

The impact of internet Addiction and predictor factors on medical students: a cross-sectional study in western Iran

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Research

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Abstract

Background: In recent years, Internet and social media technology use have emerged as an integral tool of human society, and the evolution of technological integration, cyberspace, and web-technology has become a common practice in educational institutions. Internet usage among students has played an indispensable role in learning behavior; however, the excessive usage of the internet and social media leads to internet addiction. This original study has performed a focalized scrutiny on revealing relationships between internet addiction and associated factors among the students of medicine, dentistry, and pharmaceutical departments.

Methods: This descriptive and analytical study recruited medical students from the Self-governing Education Incubator of Kermanshah. This survey distributed 753 questionnaires among the respondents' three departments, and this statistical data reported on 420 valid responses of the respondents. They represent first and second-semester medical students of the academic year 2017-2018. The study selected medical students by applying Cochran's Sample Size Formula through Stratified Random Sampling and cross-sectional research design. The survey has utilized a demographic questionnaire of Young's Internet Addiction Test (IAT) for the data collection. The study analyzed received data by using SPSS version 24 and performed the descriptive statistics, and analytical statistics (t-test and ANOVA).

Results: The results of the present study established that the majority of subjects were female students (53.3%), and the average age was 23.84 ± 2.14 , including the students of all departments. Besides, findings specified that the overall mean and standard deviation scores were 3.34 and ± 0.88 . Internet addiction revealed mean and the standard deviation score measured for all students 3.29 ± 0.73 , 3.17 ± 0.92 , and 3.57 ± 0.64 correspondingly. The survey results illustrated that medical students' internet addiction substantially correlated with demographic variables, such as age, marital status, the field of study, academic term, significant time of consuming the internet, the key reason of utilizing the internet, and daily usage of the internet ($p < 0.05$).

Conclusions: The results of the study specified that 25% of medical students showed internet addiction. The students are increasingly using the internet, and it has penetrated among students. The design and implementation of adequate educational programs and the application of internet-based efficiency interventions are essential for both knowledge acquisition and medical students' healthy behavior.

Background

With the rapid advance in technologies over the past decade, the Internet has become an integral part of the lives of many individuals. Widespread Internet access has benefited people by improving access to online information and providing new opportunities for social communication and entertainment [1]. Although the Internet has offered advantages, excessive usage of the Internet is associated with a psychiatric condition known as Internet addiction (IA) [2]. However, evidence indicates that maladaptive and excessive use of the Internet may lead to addiction, which in turn could lead to psychosocial health

problems [3]. IA mimics other forms of addiction and is characterized by an inability to inhibit Internet use despite the negative impact on physical health and psychosocial functioning [4].

Internet activities and technologies that are increasing rapidly have attracted young adults, leading to excessive use of the Internet and maladaptive Internet attitude known as "Internet addiction" [5]. The term "addiction," even traditionally utilized to describe a physical dependence of substances, has been applied to the excessive use of the Internet [6]. Internet addiction disorder is expressed as too much computer use that contradicts daily activities and can harm daily function [7]. Despite this situation, it has been suggested that problematic Internet use is an addictive behavior since the four fundamental characteristics are manifested [3]. The first characteristic relates to frequent or excessive use and uncontrollability at the expense of other vital activities and considers that those who use the Internet for more than 38 h a week for a purpose that is not academic or work-related are displaying addictive behavior [8]. Moreover, internet addiction is a type of disorder that refers to overusing the internet whereby one's other social activities are overwhelmed and there will be a decline in his/her performance in various occupational, scientific, and professional, familial, economic, psychological area, thereby ignoring relationships in the real world, such as friends and family [2].

