

Prevalence of internet addiction among Syrian undergraduate medical students

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Abstract

The purpose of this study is to determine the prevalence and risk factors for internet addiction disorder among Syrian medical students. Syrian medical students from 8 different universities participated in an online cross-sectional questionnaire study between May 13 and June 16, 2022. DASS-21 Depression, Anxiety, Stress Scale, and Internet Addiction Test were the 3 main determinants of the questionnaire. One thousand nine hundred fifty-three medical students from 8 different Syrian universities have participated in our cross-sectional. Half of the participants were from the Syrian private and Damascus universities. 62.1% were females, and most participants had good academic degrees (70–90/100). Sixty-nine percent of the study participants thought that COVID19 increased internet use rates. The Internet Addiction Scale's average score was 33.48 ± 16.29 (1–100). The total young internet addiction test score was high among medical students from the faculty of medicine university, students from Damascus University, males, smokers, and medical students with lower academic credentials than other subgroups. Both the relationship between internet addiction and DASS-21 subgroups and the correlation between DASS-21 subgroups were statistically significant. Our research showed that internet addiction was widespread among Syrian medical students, particularly when used more for entertainment than educational purposes. Additionally, it was linked to poor academic degrees in the exams at the university and mental health conditions, including depression, anxiety, and stress.

Abbreviations: DASS-21 = depression, anxiety, stress scale, IAD = internet addiction disorder, YIAT = young internet addiction test.

Keywords: internet addiction, medical students, psychological disorders, Syrian medical students

1. Introduction

In the third century, the Internet has become crucial in many facets of every person's life. It is now employed in all realms of business, education, and politics, as well as entertainment and gaming. The growing demand for this technology has become related to many people's psychiatric problems and disordered social relationships.^[1] Internet addiction disorder (IAD), the so-called pathological internet use, is characterized by an individual's lack of control over their Internet use, resulting in distress, preoccupation, mood changes, tolerance, withdrawal, and functional impairments of social, occupational, and academic performance.^[2] Cross-sectional research found that excessive internet usage leads to addiction, particularly among young people, which is a concern for medical students. Mobile devices are the most popular method of internet access for internet addicts, and social media platforms are their primary destination.^[3] The incidence of internet addiction among student populations in the US, China, Korea, the UK, Australia, Taiwan, Japan, and Eastern and Western Europe ranges from

5% to 25%.^[4] Previous research identified a connection between internet addiction and mental health conditions such as headache, insomnia, and poor sleep quality, which may impair memory, learning, and attention. Several observational studies have examined the relationship between internet addiction and depression in adults, particularly in students, and they have shown a greater prevalence of poor sleep, erratic eating patterns, low levels of physical activity, and suicidal thoughts.^[5,6] Researchers have looked for the causes of or risk factors for internet addiction, and it has been suggested that a combination of personal, family, societal, and internet-related elements may play a role in this development.^[7] Additionally, Medical students, who are particularly susceptible to IAD owing to their age, desire for science, and need for social networking, have a wealth of literature on internet addiction and its relationship to mental issues. To our knowledge, no research on this issue has been done in the Syrian Arab Republic. The purpose of this research is to evaluate the frequency of IAD among undergraduate students of health care faculties (medicine, pharmacy, and dentistry) in the Syrian Arab Republic, as well as its relationship

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The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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to depression, anxiety, and stress, in light of the poor living and academic situations that most Syrian students face, which may impact their internet usage habits and therefore their mental well-being.

2. Methods

2.1. Study strategy and questionnaire design

An online cross-sectional survey was conducted among students in medical faculties (medicine, pharmacy, and dentistry) at 8 universities in Syria (Syrian Private University, International University of Science and Technology, Al-Hawash Private University, Al-sham Private University, Damascus University, Tishreen University, Aleppo University, Tartous University) between May 13 and June 16, 2022. The information was acquired through an online survey disseminated over social media sites, including Facebook, WhatsApp, Twitter, and Telegram. All Syrian medical students older than 18 were included; others were not. We used convenience and snowball sampling techniques to collect the needed data from the respondents. The participants were distributed using computer-based randomization and the student ID numbers. An email was sent to each selected student. The required sample size was determined using Good calculators, which can be found at the following link: The sample size calculator at <https://goodcalculators.com/sample-size-calculator/> advised 76, with a confidence level of 95%, a margin of error of 5%, and a population proportion of 5.2% for internet addiction among Iranian medical students. A response rate of 78.12% was achieved on the Google form website, with 1953 replies from 2500 contacted students.

