

Internet Addiction among Zagazig University Students and Its Association with Mental Health Using Arabic Version of Depression Anxiety Stress Scale

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ABSTRACT

Background: One of the public health concerns today is the increasing use of the internet especially among adolescents and the appearance of internet addiction problems. Although using the internet to students represents great benefits, it has despised consequences on their mental health such as depression, anxiety, and stress.

Objectives: To estimate the prevalence of internet addiction among Zagazig University students and to identify its association with mental health using DASS-21 scales.

Methodology: Across sectional study was done on 246 randomly selected students at Zagazig University during 1st term of the academic year 2023/2024 representing both males and females using a cluster sampling technique. A self-administered questionnaire was used. It consisted of three components: the first component comprised sociodemographic data, which included age, gender, and collage, the second part represented a young scale for the detection of internet addiction, and the third part was an Arabic version of Depression Anxiety Stress Scale-21 (DASS-21) to evaluate mental health of studied participants.

Results: Prevalence of internet addiction was 73.2% among the studied group. There were statistically significant associations between internet addiction, gender, degree of academic achievement, place of living, students-parents relationship, income, depression, anxiety, and stress. Also, they were the predictors of internet addiction with odds ratios (14.16, 27.72, 24.55, 24.61, 3.32, 1.94, 2.51, 2.55) respectively.

Conclusion: Prevalence of internet addiction was 73.2% among students. Female, bad degree of academic achievement, living away from family, bad students-parents relationship, enough or more family income, depression, anxiety and stress were predictors of internet addiction.

Keywords: Internet addiction, Mental health, DASS-21 scales, Zagazig University Students.

INTRODUCTION

One of the public health concerns today was the increasing uses of computers, smartphones, and other electronic devices, as well as the internet ⁽¹⁾. Internet addiction is an impulse control disorder affecting people who spend weekly more than thirty-eight hours online and cannot control their own life activities. It is like pathological gambling but does not include misuse of intoxicating drugs ⁽²⁾. Internet addiction is prevalent among adolescents and young adults (12-29 years) and they are at high risk of misuse ⁽³⁾.

There is rapid growth of Egyptian users of the internet from 34.1 million to 77.66 million between 2013 and 2022 respectively, representing a twenty-two percent increase in internet usage from 2019 to 2020 and a 1.9 percent growth from 2021 to 2022. The internet penetration rate in Egypt in 2022 was 71.9 % ⁽⁴⁾.

The internet offers numerous educational advantages; however, overuse can lead to despised consequences like neurological and medical issues, depression, anxiety, social isolation and mental instability, unhappiness, decrease self-esteem, and poor academic performance among students ⁽⁵⁾.

Mental health is a state of mental well-being, which allows enabling people to cope with the stresses of life, realize their abilities, learn well and work well, and participate in their community. Depression, anxiety, and stress are considered as fundamentally negative indices of mental health ⁽⁶⁾.

Fifty percent of all mental illnesses start before fourteen years old, most of them are missed and not treated and unfortunately can lead to long-term complications such as impairment of physical, and mental health and ability to survive normal productive lives as adults ⁽⁷⁾.

There is a two-way relationship between adolescents' depression, anxiety, and stress due to internet addiction ⁽⁸⁾. Internet addiction and depression relationship could begin by anxiety/stress alteration or stimulation of internet addiction by the stress-and-anxiety shortcut also, internet addiction can affect the emotional condition, which over the long run would promote depression ⁽⁹⁾. The aim of our study was to measure the prevalence of internet addiction among Zagazig University students and to recognize its association with mental health using DASS-21 scales to help in the future reduction of the prevalence of internet addiction and promotion of mental health of University students.

SUBJECTS AND METHODS

Research design: A cross-sectional study design was performed.

Site and time of study: The study was completed in Zagazig University throughout the first term of the academic year 2023/2024 among university students of both sexes.

Sample size calculation was done using (open Epi-Info 7.0). Based on the statistical letter of Zagazig University, the overall numbers of registered students at

the year 2021-2022 were 16890 students and the expected prevalence of internet addiction was 80.7% ⁽¹⁰⁾ at 95% confidence level and the margin of error was 5%. The calculated sample size was 214. Then we added to it 15% to compensate for non-response so, the total sample size was increased to 246 students.