Internet addiction is a term that was first used by Goldberg for the obsessive-compulsive use of the internet. Not to mention, the scientific community was familiar with addiction to technology, computer addiction, and addiction to computer games. The idea that the use of computers may be compulsory or even addictive emerged in the 1970s [9]. Young (1998) believed that the term "addict" could also be used to refer to internet users because the signs of internet addiction are similar to those found in alcohol and cigarette addiction [10]. The American Psychiatric Association defined Internet addiction disorder (IAD) as the intense engagement and lack of control, a sense of necessity or behavior that involves the use of the internet, thereby leading to disturbance or distress [1]. The prevalence rate has increased from 1.5% in 2000 to 8.2% in 2009 in the United States and Europe [11]. The average global prevalence of IA has estimated at around 6% [2], whereby prevalence of IA among adolescents ranges between 5% and 15.2% in Europe and between 2.5% and 26.8% in Asian countries [12]. The prevalence of Internet addiction concerns mainly male adolescents across cultures [4]. However, the Internet is a medium that is present on different devices, such as cell phones, tablets or computers, and the activities that can be performed through the Internet e such as compulsive buying, compulsive sexual behavior, or pathological gambling e also are heterogeneous, meaning that the prevalence rate may be overestimated since it includes different types of responses [13].

The active researchers in the field of the internet, such as Anderson [14] and Li et al. [1], all emphasize the addictive nature of the internet, especially in the student population. According to the announced statistics, the highest rates of internet addiction among university students across the world in descending order were as follows: the United States, South Africa, Taiwan, South Korea, Norway, the United Kingdom, Italy, China, and Cyprus.

Existing statistics have indicated that there are over 56 million individuals of Internet users in Iran, making this country top in the list of Internet users in the Middle East [15]. The prevalence of internet addiction in Iran indicated 3.80% among High school students, 10.80%, medical students, and 22.80% of the Internet users in the general population [15]. Internet World Stats, identified that the Internet penetration rate in Iran is 57.20% [16]. In response to the increasing trends of Internet penetration and the development of Internet penetration and its users, internet addiction is prevalent in Iran.

Various studies showed that adolescents are the most exposed group to Internet addiction as they carry communication with others on social network sites rather than the actual contact in real life [17]. University students are thought to be at a hazardous risk to excessive Internet use worldwide. Internet addiction among these students was established to be associated with different psychiatric disorders such as depression, stress, anxiety [18], low self-respect [19], and low psychosomatic well-being [20]. Besides, Ahangarzadeh Rezaei and Moradi (2015) reported that male students' mean score of internet addiction was higher than that of female students at Uromia University of Medical Sciences [21]. Mohammadi et al. (2017) reported that 57.8% of students at Qom University of medical sciences had a mild internet addiction. It was also shown that male students' mean score of internet addiction was significantly higher than that of female students [22]. In a study performed by Smita et al. (2018), a 5.1-percent rate of internet addiction was reported among the medical students of Mauritius University [23]. In a study done by Langarizadeh et al. (2017), it was found out that 29.9% of students were at risk of internet addiction, 1.3% of students had symptoms of internet addiction, and 68.8% did not have internet addiction [24]. Additionally, Gedam et al. (2016) reported that the rate of internet addiction was 2.3% and 1.2% among the medical and dental students, respectively [25].

Today, the internet is a robust and conventional method in universities for doing research, which has provided quick and easy access to information [22]. Moreover, university students make up the majority of internet users. The number of students using the internet in academic settings is much higher than other users due to unlimited and free access to the internet [26, 27]. Besides, the number of internet-addicted users is increasing in Iran, with the number of internet users in schools and universities, reaching up to 15 million per day [28]. The youthfulness of most of these users has increased concerns about the physical, psychological and social health of the next generation of the nation, thereby heightening the responsibility for accurate recognition and adopting a cautious approach to the outcomes [29]. Paying attention to students' mental health is of prime importance in terms of their future and the country's development [30]. Universities should do their utmost to boost the mental health, personal growth and well-being of students [31]. Consequently, the present study aimed to investigate the status of internet addiction and its related factors among the medical, dental and pharmaceutical students at the Self-governing Education Incubator of Kermanshah, Iran.

