

## Original Article

# Internet Addiction and Psychological Strain in Nursing and Midwifery Students

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### ABSTRACT

**Background:** Despite the beneficial effects of the internet, inappropriate, and overuse of it may result in negative consequences such as internet addiction (IA). Despite the increasing uses of the internet among students and the concern about IA, the mechanism and the direction of association between IA and psychological strain is still unknown. **Objectives:** This study aimed to investigate the correlation between IA and psychological strain in nursing and midwifery students of Islamic Azad University, Qom Branch, in 2018. **Methods:** A cross-sectional study was carried out on 298 nursing and midwifery students of Islamic Azad University, Qom Branch. The students were recruited through a census method and responded to a three-part instrument. The study instrument included questions addressing the students' characteristics, the Young's IA Test, and the Osipow Psychological Strain Inventory. Data analysis was performed using descriptive and inferential statistics. **Results:** The mean age of the students was  $21.93 \pm 2.91$  years. The mean IA and psychological strain were  $53.12 \pm 16.66$  and  $25.22 \pm 7.33$ , respectively. About 50% of the students were moderately addicted to the internet, and 53% of the students showed moderate psychological strain. A direct significant correlation was found between IA and psychological strain in nursing and midwifery students ( $P = 0.001$  and  $r = 0.41$ ). IA and students' age could predict psychological strain in nursing and midwifery students ( $r^2 = 0.18$ ). **Conclusion:** A majority of nursing and midwifery students showed moderate levels of IA and psychological strain, and these two variables are significantly correlated. The authorities in nursing and midwifery education should establish appropriate strategies to diminish the harmful effects of excessive internet use by the students.

**KEYWORDS:** Internet addiction, Midwifery, Nursing, Psychological strain, Students

## INTRODUCTION

Internet addiction (IA) is the most modern type of behavioral addiction. The term appeared in 1996 and spread quickly worldwide.<sup>[1]</sup> It has been defined as the excessive or poorly controlled preoccupations, urges, or behaviors regarding internet access that lead to impairment or distress.<sup>[2]</sup> The internet is a useful tool and part of the modern everyday life for everyone, especially the youth, and is mostly used for communication and information seeking.<sup>[3]</sup> However, the easy access to this technology has increased the people's dependence on it for various aspects of their lives and has led to the internet misuse and addiction.<sup>[4]</sup>

According to the latest report of Global Internet Society, the population of internet users has tripled over the last decade.<sup>[5]</sup>

The prevalence of IA among students is on the rise in Iran.<sup>[6]</sup> In a recent study of nursing and midwifery students of Zahedan University of Medical Sciences, the prevalence of severe to moderate IA was 11.3%.<sup>[7]</sup> In another study of nursing students

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of Tehran university, IA rates were reported to be 17.7%.<sup>[8]</sup>

A majority of internet users are university students. The number of professional and semi-professional internet users is great among college students due to their profession and access to the facilities at colleges. Although the rate of use varies among the students according to their field of study, the high rate of internet use among the students can be attributed to a number of factors such as easy access, acceptance in the interactive environment, the ability to participate in group discussions, the existence of an intimate atmosphere, and the possibility of anonymity.<sup>[9]</sup>

The youthfulness of most of the internet users has increased the concern about the physical and psychosocial health of the next generation and heightened the responsibility for accurate recognition and conscious encounter with this phenomenon. Medical sciences students are in an important position. They will ultimately be placed in jobs that carry health messages and can greatly affect people's lifestyle and health-care behaviors. Hence, the need for the conscious and planned use of the internet is essential for these students. Therefore, the development of a culture of proper use of the internet and informing the students about the consequences of uncontrolled use of it is very important.<sup>[10]</sup>

A variety of social and health consequences has emerged with the advent of the internet, some of which have even worried about the global community. Declined academic performance,<sup>[11]</sup> anxiety, depression<sup>[12]</sup> and psychological distress<sup>[13]</sup> are among these outcomes.