Sampling technique: A cluster sampling technique was utilized. We first listed the sixteen colleges of Zagazig University after that two colleges were selected randomly by simple random sample, one practical (Faculty of Medicine) and one theoretical (Faculty of commerce). The college's students were divided into sampling units (sections for the practical college and specialties for the theoretical one), one section or specialty was selected from each grade of each college by utilizing simple random sample. Entire students in the selected section or specialty were the target population. The students were reached mostly at the classrooms.

Inclusion criteria: Egyptian, undergraduate students in Zagazig University from both genders, free from any chronic disease and cognitive disabilities.

Exclusion criteria: Non Egyptian, postgraduate students in Zagazig University, having any chronic disease or cognitive disabilities.

Data collection tools:

A self-administered questionnaire consists of 3 components.

The first part was used to assess sociodemographic characteristics of studied students like age, gender, college.... etc.

The second part was composed of Young's Internet Addiction scale to classify the degree of internet addiction among studied students. It consists of twenty multiple-choice questions on a 5-point Likert scale (rarely, occasionally, frequently, often, and always). The range of scores to each question is from 1 to 5. The more increase in score the more is the increase in the degree of internet addiction. The total calculated scores are between 20 to 100. No internet addiction if the total calculated score is less than 20, mild internet addiction if the scores are between 20-49, moderate internet addiction if scores are between 50-79, and severe internet addiction if scores are between 80- 100 ⁽¹¹⁾.

The third part was composed of the Arabic version of the Depression Anxiety Stress Scale -21 as indicator to mental health. It is used to classify the degree of depression, anxiety, and stress symptoms among participants. It consists of 21 multiple-choice questions on a 4-points Likert scale which represent the existence of any symptom over the last week (didn't relate to me, related to certain degree, related to a considerable

degree, related to a higher degree). The range of scores for each question are from 0 to 3 and the total scores for all related items of depression, anxiety, and stress scales are between 0 to 21 ⁽¹²⁾. Degree of depression, anxiety, and stress were done by adding scores of related items and calculated as follow:

Table (1): Degree of depression, anxiety, and stress according to ⁽¹²⁾

	Depression	Anxiety	Stress
Normal	0-4	0-3	0-7
Mild	5-6	4-5	8-9
Moderate	7-10	6-7	10-12
Severe	≥11	≥8	≥13

Both of Young's Internet Addiction scale and DASS -21 scales were revised by six professors of Community Medicine in the Faculty of Medicine, Zagazig University to evaluate its contents and checking its validity. Also, their reliabilities were checked by Cronbach's one alpha and their scores were (0.815 and 0.802) correspondingly.

Pilot Study: A pilot study was done to evaluate competence, clarity, and the time required to complete the questionnaire.

Administrative and Ethical consideration: The study was approved by the Institutional Review Board (IRB) of the Faculty of Medicine at Zagazig University (ZU.IRB#11116/11-9-2023) and it followed the Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies done on humans. We took written consent from participating students and we simply clarified to them the aim of the study, and its methodology and informed them that their participation was voluntary and that the privacy and confidentiality of their data would be kept.

Data management: Data were entered and analyzed by SPSS version 22. Qualitative data were described as frequencies and percentages. For comparisons between categorical variables Chi-Square test was used. A binary logistic regression was used to detect predictors of internet addiction. A p-value less than 0.05 was considered statistically significant.

RESULTS

Our results revealed that mild internet addiction was prevalent among 37% of participants followed by moderate internet addiction at 33.3% and the last one was severe internet addiction at 2.8%. Regarding the assessment of mental health by (the DASS-21) scale; severe depression, anxiety and stress were prevalent at 40.2%, 76.4%, and 47.2% respectively (Table 2).

Table (2): Level of internet addiction, depression, anxiety and stress among studied group (No.=246)

	Variables	No.	%
Internet addiction	No	66	26.8
	Mild	91	37.0
	Moderate	82	33.3
	Severe	7	2.8
Depression	Normal	84	34.1
	Mild	11	4.5
	Moderate	52	21.1
	Severe	99	40.2
Anxiety	Normal	44	17.9
	Mild	5	2.0
	Moderate	9	3.7
	Severe	188	76.4
Stress	Normal	41	16.7
	Mild	22	8.9
	Moderate	67	27.2
	Severe	116	47.2

Figure 1 shows that social networking followed by study were the most common purposes of internet use among participants (71.1 and 46.2%) respectively. Most of members utilized internet for three to six hours per day (41.7%) while, (11.1%) of members utilized internet for more than nine hours daily.

