



The Relationship Between Internet Addiction, Loneliness and Sleep Quality Among Students of Nursing and Midwifery Faculty

Fereshteh Najafi ¹, Fatihe Kerman Saravi ^{1,*}, Ali Navidian ¹ and Sobhan Malek Raeisi ²

¹Community Nursing Research Center, Zahedan University of Medical Sciences, Zahedan, Iran

²Scientific Research Center, Zahedan University of Medical Sciences, Zahedan, Iran

*Corresponding author: Assistant Professor, Community Nursing Research Center, Zahedan University of Medical Sciences, Zahedan, Iran. Email: f_kermansaravi@yahoo.com

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Abstract

Background: Internet abuse has had a growing trend among medical students. This practice incurs negative consequences on many aspects of an individual's life, including academic, professional, and communicative status as well as loneliness and sleep quality. These consequences have adverse effects on the quality of patient care and safety, as well as physical and mental health of students.

Objectives: The aim of this study was to investigate the relationship between Internet addiction and loneliness, and sleep quality among students of the Nursing and Midwifery Faculty.

Methods: This cross-sectional study was conducted on 216 students of Zahedan Nursing and Midwifery Faculty during year 2016. The study population was selected through the stratified random sampling technique. The data were collected using the demographic form, Young's Internet Addiction Test, University of California Los Angeles Loneliness Scale, and Pittsburgh Sleep Quality Index. Data analysis was performed using independent *t*-test, analysis of variance (ANOVA), multivariate regression, and Pearson correlation coefficient in SPSS-20 software.

Results: According to the results, 62.1%, 10.3%, and 1% of the students had mild, moderate, and severe Internet addiction, respectively. The mean scores of Internet addiction, loneliness, and sleep quality were 37.92 ± 13.32 , 44.11 ± 9.63 , and 10.7 ± 5.29 , respectively. Furthermore, there was a significant difference between males and females in terms of the mean Internet addiction and sleep quality ($P < 0.001$ and $P = 0.02$, respectively). Additionally, sleep quality showed a significant correlation with Internet addiction ($r = 0.16$, $P = 0.01$) and loneliness ($r = 0.22$, $P = 0.001$). Nevertheless, no significant relationship was observed between Internet addiction and loneliness. Moreover, 8% of the total variation of Internet addiction among students was dependent on sleep quality and gender.

Conclusions: Considering the effects of Internet addiction on the health dimensions of students, it seems necessary to implement periodic educational courses, refer them to counseling centers, and perform interventional studies to assess the effectiveness of such programs.

Keywords: Internet Addiction, Sleep Quality, Loneliness, Nurse, Student

1. Background

Currently, Internet is a key element in telecommunications, education, commerce, and entertainment, which is globally available. This system is widely used for searching information, financial exchange, and online communications (1). According to the International Telecommunication Union, there are over two billion Internet users (2). In India, Internet users increased from five million in 2000 to 190 million in 2013 (3). Accordingly, the number of Iranian Internet users reached over 32 million by the end of 2011 (4).

The excessive use of the Internet has led to the emergence of a disease, known as Internet addiction. Internet

addiction is a psychosomatic disorder, the diagnostic criteria of which overlaps with those of substance dependence (5). According to Young, Internet addiction is characterized by preoccupation with being online, inability to control use of the Internet, hiding the extent of online behavior, psychological withdrawal, and compulsive use of the Internet, despite its behavioral consequences (6).

Some researchers investigating Internet addiction have focused on high-risk individuals, especially university students (1). The factors leading to Internet addiction among students include specific features of the Internet, internal needs and motivation, sense of disability, and compulsion to use the Internet, as well as environmental

factors, such as lack of support by the administrative system and organizations, inefficient social system, and culture change (5,7).

Internet addiction is a very common phenomenon among the students (8), especially in Asian societies (9). Accordingly, the prevalence of Internet addiction among students is on the rise in Iran (5). Medical students are a vulnerable group in this regard due to the growing use of technology for education and clinical care, which leads to medical students spending a lot of time using the Internet (3).

