



## Effects of cyberspace addiction on academic performance of nursing and midwifery students of Golestan University of Medical Sciences, Iran

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### Abstract

**Background:** The curious, unplanned, and aimlessly searches of students on the internet result in a type of addiction to the internet and can have negative effects on their academic performance. This study aimed to investigate the effects of cyberspace addiction on the academic performance of nursing and midwifery students.

**Methods:** This cross-sectional study was performed on 302 nursing and midwifery students of Golestan University of Medical Sciences, Iran. Data were collected online using the Internet Addiction Test and a cell phone addiction questionnaire. The collected data were analyzed using descriptive statistics and Spearman's, Mann-Whitney, and Kruskal-Wallis tests. The statistical significance level was set at 0.05.

**Results:** The average score of internet addiction was  $44.61 \pm 12.77$  (at a low level), and the average score of cell phone addiction was  $51.46 \pm 14.59$  (at a moderate level). There was a significant relationship between cell phone addiction and marital status ( $P=0.038$ ) and age ( $P=0.011$ ). The average score of internet addiction was significantly higher in dormitory students than in non-dormitory students ( $P=0.011$ ).

**Conclusion:** Considering the existence of cyberspace addiction among nursing and midwifery students, it is recommended to hold educational workshops to increase awareness about the consequences of this problem.

### Highlights:

#### What is current knowledge?

Pathological use of the Internet or Internet addiction is a common problem among teenagers and university students.

#### What is new here?

Internet addiction and dependence on mobile phones existed among university students, which was related to the decrease in their academic performance.

### Introduction

The use of the internet has increased rapidly in general society. It is estimated that there are more than 600 million internet users worldwide (1). In recent years, internet use by medical students has been growing worldwide. Mobile phones and smartphones are even used for educational and entertainment purposes (2, 3). Pathological use of the internet or internet addiction is a common problem among teenagers and university students (1).

In a study in Iran, 47.7% of paramedical students had internet dependence, and 38.6% of the users reported internet chat as the most important reason for using the internet (4). In another study on 360 students of medicine, paramedicine, dentistry, pharmacy, nursing, midwifery, and health, the average rate of addiction to social networks was 50.83%, and 70.60% of the students had moderate addiction to the internet (5).

The excessive use of the Internet can have negative consequences as several studies have shown that dependence on smartphones is associated with loneliness and lower academic achievement (6, 7). In addition, other studies also showed that excessive use of the internet by students leads to anxiety, depression, mood swings, restlessness, obsessive thoughts, fantasy, social isolation, and academic and educational performance decline (1, 8). In a study by Parizad et al. in Urmia, Iran, the feeling of loneliness and academic performance score of students was in the average range. Moreover, the smartphone addiction score had a direct relationship with the feeling of loneliness and an inverse relationship with academic performance (9).

In Malaysia, a study reported an inverse significant relationship between the use of smartphones and the academic performance of undergraduate students

(10). However, D'Souza et al. (2020) reported no significant relationship between mobile phones and students' academic performance (11). In another study, 48% of nursing students were addicted to the internet, which can have very bad consequences on the nursing processes as well as the safety and well-being of patients (12). On the other hand, the use of smartphones in the workplace, especially in healthcare settings that require high concentration, causes medical errors and exposes patients to serious risks. Therefore, the use of smartphones in the nursing work environment should be minimized (13).

Considering the adverse effects of internet addiction on students and their academic performance, the present study was conducted to investigate the relationship of internet and cell phone addiction with the academic performance of nursing and midwifery students of Golestan University of Medical Sciences, Gorgan, Iran.

### Methods

This cross-sectional study with a descriptive-analytical approach was performed on 302 nursing and midwifery students of the Golestan University of Medical Sciences, Gorgan, Iran. The study population was selected by convenience sampling method. Inclusion criteria were being a second-semester and higher nursing or midwifery student at a BSc, MSc, or PhD level and not having a history of mental disorders. Students with incomplete questionnaires were excluded from the study. Based on the sample size formula and considering a 50% prevalence rate of cyberspace addiction (13, 14), an error of 5%, and a 25% dropout rate, the sample size was determined to be 400. Data were collected using a demographic information questionnaire, the internet addiction test (IAT) questionnaire, and a cell phone addiction questionnaire. The demographic information questionnaire investigated age, gender, education level, marital status, dormitory life, etc. The IAT questionnaire was prepared by Kimberly Young in 1998. This questionnaire is composed of 20 multiple-choice items (ranging from none to always) that are scored on a 5-point Likert scale. The total score varies from 0 to 100. Based on the total score, individuals' addiction is divided into four levels, namely, a normal user (score: <20), mild addiction (score: 20-49), moderate addiction (score: 50-79), and severe addiction (score: 80 to 100). This questionnaire is one of the most valid criteria for measuring internet addiction. The validity and reliability of the questionnaire were confirmed in Iran by Alavi et al. (2010) (15).

