

# Prevalence of Internet addiction and its associated factors among AL-Kindy medical students /University of Baghdad 2019

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## Abstract

**Background:** The internet has become an essential part of our daily life. It has a positive and negative impact on people; for students, learning has become easier compared to older days as nowadays information is at their fingertips. However, internet addiction may negatively affect students' life such as emotional instability, depression, poor time management, and poor academic performance.

**Aims of the study:** The aim of this study was to estimate the prevalence and possible risk factors of internet addiction among AL-Kindy medical students and its association with their academic performance.

**Methods:** A cross-sectional study conducted on estimated sample size of 306 students using Dr. Young's questionnaire. Online questionnaires by Google forms and self-administration using quota-sampling methods were used to collect the data, which was analysed using SPSS 25.

**Results:** The prevalence of internet addiction in this sample was high (68%). Age, gender, smoking, parents' educational level, family members' number and using internet with mobile were all insignificant factors. In addition, no significant correlation was found among different stages, but significant correlations were found between internet addiction and using internet for social media, entertainment, online games and online shopping (P-value .000, .000, .044, .038 respectively). Grades in the previous stage were negatively correlated with internet addiction (P-value .006).

**Conclusions:** The results of this study indicated a high prevalence of internet addiction among medical students of AL-Kindy medical college. The findings of the current study showed that internet addiction is negatively associated with the academic performance of students.

**Keywords:** Academic performance; AL-Kindy medical college; Internet addiction; Medical students; Prevalence.

## Introduction

The Internet revolution had substantially changed the world in recent years converting it into a global village. It originally devised, about 50 years ago, for research purposes and exchange of information. Now, it affects every aspect of human life including economics, politics, health, education and social fields. The world showed rapid growth in the use of the internet since the beginning of the 21st century. This is particularly true in developing countries like Iraq. It is a worldwide growing tool for information and is a user-friendly communication medium that is a cost-effective, fast and useful tool in education [1]. In the modern era, academic goals accomplishment has been extremely facilitated by today's technology [2]. No library in the whole world, in the present time, can give an amount of information such as the internet. Not only the amount but also the rapidity and simplicity to reach the data also facilitated, as with just a single click, a huge data can be accessed [3]. People from different part of the globe and different fields of sciences and education has been connected via the internet. It is horrible for those people, including students, to think their academic work, research and education can be accomplished without the internet [4].

Internet is a double-edged sword; it can be a magic wand when it used appropriately but it may wreak havoc when it used for inappropriate purposes [5]. Among the adverse effects of the internet, addiction is the most important. By definition, internet addiction (also called compulsive internet use) is the "inability to stop internet overuse, tendency to perceive offline time as meaningless, excessive irritation and aggression during deprivation" [6,7]. It can be compared to other types of addictions regarding risks and consequences [8]. Internet addition (IA) can lead to various psychological, physical, as well as social

problems including impaired function at work, impaired academic performance, sleep deprivation, poor dietary habits, headache, eye strain, social isolation and relationship problems [9-12], as addicts find refuge on the internet and tend to escape from reality [13]. For this reason, IA has evolved as a major public health issue in recent years and has gained the attention of researchers all over the world [14].

The widespread availability of smartphones and tablets make it an integral part of most student's life [15]. The majority of those students use the internet for non-educational purposes by keeping visiting non-educational sites [16]. Researches have shown that the proportion of time a student spends on the internet for educational purposes versus non-educational activities could significantly determine his success [17,18].

Being psychologically immature, college students including medical, are more vulnerable to IA. All over the world, the prevalence of IA among medical students is increasing and its adverse effect on health and academic performance is worrisome. A Malaysian study reported IA of 36.9% among medical students [18] and a Chinese study revealed a negative effect of internet usage on academic records [19].

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Society, institutions, teachers, and parents can play a major role in the adoption of measures to keep youth away from this harassment [20].