2.2. Measures

The questionnaire was divided into these 3 sections:

- Sociodemographic characteristics: information on the respondent's sex, age, marital status, socioeconomic status, use of tobacco, and alcohol use, in addition to inquiries about the number of hours spent online, academic standing, and academic percentage.
- Validated Arabic version of young internet addiction test (YIAT)^[8]: It consists of a 20-item survey scored on a 6-point Likert scale. It is used to assess the prevalence of internet usage and technological dependence in individuals.^[8] A total score of 0 to 100 was assigned to the 20 items, with each item receiving a value between 0 and 5. Total scores of 0 to 30 are thought to represent a typical level of internet use, 31 to 49 show a mild online addiction, 50 to 79 indicate a moderate degree of internet addiction, and 80 to 100 indicate a severe level of internet dependent. ⁹ For the purpose of simplicity, dichotomization was utilized to assess the possibility of an online addiction, with scores ranging from 0 to 49 (normal use and mild addiction) being considered non-pathological variations of internet usage and scores ranging from 50 to 100 (moderate and severe internet addiction) representing pathological usage of the internet.
- Depression, Anxiety, Stress Scale (DASS-21): The DAS is a tool that is often used to test for negative affect. It stands for depression, anxiety, and stress scale.^[9] The 21-item scale's 4-point Likert scale measurement (0–3). It is regarded as the 42-item original DASS in a condensed form. Since the DASS-21 test items are written in English, we had to utilize the Arabic version of the test, which was certified by Amira Mohammad Ali et al in 2017.^[10] cutoff scores used for each subscale are: Depression: normal 0 to 4, mild 5 to 6, moderate 7 to 10, severe 11 to 13 and extremely severe 14+. Anxiety: normal 0 to 3, mild 4 to 5, moderate 7 to 10, severe 11 to 13 and extremely severe 10+. Stress: normal 0 to 7, mild 8 to 9, moderate 10 to 12, severe 13 to 16, and extremely severe 17+.

Furthermore, to evaluate this questionnaire's applicability and intelligibility, it was administered to 40 randomly chosen many medical students. Following that, adjustments were made in response to participant feedback. We also conducted a pilot test with 35 individuals to assess the validity and reliability of the questionnaire. The instrument maintained a good internal consistency for both used scales (YIAT+DASS-21), with a Cronbach's alpha ranging from 0.70 to 0.80; the questionnaire was made available once the pilot study was finished.

2.3. Statistical analysis

Excel datasheet was used to import, clean, and arrange data. Statistical package for the social sciences statistical software was used for data analysis (version 22). *P*-values below .05 were deemed significant for each of the variables. The distribution of the data was determined using descriptive statistics (mean, SD, percentage), and the Shapiro–Wilk test of normality and nonparametric tests (Spearman's correlation, Mann–Whitney *U* test, and Kruskal–Wallis test) were used to evaluate the data and investigate the significance of the differences between the various research variables. Excel and statistical package for the social sciences software were used to create the figures.

2.4. Ethical considerations

The Syrian research ethics committees gave their approval to our study protocol. Every participant in the cross-sectional study had the right to revoke their participation at any moment. Since names or email addresses were not provided in the research, the participant could not be identified. Therefore, throughout the experiment, each participant's identity was completely secured. This investigation was conducted under the Helsinki Declaration.

3. Results

3.1. Demographic variables

Table 1 represents the demographic variables of the research sample, and the final sample size included 1953 participants from 8 different Syrian universities; the majority were from the Syrian Private University (SPU) (26.1%) and Damascus University (24%). (45.8%) The sample was from the faculty of medicine, (23.2%) dentistry, and (31%) pharmacy. Moreover, (72.6%) were in the age group (17–22), and (26.7%) were (23–27) years, males comprised (37.9%), while females accounted for (62.1%) of the sample. Regarding socioeconomic status, (25.2%) had moderate socioeconomic status, and (59.7%) had good socioeconomic status.

