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Original Article

Prevalence and Correlates of Internet Gaming Disorder among Undergraduate Medical Students

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ABSTRACT

Background: Internet gaming disorder (IGD) is a worldwide psychological illness that can cause substantial suffering and impairment of gamers' mental and physical health. It refers to a form of addiction that the excessive use of video games that involves a lack of control over the habit and that leads to physical, social and emotional problems. In this study, we evaluated the IGD prevalence among undergraduate students aiming at improving the effectiveness of the prevention programs against this great problem as well as early intervention for this major public health problem. M**ethods:** This cross-sectional study included 627 medical students who were selected randomly from lectures or rounds and interviewed for assessment. All participants were subjected to semi-structured psychiatric interviews and internet gaming disorder 9-Item Short Scale. **Results:** Gaming addiction is significantly associated with uncontrollable internet use, affection of study hours, presence and higher frequency of distraction in attention, decrease in academic grades and poorer grades.

Conclusion: The findings reveal alarming rates of excessive internet use and gaming addiction; this behavioral addiction is intricately linked to disruptions in study habits, attention-related challenges, adverse academic outcomes and elevated levels of depression, anxiety, and stress.

Keywords: Internet gaming disorder (IGD), Mental health, Behavior addiction

INTRODUCTION

Addiction is a state of constant engagement in a substance or behavior that rewards the user despite its debilitating consequences. Substance abuse or addictions involve the intake of drugs or alcohol, while behavioral addictions are about engaging in repetitive behavior. Nonetheless, researchers have acknowledged the significant similarities between chemical addictions and excessive behaviors that are non-chemical [1,2].Behavioral addictions are defined as excessive and pathological behaviors that are characterized by diminished control over the behavior and continuation of the behavior despite negative consequences in daily life leading to functional impairments [2].

Montag et al. [3] propose a new classification scheme for internet use disorders (IUD), conceptualized as "predominantly online addictive behaviors" .It includes five categories that correspond to the specific online activities: gaming disorder, gambling disorder, buying-shopping disorder, pornography use disorder and internet communication/social networks use disorder [3]**.**Another common form of online addictive behaviors is internet gaming disorder. Previous research has reported an association between IGD and anxiety, depression, attention deficit hyperactivity disorder (ADHD) symptoms, as well as social phobia/anxiety and obsessive-compulsive symptoms [4].

Among university students, medical students specifically need special attention as they usually spend long hours on the internet to get the latest updates on medical education and research, using emails, social media, discussion forums and watching movies online [5]. Medical students often face more academic pressure and have longer study durations than other university students [6]. The

increased emotional and academic demands of medical school can have a negative effect on medical students and can precipitate psychopathologies such as depression, anxiety and burnout [7]. This is reflected in the higher rates of addictive behaviors in medical students compared to the general population [8].

To our knowledge, there is a scarcity of studies done in Egypt concerning behavioral addictions among medical university students. Taken together, with this background in mind, the present study aimed to improve the effectiveness of the prevention programs against this great problem as well as early intervention for this major public health problem.

METHODS

This cross-sectional study was performed on some randomly selected medical students at Zagazig University. The recruitment was done upon interviews were done over 6 months from 04/ 2023 to 9 /2023. Students from each academic year were selected randomly from lectures or rounds and interviewed for assessment. Written consent was obtained from the students for participation approval**.** All participants were screened to determine eligibility for participation in the study according to the specified inclusion and exclusion Criteria. This study was carried out after the approval of the Institutional Review Board (IRB).

The total sample was 614 students (Open Epi). We used random sampling: stratified sampling method. By proportional allocation, the sample was distributed according to the proportion of students in each grade:153 students from grade 1, 118 students from grade 2, 115 students from grade 3, 76 students from grade 4, 76 students from grade 5 and **76** students from grade 6.

Students with an age range of 18-25 years, both genders, all socioeconomic classes, and students who agreed to participate and complete the assessment were included in the current study. Students who have psychotic disorders, refusal to participate in the study, presence of substance abuse and presence of any medical or neurological diseases that may affect cognition were excluded. All patients were subjected to a semi-structured questionnaire designed by the authors. The questionnaire was composed of questions related to socio-demographic characteristics and data about academic performance.