Today, medical students (MS) are encouraged by their supervisors even after graduation to use the internet to keep track with the latest medical advances all over the world to provide the best health services for their patients, also to facilitate information gathering for their regular students prepared seminar episodes, writing and publishing researches purpose. However, the data about the effects of using the internet among medical students and its consequences on their academic performance is negligible [21-24]. For this reason, many researchers around the world started to study this condition as in Egypt [25] and Iran [13]. In Iraq, The literature on internet usage among Iraqi medical students is scanty. This problem has been studied among MS of the University of Kufa and it has been found that the prevalence of IA was 44.5%, 54.6% and 0.9% as mild, moderate and severe respectively [26]. To our best knowledge, there is no other published researches have been done to determine the size of this problem among Iraqi MS. This study conducted with the aims of estimating the prevalence of IA among Al-Kindy medical students, to evaluate the association of personal, familial and social factors as possible risk factors and to evaluate the association of IA with academic performance of Al-Kindy medical students.

## Materials and Methods

### Samples

This cross-sectional study was conducted among MS of Al-Kindy medical college (KMC)/University of Baghdad (UOB) during the academic year 2018–2019. The data were collected during the period from 15th of November 2018 to 6th of February 2019.

The sample size was calculated as 306 among a total of 915 MS of KMC/UOB, using a sample size calculator with confidence level 95% and a confidence interval 4.57% [27]. The sample was divided into six groups according to the six stages of the college, then each group was divided into two subgroups according to the gender after that the number of participants needed in each subgroup was determined according to its percentage in the studied population.

### Questionnaire

Internet addiction diagnostic questionnaire developed by a Center for IA (Dr. Kimberly Young) [28], which is a widely utilized screening instrument examining compulsive Internet use, was used to collect the data. The questionnaire contains 20 questions that examine the symptoms of IA based upon a scale (0=Not applicable, 1=Rarely, 2=Occasionally, 3=Frequently, 4=Often, 5=Always), after all the questions were answered, the numbers for each response were added to obtain a final score, the higher score, the greater level of addiction. The severity impairment index is determined as follows:

1. None (0–30 points).
2. Mild (31–49 points): an average online user, a participant may surf the Web a bit too long at times, but he has control over his usage.
3. Moderate (50–79 points): a participant is experiencing occasional or frequent problems because of the Internet; he should consider their full impact on his life.
4. Severe (80–100 points): internet usage is causing a significant problem in the participant's life; he should evaluate the impact of the Internet on his life and address the problems directly caused by his Internet usage.

Sociodemographic questions (stage, age, gender, marital status, family members number, smoking, using internet with and parents educational level), grade in previous stage and several questions about purposes of using internet (entertainment, social medial, education, news, online shopping, and online games) were added to the original questionnaire.

An online questionnaire by Google forms was used to collect the data [29], but unfortunately, the participants were less than expected (199). The rest (124) were collected by a self-administered questionnaire using a quota sampling method, 17 of them were excluded due to uncompleted or misleading information.

### Statistical analysis

The data were analysed using SPSS 25. Descriptive statistics (including frequencies, percentages, mean and Std.), Independent-Sample T-Test, Chi-Square Test, Fisher's exact test and One-Way ANOVA Test were used.

First stage participants were excluded from the comparison between grades in the previous stage and IAT score because they did not have an academic degree yet. P-value<0.05 was considered statically significant.

Adequate explanation concerning the purposes of the study was provided to the participants and informed consent was obtained to utilize their data for research purposes.

## Results

The sociodemographic characteristics of the participants were illustrated in Table 1. A total of 306 participants were recruited in this study. Their mean age was 20.81 years (Std. 2.039 years). More than half of them were females (61.1%). The majority of participants were single (98.7%) and non-smokers (88.9%). Regarding the educational level of fathers and mothers of participants, (81.4%) of fathers and (71.2%) of mothers completed their higher education. Most of the participants (47.4%) have a family number of 3-5 persons (Table 1).

According to the results of the internet addiction test (IAT), the mean score was  $39.36 \pm 16.274$ . Thirty-two percent of the participants were not addicted, whereas 68% of them were addicted. Forty-one point two percent of the participants had mild IA, 25.5% of them labelled as moderately addicted, while sever internet-addicted participants were only 1.3% as shown in figure 1.

Table 2 shows the comparison of different variables among addicted and non-addicted participants. There was no significant correlation between IA and tested variables.