3.2. Internet use among the sample study

We found that among medical students who used the internet for more than 6 hours a day, the percentage of time spent on it for enjoyment (30.7%) exceeded that of time spent on it for study purposes (3.5%). Additionally, a significant majority of the survey group (69%) agreed that the COVID19 pandemic had raised internet use (Fig. 1). Compared to the pharmacy and dental students, faculty medicine medical students had the highest YIAT prevalence (34.52%), and male students had a greater YIAT prevalence (34.23%) than female students (Figs. 2 and 3).

3.3. DASS-21 and YIAT

Table 2 demonstrates the analysis of the YIAT and DASS-21; the average value of the YIAT scale was (33.48 ± 16.29) and ranged from (1–100). (48.1%) of the sample had normal use,

Table 1
demographic variables of the research.

Variables		N	%	Variables		N	%	
University	SPU1	509	26.1%	Mother education	Illiterate	35	1.8%	
	IUST2	146	7.5%		Primary school	339	17.4%	
	HPU3	140	7.2%		Secondary school	496	25.4%	
	APU4	146	7.5%		University	1083	55.5%	
	Damascus University	468	24.0%		SES*	Low	46	2.4%
	Tishreen University	183	9.4%		Moderate	492	25.2%	
	Aleppo University	183	9.4%		Good	1165	59.7%	
	Tartous University	178	9.1%		High	250	12.8%	
Faculty	Medicine	894	45.8%	Smoking	No	1519	77.8%	
	Dentistry	454	23.2%		Yes	434	22.2%	
	Pharmacy	605	31.0%	Alcohol	No	1787	91.5%	
Academic yr	First	314	16.1%		Yes	166	8.5%	
	Second	408	20.9%	Traumatic events	No	1426	73.0%	
	Third	392	20.1%		Yes	527	27.0%	
	Fourth	341	17.5%	Family problems	None	1738	89.0%	
	Fifth	337	17.3%		Divorce	84	4.3%	
	Sixth	161	8.2%		Domestic violence	39	2.0%	
Academic degree	<60%	80	4.1%		Addiction	24	1.2%	
	60–70%	458	23.5%		Other	68	3.5%	
	70–80%	765	39.2%		Time spent on the internet for studying	Less than an hour	838	42.9%
	80–90%	569	29.1%	1–3 h		832	42.6%	
90–100%	81	4.1%	3–6 h	215		11.0%		
Number of fallen yr	None	1807	92.5%	More than 6 h		68	3.5%	
	1 yr	114	5.8%	Time spent on the internet for other purposes	Less than an hour	68	3.5%	
	2 yr	22	1.1%		1–3 h	510	26.1%	
	3 or more	10	0.5%		3–6 h	776	39.7%	
Gender	Female	1213	62.1%		More than 6 hours	599	30.7%	
	Male	740	37.9%	Internet usage change during COVID-19	Increased	1358	69.5%	
Age	17–22	1417	72.6%		Decreased	71	3.6%	
	23–27	521	26.7%		Didn't change	524	26.8%	
	28–34	15	0.8%					
	Father education	Illiterate	11	0.6%				
Primary school		306	15.7%					
Secondary school		384	19.7%					
University		1252	64.1%					

* Socioeconomic status.
¹ Syrian Private University.
² International University of Science and Technology.
³ Al-Hawash Private University.
⁴ Al-sham Private University.

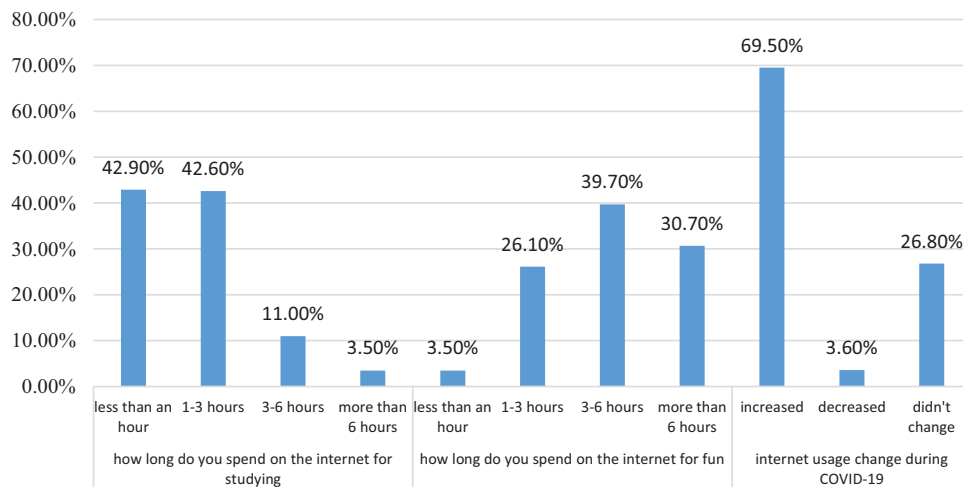


Figure 1. Internet use of the sample study.