The cell phone addiction questionnaire was first introduced by Hyun Young Koo in 2009. This questionnaire is composed of 20 questions about cell phone

addiction, each of which has four options: very much, much, little, and very little. According to the scores, subjects are categorized as cell phone addicts (score:  $\geq 70$ ), heavy cell phone users (score: 63-70), and moderate cell phone users (score:  $<63$ ). This tool was previously used in Iran by Kia and Talebi, and its reliability was calculated using Cronbach's alpha coefficient ( $\alpha=0.092$ ) (16). The student's grade-point average was used to evaluate academic performance.

Data were collected online (questionnaire design on the press-line platform). First, the sampling frame was determined, then the number of nursing and midwifery students was determined based on the sample size. The link to the questionnaires was sent to the WhatsApp group of different academic levels through the education department so that the students who wanted to participate in this research could complete the questionnaires online. The ethical principles including confidentiality and protection of the personal information of the participants were observed in the research. This study was approved by the Research Ethics Committee of Golestan University of Medical Sciences (Ethical code: GOUMS.REC1395.256).

Data were analyzed with descriptive and inferential statistics using SPSS (version 23). The normality of the variables was assessed using the Shapiro-Wilk test. Due to the non-normal distribution of the data, the Kruskal-Wallis and Mann-Whitney non-parametric tests were used. The statistical significance level was considered at 0.05.

## Results

In this study, 302 nursing and midwifery students were enrolled, most of whom were female ( $n=214$ , 70.9%) and single ( $n=259$ , 87.5%). Of 302 students, 234 (78.8%) were studying nursing and 170 (56.3%) lived in the dormitory Table 1.

Table 1: Frequency distribution of demographic characteristics of nursing and midwifery students

Variables		Number (%)
Gender	Male	88 (29.1)
	Female	214 (70.9)
Marital status	Single	259 (87.5)
	Married	37 (12.5)
Field of study	Nursing	234 (78.8)
	Midwifery	63 (21.2)
Education level	BSc	278 (96.2)
	MSc	6 (2.1)
	PhD	5 (1.7)
Place of residence	Dormitory	170 (56.3)
	Non-dormitory	132 (43.7)

The average overall score of internet addiction was  $44.61 \pm 12.77$ , which is at a mild level. The average overall score of cell phone addiction was  $51.46 \pm 14.59$ , which is at a moderate level Table 2. There was an inverse relationship between internet and cell phone addiction and the academic performance of the students, but this relationship was not statistically significant ( $P>0.05$ ) Table 3.

Table 2: The relationship between internet and cell phone addiction and academic performance of nursing and midwifery students

Variables	Field of study	Minimum	Maximum	Mean	Standard Deviation	P-value	R
Internet addiction	Nursing	20	100	45.15	12.44	0.521*	-0.4
	Midwifery	23	84	42.84	14.04	0.221*	-0.16
	Total	20	100	44.61	12.77		
Cell phone addiction	Nursing	20	100	51.95	14.74	0.129*	
	Midwifery	21	78	50.04	12.82	0.203*	-0.17
	Total	20	100	51.46	14.59		-0.10

\*Spearman's correlation coefficient

There was no statistically significant difference in the average score of internet addiction between students with different education levels ( $P=0.440$ ). The average score of internet addiction in dormitory students was significantly higher than that in non-dormitory students ( $P=0.038$ ).

The average score of cell phone addiction was significantly higher in single students ( $P=0.011$ ). Also, there was no significant relationship between internet addiction and the age of the students ( $P=0.365$ ,  $r=-0.05$ ). However, there was a significant inverse relationship between cell phone addiction and age ( $P=0.011$ ,  $r=-0.14$ ).

## Discussion

This study showed that the rate of internet addiction in nursing and midwifery students is at a mild level, which is consistent with the results of a study by Namirani et al. (17). However, Karimi Johani et al. reported moderate use of the internet in Paramedical students of Urmia University, Iran (4). This contradiction may be related to the difference in the study population. In the mentioned study, paramedical students were studied using the IAT, while in our study, nursing and midwifery students were enrolled.