Methods

Study population and design

This current descriptive and analytical study incorporated a statistical population-based on medicine, dentistry, and pharmaceutical department students at the Self-governing Education Incubator of Kermanshah, Iran. This survey distributed 753 questionnaires among the respondents' three departments, and this statistical population data has reported on 420 valid responses of the selected respondents at a 95% confidence levels and the margin of error was 5%. They represent first and second-semester medical students of the academic year 2017-2018, which lasted from December 14, 2017, to May 23, 2018. The study has selected medical students by applying Cochran's Sample Size Formula through Stratified Random Sampling with a cross-sectional research design. The survey has utilized a demographic questionnaire of Young's Internet Addiction Test (IAT) for the data collection process. The study has analyzed received data by using SPSS version 24 and performed the descriptive statistics (frequency, mean, and standard deviation) and analytical statistics (t-test and ANOVA). The sampling procedure consisted of the stratified random sampling method. First of all, the authors received student lists from the respective departments. The study draws the statistical sample according to the proportionality of the population among medical students from each department. The study has determined the target ratio for each department. The authors provided a questionnaire for each picked-up student to complete his/her response.

Further, the ethical principles employed in the present study included obtaining the necessary permits, retaining the rights for the schools under investigation to either accept or reject to participate in the research and ensuring the confidentiality and non-disclosure of the personal information of samples. Then, the questionnaires were distributed among the target sample. To this end, the objectives of the present study were explained to the target subjects. Informed consent was obtained from all participants before the study began. As for data collection, a demographic questionnaire and Young's Internet addiction Test (IAT) were utilized.

Demographic Questionnaire: The first part of the instrument dealt with the demographics and comprised questions on gender, age, marital status, place of residence, the field of study, academic term, central location and time of using the internet, the primary reason for using the internet, and daily use of the internet.

Measures

Internet Addiction Test (IAT) [10]: This 20-item questionnaire was developed by Young (1988) for measuring the internet addiction, which is affected by a variety of aspects in users' lives [10]. We used the Persian translation of Young's Internet Addiction Test (IAT) developed by Alavi et al., [32]. The questions were scored with five-point Likert Scaling (5=always, 4=usually, 3= most of the time, 2= sometimes, and 1=seldom). Moreover, the minimum and maximum ranges of scores were 20-100. According to the scores, the internet users were grouped into three categories: a score of 20-49 for typical users, a score of 50-79 for at-risk users, and a score of 80-100 for addicted users. It should be noted that the highest ratings represent the highest levels of dependency on the internet. According to the latest studies, a score of 50 is considered for internet addiction. Furthermore, the validity of the questionnaire was confirmed by

three experts using the content validity index (0.84), and its reliability was confirmed using the test-retest (0.88) by 20 medical students using Cronbach's alpha (0.87) within two weeks. The reliability, as well as the validity of this tool, have reported above 90% in previous studies [31, 33-36].

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Inclusion criteria

Active Internet user since at least 1 year Willing to give consent and complete the Questionnaire

Exclusion criteria

Not willing to give consent and complete the questionnaire Not using the Internet

Statistical Analysis

For data analysis, the descriptive (frequency distribution, mean, and standard deviation) and inferential statistics (independent t-test, one-way ANOVA, and chi-squared test) employed in the SPSS Statistics Software Version 24 SPSS Inc., Chicago, USA). For comparing the mean scores of internet addiction in terms of the two-faceted qualitative variables (e.g., gender and marital status), the independent t-test was utilized. Additionally, to compare the mean scores of the internet addiction in terms of the multi-faceted categorical variables (e.g., age, place of residence, field of study, academic term, central location and time of using the internet, primary reason for using the internet, and daily use of the internet), the one-way ANOVA was employed. The significance level was set at $p < 0.05$.

Results

Sample Characteristics

A total of 420 subjects are presented in this study, 196 (46.7%) were male, and 224 (53.3%) showed female students. The average age of the subjects was 22.80 ± 3.13 , and the majority of subjects showed students aged between 21 and 25 (57.6%). In terms of marital status, 389 of the participants (80.5%) were single. Besides, the number of students in each school was as follows: 178 dentistry in the Medicine School (42.4%), 115 students in the Medicine School (27.4%), and 127 students in the medicine school (30.2%). In terms of the academic term, the majority of students were in the eighth term or higher (82 students, or 19.5%). Further, the majority of students were living in dormitories (237 students or 56.4 %). The results also showed that 31.7% of students (133 subjects) connected to the internet in dormitories, and they mainly connected to the internet in the morning or evening (317 subjects or 75.5%). It was also

revealed that and their main reason for being online was using chat applications (159 subjects, or 37.9%) (Table 1).