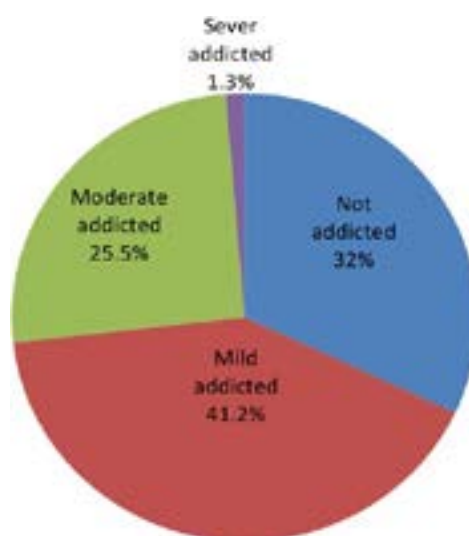
Table 3 shows a comparison of the total score of IAT between different stages of the studied sample. No significant correlation was found with a P-value of 0.451.

The majority of participants spend most of their online time for social media (44%) and entertainment (31%) purposes with significant difference between addicted and not addicted participants (P-value<.001 for both), online games (8%) and online shopping (2%) also show significant differences between addicted and not addicted participants with P-value .044 and .038 respectively. On the other hand, spending online time for educational purposes is more among not addicted participants but with no significant difference as shown in Figure 2 and Table 4.

Table 5 shows a statistically significant correlation between grades in the previous stage and IA with P-value (.006).

**Table 1:** Sociodemographic characteristics of the studied sample.

variables	Frequency	Percentage%
Age (mean ± Std.)	20.81±2.039	
<b>Gender</b>		
Male	119	38.9
Female	187	61.1
<b>Stage</b>		
First stage	63	20.6
Second stage	48	15.7
Third stage	40	13.1
Fourth stage	40	13.1
Fifth stage	56	18.3
Sixth stage	59	19.3
<b>Marital state</b>		
Unmarried	302	98.7
Married	4	1.3
<b>Smoking</b>		
Nonsmoker	272	88.9
Smoker	34	11.1
<b>Father educational level</b>		
Illiterate	3	1.0
Primary school	11	3.6
Secondary school	43	14.1
Higher education	249	81.4
<b>Mother educational level</b>		
Illiterate	5	1.6
Primary school	29	9.5
Secondary school	54	17.6
Higher education	218	71.2
<b>Family members number</b>		
3-5	145	47.4
6-8	143	46.7
>8	18	5.9



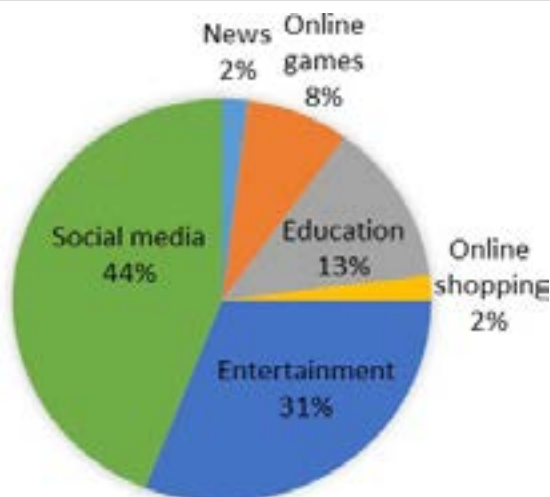
**Figure 1:** Distribution of the studied sample according to IAT scores.

**Table 2:** Association of sociodemographic characteristics with IA among the studied sample using Independent-Samples T Test, Chi-Square Test and Fisher's exact test.

Variable		Internet addiction		Total	P-value
		Normal	Addicted		
Age	(mean ± std.)	21.03±2.043	20.71±2.034	20.81±2.039	.202
Gender	male	41(34.5%)	78(65.5%)	119(38.9%)	.468
	female	57(30.5%)	130(69.5%)	187(61.1%)	
Smoking	non smoker	84(30.9%)	188(69.1%)	272(88.9%)	.225
	smoker	14(41.2%)	20(58.8%)	34(11.1%)	
Father educational level	illiterate	1(33.3%)	2(66.7%)	3(1%)	.062
	primary school	4(36.4%)	7(63.6%)	11(3.6%)	
	secondary school	21(48.8%)	22(51.2%)	43(14.1%)	
	higher	72(28.9%)	177(71.1%)	249(81.4%)	
Mother educational level	illiterate	3(60.0%)	2(40.0%)	5(1.6%)	.410
	primary school	9(31.0%)	20(69.0%)	29(9.5%)	
	secondary school	14(25.9%)	40(74.1%)	54(17.6%)	
	higher	72(33.0%)	146(67.0%)	218(71.2%)	
Family members number	3-5	99(68.3%)	46(31.7%)	145(47.4%)	.989
	6-8	97(67.8%)	46(32.2%)	143(46.7%)	
	>8	12(66.7%)	6(33.3%)	18(5.9%)	
Using internet with	phones	96 (32.8%)	197 (67.2%)	293(95.8%)	.237