(36.8%) had mild addiction, while moderate and severe addiction comprised (13.8%) and (1.3%) respectively. Regarding DASS-21, the average depression score was (16.88 ± 11.05). (13.7%) had severe depression, and (19.5%) had very severe

depression. While for the anxiety scale, it was on average (11.4 ± 9.32), and the majority had normal levels of anxiety (40%), while (10.3%) (20%) had severe and very severe anxiety levels, respectively. Finally, the average stress level

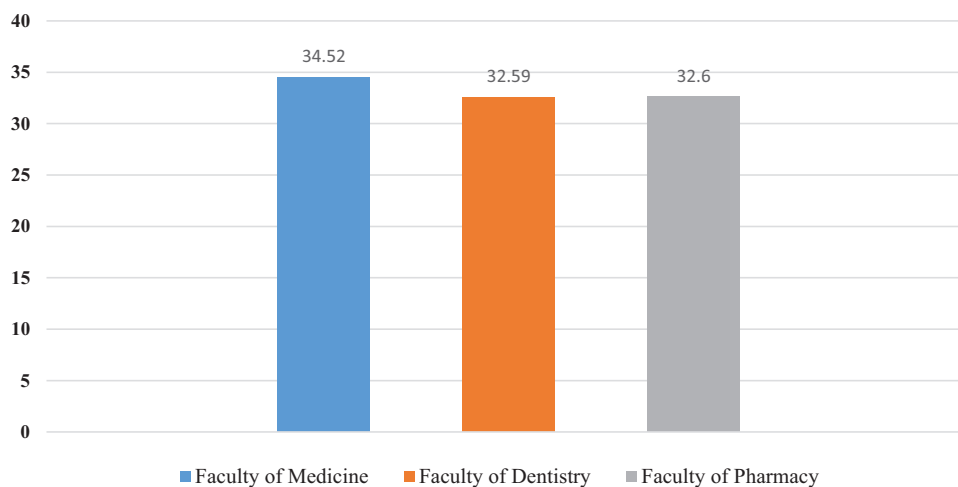


Figure 2. Average level of YIAT for each faculty. YIAT = young internet addiction test.

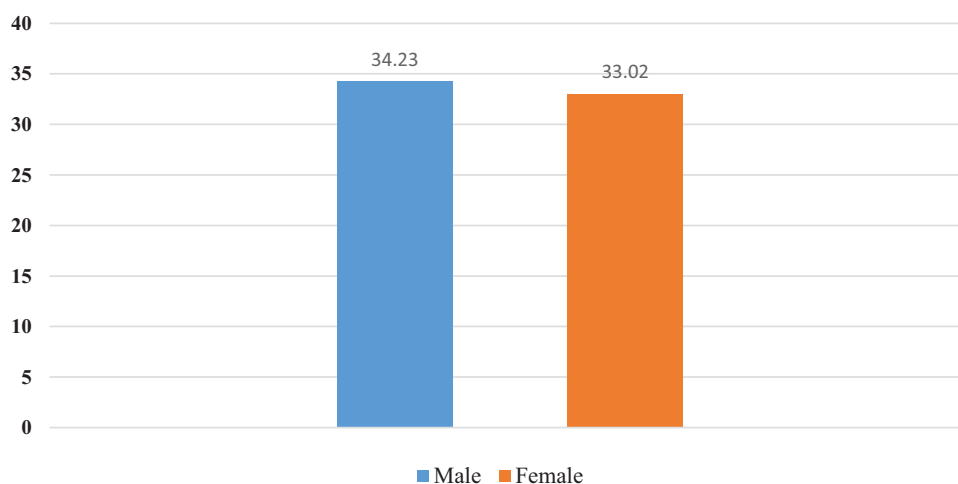


Figure 3. Gender differences for the YIAT. YIAT = young internet addiction test.

was (17.77 ± 10.35), and the majority had a normal range (44.4%).