The mean and standard deviation of students' internet addiction measured 3.34 ± 0.88 . Besides, the mean and standard deviation of medical, dental and pharmaceutical students' internet addiction measured 3.29 ± 0.73 , 3.17 ± 0.92 , and 3.57 ± 0.64 , respectively. Furthermore, a significant difference observed between the different groups ($p < 0.05$) (Table 1).

As shown in Table 2, there was no significant difference between the mean scores of internet addiction in both gender students, as indicated by results (3.38 ± 0.93 in males and 3.31 ± 0.85 in females). Additionally, internet addiction significantly correlated with each of ($P < 0.05$). In contrast, there was no significant relationship between internet addiction and each gender, place of residence, and prominent location of using the internet ($P > 0.05$).

The results of the study demonstrated that 31.20% and 25% of students at Kermanshah University of Medical Sciences were minimally and severely addicted to the internet, respectively. Moreover, 43.8% were at risk of internet addiction (Table 2/Figure 1).

Internet Addiction Diagnostic Questionnaire (IADQ)

Scale		Question					
1	How often do you find that you stay on-line longer than you intended?	5	4	3	2	1	0
2	How often do you neglect household chores to spend more time on-line?	5	4	3	2	1	0
3	How often do you prefer the excitement of the Internet to intimacy with your partner?	5	4	3	2	1	0
4	How often do you form new relationships with fellow on-line users?	5	4	3	2	1	0
5	How often do others in your life complain to you about the amount of time you spend online?	5	4	3	2	1	0
6	How often do your grades or college work suffer because of the amount of time spent online?	5	4	3	2	1	0
7	How often do you check your email before something else that you need to do?	5	4	3	2	1	0
8	How often does your job performance or productivity suffer because of the Internet?	5	4	3	2	1	0
9	How often do you become defensive or secretive when anyone asks you what you do online?	5	4	3	2	1	0
10	How often do you block out disturbing thoughts about your life with soothing thoughts of the internet?	5	4	3	2	1	0
11	How often do you find yourself anticipating when you will go online again?	5	4	3	2	1	0
12	How often do you fear that life without the Internet would be boring, empty, and joyless?	5	4	3	2	1	0
13	How often do you snap, yell, or act annoyed if someone bothers you while you are on-line?	5	4	3	2	1	0
14	How often do you lose sleep due to late-night log-ins?	5	4	3	2	1	0
15	How often do you feel preoccupied with the Internet when off-line, or fantasize about being on-line?	5	4	3	2	1	0
16	How often do you find yourself saying "just a few more minutes" when you are online?	5	4	3	2	1	0
17	How often do you try to cut down the amount of time you spend on-line and fail?	5	4	3	2	1	0
18	How often do you try to hide how long you have been on-line?	5	4	3	2	1	0
19	How often do you choose to spend more time on-line over going out with others?	5	4	3	2	1	0
20	How often do you feel depressed, moody, or nervous when you are offline, which goes away once you are back on-line?	5	4	3	2	1	0

Table 1 Distribution of the Demographic Characteristics of Participants in Specialized Groups