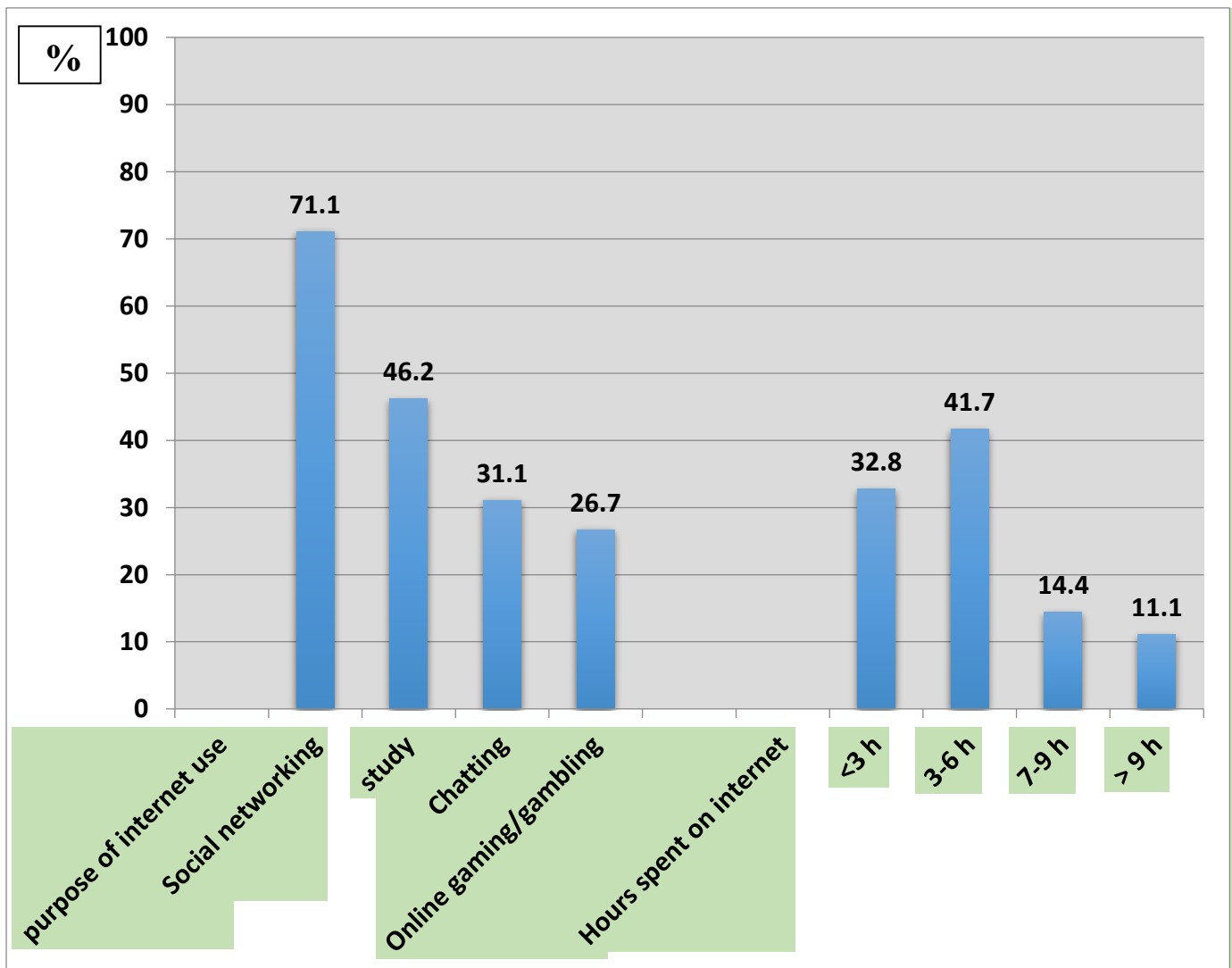


Figure (1): purpose of internet use and hours spent on internet among studied group (No. =180).

Our results revealed that there were statistically significant associations between internet addiction and gender, degree, place of living, students-parent's relationship and income that 92.8% of females, 96.2% with bad degree, 95% of those living away from their family, 95.5% of those with bad students-parent's relationship and 74.8% of students who had enough or more income suffered from internet addiction. In contrast, there were no statistically significant association between internet addiction and age, types of faculties, grade, residence, friendship, religious commitment, and stressful conditions in the last year and presence of physical disability (Table 3).