3.4. Correlation between the research variables and YIAT

The medical students of Damascus University had a significantly statistically ($P < .05$) higher YIAT score (34.84) than those at other universities, especially Tishreen University, which has the lowest YIAT score of all (29.75). Additionally, the individuals who have a history of addiction issues and medical students who have an illiterate father both had the highest YIAT scores (overall score = 45.36 , $P < .05$) and 39.59 , respectively. We also showed that medical students with lesser academic degrees throughout their medical school had a higher total YIAT score. (Table 3).

3.5. YIAT and DASS-21 subgroups correlation as well as DASS-21 subgroups correlation

The Spearman's test was used to determine the relationship between the YIAT and each DASS-21 subgroups as well as the relationship between the DASS-21 subgroups themselves. The relationship between internet addiction and depression, anxiety, and stress was shown to be significantly positive (P -value < 0.05), while the Spearman's values were, respectively, 0.42 , 0.34 ,

and 0.418 . Additionally, all DASS-21 subgroups had a high positive significant correlation with 1 another, with Spearman's ware values ranging from 0.6 to 0.8 (Table 4).

4. Discussion

Internet addiction, a growing problem and harm brought on by excessive computer use, has drawn the attention of experts from all around the world. The internet and computer use are deeply ingrained in contemporary society and have had a tremendous impact on how we live, more so than any other technological medium to yet. A broad term used to describe a range of behaviors and issues with impulse control involving the internet, personal computers, and mobile devices is "internet addiction.." The average YIAT score in our study was (33.48 ± 16.29), which is equivalent to the result of Farah Younes et al in Beirut, Lebanon, in 2016,^[11] although it is lower than what was published in Japanese study (45.4 ± 13.0), which the differential difference between Syria and Japan may be explained by the fact that Japan is a more advanced nation and the Japanese students are dependent on the electronic learning more than the Syrian students.^[12] Normal internet usage is represented by (1.3%), mild internet addiction by (36.8%), moderate addiction by (13.8%), and severe addiction by (1.3%). As previously stated, moderate and severe addiction were deemed pathological; hence, the proportion of internet addiction (pathological internet usage) was

Table 2
Analysis of the YIAT and DASS-21.

Variables	N	Mean	Minimum	Maximum	SD	
	1953	33.48	1.00	100.00	16.29	
Internet addiction	N		%			
Normal use	939		48.1%			
Mild addiction	719		36.8%			
Moderate addiction	269		13.8%			
Sever addiction	26		1.3%			
	N	Mean	Minimum	Maximum	SD	
Depression	1953	16.88	.00	42.00	11.05	
Anxiety	1953	11.40	.00	42.00	9.32	
Stress	1953	17.77	.00	42.00	10.35	
Descriptive analysis	Normal	Mild	Moderate	Severe	Very severe	
	N	566	271	468	267	381
Depression	%	29.0%	13.9%	24.0%	13.7%	19.5%
Anxiety	N	781	153	427	201	391
	%	40.0%	7.8%	21.9%	10.3%	20.0%
Stress	N	867	275	345	267	199
	%	44.4%	14.1%	17.7%	13.7%	10.2%

DASS-21 = depression, anxiety, stress scale, YIAT = young internet addiction test.