IA and spending too much time on the internet makes the students physically and psychologically tired. This will allow them to spend less time on their academic affairs, achieve poor academic results, and consequently reduce their enthusiasm for education.<sup>[11]</sup>

Psychological distress is defined as negative thoughts and feelings such as unpleasantness, disappointment, irritability, worry, and anxiety.<sup>[14]</sup> It is one of the major problems of medical sciences students.<sup>[14]</sup> Studies have shown that nursing and midwifery students experience high levels of psychological distress<sup>[15]</sup> which threaten their physical and mental health.<sup>[16]</sup> Evidence showed that mental health problems such as depression, anxiety, and stress disorders are more prevalent among nurses and nursing students than other health-care providers. It has also been shown that high levels of prolonged stresses have negative individual and organizational consequences. Negative attitudes toward work, impaired clinical judgment, increased medical errors, reduced care

quality and decreased patient safety, reduced patient satisfaction, decreased job satisfaction, and increase in job turnover are among these consequences.<sup>[17]</sup> For the students, high levels of stress can also diminish their academic performance and reduce their interest in their own profession.<sup>[18]</sup> Therefore, studies have emphasized on the need for planning to decrease the students' stress and provide them appropriate support in this regard.<sup>[19]</sup>

Stress among college students is multifactorial, arising from both academic and nonacademic factors. Heavy academic assignments, workload, and problems associated with studying are among the most common sources of stress in nursing and midwifery students.<sup>[20]</sup> Moreover, the fear of unknown situations and mistakes with patients or handling of technical equipment are among the clinical sources of stress among nursing and midwifery students.<sup>[21]</sup> A study also reported that IA can cause stress in nursing students.<sup>[22]</sup>

A review of studies has shown that the severity of IA varies among students of different disciplines of medicine.<sup>[6]</sup> On the other hand, studies that examined the IA and its relationship with psychological stress reported controversial results. A majority of studies have reported a direct association between IA and psychological disorders such as impulsivity and psychological distress and psychological morbidity.<sup>[12,14,22]</sup> However, a number of studies could not find a relationship between IA and psychological indicators such as loneliness and depression.<sup>[7,23]</sup>

Although most studies confirm the relationship between psychological symptoms and IA, the mechanism of this association is still unknown. In other words, IA can be the cause or the result of a psychological symptom. Yet, further studies are needed to identify the existence or absence, and also the direction of such an association.<sup>[6]</sup>

## Objectives

Due to the importance of psychological and physical health of nursing and midwifery students, and considering the increasing use of the internet among students, this study aimed to investigate the correlation between IA and psychological strain in nursing and midwifery students of Islamic Azad University, Qom Branch in 2018.

## METHODS

### Design and participants

This cross-sectional study was carried out on 298 nursing and midwifery students of Islamic Azad University, Qom Branch, in 2018. The sample size was estimated based on a previous study in which IA in nursing students was examined, and the mean of IA score was

$31.31 \pm 11.33$ .<sup>[8]</sup> Then, using the formula for calculating the sample size in a limited population, and considering the Type I error probability of 0.05,  $\delta = 11.33$ , and the measurement accuracy of 2 scores ( $d = 2$ ), and given that the total number the nursing and midwifery students were 380, it was estimated that 377 individuals would be needed for this study. As the estimated sample size was approximately the same as the entire accessible population, all the students with the eligibility criterion (willingness to participate in the study) were recruited into the study. Failure to return and incomplete completion of the questionnaires were considered as exclusion criteria.

### Instruments

A three-part instrument was used. The first part included questions addressing the students' characteristics including their age, the field of study, numbers of the semesters they have passed, marital status, level of interest in the profession, having a cell phone and use of internet through their own cell phone. The Young's IA Test (YIAT20) and the Osipow Psychological Strain Inventory (OPSI) were used as the second and the third parts of the instrument.

YIAT20 is a 20-item questionnaire developed by Young (1998) to assess the presence and severity of IA. Examples of items in this questionnaire are as follows: How often do you find that you stay on-line longer than you intended? How often does your job performance or productivity suffer because of the Internet? How often do you feel being distracted when off-line, which goes away once you are back on-line? All items are responded on a five-point Likert scale ranging from 1 (never) to 5 (always). The minimum and maximum possible score are 20 and 100, respectively. It categorizes the internet users into 3 levels of IA including normal or nonaddicted (20–49 points), mildly addicted (50–79 points), and severely addicted (80–100 points).<sup>[6]</sup> The validity and reliability of the Persian version of YIAT20 have previously been assessed and confirmed by Mohagheghi *et al.*<sup>[24]</sup> In the present study, after the implementation of YIAT20 on 25 students, its Cronbach's alpha was calculated as 0.93.

