

INTERNET ADDICTION AND CIGARETTE SMOKING AMONG STUDENTS OF MEDICAL COLLEGES IN DUHOK

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ABSTRACT

Background: Addiction on the internet has become a major concern nowadays with the increase in the need for it for various daily life tasks. The potential of being addicted to one or more behaviors remains a subject of debate. This study aimed to identify the prevalence of internet addiction and its relation to cigarette smoking.

Methods: A cross-sectional study was conducted among students of medical colleges in Duhok governorate (Medicine, Dentistry, Pharmacy, Nursing and Zakho College of Medicine); a total of 421 participants responded to a questionnaire that assessed the degree of internet addiction and cigarette smoking dependence, along with sociodemographic data. Internet Addiction Test and Fagerstrom Test for Nicotine Dependence were used to assess internet addiction and cigarette smoking dependence.

Results: The prevalence of internet addiction was 82.7%. There were 41 (9.7%) cigarette smokers, all males, of whom 37 (90.2%) were internet addicts. Prevalence of smoking was observed to increase with the severity of internet addiction, though the relationship was statistically not significant ($P= 0.304$). Compared to males, female students were more likely to have no or single addiction, while males were prone to double addiction.

Conclusions: The prevalence of internet addiction was high, compared to the low prevalence of cigarette smoking. Prevalence of smoking increased with the severity of internet addiction, but this did not reach statistical significance.

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Keywords: Cigarette Smoking, Duhok, Internet Addiction, Medical Students.

Invention, we say, is the mother of modern diseases! This could be true of conditions that are being categorized as “techno-pathology” disorders, resulting from the overuse or misuse of technology¹. Recently, the internet has become an essential factor in our daily lives, and many individuals have developed and are developing an addiction to it. Internet addiction disorder is defined as a compulsive behavior related to online activities that interfere with an individual’s daily lifestyle^{2,3}. The disorder is characterized by an individual’s lack of control over internet use, resulting in

functional impairment of social, occupational, and academic performance⁴. Excessive use of the internet, withdrawal symptoms, tolerance, and negative consequences are the four essential components for the diagnosis of internet addiction^{5,6}. However, internet addiction is not recognized as a disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) and is considered to need further studies.

Risk of internet addiction increases in the presence of history of other types of addictions⁷; as a result, internet addiction

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can have a negative effect on academic performance⁸.

Cigarette Smoking: According to DSM-V, cigarettes are the most commonly used tobacco product, representing over 90% of tobacco/nicotine use⁹. A prevalence of cigarette smoking of 23.5% was recently reported among students of Duhok city universities.¹⁰ According to CDC, in 2018, 13.7% of US adults aged 18 or older (34.2 million people) smoked cigarettes: 15.6% of men, 12.0% of women.¹¹

The correlation between internet addiction and substance addiction, one of which is nicotine, has been reported in several studies. Lee *et al.*, study suggested that the severity of smoking was positively correlated with the severity of internet addiction¹², and Mei *et al.*'s findings indicated that cigarette smoking could influence the risk of internet addiction¹³. As it appears, cigarette smoking can be a cause of severe internet addiction among cigarette smokers. This could be a major concern in the community. For these reasons, we found it necessary to conduct this research. The aim of this study is to identify the prevalence of internet addiction and its association with cigarette smoking among students who will likely work in the medical field in Duhok governorate.

METHODS

Study design and setting: This study was a cross-sectional study among students of the medical colleges in Duhok governorate. The colleges include Medicine, Dentistry, Pharmacy, Nursing and Medical-technical colleges. The students involved were from University of Duhok and University of Zakho. The study was conducted during three months, from 3rd of May 2019 to 3rd

of August 2019. Approvals were taken from the Deanery of each college before starting the study. Data were collected anonymously using a self-completed questionnaire involving questions mentioned below.

Study sample: Multi-stage sampling was first used to conveniently select five medical colleges: four colleges from the University of Duhok (Medicine, Dentistry, Pharmacy, and Nursing) and one college from the University of Zakho (Medicine). Medical-technical colleges were not included for administrative reasons. In the second stage, two study stages from each college were selected using simple random sampling; University of Zakho College of Medicine had only one study stage at the time of the survey, which was selected. In the third stage, all students in the selected stages were involved in the study. The total number of participants reached 501, from which only 421 were included; 80 participants were excluded due to the inappropriate filling of the questionnaire. Inclusion criteria were any university student present at the time of the survey, regardless of age or sex.