**Table 3:** Comparison of total score of IAT between different stages using One-Way ANOVA Test.

Stage	Stage	P-value
First stage	Second stage	.962
	Third stage	1.000
	Forth stage	.991
	Fifth stage	.973
	Sixth stage	.914
Second stage	Third stage	.971
	Forth stage	1.000
	Fifth stage	.653
	Sixth stage	.495
Third stage	Forth stage	.992
	Fifth stage	.988
	Sixth stage	.957
Forth stage	Fifth stage	.806
	Sixth stage	.675
Fifth stage	Sixth stage	1.000



**Figure 2:** Percentage of internet usage according to purposes.

**Table 4:** Association between IA and purposes of using internet among the studied sample using Independent- Sample T Test.

Purpose of using internet	Internet addiction	n	Mean hours/day	Std. deviation	P-value
Education	not addicted	98	1.0796	1.44529	.387
	addicted	208	.9423	1.21685	
Online shopping	not addicted	98	.0949	.25001	.038
	addicted	208	.2051	.49299	
Social media	not addicted	98	2.1792	1.26674	.000
	addicted	208	3.9375	2.17642	
Entertainment	not addicted	98	1.2936	1.06746	.000
	addicted	208	2.8875	2.15498	
Online games	not addicted	98	.43	.889	.044
	addicted	208	.73	1.352	
News	not addicted	98	.0969	.20622	.115
	addicted	208	.1453	.26730	

**Table 5:** Association of grades in the previous stage with IA among the studied sample using Fisher's exact test.

Grades in the previous stage	Not addicted	Addicted	Total	P-value
Acceptable	8(17.8%)	37(82.2%)	45(18.5%)	.006
Average	24(27.3%)	64(72.7%)	88(36.2%)	
Good	34(37%)	58(63%)	92(37.9%)	
Very good	10(66.7%)	5(33.3%)	15(6.2%)	
Excellent	2(66.7%)	1(33.3%)	3(1.2%)	

## Discussion

It is generally agreed that the internet plays an important role in our life, but its downside (addiction) can affect a student's life in many aspects. In this study, the prevalence of IA found to be 41.2%, 25.5% and 1.3% as mild, moderate and severe respectively, which is in accordance with other studies conducted among MS that showed a high prevalence of IA with variations in addiction pattern. A study conducted by Sushma J et al in India reported a prevalence of 58.2%, 19.5% and 0.8% as mild, moderate and severe IA respectively [30]. Pramanik et al in Nepal noted that 40%, 41.35% and 3.07% of the MS were categorized as mild, moderate and severe IA respectively [31].

Ali et al in Egypt reported the prevalence among four medical faculties (Medicine, Nursing, Pharmacy and Veterinary Medicine) to be 39%, 44% and 4% as mild, moderate and severe Internet addicts respectively [32]. Two studies in Malaysia and India reported the prevalence of sever IA to be zero with a prevalence of 49% and 23% in University Sultan Zainal Abidin, Malaysia as mild and moderate IA respectively [33] and prevalence of 51.42% and 7.45% in Dr. D. Y. Patil Medical College, India as mild and moderate IA respectively [34]. The high prevalence of IA could be related to high-stress level among MS [35], which make them more prone to going online as a tool to release their tension [36,37]. The variations in the addiction pattern can be explained by the heterogeneity of the studied samples, a difference in assessing instruments and case definitions used in each study.

During the search for a possible risk factor, age appears to be an insignificant factor in IA, which is consistent with many other studies on MS [25,26,32,34,38-40]. This could be explained by the homogeneity of the age group of the studied sample. Gender also appears to be

an insignificant factor, which is in line with studies in Tunisia [41], Kufa medical college in Iraq [26] and a meta-analysis study done at the National University of Singapore [40]. Other studies report that male gender is more susceptible to IA [30,33,34,38,39,42-44], however, diminish in gender effect can be an emerging trend when both genders have equal access to the Internet [45], especially for MS.