OPSI is a 10-item questionnaire developed to assess job-related stress. Examples of items in this questionnaire are as follows: "I have not been happy recently," "I am depressed," and "I react badly even under normal circumstances." All items are responded on a five-point Likert scale ranging from 1 (never) to 5 (always). The minimum and maximum scores are 10 and 50, respectively. Higher scores indicate higher levels of psychological strain. Scores 10–23, 24–37, and 38–50 are categorized as low, moderate, and severe

psychological strain, respectively.<sup>[25]</sup> The validity and reliability of the Persian version of the scale have been assessed and confirmed in an earlier study (chronic venous insufficiency = 0.98, Cronbach's alpha = 0.91).<sup>[26]</sup>

### Data collection

Data collection began after getting the permission of the authorities at Islamic Azad University, Qom Branch. All the data were gathered at the early of the first educational semester of 2018 when the students were not under the stressful effects of examinations. The researcher referred to the students at the university or at the hospitals where they were passing their clinical apprenticeship. Explained the study objectives and passed them the study questionnaire to be responded in a private setting and return it to the researcher on the same day. The participants were asked to respond to the OPSI according to their own experiences in the past 6 months.

### Ethical considerations

The current study was approved by the Institutional Review Board and the Research Ethics Committee of the Islamic Azad University, Qom Branch (approval code: IR.IAU.Qom.REC.1397.020). All participants were informed about the purpose of the study, the voluntary nature of their participation, the right to withdraw from the study at any time, and that their responses will be kept confidential and anonymous. All participants signed an informed consent form before entering the study.

### Data analysis

Data were analyzed using SPSS V13 (SPSS Inc., Chicago, IL, USA). Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to present the participants' characteristics. Kolmogorov–Smirnov test confirmed the normal distribution of the psychological stress and IA. Then, independent samples *t*-test and analysis of variance were used to examine the differences in the mean psychological strain and IA scores between the subgroups of the students. Pearson correlation coefficient was used to examine the correlation between the students' age and IA, and also between IA and psychological strain. Linear regression with the backward method was also used to determine the predictors of psychological strain.  $P < 0.05$  was considered statistically significant in all tests.

## RESULTS

Of the 380 students, 298 ones returned the fully responded questionnaire (response rate 78.3%). The mean age of the students was  $21.93 \pm 2.91$  years. Most of the participants were single (78.5%), 1<sup>st</sup> year students (32.2%), and studying in nursing (54.4%). A majority of them (52.7%) expressed a high level of

interest in their field of study. All of them had a cell phone, which 93.6% of them had internet connectivity, and they used this feature [Table 1].

The mean IA score was significantly higher in nursing students ( $P < 0.006$ ) and among 1<sup>st</sup> year students ( $P < 0.03$ ). The students' age was also significantly correlated with their IA score ( $r = -0.178$ ,  $P < 0.002$ ).

The mean IA score was  $53.12 \pm 16.66$ , and 50% of the students were moderately addicted to the internet [Tables 1 and 2]. The mean psychological strain score was  $25.22 \pm 7.33$  and 53% of the students showed moderate psychological strain [Tables 1 and 2].

The Pearson correlation test showed a direct significant association between the IA and psychological strain in nursing and midwifery students so that an increase in the students' psychological strain increased the

IA score ( $r = 0.41$ ,  $P = 0.001$ ). In linear regression, the psychological strain scores were selected as the dependent variable, and IA scores along with all variables with  $P \leq 0.2$  in univariate analysis were entered into the model as independent variables using the backward method. The results showed that only IA and students' age could predict psychological strain in nursing and midwifery students ( $r^2 = 0.18$ ) [Table 3].