Table (3): Association between level of internet addiction and socio-demographic characteristic among studied groups (No.=246)

Socio-demographic characters	Internet addiction				χ^2	P-value
	No Internet addiction (No.=66)		Internet addiction (No.=180)			
	No.	%	No.	%		
Age (years)						
<20 years (n=110)	30	27.3	80	72.7	0.019	0.888
≥20 years (n=136)	36	26.5	100	73.5		
Gender						
Female (n= 139)	10	7.2	129	92.8	62.76	<0.001
Male (n=107)	56	52.3	51	47.7		
Faculty						
Theoretical (n= 128)	30	23.4	98	76.6	1.563	0.211
Practical (n= 118)	36	30.5	82	69.5		
Grade						
Juniors* (n=130)	41	31.5	89	68.5	3.114	0.077
Seniors (n=116)	25	21.6	91	78.4		
Degree of academic achievement						
Bad (n=130)	5	3.8	125	96.2	74.18	<0.001
Good (n=116)	61	52.6	55	47.4		
Residence						
Rural (n=122)	29	23.8	93	76.2	1.153	0.282
Urban (n=124)	37	29.8	87	70.2		
Place of living						
+ Away from family (n=141)	7	5.0	134	95.0	80.446	<0.001
With family (n= 105)	59	56.2	46	43.8		
Students-parents relationship						
Bad (n=134)	6	4.5	128	95.5	74.902	<0.001
Good (n= 112)	60	53.6	52	46.4		
Friendship						
Good (n= 124)	30	24.2	94	75.8	0.884	0.346
Bad (n=122)	36	29.5	86	70.5		
Religious commitment						
Yes (n=122)	28	23.0	94	77.0	1.355	0.244
No (n=124)	36	29.0	86	71.0		
Stressful conditions in the last year (disease, death...etc.)						
Yes (n=26)	8	30.8	18	69.2	0.229	0.631
No (n=220)	58	26.4	162	73.6		
Presence of physical disability						
Yes(n=28)	9	32.1	19	67.9	2.739	0.097
No (n=218)	57	26.1	161	73.9		
Family income						
Not enough (n= 55)	29	52.7	26	47.3	15.124	<0.001
Enough/more (n=191)	48	25.2	143	74.8		

* Juniors 1st three year + Away from family (Student hostel, with friends, private flats)

Our results revealed that there was a statistically significant association between internet addiction and the mental health using DASS-21 scale in which 77.8% of depressed, 76.7% of anxious, and 76.6% of stressed students had internet addiction (Table 4).

Table (4): Relation between depression, anxiety, stress as indicators of mental health and internet addiction among studied groups (No. =246)

	Internet addiction				χ^2	P-value
	No Internet addiction (No.=66)		Internet addiction (No.=180)			
	No.	%	No.	%		
Depression						
▪ Absent (n=84)	30	35.7	54	64.3	5.129	0.023
▪ Present (n=162)	36	22.2	126	77.8		
Anxiety						
▪ Absent (n=44)	19	43.2	25	56.8	7.299	0.007
▪ Present (n=202)	47	23.3	155	76.7		
Stress						
▪ Absent (n=41)	18	43.9	23	56.1	7.305	0.007
▪ Present (n=205)	48	23.4	157	76.6		

Our results revealed that females, bad degree of academic achievement, living away from family, bad students-parents relationship, enough or more family income, depression, anxiety and stress were predictors of internet addiction with odds ratios (14.16, 27.72, 24.55, 24.61, 3.32, 1.94, 2.51, 2.55) respectively (Table 5).

Table (5): Binary logistic regression to assess predictors of internet addiction among the studied groups

	B	Wald	p. value	Exp (B)	95% CI For Exp (B)	
					Lower	Upper
Female	3.32	11.234	<0.001	14.16	6.711	29.894
Bad degree of academic achievement	2.5	9.798	<0.001	27.72	10.56	72.8
Living away from family	2.1	8.997	<0.001	24.55	10.47	57.56
Bad students-parents relationship	2.31	8.998	<0.001	24.61	10.01	60.48
Enough /more family income	1.6	6.879	0.018	3.32	1.78	6.19
Depression	0.89	4.853	0.038	1.94	1.08	3.47
Anxiety	2.1	5.49	0.029	2.51	1.27	4.94
Stress	1.9	5.51	0.028	2.55	1.28	5.136