Variable		N	Percent	Mean±SD	The number of subjects under study in each group			P-value
					Medicine (n=178)	Dentistry (n=115)	Paramedics (n=127)	
Gender	Male	196	46.7	3.38±0.93	71(16.9%)	60(14.3%)	65(15.5)	0.432
	Female	224	53.3	3.31±0.85	107(25.5%)	55(13.1%)	62(14.8%)	
Age (years)	≤20	107	25.5	3.20±0.86	41(9.8%)	16(3.8%)	21(5%)	0.000
	21-25	242	57.6	3.35±0.89	102(24.3%)	54(12.9%)	62(14.8%)	
	26-30	58	13.8	3.42±0.91	31(7.4%)	40(9.5%)	40(9.5%)	
	≥30	13	3.1	3.44±0.70	4(1%)	5(1.2%)	4(1%)	
Marital status	Single	389	92.6	3.36±0.90	162(38.6%)	104(24.8%)	123(29.3%)	0.074
	Married	31	7.4	3.11±0.72	16(3.8%)	11(2.6%)	4(1%)	
Academic Term	1st	40	9.5	3.71±0.47	18(4.3%)	22(5.2%)	-	0.000
	2nd	44	10.5	3.45±0.76	15(3.6%)	16(3.8%)	13(3.1%)	
	3rd	34	8.1	3.57±0.70	8(1.9%)	-	26(6.2%)	
	4th	48	11.4	3.52±0.80	19(4.5%)	3(0.7%)	26(6.2%)	
	5th	59	14	3.15±0.83	32(7.6%)	5(1.2%)	22(5.2%)	
	6th	58	13.8	2.97±0.84	28(6.7%)	25(6%)	5(1.2%)	
	7th	55	13.1	3.22±0.79	18(4.3%)	32(7.6%)	5(1.2%)	
	8th and higher	82	19.5	3.39±0.47	40(9.5%)	12(2.9%)	127(30.2%)	
Location of residence	With parent or spouse	237	56.4	3.37±0.93	81(19.3%)	76(18.1%)	80(19%)	0.513
	Dormitory	89	21.2	3.38±0.91	40(9.5%)	23(5.5%)	26(6.2%)	
	Rental	94	22.4	3.25±0.74	57(13.6%)	16(3.8%)	21(5%)	
Main location of using the Internet	Home	119	28.3	3.31±0.84	48(11.4%)	44(10.5%)	27(6.4%)	0.927
	Classroom	45	10.7	3.35±0.49	26(6.2%)	8(1.9%)	11(2.6%)	
	Dormitory	133	31.7	3.35±0.89	56(13.3%)	28(6.7%)	49(11.7%)	
	Library	65	15.5	3.43±0.94	16(3.8%)	24(5.7%)	25(6%)	
	Other public places	58	13.8	3.31±0.82	32(7.6%)	11(2.6%)	15(3.6%)	
Main time of using the Internet	Morning to evening	317	75.5	3.31±0.87	142(33.8%)	95(22.6%)	80(19%)	0.026
	Evening to night	67	16	3.51±0.83	35(8.3%)	10(2.4%)	22(5.2%)	
	Night to morning	36	8.6	3.31±0.67	1(0.2%)	10(2.4%)	25(6%)	
Most important reason for using the Internet	Scientific topics	25	6	2.55±0.63	16(3.8%)	9(2.1%)	-	0.000
	Research	42	10	2.89±0.56	25(6%)	17(4%)	-	
	Web browsing	96	22.9	3.19±0.55	62(14.8%)	33(7.9%)	1(0.2%)	
	Downloading (film, music, picture)	159	37.9	3.47±0.93	15(3.6%)	27(6.4%)	56(13.3%)	
	Online chatting	98	23.3	3.69±0.58	60(14.3%)	29(6.9%)	70(16.7%)	
Daily internet use (in hours)	0-2	98	23.3	3.29±0.83	62(14.8%)	30(7.1%)	6(1.4%)	0.041
	2-4	132	31.4	3.29±0.94	50(11.9%)	26(6.2%)	56(13.3%)	
	4-6	72	17.1	3.33±0.86	13(3.1%)	24(5.7%)	35(8.3%)	
	>6	118	28.1	3.46±0.87	53(12.6%)	35(8.3%)	30(7.1%)	

Table 2 Distribution of severity scale of Internet addiction (N=420)

Degree of Internet addiction	Frequency	Percent
Non-addicted user (20-49 points)	131	31.2%
At risk user (50-79 points)	184	43.8%
Addicted user (80-100 points)	105	25%