15.1%, which is in line with what Farah Younes determined in her research (16.8%).^[11] On the other hand, the prevalence of internet addiction among undergraduate medical and health science students at Ambo university in Ethiopia was much higher (79%) than the results of our research.^[13] This may be because Syria is now experiencing challenges with the internet and electricity as a result of a civil war that has lasted for more than 10 years.^[14-18] Other studies reported greater proportions of internet addiction, such as Basem Salama et al research's in Al-Beheira Governorate, Egypt in 2020, which found that 47.5% of the subjects were afflicted by online addiction.^[19] Mehdi Sayyah et al 2019's research on medical students in Iran found that (1.6% of them) used the internet normally, (47.4%) had a light internet addiction, (38.3% had a moderate addiction), and (12.9% had a severe degree of addiction).^[20] Additionally, our research found that gender has no discernible impact on the prevalence of internet addiction. This finding is in contrast to many previous studies in the medical literature, the majority of which demonstrate a male predominance, such as those conducted by Basem Salama et al in Al-Beheira Governorate, Egypt and Farah Younes et al in Beirut, Lebanon in 2016.^[11] This finding may be attributed to the fact that our research is one of the most current connected to internet addiction and it was done during the COVID-19 epidemic, and since girls are more emotionally vulnerable than men, they may use the internet as a means to relieve stress. This may explain the increasing levels of internet addiction among females that reached near to boys' levels of internet addiction, leaving the gap between both genders statistically inconsequential. In terms of socioeconomic level, Basem Salama et al finding's in their research conducted in Al-Beheira Governorate, Egypt in 2020 were supported by our findings, which revealed no statistical significance among participants of various SES when it comes to internet addiction.^[19] However, there was a considerable rise in internet use during the COVID-19 pandemic (35.67%), which is consistent with the findings of Min-Pei-Lin et al in Taiwan in 2020,^[21] and time spent on the internet for objectives other than learning was substantially related with levels of internet addiction; this finding is comparable with the findings of a Tanzanian research on a group of medical students done by Mboya et al 2020.^[22] There was no

significant difference in internet addiction levels among different faculties, we did not find studies in literature that supports or refute our result regarding the relationship between faculty and internet addiction. Regarding academic year and internet addiction relation: our study showed that there was no statistically significant difference in internet addiction levels among students of different academic years. Literature search regarding this variable showed discordant results. For instance, a study conducted by Aman Gupta et al in India in 2018; did not find significant correlation between academic year and internet addiction.^[23] While some other studies revealed that internet addiction was significantly higher among early-years students.^[24,25] Contrastingly, Kentaro Kawabe et al in Japan found that internet addiction increases as students' progress through academic years, thus indicating higher internet addiction levels among late-years students.^[26] These contrasting results could be ascribed to the fact that progression through academic years is usually associated with intellectual and cognitive maturity, which may explain the decreasing levels of internet addiction as students' progress from 1 year to another, at the same time, this cognitive maturity grants individuals more freedom regarding their decisions and behaviors (including their internet usage), and this may underlie the increase in internet addiction levels among late-years students in some studies. Our study showed no statistically significant difference among different age groups as far as internet addiction is concerned, this result is in accordant to what Ergin, A. et al in Turkey in 2013.^[27] Domestic violence appears to be a significant risk factor for internet addiction depending our study results, this is consistent with the results of Hye-Jin Kim et al in South Korea in 2018.^[28]

According to the relation between YIAT score and DASS-21, the researchers discovered compelling evidence that certain internet users have acquired an addictive internet habit, whereby they substitute virtual social engagement for face-to-face encounters.^[5] When individuals find out they aren't included in an activity online, it might damage their emotions, feelings, and even their physical health. Use of social media reduces, disrupts, and delays sleep, which is linked to depression, impaired memory, and subpar educational achievement.^[5,7] Our study result indicates the presence of a significant relationship between

Table 3
Significant difference between the research variables and YIAT.