DISCUSSION

Our results revealed that mild internet addiction was observed in (37%) of the sample followed by moderate internet addiction (33.3%) and severe internet, addiction was observed in (2.8%) (table 2). It is similar to another study ⁽¹³⁾, which found that moderate internet addiction represented by more than 33.3% and severe internet addiction by 2% of studied students. In addition, this result was in accordance with the results of a research done in Saudi Arabia ⁽¹⁴⁾, which recorded that the moderate internet addiction prevalence was 49.5% while prevalence of severe was 1.9%. Also, a similar study was done on Czech students and Slovak students where mild internet addiction was 27.2% and 27.6% respectively while moderate and severe internet addiction was (3.4% and 0.1%) in Czech students and (6% and 0.2%) in Slovak students ⁽¹⁵⁾ and another study ⁽¹⁶⁾ reported that prevalence of mild internet addiction was 47.9% while moderate and severe were 18.3% and 0.8% respectively. On the other hand, our result was inconsistent with the result done in Menoufia, which revealed that problematic internet usage was 68.3% ⁽¹⁾. The increased prevalence of students' internet addiction can be clarified by the rapid spread of using the internet in current days and the dependence of students on it during education especially after COVID-19 pandemic.

Assessment of mental health by DASS-21 scales (Table 2) revealed that severe depression, anxiety, and stress were prevalent among 40.2%, 76.4%, and 47.2% respectively. This result was consistent with the result of a one study ⁽¹⁾ where severe depression was common (27.1%) in comparison to mild depression (19.3%), severe anxiety was 53.2% of studied students and severe stress was 31.4%. In addition, it was similar to another study ⁽¹⁷⁾, which reported that the prevalence of anxiety, stress, and depressions were 55.6%, 34 and 39.6% respectively. However, our result was inconsistent with the study done on Czech students and Slovak students where severe depression was 3.4% and 2.7% respectively and severe anxiety was (4.9% and 3.5%) respectively and severe stress was (12.9% and 9.1%) respectively ⁽¹⁵⁾. This high degree of severe depression, anxiety and stress may be due to increase number of students with poor academic achievement (n=130), living away from family (n=141), poor students-parent's relationship (n=134).

Purpose of internet use and hours spent on internet (Figure1).

Our study revealed that social networking followed by study were the most common purposes of internet use among participants (71.7 and 46.2%) respectively. It was similar to another study ⁽¹⁰⁾ in which the most common purpose of utilizing internet was social networking (71.4%) then uses for study (42.1%) and another study done by ⁽¹⁸⁾ revealed that (64.8%) of participants used social networking. Also, another

study ⁽¹⁹⁾ found that social media was used by >80% of participants.

In the current study, the majority of students utilized the internet for 3–6 hours/day (41.7%) while, (11.1%) of them used internet for more than nine hours. This result was similar to another study ⁽¹⁰⁾, which revealed that (42.1%) of participants used internet for 3-6 hours while (11.5%) of them used internet for more than nine hours. This is inconsistent with one study ⁽²⁰⁾ where most of participants used internet for less than 3 hours per day. This difference may be due to difference in target groups. Our target groups were students in general faculties while others' target population were students taking professional courses with vast study syllabus in which participants had little time to use internet.

Association between level of internet addiction and sociodemographic characteristic (Table 3).

Our result revealed that internet addiction was more common among females as 92.8% of females were internet addicted while 47.7% of males were internet addicted. Our result was similar to one study ⁽¹⁰⁾ in which internet addiction was common among females (84%) compared to (71.4%) among males and also with another study ⁽²¹⁾. While, it was inconsistent with one study ⁽²²⁾ in which internet addiction was common among males more than females. In our study, higher prevalence of internet addiction among females may be due to higher frequency of female participants in the study beside higher attendance rate of females to chosen classes as we did our data collection during lecture hours.

Our study revealed that 96.2% of participants with bad degree of academic achievement had internet addiction with statistically significant difference. This result was consistent with the studies ⁽²³⁾ on medical students and ⁽²⁴⁾ on Asian college students, who reported that students with academic failure were having internet addiction. While, it was inconsistent with another study ⁽²⁵⁾, which found that there was no significant association between academic achievement and using social media. Finding of our study which revealed association between poor academic achievement and internet addiction may be due to over use of internet for social networking and chatting and gaming etc. may lead to decrease time available to study.

Our results revealed that 95% of participants living away from their family had internet addiction. This was similar to previous study ⁽²⁶⁾. This finding may be due to living away from family lead to lose of the role of their parents' control on their risky behavior like their online activities.

Our study reported that 95.5% of participants with bad students-parent's relationship had internet addiction. This was similar to another study ⁽²⁷⁾, which explored the role of family in protecting adolescents from hazardous internet addiction. These findings

may be due to importance of parents' role in their family as bad students-parent's relationship leads to feeling of students of depression, stress and anxiety and loneliness so they used the internet to escape from these bad feeling. In addition, living in families with poor parent's relationship may lead to the students refuse supervision and monitoring by their parents.

Our results revealed an association between internet addiction and income. In which 74.8% of those with enough or more than enough had internet addiction with statistically significant result. This was consistent with a study done ⁽¹⁾, where 74.5 of students with problematic use of the internet had sufficient family income followed by more than sufficient 70.2% and the least was less than sufficient 48.6%. This is also, similar to the study done in Jordan, where internet addiction among students was 48% among moderate family income while the least internet addiction was among high family income ⁽²⁾. This may be due to using internet to the degree of internet addiction is costly and need more money so it is higher among families having sufficient to more than sufficient income than families with less than sufficient income. However, this finding disagrees with finding of other authors ⁽²⁷⁾ who found that low family income was a predictor of internet addiction.

Our results displayed that there was a statistically significant association between internet addiction and depression, anxiety, and stress as indicator of mental health (Table 4) that 77.8%, 76.7%, and 76.6 of participants who have depression, anxiety, and stress correspondingly had internet addiction. This was consistent with another study ⁽¹⁾, where 71.3%, 70.5%, and 70.4% of those having depression, anxiety, and stress had problematic use of the internet with an odds ratio of 1.57, 1.65, and 1.48 respectively and another study ⁽¹⁰⁾ found that 85.7% of depressed had internet addiction and 83.3% of those having anxiety were internet addicts and 57.1% of stressed was internet addicts. A highly significant association between stress, depression, anxiety, and internet addiction that increased mean scores among those with moderate to severe internet addiction was also revealed ⁽¹⁶⁾.

Many studies reported a significant positive moderate association between internet addiction and depression, anxiety, and stress ⁽¹⁵⁻¹⁷⁾.

Another study ⁽²⁸⁾ reported that stress, anxiety, and depression, were independently associated with internet addiction. The cause-and-effect correlation between internet addiction and depression, stress, and anxiety couldn't be confirmed considering the cross-sectional design of the study. It is apparent that the internet is utilized by addicts as a means of avoiding and dealing with main psychiatric troubles, on the other hand, it is difficult to prove whether this addiction was the reason or the effect of different psychiatric comorbidities.

Despite the promising outcomes of the current study, small sample sized has been considered the main limitation. In addition, absence of qualitative research procedure could be considered another limitation.

Predictors of internet addiction (Table 5).

Our results revealed that female, bad degree of academic achievement, living away from family, bad students-parent's relationship, depression, anxiety and stress were predictors of internet addiction with odds ratios (14.16, 27.72, 24.55, 24.61, 3.32, 1.94, 2.51, 2.55) respectively. This was consistent with previous study ⁽¹⁾, in which having depression, anxiety, and stress were predictors of problematic use of the internet with an odds ratio of 1.57, 1.65, and 1.48 respectively and another study ⁽¹⁰⁾ found that depression, anxiety and stress were predictors of internet addiction with an odds ratio (14, 3.33 and 12) respectively. In addition, one study ⁽²⁹⁾ found that loneliness, stress, despair, anxiety, and depression were predictors of excessive internet usage.

Also, it was similar to the study ⁽²⁷⁾, which found that the predictors of internet addiction were adolescents having bad relationship with their parents with odds ratio (2.903) and restrictive parenting approaches with odds ratio (1.857), however, they disagree with our study in the following: males were predictors of internet addiction with odd ratio (1.839) and family income with below average to low average in referral to average or above family income with odds ratio (1.857).

CONCLUSION

Addiction to the internet among Zagazig University students was (73.2%). There was a statistically significant association between gender, students' degree, and place of living, students-parent's relationship, income, stress, depression, anxiety, and internet addiction. Female, bad degree of academic achievement, living away from family, bad students-parent's relationship, enough or more family income, depression, anxiety and stress were predictors of internet addiction with odds ratios (14.16, 27.72, 24.55, 24.61, 3.32, 1.94, 2.51, 2.55) respectively.

RECOMMENDATION

Extensive health education programs to increase awareness about the bad consequences of internet addiction especially its adverse effect on mental health of adolescents should be implemented to the students, parents, and educational staff.

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