Discussion

The present study aimed to investigate the status of internet addiction and its related factors among the medical, dental, and pharmaceutical students at the Self-governing Education Incubator of Kermanshah, Iran. The results of the present study demonstrated that 31.2% and 25% of students at Kermanshah University of Medical Sciences were minimally and severely addicted to the internet, respectively. Moreover, 43.8% were at risk of internet addiction. The high prevalence of Internet addiction revealed in the present study was justified by Young, 2004, who said that university students have much unstructured time. They always look for doing communication through the Internet and use the Internet to leave university sources of stress from exams and studying [5]. In a study done by Lashgarara et al. (2011), 34% of students were addicted to the internet [37]. Similarly, the results of the study conducted by Debata et al. (2018) revealed that there was a 67-percent prevalence of internet addiction among the medical and engineering students at universities based in Bengaluru[38]. Likewise, Dhok et al. (2016) reported that the rate of internet addiction among medical students in Aurangabad, India, was reasonable (53.8%), moderate (31.5%), and high (14.6%) [39]. These findings were consistent with the results of the present study. The researchers pointed out that the excessive use of the internet decreased the mental health of students. They also found out that the excessive use of the internet led to traumatic and psychological problems. The observed differences in the prevalence of Internet addiction in the aforementioned studies even in studies conducted in the same country could be attributed to the application of various assessment instruments, cutoffs, and the differences in the cultural and social contexts.

The results of the present study revealed that there was no significant difference between male and female students in terms of internet addiction, and the mean score of internet addiction in male students was higher than that of female students. In this study, it found out that male students were to be given priority over female students regarding the prevention of internet addiction disorders. In terms of the mean score of male students' internet addiction, the results of the present study were consistent with the results of studies conducted by Ahangarzadeh Rezaei and Moradi. [21], Vahidi far et al. [40], Mohammadi et al. [22], Mohammad Khani and Zafarpanahi [41]. However, the results of studies done by Alavi et al. [42], Orsal et al. [43] and Fonia et al. [44], in which girls' rate of internet addiction has been reported higher than boys', were inconsistent with the results of the present study. Male students seem to have more internet addiction than female students. It can argue that girls and boys equally use the existing facilities due to intellectual development and a change in views about gender. On the other hand, with the growing number of girls entering universities, they can become more familiar with technology and have a higher chance of using the internet. In fact, in line with the findings of other studies, the present research revealed that men were more exposed to internet addiction because of different social and environmental factors to which both genders are exposed. Accordingly, it seems that this finding can be regarded as an

alert about the rise of this disorder among students, which requires better planning in this area on the part of university officials.

According to the results of the present study, there was a significant relationship between age and internet addiction, and the 21-25 age group was more exposed to internet addiction than other age groups, which indicates that the rate of internet addiction in young age groups is higher than other age groups, and this issue can attribute to the characteristics of this age group.

On the other hand, the results of the present study revealed that marital status and internet addiction were significantly related, and the singles were more addicted to the internet, which was concurrent with the results of studies performed by Nasrollahi et al. [45] and Ghamari et al. [46]. However, this finding was inconsistent with the results of studies conducted by Salehi et al. [47], Kyani et al. [48]. Not to mention, single students have more leisure time and the majority of them have no other jobs but studying whereas married students, considering, are in charge of the family and supporting their family members financially. Therefore, married students sometimes have to work in several places, and if they have the opportunity, their obsession with life expenses does not allow them to use the internet.

Besides, it showed that there was a significant relationship between internet addiction and field of study, and internet addiction was more prevalent among medical students than dental and pharmaceutical students, which might be due to the more significant number of medical students than other groups – similarly, Baradaran et al. [49] and Ahangarzadeh Rezaei and Moradi. [21] reported that internet addiction significantly correlated with the field of study and educational level. In other words, the use of the internet differs in students from different areas of research and levels of education.

In the present study, meaningful relationships found between the subjects' internet addiction and academic term. The findings of the present study showed that students in the fifth, sixth and eighth terms and above had the highest degrees of internet addiction. It seems to be because higher-level students have to use more internet for research and homework.

Further, the results of the present study demonstrated that internet addiction and place of residence significantly correlated. In other words, the rate of internet addiction was higher among students who were living with their families. This study finding was consistent with the results of studies done by Vahabi et al. [50], Imani et al. [51], Salehi et al. [47] and KhatibZanjani et al. [52]. It can express that, nowadays, access to the internet is possible everywhere, and students can use it on their cell phones and tablets everywhere in the city. Moreover, it seems that the possibility of internet addiction is equal for both groups living in dormitories or other modes of living.