The prevalence of Internet addiction has been reported as 9.5% among medical students of Gonabad (10). Furthermore, 13.2% of the students of Shiraz University had Internet addiction, and 31% were at risk of addiction (11). The prevalence of Internet addiction in nursing students of Tehran universities was 17.7% (12), and the prevalence of smart phone addiction was about 10% (13).

The harmful use of the Internet is associated with negative consequences on various aspects of individual's life, including academic, professional, financial, and communicative aspects. It also results in some psychological problems, such as depression, anxiety (14), loneliness, decreased self-confidence, life satisfaction, decreased mental health (15, 16), and impaired family function (3, 17). In a study conducted by Lin *et al.* (18) 10% of nurses had Internet addiction, and their addiction was related to fatigue.

Due to the advancement of technology and easier access to the Internet, nurses may be more susceptible to Internet addiction, which in turn affects the quality of patient care and safety (18). In a study conducted on medical students of Mexico, interpersonal communication and personal performance were among behaviors influenced by the overuse of the Internet. In the mentioned study, Internet addiction was reported to have a significant correlation with anxiety, aggression, insomnia, loneliness, and depression (1).

One of the most common complications of Internet addiction is the lack of control in time management and loneliness (6). Loneliness is a situation, in which a person experiences lack of contact with family and friends (19). The results of numerous studies showed that unhealthy and excessive use of the Internet increases the sense of loneliness (17, 19, 20). Accordingly, in a study carried out by Zarbakhsh *et al.* there was a direct correlation between addiction to the Internet and loneliness (21).

On the other hand, there was a significant relationship between loneliness and poor sleep quality. Sleep disorder is a prevalent problem in university students and is reported to be associated with decreased quality of educa-

tion and health as well as increased health care expenses. The prevalence of low sleep quality was reported to be 19% to 57% among Chinese university students (9). In a study carried out on university students of Turkey, reduced sleep quality was associated with enhanced addiction to mobile phones (22). Likewise, Nourian Aghdam *et al.* demonstrated that Internet addiction had a significant role in sleep disorder (19).

Internet addiction induces adverse effects on university students, however, there are limited studies investigating this issue among nursing and midwifery students.

2. Objectives

The present study was conducted with the aim of examining the association of Internet addiction with sleep quality and loneliness among students of Nursing and Midwifery Faculty of Zahedan.

3. Methods

3.1. Study Design, Study population and Sampling

This cross-sectional study was conducted on students of Zahedan Nursing and Midwifery Faculty during year 2016. The sample size was estimated as 173 cases based on a study conducted by Solhi *et al.* (23) with 95% confidence interval, however, it was determined as 216, considering 25% sample loss ($z = 1.96$, $P = 0.13$, $q = 0.87$). The study population was selected through the stratified random sampling technique (field of study was considered as strata) and in proportion to the number of students in each field.

3.2. Instruments

The data were collected using demographic form, Young's Internet Addiction Test, University of California Los Angeles Loneliness Scale, and Pittsburgh Sleep Quality Index. The demographic form entailed data such as age, gender, marital status, residential status, field of study, academic year, and average score.

3.2.1. Internet Addiction Test (IAT)

The Internet Addiction Test was developed by Young to measure Internet addiction (24). This questionnaire consists of 20 items rated on a six-point Likert scale (never = 0, rarely = 1, sometimes = 2, usually = 3, often = 4, always = 5). This test covers dimensions, such as excessive use, neglecting work, anticipation, lack of control, and neglecting social life. The final score ranges within 0 to 100. Scores of < 30, 31 to 49, 50 to 79, and 80 to 100 represent normal,

mild, moderate, and severe addiction, respectively. Therefore, a higher score in this tool signifies higher level of addiction. This questionnaire is a standard instrument, the validity and reliability of which were demonstrated in previous studies rendering a Cronbach's alpha coefficient of 0.94 (25). The Persian version of this scale was used in Iran, and its reliability was confirmed in two studies reporting the Cronbach's alpha coefficients of 0.81 and 0.93 (26, 27). In the current study, the reliability of this test was confirmed by Cronbach's alpha coefficient of 0.85.