Table 3: Comparative evaluation of internet and cell phone addiction according to demographic characteristics of nursing and midwifery students

		Internet Addiction		P-value	Cell phone Addiction		P-value
		Mean	Standard Deviation		Mean	Standard Deviation	
Gender	Female	44.88	13.37	*0.744	52.26	14.96	*0.196
	Male	43.97	11.22		49.52	13.53	
Marital Status	Single	45.21	12.54	0.059	52.35	14.34	*0.011
	Married	41.18	13.60		46.67	15.74	
Field of study	Midwifery	42.84	14.04	*0.186	50.04	13.82	*0.536
	Nursing	45.15	12.44		51.95	14.74	
Education level	Bachelor's degree	44.92	12.61	**0.440	51.58	14.43	**0.418
	Master's degree	46.00	21.27		46.83	10.00	
	PhD	38.60	12.81		46.00	14.37	
Semester	2	43.97	12.04	***0.718	53.62	11.88	***0.114
	3	45.74	15.74		48.84	17.12	
	4	43.54	12.62		49.10	15.33	
	5	45.85	11.62		53.32	14.02	
	6	43.30	11.18		52.64	14.10	
	7	47.20	14.16		50.91	15.66	
	8	42.33	11.36		47.61	15.85	
Place of residence	Dormitory	45.64	12.13	*0.038	51.27	13.74	*0.843
	Non-dormitory	43.29	13.48		51.71	15.66	

\* Mann-Whitney U test

\*\* Kruskal-Wallis test

In our study, the level of cell phone addiction was at a moderate level, which is in line with the findings of a previous study by Mamashli et al. (18). This might be due to the lack of suitable recreational and sports facilities for the younger population, especially students, as well as the easy access to cell phones as a mean of entertainment. Parizad et al. reported moderate to a high level of cell phone addiction among students of Uremia University of Medical Sciences (9). It should be noted that cultural differences and the level of internet access among students could affect the level of cell phone addiction.

In line with previous studies (18), we found no significant relationship between internet addiction and the academic performance of nursing and midwifery students. Unlike the past, when the internet was considered a main cause of decline in the academic performance of students, today, the internet plays an opposite role in the lives of students and teenagers. Nevertheless, a study by Hassanzadeh et al. demonstrated a significant relationship between internet addiction and decline in academic performance (19). The reason for this discrepancy is the difference in the study population and the socio-cultural background of the subjects.

In the present study, there was no significant relationship between cell phone addiction and the academic performance of nursing and midwifery students. which is consistent with the results of a study by Desuza et al. (11). However, some studies reported a significant negative correlation between dependence on cell phones and academic achievement (9, 20).

We found that cell phone addiction was significantly higher among single students, which is similar to the findings of the study by Manacle et al. (18). Indeed, single students have more spare time and opportunity to use cell phones compared to their married counterparts.

We observed no significant association between internet addiction and education level. Similarly, Mohammadbeigi, et al. also reported that internet addiction is not related to education level (21). However, a study by Behbodhi et al. showed that internet addiction is significantly correlated with education level (22).

The average score of internet addiction was significantly higher in dormitory students than in non-dormitory students. This is inconsistent with the findings of a previous study in Iran that showed that the average score of internet addiction is lower in dormitory students than in students living in rented houses (23). This might be because of students' access to the internet and the lack of parental supervision in the dormitory environment.

In our study, there was a significant inverse relationship between cell phone addiction and age. Mansourian et al. also reported that younger students were more dependent on cell phones (24). Therefore, younger students should be prioritized when tailoring strategies to target the problem of cell phone addiction.

## Conclusion

Our results indicate that there is internet and cell phone addiction among nursing and midwifery students. Therefore, authorities of the university must address this issue by holding educational workshops and increasing awareness regarding the appropriate use of the internet and cell phones. It is suggested to investigate the relationship between cyberspace addiction and the mental health of students and teenagers in future studies.

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### Ethical statement

The ethical principles including confidentiality and protection of the personal information of the participants were observed in the research. This study was approved by the Research Ethics Committee of Golestan University of Medical Sciences (Ethical code: GOUMS.REC1395.256).

### Conflict of interest

The authors declare that there is no conflict of interest.

### Author contributions

All authors contributed equally to the methodology, data analysis, writing, and revising of the manuscript.

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