Moreover, the results of the present study demonstrated that there was a significant relationship between internet addiction and how long students use the internet. In other words, the longer one uses the internet, the higher the likelihood of internet addiction will be. Among those who had mild or severe internet addiction, many of them used the internet from morning to evening. The primary goals of using the internet in the present study were downloading photos, video clips and music, chatting, and web surfing,

which was consistent with the results of studies done by Vizeshfar et al. [53], Vahidi far et al. [40], Shayegh et al. [54] and Dargahi et al. [55]. One of the critical criteria for identifying internet addicts is the time they devote to the internet. In other words, the more hours one spends on the internet, the higher the probability of his/her addiction to the internet will be. Therefore, universities should provide students with the proper culture to use the internet and fill their leisure time towards conducting research and gaining useful information, thereby avoiding wasting their precious time. Hence, provision of training on reducing internet usage in unnecessary situations is helpful.

The results of the present study revealed that there was no significant relationship between the central location of using the internet and internet addiction, and students living in student dormitories exposed to internet addiction. This finding was consistent with the results of studies conducted by Kormas et al. [56], Ceyhan et al. [57], Tsitsika et al. [56], and Siomoset al. [58].

The debate establishes that all individuals' lifestyles, including academics and students, present intertwined links with the Internet and social networks. They have made profound changes in different aspects of today's life. At present, students' community make-up youth and represents the majority of the youngsters in most of the countries worldwide. These students comprise the main groups of internet users, and they are a vital force in transforming the lives of today's people as well as human beings of the future. Therefore, both students and the Internet are transforming knowledge for themselves and the whole society. In the future, they will change and transfer knowledge even faster, and in this fast-paced and massive transformation process, students also shape and develop their lives and identities. Accordingly, the application of measures and Internet use, which can use a positive image in community development, is essential.

Limitation Of The Study

Concerning the limitations, this study evaluated medical students in the classrooms based on different groups. The discussions among students could present bias in their feedback. There was no face-to-face interview session, and the data set reported on a self-reported questionnaire, which increases the risk of social desirability biases among medical students of medicine, dentistry, and pharmaceutical departments at Self-governing Education Incubator of Kermanshah, Iran. The limitations of this current study specify that researchers can consider a large sample size based on medical students as well as other departments to execute their investigations in Western Iran. Scholars can find experimental and longitudinal methods with larger samples to examine different results.

Conclusion And Recommendations

The review results exemplified that medical students engaged in internet addiction considerably linked with demographic variables, including students' age, marital status, the field of study, academic term, significant time of consuming the internet, the key reason for utilizing the internet, and daily usage of the internet. The findings of the present study were indicative of high rates of internet addiction among the

students under investigation. The rising internet penetration among medical students, study design and implementation of appropriate educational programs and the application of internet-based efficacy interventions are indispensable to improve students' knowledge and induce healthy behaviors. The fallouts of this study also describe the implication of preventative measures in the form of educational and counseling programs for students regarding the proper and useful use of the internet. Not to mention, addressing the issues and problems relating to the use of communication technologies such as the internet can lay the groundwork for proper education and more attention of parents and families for the adequate and effective use of the internet. Thus, concentrating on related elements might help in implementing more effective intervention programs for the vulnerable group of Internet addiction.

Abbreviations

IA: Internet Addiction; PF: Predictor Factors; MS: Medical Students

Declarations

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Authors' contributions

This study comprised the contribution of all the authors, AZ, RT, MS, JYL, MM, and JA. Suggesting the title of manuscript and data collection were done by AZ, SAA and FC. Data analysis, interpretation, and manuscript preparation were conducted by AZ and BM reviewed, revised, and edited the final version of the manuscript. All authors approved the final version of the manuscript.

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Availability of data and materials

All data generated or analyzed during this study are included in this article.