Moreover, the stage appears to be an insignificant factor. A similar finding has been reported by a study done in Dr. D. Y. Patil Medical College, India [34]. Smoking and Family members' number appear to have no significant correlation to IA according to this study and another study on MS in Iran [42].

This study did not show any significant correlation between parent's educational level and IA, which is similar to another three studies conducted among MS in Iran [13], India [34] and Iraq [26].

Some studies done on MS showed that mobile usage for internet access is associated with IA [32,34,38,43], however, our study did not show a significant correlation between using mobile phones for internet access and IA. This could be simply explained by the fact that 95.8% of students in this sample are using a smartphone as a tool for internet access.

Among many purposes for using the internet, this study showed that communication and social media are the most common. Social networking has become a new-age fad. Anonymous nature of online interactions, achieving an altered sense of personal identity online and the need for developing intimate relationships can be the reasons for excess internet use for social networking, which is a similar result to the other four studies on MS [26,32,42,43]. Three of the previous

four studies [32,42,43] reported that using internet for social media is the most important activity related to internet dependency, which is consistent with the finding of this study, However, the fourth study [26] conflict this finding by showing that spending time on social media has no significant correlation to IA.

The second most common purpose for using the internet is entertainment (listening to music, watching videos, films, series, anime, and pornography), as the students seek it to release the tension, alleviate negative emotion, escape from reality or fulfill their sexual needs, which appears to be a very significant factor in IA. This finding is supported by a study done on MS in India [34].

Using the internet for education and study-related topics appear to be not associated with IA. It is similar to the finding in three other studies on MS [26,42,46]. This study also shows that it is the only purpose that healthy students spend more time on it than addicted students. It is close to the finding of a study in Egypt [32] that reported IA was found to be inversely associated with using the internet for educational purposes.

Playing online games appears to be significantly associated with internet addiction, which is in line with the finding of two other studies conducted among MS [31,32]. It could be explained by the fact that internet took gaming experience to a new level by developing Massively Multiplayer Online Role-Playing Games, where players create a characters that exist and progress in a virtual world that share major similarities with the real world, where almost anything can occur, also permitting the players to interact with each other, chat and complete tasks together, among many other things, absorbing players into a second life, which may lead to a very addictive behaviour.

Online shopping appears to be significantly associated with internet addiction, which is consistent with the finding of two other studies conducted among MS [32,46]. It could be explained by findings of a study conducted among the general population of Turkey [47] that reported possible causes of an online shopping addiction may be listed as:

1. Hedonic impulses: including pleasure, relaxation, happiness, and fun.
2. Motivational impulses: including the existence of cheap products, wide selection, promotions and the ability to compare products.
3. Technological factors: including ease of use and practicality.
4. Psychological factors: including stress and boredom.

Watching news online appears to be insignificantly associated with IA. It is consistent with the finding of two other studies conducted among MS [32,34].

As a measure of the association of IA with academic performance among KMC students, an Inverse relation was found, which correlates with a study conducted by Menoufia University Faculty of Medicine, Egypt [25] that reported academic performance was significantly associated with pathological internet usage and poorer grades were a predictor, as pathological internet usage causes the students to lose their capacity to concentrate, most possibly because of late-night internet sessions.

## Limitations of the Study

Data collection was based on the self-reporting of symptoms by the students. There was no interview with students to confirm the clinical

diagnosis of IA. Being a cross-sectional analysis, although some factors were found to be associated with IA, the cause and effect relationship could not be established. An observational/longitudinal study would give more information on the risk factors and the effect of IA. Also because of the insufficient number of married students in this sample, the relation of marital state with IA has not been measured. Moreover, there are other possible risk factors for IA that unfortunately were not included in the questioner (age of first use, monthly financial expenditure for internet access, using internet on privacy, depression score, anxiety score and stress score).

## Conclusions

The results of this study indicated a high prevalence of IA among MS of KMC. The findings of the current study showed that IA is negatively associated with the academic performance of students. IA is associated with using the internet for social media, entertainment, online games, and online shopping purposes. Therefore, these findings suggest several courses of action for such as develop strategies for the prevention of IA and enhance the safe and healthy usage of the Internet. In addition, awareness should be created among the undergraduate MS about the disadvantages of the excessive use of the internet. Finally, it is necessary to encourage students to use the internet for academic research and gathering scientific information.

## Conflicts of Interest

The authors report no conflicts of interest in this work.

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