. Clinical setting	85	81.73
5. Exams	93	89.42

6. Poor time management	88	84.62
7. Teacher-student relationships	78	75.0
8. Competitive university environment	76	73.08
9. Career growth	46	44.23
10. Social relationships	34	32.69
11. Financial issues	35	33.65
12. Psychological problems	20	19.23

Stress experience	**Students (*N* = 104)**					
	Usually		**Sometimes**		**Rarely**	
	n	**%**	***n***	**%**	***n***	**%**
1. When I feel stressed, I discuss my problems and concerns with people close to me.	38	36.5	27	26.0	39	37.5
2. I take time off to relax each day.	55	52.9	43	41.3	6	5.8
3. I believe that my life has purpose.	84	80.8	15	14.4	5	4.8
4. I maintain meaningful and fulfilling relationships with others.	71	68.3	26	25.0	7	6.7
5. I look forward to the future.	85	81.7	14	13.5	5	4.8
6. I spend time with close friends whenever possible.	51	49.0	39	37.5	14	13.5
7. I feel content and at peace with myself.	64	61.5	38	36.5	2	1.9
8. I find it easy to show/share my emotions and feelings.	13	12.5	44	42.3	47	45.2

9. I have special strategies to relieve my stress.	44	42.3	37	35.6	23	22.1
10. I seek help and counseling when needed.	36	34.6	30	28.8	38	36.5

Note. More than one answer was chosen for causes of stress

Table 3

Distribution of the students' stress management strategies

Strategy	Students (*N* = 104)	
	n	**%**
1. Eating	65	62.5
2. Dancing	34	32.7
3. Shopping	36	34.6
4. Reading	37	35.6
5. Physical exercise	46	44.2
6. Praying	64	61.5
7. Reading the Quran	70	67.3
8. Internet use	71	68.3
9. Speakingor chatting with friends	58	55.8
10. Going to bed/sleeping	66	63.5
11. Housework/chores	31	29.8
12. Cooking	31	29.8
13. Watching TV or movies	65	62.5
14. Listening to music	54	51.9
15. Crying	55	52.9

Note. More than one answer was chosen

Table 4

Distribution of the purposes and pattern of students' internet use

Purpose of internet use	Students (*N* = 104)	
	n	**%**
1. Academic (topics, information gathering, and assignments)	89	85.58
2. Social interaction	100	96.15
3. Online shopping	53	51.0
4. Emailing	67	64.42
5. Reading the news	18	17.31
6. Watching movies and videos	43	41.35
7. Playing music	52	50.0
8. Listening to the Quran	65	62.5
9. Playing games	12	11.54
Pattern of Internet Use	**Students (*N* = 104)**	
	n	**%**
1. My Internet use interferes with my sleep.	69	66.3
2. My Internet use interferes with my study	79	76.0
3. My Internet use interferes with my academic performance.	40	38.5
4. My Internet use interferes with my eating habits.	52	50.0
5. I usually stay online longer than intended.	69	66.3
6. I use the Internet before performing any other tasks.	65	62.5

7. Life with no Internet is boring, empty, and joyless.	54	51.9
8. I try not to tell others how many hours I spend online.	37	35.6
9. I feel satisfied and happy and am a good mood when I am online.	67	64.4
10. Being online relieves my stress	55	52.9

Note. More than one answer was chosen