Study instruments: The questionnaire included information on age, sex, current college, and study stage. The Internet Addiction Scale (IAS) and the Fagerstrom Test for Nicotine Dependence were used. IAS is a 20-item scale that measures the presence and severity of internet addiction among adults. This test, a 5-degree Likert self-completed questionnaire, consists of 20 item questions; each question can be given a score from 0 to 5 corresponding to Not Applicable and Always, respectively. In this research, only 10 questions were used in order to improve the response rate with a

smaller number of questions. The questions included were about excessive internet use (5 questions), lack of control (3 questions), and neglect of work (2 questions). As a result, a score of 0-15, 16-24, 25-39, and 40-50 were considered to have a 'normal level of internet usage or not having internet addiction,' a mild, a moderate or a severe level of internet addiction, respectively. Fagerstrom Test for Nicotine Dependence was used to assess the degree of nicotine dependence among smokers. It contains six questions with multiple choices; each choice corresponds to a score, and the sum of scores indicates the degree of nicotine dependence scored from 1 (low dependence) to 8+ (high dependence)^{14,15}. Statistical Analysis: Data have been analyzed using SPSS version 26. Data were described by frequencies and percentages. Fisher's exact test was used to test the

association between categorical variables. A *p*-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1 displays the sociodemographic characteristics: setting (*i.e.*, University and College), sex, and age. The highest proportion of the participants was from the College of Nursing, which accounted for 26.1% of the total sample, and the lowest percentage of participants was from Zakho College of Medicine, which was about 6.7% of the total sample. The percentage of female participants (57.7%) was higher than the percentage of male participants (42.3%). The largest group of participants, according to age, was in the range of 17-20 which accounted for 53.7% of the total sample.

Table 1: Study sample by setting and sociodemographic characteristics

Setting	Characteristic		No. (%)
	University	College	
Sex	Duhok	Medicine	98 (23.3)
		Dentistry	84 (19.9)
		Pharmacy	101 (24)
		Nursing	110 (26.1)
	Zakho	Medicine	28 (6.7)
		Male	178 (42.3)
		Female	243 (57.7)
Age in years		17 – 20	226 (53.7)
		21 – 24	179 (42.5)
		25 – 28	16 (3.8)
Total			421 (100)

The total number of internet addicts was 348 (82.7%). One hundred and thirty-six students (32.3% of the total sample) had a mild degree of internet addiction, 195 (46.3%) had moderate internet addiction,

and 17 (4%) had severe internet addiction, table 2.

The total number of cigarette smokers was 41 (an overall prevalence of 9.7%); all were males and had moderate to high

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dependence on nicotine. Thirty-seven (92.2%) out of the 41 smoking students were internet addicts. According to Table 2 and Figure 1, cigarette smoking prevalence relates positively to an increase in the severity of internet dependence: 8.8%,

11.3%, and 17.7% smokers in mild, moderate, and severe internet addiction, respectively. Despite that, Fisher's exact test yielded a non-significant result ($p = 0.304$).

Table 2. Relationship between cigarette smoking and internet addiction

Internet addiction	Smokers No. (%)	Non-smokers No. (%)	Total No.
Mild	12 (8.8)	124 (91.2)	136
Moderate	22 (11.3)	173 (88.7)	195
Severe	3 (17.7)	14 (82.3)	17
[All internet addicts	37 (10.6)	311 (89.4)	348]
Non-internet addicts	4 (5.5)	69 (94.5)	73
Total	41 (9.7)	380 (90.3)	421

$P = 0.304$ (the row for all internet addicts is for clarification and is not included in the statistical test).