Internet Gaming Disorder 9-Item Short Scale: It consists of 9 yes-or-no questions; the scale assigns one point for each “yes” answer. The participants were divided into 3 groups: normal gamers (0 to 2 points), risky gamers (3 to 5 points) and disordered gamers (6 to 9 points) [9]. The short version of the scale provided a valid and reliable measure of IGD with good diagnostic accuracy that can be used for research and diagnostic purposes among male and female gamers of all ages [9]. Arabic version of the scale was validated [10].

The depression anxiety stress scale–21 (DASS–21): The DASS-21 has 21 items in 3 subscales of 7 items each. They ask about depressive symptoms (e.g., feeling down-hearted and blue), anxiety symptoms (e.g., feeling close to panic) and general stress symptoms (e.g., having a tendency to overreact to situations). Response options were on a 4-point scale (0 = did not apply to me at all, and 3 = applied to me most of the time). Higher scores indicate more psychological distress as indicated by Lovibond et al. [11]

Arabic version of the scale was reliable according to Ali et al., [12]

The following cut-off scores were used for each subscale: depression: normal 0–4, mild 5–6, moderate 7–10, severe 11–13 and extremely severe 14+; anxiety: normal 0–3, mild 4–5, moderate 6–7, severe 8–9 and extremely severe 10+; stress: normal 0–7, mild 8–9, moderate 10– 12, severe 13–16 and extremely severe 17+.

Statistical Analysis: Data analysis was performed using the software SPSS (Statistical Package for the Social Sciences) version 26. Categorical variables were described using their absolute frequencies and were compared using the chi-square test and the Fisher exact test when appropriate. To compare ordinal data between two groups, chi-square for the trend test was used. Kolmogorov–Smirnov test was used to verify assumptions for use in parametric tests. Quantitative variables were described using the mean and standard deviation or median and interquartile range according to the type of data. To compare quantitative data between two groups, an independent sample t-test (for normally distributed data) was used. To compare quantitative data between more than two groups, a one-way ANOVA test (for normally distributed data) was used. When the difference is significant, the Bonferroni test was used to detect the difference between the two individual groups. Spearman rank correlation coefficient was used to assess the strength and direction of correlation between two variables. Binary logistic regression was used to identify independent risk factors associated with certain

health problems. The level of statistical significance was set at $P<0.05$.

RESULTS

This study included 627 medical students ranging in age from 18 to 25 years, with a mean of 21.06 years. Females represented 51.2% of them. About 24% of them were in grade 1. About 60% came from rural residences and the largest percentage of them, 99.5%, were Muslims. About 52% sleep for 6 to 8 hours (Table 1).

As regards gaming, 22.3% had risky gaming and 20.6% had disordered gaming (Table 2).

On using DASS-21 scores to evaluate the presence of depression, anxiety, and stress scores among medical students, 29.7% had extremely severe depression, 50.4% had extremely severe anxiety, and 14.5% had extremely severe stress (Table 3).

There was a statistically significant relation between gaming addiction and comorbid psychiatric disorders, age, and residence (Table 4).

There was a statistically significant relation between gaming addiction and uncontrollable internet use, whether study affected, decrease in study hours, presence and more frequent distraction and decrease in academic grades. (Table 5).

There was a statistically significant relation between gaming addiction and depression, anxiety and stress. Gaming addiction **is** significantly associated with higher levels of depression, anxiety, and stress (Table 6).

Moderate depression, extremely severe depression, mild stress, moderate stress, severe stress, extremely severe stress, uncontrollable internet use and urban residence significantly independently increase the risk of gaming addiction by 3.061, 2.799, 2.51, 2.03, 2.191, 3.759, 4.459, and 1.467 folds respectively. Mild and severe depression non-significantly independently risk of gaming addiction by 1.263 and 1.672 folds (Table 7).