## DISCUSSION

The present study showed that half of the nursing and midwifery students showed the symptoms of moderate IA. Moreover, about 7% of them suffered from severe internet dependency. These findings are consistent with a number of earlier studies.<sup>[6,27,28]</sup> In two earlier studies in Iran<sup>[6]</sup> and India,<sup>[29]</sup> about a third of college students showed the symptoms of severe IA. Although the rate of severe IA among our students was considerably lower

**Table 1: Distribution of the students' demographic characteristics and their internet addiction and psychological strain scores**

Variable	n (%)	Internet addiction, mean ± SD	P	Psychological strain, mean ± SD	P
Field of study					
Nursing	162 (54.4)	55.52 ± 17.44	0.006 <sup>a</sup>	25.67 ± 7.27	0.24
Midwifery	136 (45.6)	50.25 ± 15.26		24.69 ± 7.39	
Marital status					
Married	64 (21.5)	48.42 ± 17.01	0.46 <sup>a</sup>	25.48 ± 7.16	0.95
Single	234 (78.5)	54.4 ± 16.37		25.15 ± 7.39	
Year of study					
First	96 (32.2)	57.16 ± 19.08	0.03 <sup>b</sup>	25.15 ± 8.42	0.99
Second	54 (18.1)	51.31 ± 15.59		25.0 ± 7.03	
Third	93 (31.2)	50.87 ± 13.64		25.31 ± 6.53	
Fourth	55 (18.5)	51.63 ± 16.96		25.43 ± 7.33	
Interest in the profession					
High	157 (52.7)	52.68 ± 16.84	0.89 <sup>b</sup>	24.73 ± 7.65	0.08
Moderate	102 (34.2)	53.65 ± 16.90		26.48 ± 6.87	
Low	39 (13.1)	53.48 ± 15.68		23.92 ± 6.87	
Internet connectivity of the cell phone					
Yes	279 (93.6)	53.66 ± 16.39	0.57 <sup>a</sup>	25.36 ± 7.36	0.49
No	19 (6.4)	45.10 ± 18.98		23.21 ± 6.74	
Age, year, (Mean±SD)	21.93 ± 2.91	53.12 ± 16.66	0.002 <sup>c</sup>	25.22 ± 7.33	0.34 <sup>c</sup>

<sup>a</sup>Independent sample *t*-test, <sup>b</sup>ANOVA, <sup>c</sup>Pearson correlation. SD: Standard deviation, ANOVA: Analysis of variance

**Table 2: The distribution of internet addiction and psychological strain among the nursing and midwifery students**

	Nursing students, n (%)	Midwifery students, n (%)	All students, n (%)	P <sup>a</sup>
Internet addiction				
Nonaddicted	63 (38.9)	66 (48.5)	129 (43.3)	0.027
Moderately addicted	83 (51.2)	66 (48.5)	149 (50)	
Severely addicted	16 (9.9)	4 (2.9)	20 (6.7)	
Psychological strain				
Low	64 (39.5)	63 (46.3)	127 (42.6)	0.47
Moderate	90 (55.6)	68 (50)	158 (53)	
Severe	8 (4.9)	5 (3.7)	13 (4.4)	

<sup>a</sup>Chi-square

**Table 3: The results of linear regression analysis for predicting the variables affecting the psychological strain among the nursing and midwifery students**

Model <sup>a</sup>	Unstandardized coefficients		Standardized coefficients $\beta$	<i>t</i>	Significant	Adjusted $R^2$
	B	SE				
Constant	7.887	3.467		2.275	0.024	0.180
Internet addiction	0.190	0.024	0.434	7.981	0.001	
Age	0.334	0.136	0.133	2.454	0.015	

<sup>a</sup>Dependent variable: Psychological strain. SE: Standard error

than these studies, the moderate and severe IA of more than half of our students rings the bell for the authorities and necessitates their more attention to the health and academic achievement of nursing and midwifery students as the future workforce of the health-care system.