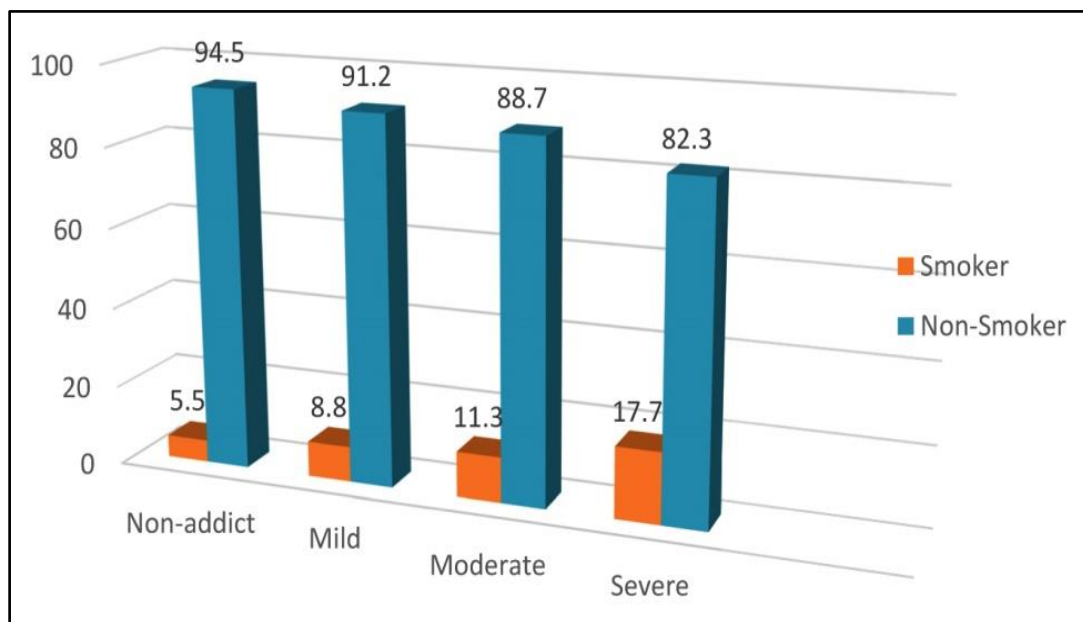


Figure 1: Percent distribution of cigarette smoking by the severity of internet addiction

Table 3 shows that male participants accounted for all double dependence, with a $p < 0.001$. Single dependence (which is internet addiction for females) and no

dependence were higher among female participants than male participants.

Table 3. Dependence status according to sex

Sex	No dependence No. (%)	Single dependence* No. (%)	Double dependence** No. (%)	Total No.
Male	20 (11.2)	121 (68.0)	37 (20.8)	178
Female	49 (20.2)	194 (79.8)	Nil	243
Total	69 (16.4)	315 (74.8)	37 (8.8)	421

$P < 0.001$.

* Single dependence refers to either being a smoker or an internet addict. All females were non smokers, so single dependence for them means internet addiction.

** Double dependence refers to being a smoker and having internet addiction at the same time.

DISCUSSION

This study aimed at studying the prevalence of internet addiction and its relation to cigarette smoking among a group of university students chosen from five medical colleges from various study stages. Four hundred and twenty-one students were included. The study showed that students in these medical colleges have multiform dependence, which was more in males than females.

Our finding regarding the prevalence of internet addiction (82.7%) was consistent with Taha et al., which was 82.3%; the latter survey was done among students of University of Duhok with a larger number of participants¹⁶. Such a high prevalence of internet addiction in both studies could be due to academic stress. As university students encounter stressful situations, they experience negative emotions; as a result, they may use the internet as a coping mechanism to relieve these emotions. Easy accessibility to the internet could also play a role.

The current study failed to detect a statistically significant association between internet addiction and smoking, which is not consistent with Sung *et al.*¹⁷. A limitation of this study is that it only

included medical students, which might be the reason behind the low prevalence of smoking. This might have resulted in a statistically non-significant relation between internet addiction and cigarette smoking. However, the study did show that most cigarette smokers (90.2%) were internet addicts. Additionally, the prevalence of cigarette smoking in severe internet addiction was higher than in moderate internet addiction, and the latter was higher than in mild internet addiction. These findings imply that a relationship is possible between internet addiction and cigarette smoking. The presence of one of these addictions, or worse, of both, can increase the risk for developing non-communicable diseases, e.g., coronary heart disease and mental illness¹⁸.

All female students were non-cigarette smokers, while 41 (23%) of males were smokers. Thus, being a smoker and having internet addiction at the same time (i.e., double dependence) could only be seen among males, indicating they are more prone to double addiction than females. This can considerably increase the risk of non-communicable diseases if not targeted by appropriate preventive programs to help

students increase their physical activity and quit smoking¹⁹.

The prevalence of internet addiction was high among students, but that of cigarette smoking was low. The increasing prevalence of smoking was noticed with the increase in the severity of internet addiction, but this did not reach statistical significance. A larger study covering nonmedical colleges and technical institutions, in addition to medical colleges, is recommended

Conflict of Interest

The authors declare no conflict of interest.