Table (1): Distribution of studied students according to demographic data:

	N=627	%/range
Age (year) [mean ± SD]	21.06 ± 2.09	18 – 25
Sex:		
• Male	306	48.8%
• Female	321	51.2%
Grade:		
• One	153	24.4%
• Two	118	18.8%
• Three	116	18.5%
• Four	82	13.1%
• Five	76	12.1%
• Six	82	13.1%
Residence:		
• Rural	249	39.7%
• Urban	378	60.3%
Religion		
• Muslem	624	99.5%
• Christian	3	0.5%
Sleep hours:		
• 6 – 8 hours	323	51.5%
• <6 hours	121	19.3%
• >8 hours	183	29.2%

Table (2) Prevalence of internet gaming addiction among students:

	Median (IQR)	Range
IGD-9 score	2(0 – 5)	0 – 9
• No	358	57.1%
• Risky gaming	140	22.3%
• Disorder gaming	129	20.6%

Table (3) Distribution of the studied students according to depression, anxiety and stress scales:

	Depression	Anxiety	Stress
Median (IQR)	10(5 – 15)	6(3 – 10)	10(6 – 14)
Range	0 – 21	0 – 21	0 – 21
• Normal	118 (18.8%)	84 (13.4%)	225 (35.9%)
• Mild	78 (12.4%)	76 (12.1%)	66 (10.5%)
• Moderate	148 (23.6%)	72 (11.5%)	118 (18.8)
• Severe	97 (15.5%)	79 (12.6%)	127 (20.3%)
• Extremely severe	186 (29.7%)	316 (50.4%)	91 (14.5%)

Table (4) Relation between gaming addiction and baseline data:

			Gaming	χ^2	p
	Normal N=358 (%)	**Risky N=140 (%)**	**Disordered N=129(%)**		
Grade:					
• One	87 (24.3%)	38 (27.1%)	28 (21.7%)		
• Two	58 (16.2%)	31 (22.1%)	29 (22.5%)		
• Three	63 (17.6%)	25 (17.9%)	28 (21.7%)	13.729	0.186
• Four	52 (14.5%)	16 (11.4%)	14 (10.9%)		
• Five	48 (13.4%)	9 (6.4%)	19 (14.7%)		
• Six	50 (14%)	21 (15%)	11 (8.5%)		
Age (year) [mean ± SD]	21.27 ± 2.1	20.84 ± 2.12	20.74 ± 1.99	4.088¥	0.017*
Bonferroni	P_1 0.121	P_2 >0.999	P_3 0.041*		
Sex:					
Male	171 (47.8%)	74 (52.9%)	61 (47.3%)	0.031	0.861
Female	187 (52.2%)	66 (47.1%)	68 (52.7%)		
Religion					
Muslem	356 (99.4%)	140 (100%)	128 (99.2%)	0.005	0.945
Christian	2 (0.6%)	0 (0%)	1 (0.8%)		
Residence:					
Rural	155 (43.3%)	51 (36.4%)	43 (33.3%)	4.584§	0.032*
Urban	203 (56.7%)	89 (63.6%)	86 (66.7%)		
		Gaming		**χ^2**	**p**
	Normal N=358 (%)	Risky N=140 (%)	Disordered N=129(%)		
Sleep hours:					
• 6 – 8 hours	191 (53.4%)	71 (50.7%)	61 (47.3%)		
• <6 hours	70 (19.6%)	26 (18.6%)	25 (19.4%)	2.159	0.707
• >8 hours	97 (27.1%)	43 (30.7%)	43 (33.3%)		
Psychiatric disorder					
• Yes	52 (14.5%)	29 (20.7%)	42 (32.6%)	19.145§	<0.001**
• No	306 (85.5%)	111 (79.3%)	87 (67.4%)		

• Depression • Anxiety • Anxiety and depression • OCD • Panic attacks • Social anxiety • Borderline personality disorder • ADHD • Autistic traits • Sexual disorder	18(34.6%) 12 (23.1%) 4 (7.7%) 7 (13.5%) 2 (3.8%) 4 (7.7%) 1 (3.8%) 2 (3.8%) 1 (1.9%) 1 (1.9%)	11(37.9%) 3 (10.3%) 3 (10.3%) 7 (24.1%) 2 (6.9%) 0 (0%) 2 (6.9%) 1 (3.4%) 0 (0%) 0 (0%)	17 (40.5%) 6 (14.3%) 5 (11.9%) 7 (16.7%) 0 (0%) 2 (4.8%) 2 (4.8%) 2 (4.8%) 0 (0%) 1 (2.4%)	12.131	0.84