In a recent study, Poli has studied the prevalence of IA and reported that the prevalence varies from 0.7% to 27.7%. They attributed these differences in the prevalence of IA to diverse study designs, different assessment methods, and differences in age, cultures, and countries studied. However, they reported that the prevalence is higher in younger people, in the male gender and in Asian samples.<sup>[30]</sup> For this reason, some authors have called IA as an emergent psychological disorder.<sup>[30,31]</sup> Health-care authorities in a number of Asian countries have also identified IA as a significant public health threat and support education, research, and treatment of this disorder.<sup>[32]</sup>

In the present study, the majority of participants showed moderate psychological strain. This finding is consistent with the results of some previous studies in Filipino and Saudi Arabia.<sup>[33,34]</sup> However, a study in North India reported a high level of psychological stress in nursing students.<sup>[16]</sup> The difference in the prevalence of psychological stress among the students might again be attributable to diverse study designs, different assessment methods, and differences in the populations studied.

The current study revealed a significant correlation between IA and psychological strain in nursing and midwifery students. Although stress is a multidimensional phenomenon,<sup>[31]</sup> about one-fifth of the variance of psychological strain in the present study could be explained by the two variables of IA and the students' age. The existing evidence on the association between IA and the user's psychological symptoms are controversial. While it is possible that internet use causes stress and depression,<sup>[35]</sup> it is also possible that those who begin to experience stress or depressed mood increase their use of the internet.<sup>[6]</sup> Several studies reported the association between the internet dependency and experiencing psychopathological symptoms such as distress,<sup>[13,14]</sup> anxiety, depression,<sup>[12]</sup> morbidity,<sup>[22]</sup> and decreased sleep quality.<sup>[12]</sup> According to these studies,

internet dependency changes the people's lifestyle and weaken their social relationships which consequently predisposes them to mental disorders.<sup>[12]</sup> However, some of the studies indicated a reciprocal association between IA and stress.<sup>[36-38]</sup> In this regard, Seifi *et al.* concluded that high anxiety and stress may have existed before the internet use, i.e. the anxious individuals may use the internet as an escaping way. Similarly, anxiety and stress may occur due to the internet dependency, that is, when the individual becomes addicted to the internet, she/he becomes restless, worried and anxious, and uses the internet to reduce her/his anxiety and stress.<sup>[36]</sup> Nonetheless, some studies could not found a significant relationship between the rate of internet use and the users' psychological symptoms<sup>[7,23]</sup> Therefore, more studies are still needed to illuminate the real relationship between the IA and psychological symptoms such as anxiety, stress, and depression.

In this study, we did not assess the students' recent stressful life events. Thus, their stress levels might not merely be attributable to their internet dependency. Further studies are suggested by considering the students' recent stressful life events. This study was only conducted in the Islamic Azad University; moreover, the small sample size and the cross-sectional nature of the study may limit the power of the causal relationships presented in this study. Therefore, further multicenter studies with larger samples and using longitudinal or more powerful designs might be suitable to obtain more generalizable results. Moreover, as discussed earlier, only about a fifth of the students' stress could be predicted by the two variables of IA and age. In other words, a large part of the variance of the students' psychological strain is explained by variables that have not been studied in this study. Therefore, more studies should be done on the variables affecting psychological strain in nursing and midwifery students.

## CONCLUSION

This study showed that the majority of nursing and midwifery students have moderate levels of IA and psychological strain. Moreover, a significant correlation was found between age, IA and psychological strain. Given the crucial importance of the nursing and

midwifery students as the future workforce of the health-care system, and considering the increasing access to the internet and smartphone among university students, and in particular, given the ever-increasing importance of using the technology, the authorities in nursing and midwifery education should establish appropriate strategies and take appropriate actions to diminish the harmful effects of excessive internet use on the students' psychological health. Studying the underlying causes of IA and prevention of it seems necessary. Moreover, through suitable workshops and training posters, the authorities of universities should educate the students regarding the culture for the correct use of the internet and informing them about the dangers of IA, its symptoms and the ways of preventing it. Furthermore, workshops or suitable courses on stress management, time management, and communication skills would be helpful if are held for the students to teach them how functionally manage their times and stress and improve their relationships in the real world instead of passing their times in the internet and virtual spaces.

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### Conflicts of interest

There are no conflicts of interest.

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