3.2.2. Pittsburgh Sleep Quality Index (PSQI)

This questionnaire examines the patient's attitude towards sleep quality over the past four weeks. It consists of 19 items in seven scales, including general description of the individual's quality of sleep, delayed sleep, sleep time, efficiency and effectiveness of sleep, sleep disturbing factors, hypnotic drugs, and inappropriate daily function. This questionnaire is rated on a four-point Likert scale (0 = normal status, 1 = mild problem, 2 = moderate problem, and 3 = severe problem). Sleep quality was obtained by summing up the scores of seven sections, ranging within 0 to 21. In this research instrument, a score of five or higher indicates an undesirable sleep quality, therefore, a higher score signifies lower sleep quality. The reliability of this questionnaire was confirmed by its designers with sensitivity and specificity of 89.6% and 86.5%, respectively (28). The reliability coefficients of this index was reported as 0.66, 0.89, and 0.82 by Cheng et al. (9), Ghoreishi and Aghajani (29), and the present study, respectively.

3.2.3. University of California Los Angeles Loneliness Scale (UCLA)

The University of California Los Angeles Loneliness Scale was developed by Russell et al. to examine the individual's sense of loneliness. This questionnaire contains 20 items with a four-point-Likert scale (never = 1, rarely = 2, sometimes = 3, and always = 4), including 10 negative sentences, and 10 positive statements. In this instrument, items 1, 5, 6, 9, 10, 15, 16, 19, and 20 were scored reversely. The minimum and maximum scores of this instrument are 20 and 80, respectively, and its mean score was 50. A score higher than the mean score is indicative of higher severity of loneliness. The reliability of this scale was reported as 0.89 by Russell et al. using test-retest reliability. The Cronbach's alpha coefficients of 0.82 and 0.85 were reported by Hajizadeh Meymandi et al. (30) and the present study, respectively.

3.3. Ethical Considerations

All the participants were informed about the study objectives, and their written informed consent was obtained. In order to maintain the confidentiality of information, the questionnaires were completed without mentioning the name.

3.4. Data Analysis

The independent *t*-test and analysis of variance (ANOVA) were employed to compare the mean sleep quality, Internet addiction, and loneliness in terms of gender and field of study, respectively. In addition, the relationship between the variables were estimated using the Pearson correlation coefficient and multivariate regression test (Model inter). *P* values of less than 0.5 were considered statistically significant. The data were analyzed using the SPSS software version 20.

4. Results

According to the findings, 125 (59.8%) participants were female. The majority of the participants were single, non-female, and nursing students. The mean age of the subjects was 21.72 ± 14.47 years (Table 1).

According to the results, 62.1%, 10.3%, and 1% of the students had mild, moderate, and severe Internet addiction, respectively. The mean scores of Internet addiction, loneliness, and sleep quality were 37.92 ± 13.32 , 44.11 ± 9.63 , and 10.7 ± 5.29 , respectively. According to Table 2, there was a significant difference between male and female students in terms of Internet addiction and sleep quality ($P < 0.001$ and $P = 0.02$, respectively). Nevertheless, the mean score of loneliness was not significantly different between the two genders. Furthermore, the students with an average score of < 17 and those with an average score of > 17 showed a significant difference regarding the mean score of Internet addiction ($P = 0.02$).

There were significant correlations between Internet addiction and sleep quality ($r = 0.16$, $P = 0.01$) as well as between loneliness and sleep quality ($r = 0.22$, $P = 0.001$). Nonetheless, no significant correlation was observed between Internet addiction and loneliness. Also, there was a significant difference in mean score of Internet addiction ($P < 0.001$) and sleep quality ($P = 0.02$) between gender groups.