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پوخته

نیدمانا نینتھرنیتتی و جگاره کیشان لدهف قوتابیین کولیزین پزیشکین ل دھوکی

پیشہ کی

پنڈیا بکار نینانا نینتھرنیتتی بھرف زیدہبونیدایہ ژبو بریقہرنا کاروبارین روزانہ ہر ژبہر فی چہندی نیدمانا نینتھرنیتتی یا بویہ جہی دو دلہی دفی سہر دمیدا. نارمانجا فی قہکولینی دیار کرنا ناستی مشہوون و پھیوہندی دناقبہرا نیدمانا لسہر نینتھرنیتتی و جگاره کیشانیدایہ.

شیواز و نہخوش

نہف قہکولینہ ہاتہ کرن لسہر قوتابیین کولیزین پزیشکین زیندہی ل پاریزگہہا دھوکی؛ کو ۴۲۱ قوتابیان بہشدار ی د قہکولینی داکر. پیزانین لسہر پلا نیدمانی لسہر نینتھرنیتتی و پشتہستن لسہر جگاره کیشانی دگلہ پیزانینین باری دیموگرافی ہاتہ و ہرگرن. پیفہری نیدمانا انتر نیتتی و پیفہری Fagerstrom یی پشتہستن لسہر نیکوتینی ہاتہ بکار نینان.

نہنجام

قہکولینی دیار کر کو ریژا نیدمانی لسہر نینتھرنیتتی گہہشتہ ۸۲.۷% و ژمارا گشتیا جگاره کیشان گہہشتہ ۴۱ (۹.۷%)، ہمی جگاره کیش رہگہز نیر بوون دقہکولینیدا، و ۳۷ (۹۰.۲%) ژوان نیدمانا نینتھرنیتتی ہجوو. پھیوہندی دناقبہرا نیدمانا نینتھرنیتتی و جگاره کیشانیدا نہیا گرننگ بوو ژلای نماریفہ (بہایی $p = ۰,۳۰۴$).

دہر نہنجام

دہر نہنجام نیدمانا نینتھرنیتتی یا مشہیہ لدهف قوتابیان. ہر چہندہ پلا نیدمانا لسہر نینتھرنیتتی نہیاگریدای بوو ب جگاره کیشانی بھلی قہکولینی دیار کر کو ریژا سہدی یا جگاره کیشانی بلندتر بوو لدهف وان قوتابیان بین نیدمانا نینتھرنیتتی ہہی.

الخلاصة

إدمان الإنترنت وتدخين السجائر بين طلاب الكليات الطبية في دهوك

خلفية البحث

أصبح الاعتماد على الإنترنت مصدر قلق كبير في الوقت الحاضر مع زيادة الحاجة إليه لمختلف مهام الحياة اليومية. وتبقى إمكانية الإدمان على سلوك واحد أو أكثر موضوع نقاش. هدفت هذه الدراسة إلى تحديد مدى انتشار إدمان الإنترنت والعلاقة بينه وبين تدخين السجائر.

المرضى وطرق البحث

أجريت دراسة مقطعية بين طلاب الكليات الطبية في محافظة دهوك (الطب، الأسنان، الصيدلة، التمريض وطب زاخو) وشارك في ذلك 421 طالبا وطالبة أجابوا على استبيان لتقييم درجة إدمان الإنترنت وتدخين السجائر إلى جانب البيانات الاجتماعية الديموغرافية. تم استخدام اختبار إدمان الإنترنت واختبار Fagerstrom للاعتماد على النيكوتين، لتقييم إدمان الإنترنت وتدخين السجائر، على التوالي.

النتائج

بلغ انتشار إدمان الإنترنت 82.7% وبلغ عدد مدخني السجائر 41 (9.7%) جميعهم من الذكور و37 منهم (90.2%) كانوا مدمني إنترنت. كانت العلاقة بين شدة إدمان الإنترنت وانتشار تدخين السجائر غير ذات اعتبار إحصائي ($p=0.304$).

الاستنتاجات

كان انتشار إدمان الإنترنت مرتفعا لدى الطلاب، مقارنة مع انتشار منخفض للتدخين، ومع ان العلاقة بين الإدمانين كانت غير ذات اعتبار إحصائي، لوحظ ازدياد انتشار تدخين السجائر مع ارتفاع شدة إدمان الإنترنت، مما قد يرفع من خطر الإصابة بالأمراض غير الانتقالية.