¥One way ANOVA test χ^2Chi square test §Chi square for trend test *p<0.05 is statistically significant **≤p0.001 is statistically highly significant

Table (5) Relation between gaming addiction and academic performance:

			Gaming	**χ^2**	**p**
	Normal N=358 (%)	**Risky N=140 (%)**	**Disordered N=129(%)**		
Uncontrollable internet use • Yes • No	 265 (74%) 93 (26%)	 130 (92.9%) 10 (7.1%)	 134 (96.1%) 5 (3.9%)	 43.513§	 <0.001**
If yes, study hours affected: • Yes • No	 243 (68.5%) 112 (31.5%)	 119 (85.6%) 20 (14.4%)	 121 (93.8%) 8 (6.2%)	 40.356§	 <0.001**
Decrease in study hours 1 – 3 hours 3 – 5 hours >5 hours	 99 (40.9%) 81 (33.5%) 62 (25.6%)	 43 (35.5%) 39 (32.2%) 39 (32.2%)	 30 (24.8%) 34 (28.1%) 57 (47.1%)	 18.053	 <0.001**
Attention distraction due to internet use • Yes • No	 275 (76.8%) 83 (23.3%)	 122 (87.1%) 8 (12.9%)	 119 (92.2%) 10 (7.8%)	 17.9§	 <0.001**
			Gaming	**χ^2**	**p**
	Normal N=358 (%)	Risky N=140 (%)	Disordered N=129(%)		
Frequency 1 – 3 3 – 5 5 – 7 7 – 10 Most of time	 62 (22.4%) 50 (18.1%) 22 (7.9%) 16 (5.8%) 127 (45.8%)	 12 (9.8%) 21 (17.2%) 16 (13.1%) 3 (2.5%) 70 (57.4%)	 10 (8.4%) 14 (11.8%) 9 (7.6%) 2 (1.7%) 84 (70.6%)	 21.691	 <0.001**
Decrease in academic grades • Yes • No	 166 (46.4%) 192 (53.6%)	 80 (57.1%) 60 (42.9%)	 85 (65.9%) 44 (34.1%)	 15.805§	 <0.001**
• Excellent • Very good • Good • Accepted • Failed	76 (45.8%) 48 (28.9%) 16 (9.6%) 14 (2.4%) 22 (13.3%)	39 (48.8%) 14 (17.5%) 9 (11.3%) 11 (13.8%) 7 (8.8%)	23 (27.1%) 25 (29.4%) 19 (22.4%) 2 (2.4%) 16 (18.8%)	6.132	0.013*

χ^2Chi square test §Chi square for trend test *p<0.05 is statistically significant **≤p0.001 is statistically highly significant

Table (6) Relation between gaming addiction and depression, anxiety and stress scores:

	Gaming			χ^2	p
	Normal N=358 (%)	**Risky N=140 (%)**	**Disordered N=129(%)**		
Depression					
• Normal	100 (27.9%)	16 (11.4%)	2 (1.6%)		
• Mild	57 (17.9%)	17 (12.1%)	4 (3.1%)	100.846	<0.001**
• Moderate	71 (19.8%)	45 (32.1%)	32 (24.8%)		
• Severe	55 (15.4%)	24 (17.1%)	18 (14%)		
• Extremely severe	75 (20.9%)	38 (37.1%)	73 (56.6%)		
Anxiety					
• Normal	73 (20.4%)	10 (7.1%)	1 (0.8%)		
• Mild	57 (15.9%)	16 (11.4%)	2 (2.3%)		
• Moderate	50 (14%)	14 (10%)	8 (6.2%)	76.033	<0.001**
• Severe	35 (9.8%)	25 (17.9%)	19 (14.7%)		
• Extremely severe	143 (39.9%)	75 (53.6%)	98 (76%)		
Stress					
• Normal	174 (48.6%)	36 (25.7%)	15 (11.6%)		
• Mild	32 (8.9%)	21 (15%)	13 (10.1%)		
• Moderate	60 (16.8%)	34 (24.3%)	24 (18.6%)	74.621	<0.001**
• Severe	61 (17%)	32 (22.9%)	34 (26.4%)		
• Extremely severe	31 (8.7%)	17 (12.1%)	43 (33.3%)		