According to Tables 3 and 4, the results of multivariate regression analysis showed the correlation coefficient among variables (Internet addiction, sleep quality, gender, and loneliness) was 0.28, which was indicative of a correlation among the independent and dependent variables.

Also, 8% of the total change in Internet addiction among students was dependent on Independent variables (sleep quality, gender, and loneliness).

5. Discussion

As the findings of the present study indicated, the prevalence of Internet addiction among the students was 11.3% ranging within moderate to severe with a mean score of 37.92. In a study carried out by Orsal et al. the mean Internet addiction of the university students was reported as 8.2 (8). In another study conducted on the students of a university in China, 6.44% of the students had Internet addiction (31).

In addition, in a study performed by Lin et al. the prevalence of Internet addiction among nurses was 10% (18). Kiany et al. reported an Internet addiction prevalence rate of 17.7% (12) for the nursing students. Considering the aforementioned study, this research obtained a higher Internet addiction prevalence in the current study. Internet addiction is a common phenomenon among students, owing to the widespread use of the Internet for education and research.

Various studies have reported different results regarding the levels of Internet addiction. These discrepancies may be due to employment of different methods for the diagnosis of Internet addiction. In addition, these studies have been carried out on different populations and time periods. Students' addiction to the Internet is associated with their mental health and personality (32).

In the present study, Internet addiction was more common in females than that in males, which was inconsistent with the findings of other studies (2, 8, 14, 33, 34). Nonetheless, in a study performed by Gedam et al. female dental students were more addicted to the Internet than their male counterparts (3) due to their greater number. Likewise, in the present study, the number of female students was higher than that of males, and this could be one of the reasons for the higher prevalence of Internet addiction in the females.

Moreover, females' longer presence at home or dormitory and feeling lonely or isolated can increase Internet addiction in this group. In the present study, loneliness was found to be at a higher level among female students than among their male counterparts. Studies show that people, who are not supported by their families use the Internet more frequently than others. Additionally, the individuals inhabiting at dormitories or homes are reported to have higher levels of Internet addiction due to their easier access to the Internet (8).

Although no significant relationship was observed between Internet addiction and loneliness in the present study, many studies reported a significant relationship between these two variables (11, 17, 20, 35). Hardness and stressfulness of the learning process, confusion due to living away from the family, as well as financial and emotional problems may lead to Internet addiction among university students. Given the direct relationship between loneliness and Internet addiction, at risk students should be referred to counseling centers for treatment and to raise awareness.

In line with the findings of other studies, the current research observed a significant statistical relationship between undesirable sleep quality and Internet addiction (9, 22). In the present study, undesirable sleep quality was more frequent among female students than that among male students, which is consistent with the findings of Mansouri et al. (36). In a study carried out by Rahmati et al. a significant relationship was indicated between sleep quality and mental health. Low sleep quality affects students' academic performance, daily activity, as well as physical and mental health, in addition, this variable was a significant relationship with dormitory residence (37).

Table 1. Demographic Characteristics of the Participants

Variables	No. (%)
Residential status	
Local	87 (41.6)
Non-local	122 (58.4)
Marital status	
Single	171 (81.8)
Married	38 (18.2)
Gender	
Male	84 (40.2)
Female	125 (59.8)
Field of study	
Nursing	121 (57.9)
Midwifery	27 (12.9)
Operating room	61 (29.2)
Academic year	
Freshman	81 (38.80)
Sophomore	49 (23.42)
Junior	52 (24.88)
Senior	27 (12.90)
Age, y (mean \pm SD)	21.72 \pm 14.47
Grade point average (mean \pm SD)	15.14 \pm 0.99

Table 2. Mean Scores of Internet Addiction, Loneliness, and Sleep Quality of the Students Based on Gender, Field of Study, and Average Score