		Internet addiction		Depression		Anxiety		Stress	
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
University	SPU	34.01	16.70	16.57	10.78	11.74	9.32	17.53	10.17
	IUST	32.17	15.69	14.52	9.83	10.00	8.74	15.52	9.82
	HPU	33.76	16.43	16.51	11.91	10.50	9.43	16.49	11.15
	APU	34.13	15.56	17.12	10.54	12.48	9.27	19.10	10.02
	Damascus Uni	34.84	16.76	17.79	11.66	11.35	10.00	18.61	10.90
	Tishren uni	31.91	16.75	15.46	10.30	11.25	8.50	16.62	8.97
	Aleppo uni	33.99	15.99	20.23	11.20	12.74	9.22	20.12	10.51
	Tartous Uni	29.75	13.99	15.35	10.58	10.35	8.55	16.84	9.96
Faculty	Medicine	34.52	16.73	17.80	11.28	11.57	9.68	18.60	10.65
	Dentistry	32.59	15.18	15.74	10.47	11.45	9.23	17.16	10.08
	Pharmacy	32.60	16.35	16.36	11.05	11.12	8.84	17.02	10.03
Academic yr	First	34.12	17.59	16.58	10.40	11.43	9.54	17.78	10.43
	Second	32.77	16.30	17.44	11.15	11.62	9.42	17.91	10.22
	Third	34.69	16.00	17.39	11.33	11.57	9.37	17.85	10.69
	Fourth	33.93	16.12	16.06	11.26	11.79	9.72	17.58	10.23
	Fifth	32.11	15.95	16.82	11.05	11.31	9.03	17.85	10.39
	Sixth	32.96	15.22	16.62	10.93	9.79	8.14	17.50	10.02
Percentage	<60%	39.39	19.88	20.73	12.23	15.13	11.50	21.68	11.84
	60–70%	36.09	16.97	17.30	11.26	12.24	9.37	17.79	10.13
	70–80%	32.52	16.04	16.43	11.20	11.16	9.26	17.27	10.38
	80–90%	32.07	14.96	16.63	10.48	10.55	8.91	17.69	10.11
	90–100%	31.85	17.08	16.72	10.56	11.26	8.96	19.11	10.71
Number of fallen yr	None	33.32	16.20	16.75	11.03	11.27	9.29	17.69	10.35
	1 yr	35.75	17.35	18.70	11.19	13.23	9.79	18.54	9.87
	2 yr	37.05	17.48	15.36	9.65	12.36	8.34	17.09	9.89
	3 or more	28.40	15.68	22.80	14.49	13.40	9.05	25.20	14.91
Gender	Female	33.02	16.10	17.19	11.22	11.73	9.24	18.30	10.29
	Male	34.23	16.57	16.36	10.77	10.86	9.42	16.92	10.39
Age	17–22	33.61	16.35	16.81	11.11	11.35	9.33	17.68	10.42
	23–27	33.14	16.10	17.04	10.89	11.54	9.21	18.03	10.15
	28–34	33.07	17.30	17.60	11.39	11.47	12.32	17.87	11.15
Father education	Illiterate	45.36	24.32	29.09	10.01	19.64	13.44	26.00	12.55
	Primary	33.68	14.86	16.78	10.69	11.33	9.02	17.59	10.11
	Secondary	34.65	16.13	18.02	11.30	12.68	9.60	18.52	10.22
	University	32.97	16.54	16.44	11.00	10.96	9.20	17.52	10.40
Mother education	Illiterate	35.69	16.66	19.89	10.67	12.86	10.38	19.77	11.02
	Primary	34.36	15.24	17.23	11.55	11.33	9.63	17.99	10.16
	Secondary	33.32	16.07	15.96	10.34	11.64	9.38	17.01	9.99
	University	33.20	16.69	17.09	11.20	11.27	9.16	17.99	10.54
SES	Low	36.65	18.63	21.74	12.69	14.48	11.43	22.65	12.02
	Moderate	34.05	17.28	18.86	11.38	12.52	9.75	19.26	10.33
	Good	33.25	15.69	16.37	10.83	11.15	9.11	17.41	10.10
Smoking	High	32.80	16.53	14.45	10.25	9.83	8.66	15.68	10.61
	No	33.24	16.19	16.70	11.13	10.89	9.35	17.52	10.49
Alcohol	Yes	34.32	16.60	17.49	10.77	13.21	8.98	18.68	9.81
	No	33.26	16.18	16.76	10.99	11.20	9.31	17.59	10.32
Traumatic events	Yes	35.86	17.21	18.08	11.71	13.65	9.13	19.75	10.50
	No	31.96	15.29	14.81	10.25	9.69	8.28	15.72	9.63
Family problems	Yes	37.58	18.11	22.47	11.20	16.05	10.34	23.33	10.19
	None	33.04	16.16	16.32	10.88	10.97	9.10	17.34	10.21
	Divorce	37.40	18.06	20.79	11.43	14.62	10.51	20.62	11.01
	Family violence	39.59	17.42	26.00	9.67	18.67	9.68	25.08	9.12
	Addiction	35.21	17.91	17.33	10.89	15.42	12.36	18.83	11.42
	Other	35.71	14.69	20.91	11.95	12.88	9.09	20.76	11.02
How long do you spend on the internet for studying	Less than an h	35.87	17.44	18.70	11.48	11.74	9.61	18.55	10.65
	1–3 h	31.30	14.41	15.08	10.20	10.79	8.73	16.92	9.88
	3–6 h	30.42	14.81	17.00	11.37	11.67	9.40	17.94	10.36
	More than 6 h	40.26	21.04	15.94	11.28	13.94	11.62	18.12	11.58