χ^2Chi square test *p<0.05 is statistically significant **≤p0.001 is statistically highly significant

Table (7) Multivariate analysis of factors associated with gaming addiction among studied patients

	β	p	AOR	95% C.I.	
				Lower	**Upper**
No depression		0.001**			
Mild depression	0.234	0.542	1.263	.596	2.677
Moderate depression	1.119	0.001**	3.061	1.587	5.906
Severe depression	0.514	0.192	1.672	0.773	3.619
Extremely severe depression	1.029	0.008*	2.799	1.308	5.989
No stress		0.002*			
Mild stress	0.920	0.004*	2.510	1.347	4.677
Moderate stress	0.708	0.015*	2.030	1.146	3.596
Severe stress	0.784	0.011*	2.191	1.198	4.006
Extremely severe stress	1.324	<0.001**	3.759	1.853	7.629
Uncontrollable internet use	1.495	<0.001**	4.459	2.435	8.166
Urban	0.383	0.037*	1.467	1.023	2.102

AOR adjusted odds ratio **p≤0.001 is statistically highly significant *p<0.05 is statistically significant

DISCUSSION

Behavioral addictions have gained increasing recognition as significant mental health concerns, extending beyond substance abuse to include compulsive and problematic behaviors [13]. Among specific populations, such as undergraduate medical students, the prevalence and correlates of behavioral addictions are subjects of growing interest in the field

of mental health research [14]. Furthermore, behavioral addictions like excessive gaming can also be observed among undergraduate medical students. The demands of medical education, coupled with stress and the need for coping mechanisms, may contribute to the development of these behavioral addictions. These addictive behaviors can negatively impact academic performance, mental health, and overall quality of life [15].

The main aim of the study was to determine the prevalence of behavioral addictions, identify associated factors among faculty of medicine students and assess the impact of these behavioral addictions on academic achievement. This cross-sectional study was conducted at the Faculty of Medicine, Zagazig University, encompassing a cohort of 627 medical students. Students from each academic year were randomly selected from lectures or rounds and interviewed for the assessment of behavioral addictions.

As regards demographic data, the participants in the study were between 18 and 25 years old, with a mean age of 21.06 years. The gender distribution indicated that 51.2% were females, and 24% were in Grade 1. Notably, a majority (60%) were from rural areas and an overwhelming percentage (99.5%) identified as muslims. Sleep patterns indicated that around 52% of the participants reported sleeping for 6 to 8 hours. Our results were consistent with Khazaie et al. [16] as the total population consisted of 420 subjects or respondents; they had a comparable gender distribution with 196 male students (46.7%) and 224 females (53.3%). The average age of the participants was reported to be 22.80 ± 3.13, slightly higher than ours and a majority of the respondents fell within the age range of 21 to 25 years (57.6%). Similarly, In Basu et al. [17] study, a total of 388 students participated; the study comprised 233 (60.1%) male and 155 (39.9%) female medical students, with a mean age of 20.48 (±1.8) years. Additionally, the study revealed that 40.2% of students lacked adequate sleep due to excessive mobile phone use.

In contrast, Bisen and Deshpande [18] explored the prevalence, predictors and psychological correlates of internet addiction among college students, involving 1,600 participants with an equal gender split. They reported a notable presence of individuals aged 18 and 19 years, constituting 34.0% and 25.3% of the total, respectively. Their participants were mainly from urban areas (59.0%), with 35.8% from rural and 5.3% from semi-urban habitats. Also, the study conducted by Akpinar Aslan et al. [19] aimed to determine the prevalence of risk for behavioral addictions among university students in Turkey. The study participants had a higher mean age of 25.58 years compared to our study. Their sample was predominantly female with 86.1%, in contrast to our more balanced gender distribution, which is likely subject to selection bias.