Variables	Internet Addiction	Loneliness	Sleep Quality
Gender			
Male	33.82 ± 9.73	44.53 ± 8.01	9.79 ± 5.18
Female	40.68 ± 14.53	43.82 ± 10.61	11.42 ± 5.28
P value	0.001 ^a	0.6 ^a	0.02 ^a
Field of study			
Midwifery	39.62 ± 10.41	42.29 ± 10.48	10.92 ± 5.04
Nursing	38.94 ± 13.68	44.88 ± 9.81	10.81 ± 5.7
Operating room	35.16 ± 13.21	43.77 ± 8.17	10.60 ± 5.72
P value	0.14 ^b	0.35 ^b	0.95 ^b
Grade point average			
17 - 19.99	28.60 ± 13.81	42.20 ± 10.13	12.60 ± 5.25
< 17	38.39 ± 13.06	44.20 ± 9.63	10.67 ± 5.29
P value	0.02 ^a	0.52 ^a	0.26 ^a

^aIndependent t-test.^bANOVA.**Table 3.** Model Summary of Regression Analysis of Internet Addiction

Dependent Variable	R	R ²	SE	F	P value
Internet addiction	0.28 ^a	0.082	12.74	9.14	< 0.001

^a(Prediction): Sleep quality, sex, loneliness**Table 4.** Multivariate Regression Analysis for Internet Addiction Based on Sleep Quality and Gender

Dependent Variable	Entered Variable	Unstandardized Coefficients		Standardized Coefficients Beta	t	P Value
		B	SE			
Internet addiction	Sleep quality	0.32	0.16	0.13	1.92	0.05
	Sex	-6.33	1.81	-0.23	-3.4	0.001
	Loneliness	0.15	0.09	0.10	1.63	0.1

The findings of this study demonstrated that Internet addiction alone could not explain loneliness. However, Rabiei and Mohammadzadeh showed that social use of the Internet was one of the variables that had the greatest effect on loneliness and could explain 24% of loneliness variations (38). Therefore, further studies are needed in this domain with a larger sample size.

In the present study, 8% of the total variation of Internet addiction among students was dependent on sleep quality and gender, which is consistent with the findings obtained by Cheng et al. (9). Regarding the negative effects of undesirable sleep quality on physical and mental health, it is essential to improve student's educational and professional activities, plan and implement appropriate interventions, and improve their knowledge and attitudes in

this regard.

One of the limitations of this study was the use of self-report for data collection. In addition, the study was carried out at only one college with a limited sample size, restricting the generalizability of the results.

5.1. Conclusion

The findings of this study revealed that the prevalence of Internet addiction in the students of the Faculty of Nursing and Midwifery was comparable to those of other studies. Internet addiction and loneliness were more prevalent among female students as compared to those of male students, which require serious attention. Regarding the effects of Internet addiction on students' health, it is of fundamental importance to provide this population with periodic educational courses and refer them to counseling cen-

ters. Furthermore, it is needed to implement qualitative research aimed at explaining the reasons for student's tendency to Internet addiction, and conduct interventional studies to evaluate the effectiveness of programs with a larger sample size. Moreover, a significant statistical relationship between undesirable sleep quality and Internet addiction was found, which should be considered by policy makers of the university.

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Footnotes

Authors' Contribution: Project managers and designers of the research: Fatihe Kerman Saravi and Ali Navidian; Collecting and data entry: Sobhan Malek Raeisi; Data analysis: Fatihe Kerman Saravi; Writing the paper: Fereshteh Najafi, Fatihe Kerman saravi and Ali Navidian.

Conflicts of Interests: The authors declare that they had no competing interests.

Ethical Considerations: The present study was derived from a research project approved by the Student Research Committee of Zahedan University of Medical Sciences (ethical code: iR.Zaums.rec.1394.129). All the participants were informed about the study objectives, and their written informed consent was obtained. In order to maintain the confidentiality of information, the questionnaires were completed without mentioning the names.

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