(Continued)

Table 3
(Continued)

		Internet addiction		Depression		Anxiety		Stress	
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
How long do you spend on the internet for fun	Less than an h	16.76	9.52	11.06	9.62	9.62	7.58	11.59	7.72
	1–3 h	26.11	13.09	14.10	10.47	9.86	8.71	15.45	10.15
	3–6 h	33.32	13.80	16.85	10.46	11.17	9.11	17.77	9.75
	More than 6 h	41.85	17.73	19.94	11.55	13.22	9.95	20.47	10.76
Did your internet usage change during COVID-19	Increased	35.67	16.54	17.46	11.03	11.50	9.38	18.22	10.36
	Decreased	22.58	10.87	13.86	10.24	10.82	8.64	14.90	8.71
	Didn't change	29.27	14.77	15.77	11.09	11.23	9.25	17.00	10.43

YIAT = young internet addiction test.

Table 4

Correlation between the YIAT and DASS-21.

Statement			Internet addiction	Depression	Anxiety	Stress
Spearman's rho	Internet addiction	Correlation Coefficient	1.000	.421**	.341**	.418**
		Sig. (2-tailed)	–	.000	.000	.000
	Depression	Correlation Coefficient	.421**	1.000	.613**	.764**
		Sig. (2-tailed)	.000	–	.000	.000
	Anxiety	Correlation Coefficient	.341**	.613**	1.000	.684**
		Sig. (2-tailed)	.000	.000	–	.000
	Stress	Correlation Coefficient	.418**	.764**	.684**	1.000
		Sig. (2-tailed)	.000	.000	.000	–

DASS-21 = depression, anxiety, stress scale, YIAT = young internet addiction test.

** Correlation is significant at the .01 level (2-tailed).

YIAT score and each of the items included in DASS-21, it is evident that depression, anxiety, and stress levels increase as YIAT score increases, thus, internet addiction has a strong correlation with the psychological problems studied in our research. This is congruent with the results of Farah Younes et al study in Beirut, Lebanon in 2016.^[11] Another study conducted by Gholamian in Iran in 2017 on a group of secondary school students showed results consistent with what we concluded in this study.^[21] In conclusion, in order to solve the problem that currently exists among medical students in Syria, we should put the following practice recommendations into effect:

- The establishment of annual seminars and lectures on the issue of the proper handling of internet usage during the stage of university study, as well as the acquisition of the realized the potential benefits from phone applications for the purpose of learning, and the interruption of computer and mobile phone applications for the purpose of managing time.
- The Syrian Ministry of Health and other local nonprofit organizations should work together to disseminate frequent announcements about the detrimental psychological impacts of addiction to the internet, with a particular emphasis on students in the school and university stages of their education.
- Encouraging exercise for its preventative and therapeutic benefits in treating internet addiction and other addictions, and doing additional study on a wider range of society and on bigger samples to get a more precise knowledge of this condition.^[29]

4.1. List of the limitations

A cross-sectional research approach cannot currently establish causality, despite its usefulness and accessibility. The use of universal sampling and the achievement of a response rate of

99% – higher than the typical response rate for surveys done for organizational research – also improved the generalizability of this study. The DSM-V lacks separate diagnostic criteria; hence the diagnosis is YIAT-dependent. Results cannot be confidently extrapolated to society at large since the research was limited to a particular demographic group, medical college students. Some participant replies may not be completely honest since the research relied on questionnaires.

5. Conclusion

We observed that internet addiction is prevalent among Syrian undergraduate students, with exact correlations with severe mental health issues such as depression and anxiety. The managers of the college ought to make an effort to enhance the availability, trustworthiness, and control of the internet services provided by the college, as this may promote learning and increase academics achievement. Moreover, we advocate for the implementation of a strategy that raises awareness about the potential harmful effects of excessive internet usage. Finally, several seminars and courses should be offered to explain the psychological implications of excessive internet usage, notably the possibility of a relationship to serious mental health issues including depression, anxiety, and stress.

Author contributions

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