Ethics approval and consent to participate

The Medical Ethics Committee approved the study procedure of Kermanshah University of Medical Sciences (IR.KUMS.REC.1398.505). This study involved only participants who gave their informed consent. The authors obtained verbal informed consent from all participants before beginning the study, and all participants completed the informed written their consent-form after being informed about the purposes of the project.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Figures

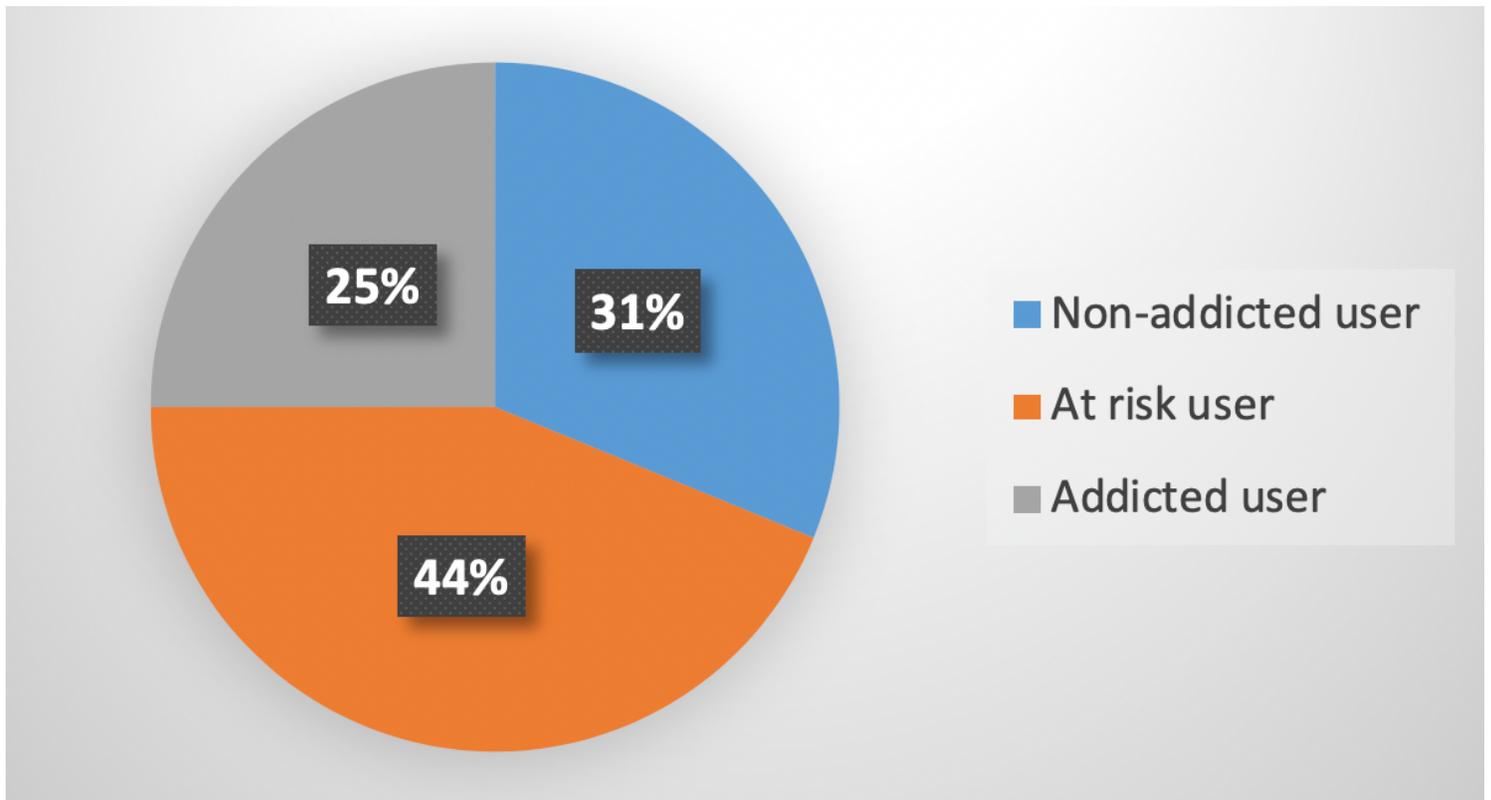


Figure 2

Degree of Internet addiction among the respondents