In our study, 22.3% of participants demonstrated risky gaming behaviors, while 20.6% exhibited signs of disordered gaming. However, the study of Chiang et al. [20] reported a lower pooled prevalence of Internet Gaming Disorder (IGD) among medical students, at 6.2%. Also, the Siste et al. [21] study found a lower prevalence rate of IGD with only 2.03% of respondents showing signs of the disorder. Similarly, In Al Asqah et al. [22] study, which focused on medical students in Saudi Arabia, the prevalence of internet gaming disorder (IGD) among 228 respondents was 8.8% (n=20). In contrast, 19.3% (n=44) were identified as risky gamers.

Salam et al. [23] found that out of the students in Peshawar, only 1.5% reported having Internet Gaming Disorder, which is lower than what we observed in our study. These differences suggest varying degrees of susceptibility to behavioral addictions among different populations of medical students. These variations in prevalence rates could be attributed to differences in sample demographics and size, cultural attitudes toward technology use and access to mental health resources. Additionally, factors such as regional differences in internet access and gaming culture may also contribute to the observed disparities in addiction prevalence rates between the two studies.

In our study, the findings revealed concerning levels of psychological distress. Notably, a substantial 29.7% of participants reported extremely severe depression, underlining the severity of mood-related challenges within the cohort. Additionally, a significant majority, 50.4%, experienced extremely severe anxiety, highlighting the prevalence of heightened nervousness and worry. Moreover, 14.5% of medical students reported extremely severe stress levels, indicating a noteworthy proportion grappling with elevated stressors. Comparatively, Bano et al. [24] reported higher rates of psychological distress, with 40.9% experiencing extremely severe anxiety, 16.8% having extremely severe depression and 7.04% reporting extremely severe stress. These findings suggest a more pronounced psychological burden in their study population.

The disparities in psychiatric disorder prevalence rates between our study and Bano et al.'s study can

be attributed to several factors. Notably, distinct cultural norms and attitudes towards mental health in Egypt and Saudi Arabia may impact the recognition and reporting of psychiatric symptoms. Variability in sample sizes, demographics and characteristics between the studies, with our study comprising 627 participants and Bano et al.'s study including 230 participants, could also affect the generalizability of the findings. Additionally, temporal and contextual factors such as differences in data collection timing and societal attitudes towards mental health, healthcare systems and access to services may contribute to the observed variations. Contrastingly, Javaeed et al. [25] reported a lower prevalence of extremely severe depression (19.0%) but a higher rate of extremely severe anxiety (46.2%) compared to our findings. Stress levels in our study were notably higher, with 14.5% reporting extremely severe stress, whereas Javaeed et al. had 17.6% reporting severe stress. These variations emphasize the nuanced nature of mental health challenges, potentially influenced by diverse contextual factors across different study populations.

Our study on gaming addiction among medical students reveals significantly higher levels of depression, anxiety, and stress, suggesting a complex interplay with mental health. Multivariate analysis highlights specific risk factors, including varying degrees of depression, stress, uncontrollable internet use and urban residence, emphasizing the multifaceted nature of gaming addiction among medical students.

A study conducted by Eldeeb et al. [26] revealed that students who used the internet excessively had higher levels of anxiety and depression compared to those who used it moderately.In alignment with our findings, Siste et al. [21], a study involving Indonesian medical students, revealed a 2.03% prevalence of internet gaming disorder among 639 respondents. Individuals with internet gaming disorder exhibited significantly elevated levels of depression (P value: .01, ORa: 18.79, 95% CI: 3.41–103.64) and anxiety (P value: .03, ORa: 9.30, 95% CI: 1.86–46.60). Additionally, bivariate analysis demonstrated a notable association between internet gaming disorder and gender.

In Singh et al. [27] study, the severity of depressive symptoms showed a connection to higher Internet Gaming Disorder (IGD) scores among medical students. Likewise, In Hakami et al. [28] study, there was a significant association between anxiety and internet gaming disorder among medical students in Saudi Arabia ($P < 0.01$).

The impact of gaming addiction on sleep and academic performance is noteworthy. Suryawanshi et al. [29] case–control research revealed a negative association between academic success and gaming addiction, with a more pronounced negative influence on males' academic performance compared to females. These findings are consistent with a study by Givron et al. [30], which identified problematic Internet and video game usage among medical students exhibiting signs of stress, depression or poor academic performance.

There was a strong negative correlation between internet addiction and academic performance, according to a study by Reda AI , et al. [31]. