INTERNET ADDICTION AMONG UNIVERSITY STUDENTS AND ITS ASSOCIATION WITH DEPRESSION: BAGHDAD, 2017

Belal Yaseen Ibraheem*, Hala Natiq Yahya and Angham Meki Hussen

Alghazaliah, Khark, Iraq.

*Corresponding Author

Dr. Belal Yaseen Ibraheem

Alghazaliah, Khark, Iraq.

ASTRACT

Background: The Increasing uses of the Internet whether over or pathological uses remain a growing concern worldwide; now internet addiction considered as an important health problem and requires more attention. Many studies revealed that internet addiction is positively associated with depression. It is important to evaluate depression in problematic internet users. **Objectives:** The objectives of this study are to find the prevalence of internet addiction and also to test if depression is a significant associated factor for internet addiction. **Materials and methods:** This study is cross-sectional with analytic components which conducted among 1584 students from the universities of Baghdad city. A multistage stratified cluster sampling used to select the sample. The students filled the questionnaire papers by self-administering methods. the statistical package for social science (SPSS version 22) software used for organization, presentation and analysis of the data. **Results:** The total prevalence of internet addiction among the study population was 38.9%, and the prevalence of internet addiction among males was 38.4% and 39.4% among females. The total prevalence of depression was 28.1%. There was a significant strong positive relationship between internet addiction and depression. **Conclusions:** According to the results of this study, it was found that depression was a positive predictor factor for internet addiction.

KEYWORDS: The Increasing uses of the Internet addiction.

INTRODUCTION

The Increasing uses of the Internet, whether over or pathological remain a growing concern worldwide[1,2], they have many attributes which make them very attractive to both young and old[1], internet addiction (IA) is classified as compulsive-control disorder[3,4], it is also considered as non-substance behavioral addictions[5], and it is being included in

the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*(DSM-5)*[1,6]; which published by the American Psychiatric Association(APA) on May 18, 2013.[7] It had been found that internet addiction was associated with depression.[8,9,10] Internet addiction can be defined as any online-related compulsive behavior which interferes with normal living and causes severe stress on family, friends, loved ones, and one's work environment, It is not how much the time spending online that determines the addictionlevel, but it how much that time is adversely affecting dailylife[11], now internet addiction is regarded as an important health problem and require more attention.[12] Depression is a common mental disorder, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration, depression can be diagnosed by non-specialists and treated as part of primary health care[13], depression is one of the most important comorbid mental disorders associated with internet addiction.[3,5,14,15] In Jordan, a cross sectional study on adolescent school students had been showed that 6.3% was severely internet addicted with significant relationship between internet addiction and the level of depression.[16] while in china the prevalence was 10.4%(10.2% moderately and 0.2% severely addicted to the Internet).[17] In Britain 18.3% of the sample among British universities' students were pathological internet users,[8] in Italy prevalence of problematic mobile uses(PMU) among high school students was 6.3%[18], in Europe the prevalence of internet addiction was 4.4% (higher in males, male/female 5.2% / 3.8%).[19] In United states, a pilot study revealed that 4% of college students was occasionally addicted on internet uses (12% had moderate to severe depression)[1], another study on university students shows that the estimate of IA was between 9.8% and 15.2%.[20] IA regarded as a global mental health problem and further attention and study should be paid to it, and it can be described in various terms, including (internet addiction disorder, pathological Internet use, and problematic Internet use)[3,14, 21], this additional behavior may have negative impacts on daily life activities, affect person's relations with friends and family, and make him emotionally unstable.[3] The presence of association between mental health problems and internet addiction[5,16,18] and the rapid increase in the prevalence of internet addiction worldwide (3.2 billion internet users over the world in 2015)[16] recommends pay attention by parents and mental health professionals to these important aspects[5,16,18] andit is important to evaluate depression in problematic internet users.[5] However, there are few studies on the association between internet addiction and mental health problems till now.[9] Finally effective efforts are needed to prevent internet addictionbehaviors and their adverse effect on physical[22], mental, psychological health and life quality.[23]

AIMS OF THE STUDY

▪ To establish a baseline data in our country for the control and prevention of internet addiction and its association with depression.

▪ To find the prevalence of IA among university students.

▪ To test if depression is a significant associated factor for IA.

MATERIALS AND METHODS

This study is a cross sectional study with analytic component which carried out among university students of Baghdad city of both gender aged between 18 and 26 years old in four governmental(public) universities and nine private universities of Baghdad city\ republic of Iraq, The study conducted over 8 months period from 1st of January 2017-until 31th of August 2017. A randomized Multi-Stage stratified Cluster Sampling Method was applied in this work. The stages of sampling were as the following: **1st stage**: There were 25universities in Baghdad city, seven public and 18private universities,13 universities (four public and nine private)chosen by stratified random sampling. **2nd stage**: These 13 universities (four public and nineprivate)were consist of 109 colleges (72scientific and 37 humanitarian), 55 college (36 scientific and 19 humanitarian) chosen bystratifiedrandom sampling. **3rd stage:** each college consists of at least 4 stages, one stage from each college chosen by simple random sampling, 55stages chosen (36 scientific and 19 humanitarian). **4th stage:** each stage consist at least of two groups, one group of them chosen by simple random sampling, and the whole students in this group taken as a cluster, therefore there were 55 cluster (36 from scientific colleges and 19 from humanitarian colleges). Data collected over 5 days/week, 5 hours/day; the students answered the questionnaire at the same time in each cluster by self-administered questionnaire and it consisted of 3 parts:- **First part:** This contains multiple questions that asking about 1.Age. 2.Gender. 3. Presence of chronic or psychological diseases. **Second part:** IA evaluated by the Internet Addiction Test (IAT) which is the most widely used test.[19] It is a scoring test from (0 to 100) used for evaluating the degree of internet addiction into (NONE score 0-30, MILD score 31-49, MODERATE score 50-79, SEVER score 80-100), and it is contain 20-item questionnaire, each one has 0-5grade [0= not applicable, 1= Rarely, 2=occasionally, 3=Frequently, 4= Often, 5=Always] then the summation of all these 20-item questionnaire for each student determined to get the final score to specify the state and the severity of internet addiction for each participant.[24] **Third part:** Depression evaluated by using the Zung Depression Scale which consist of 20-item questionnaire that is

widely used for depression assessment in primary healthcare and in various research purposes; each item is scored on a scale ranging from 1 to 4. A total score is derived by summing the individual item scores, and ranges from 20 to 80, depression graded according to the following: 20-44 Normal Range, 45-59 Mildly Depressed,60-69 Moderately Depressed, 70 and above Severely Depressed.[25]

These tests and questionnaire translated to Arabic language by specialist(assistant professor in English languages) to be answered by the participants. Also a reverse translation to original language (by another specialist) to had been done. A pilot study was carried out in two colleges on 60 students from different stage(10 students from each stage) to assess the applicability of questionnaire and the time needed, a minor changes in some questions done after this study and those interviewed students (in pilot study) excluded from the main study. Data collected by direct interview with universities students who answered the self-administered questionnaire in the presence of the researcher and absence of the teaching staff. During interview with the participant, the researcher clarified and explained the title, importance, objective, justification, and the all elements and tests in the questionnaire papers, and answered any question about the research, giving them the choice to participate or not and to use letters or any code instead of the actual name, the participant assured that the information will kept confidential and will be used for research purposes only, then when acceptation obtained they asked to sign the informed consent and answer the questionnaires. SPSS 22 software used for organization, presentation (by graphs and tables) and analysis of the data, the study's outcomes result summarized and presented in tables and graphs.

RESULTS

A total of 1584 university students from Baghdad city participated in this study, 810(51.1%) of the participants were males and 774(48.9%) were females, the age ranged from 18 to 26 years old with mean age 21.2 ±1.6 years old.

Prevalence of internet addiction and depression among students from Baghdad universities

1584 students participated in this study, Regarding IA, the results showed that 616 of them were internet addicted and 968 were normal internet users, the total prevalence of internet addiction among the students in this study was 38.9% as shown in figure (1) with 95% confidence interval (from 36% to 41%), 28.1% of them were mildly internet addicted, 8.1% were moderately addicted and 2.7% were severely addicted as shown in table.(1).
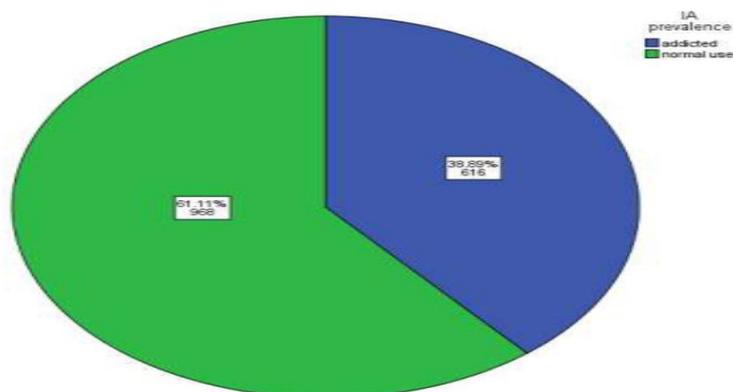
Figure. (1): Internet addiction prevalence among university's students, a sample from Baghdad city, Iraq 2017(N=1584.

Table (1): Prevalence and grades of IA, a sample from Baghdad city, Iraq 2017 N= 1584.

Internet use state	Frequency	Percent	95% Confidence Interval of the total prevalence	
			Lower	upper
Normal internet use	968	61.1%		
Total prevalence of IA	616	38.9%	36%	41%
Mild IA	445	28.1%		
Moderate IA	129	8.1%		
Severe IA	42	2.7%		

Regarding depression, the results showed that 445 of them were depressed and 1139 were normal, then the total prevalence of depression among the students in this study was 28.1% with 95% confidence interval(from 26% to 30%), 24.2% of them were mildly depressed, 2.1% were moderately depressed and 1.8% were severely depressed as presented in table (2).

Table (2): Prevalence and grades of depression, a sample from Baghdad city, Iraq 2017 N= 1584.

Depression state	Frequency	Percent	95% Confidence Interval of the total prevalence	
			Lower	upper
Normal	1139	71.9%		
Total prevalence of depression	445	28.1%	26%	30%
Mild depression	384	24.2%		
Moderate depression	33	2.1%		
Severe depression	28	1.8%		

The correlation between IA and depression

The results showed that there is a significant positive correlation between IA and depression with correlation coefficient =0.682 P value < 0.001.

The association between IA and depression: The results showed a significant association between IA and depression with χ^2=384.269, P value< 0.001 as illustrated in table (3).

Table. (3): The distribution of the sample (N=1584) according to the association of IA with depression state among university students, Baghdad 2017.

			Internet use state		Total
			Normal use	Addicted	
Depression state	Normal	Count	867	272	1139
		%	89.6%	44.2%	71.9%
	Depressed	Count	101	344	445
		%	10.4%	55.8%	28.1%
Total		Count	968	616	1584
		%	100.0%	100.0%	100.0%
c^2=384.269 , d.f=1, P value< 0.001					

The association between IA and the Gender: Regarding the gender distribution, there were 810 male and 744 female, the results showed no significant differencebetween IA prevalence and gender difference (P value=.680), as showed in table (4).

Table. (4): The distribution of the sample (N=1584) according to the association of IA withthe gender, Baghdad 2017.

			Internet use state		Total
			Normal use	Addicted	
Gender	Male	Count	499	311	810
		%	51.5%	50.5%	51.1%
	Female	Count	469	305	774
		%	48.5%	49.5%	48.9%
Total		Count	968	616	1584
		%	100.0%	100.0%	100.0%
c^2=.170, d.f.=1, P value=.680					

Logistic regression: the result of this study showed that depression was significantly associated with IA, a binary logistic regression model done to find if depression is a positive predictorfactor IA behavior of the students.

The results of the model showed that Depression was a significant and strong positive predictors for IA with 6.44 Odd. The results of logistic regression illustrated in table (5).

Table. (5): binary logistic regression analysis (AOR* with 95% CI) for depression relation to internet addiction among students from universities of Baghdad city, Iraq, 2017, N=1584.

Variable	SE Coefficient	*P* value	AOR	95% CI for AOR	
				lower	upper
Depression state	1.863	.000	6.441	4.613	8.753
*(AOR Adjusted Odd Ratio)					

DISCUSSION

This study aims to find the prevalence of internet addiction and its association with depression among university's students from the universities of Baghdad city.

Prevalence of internet addiction: The total prevalence of internet addiction among the students in this study was 38.9% and 28.1% of them were mildly internet addicted, 8.1% were moderately addicted and 2.7% were severely addicted. In agreement with the current study, A study conducted among 408 students who was studying at the Islamic Azad University, the results revealed that 40.7% of them was internet addicted.[26] Another study conducted at the Islamic Azad University also showed the same results.[27] Multiple studies conductedin Taiwan, these studies showed that the prevalence of IA was between 10.8% and 18.8%[28-30], while the prevalence among college students was 12.9%[31], these results disagree with and lower than the present study results which can be explained by the differences in the age group, the evaluating test to determine the IA, sampling methods, and other research techniques. Another study's results which disagreed with this study's results conducted in Turkey which designed to examine the relationship of mental health problem with IA which conducted among Bülent Ecevit university's students showed that 7.2% of the students had Internet addiction.[5] In Britain A study conducted to assess the Prevalence of pathological internet use and its correlations with self-esteem, among university's Students conducted, 371 students participated, the results revealed that 18.3% of the study's population were using internet pathologically[8], that is lower than this study's results which may be due to different in social and cultural factors and also may be due to the differences in sample size, and other research techniques. A pilot study which conducted in United states, revealed that only 4% of college students was occasionally addicted on internet uses (12% had moderate to severe depression).[1] Another study on university students shows that the estimate of internet addiction using the DSM-5 criteria for substance use was between 9.8% and 15.2%[20], these results were much lower than the current study's results which can

explained by differences in sample size and techniques or other research instruments or may be due to the differences in cultural nature and /or social factors.

Prevalence of depression: The total prevalence of depression among the students in this study was 28.1%, 24.2% of them were mildly depressed, 2.1% were moderately depressed and 1.8% were severely depressed. In Consistent with this study results, a systematic review of the studies of the prevalence of depression among university students showed that the average depression prevalence among university students was 30.6%[32] which much higher than average prevalence in general population.[33-37] Inconsistent with this study, A study conducted among 572 university students in Jordan, showed that 75% of the university students had some degree of depressive symptoms[38], this is much higher than the present study results which can be explained by differences in economic, social factors and may be due to differences in sample size, technique, and test used to evaluate the depression state. In Egypt, A study conducted at Assiut University which revealed that 71% of the students had depression[39] that is much higher thanthe current study result which can be explained by the differences in economic and social state between Iraq and Egypt. A large cross-sectional study conducted in USA showed that depression prevalence among college students was 7.85%[40] which inconsistent with and lower than this study results, this can be explained by the differences in cultural, social, economic factors, also may be due to differences in sample size and method or research techniques.

The association between internet addiction and depression

According to this study results, there is a strong positive correlation and a significant association between IA and depression, also depression is a significant predictor for IA with 6.441 Odd. This study results is consistent with many studies, like a study conducted among 587 Jordanian university students.[41] another study agreed with this study results which conducted in Turkey among university students also revealed a significant association IA and depression[42], Many other studies showed the same finding.[43-58] This association can be explained by that person with depression tend to use internet as a way to self-relive[122, 123], this will engage the depressed person in a harmful cycle to get short term relieve leading to addictive behavior toward internet use.[61] Two studies showed that there is no significant relationship between IA and depression[8,62], that may be due to differences, sampling method, measurements, other research technique.

The association between internet addiction and the gender

The results of this study showed no significant difference of IA prevalence between males and females(Pvalue =.680). Most of previous studies revealed that IA prevalence more in males than females[63-67] unlike this study results which showed no significant difference, this can be explained by that; firstly, in Iraq mostof females who reach university education always coming from well-educated and liberated families which gives them equal chance like males to get her own mobile phone and access internet. Secondly, females spent more time at home using internet while males can getout-door more than females, that means more leisure time which lead to more internet use. A study conducted in Korea among 573 high-school students supports this study results, which revealed that there is no significant difference of internet use between males and females.[49] another study support the current finding which conducted among 6000 University students in USA were randomly selected via their University email address to participate in a campus-wide online computer use survey, the results of it revealed that IA prevalence in women is the same as that in men.[68]

CONCLUSIONS

- IA is prevalence among university students was 38.9% with 95 C.I. (36%-41%), with no significant difference between males and females.

- IA is significantly associated and correlated with Depression and depression is a positive predictor factor for internet addiction.

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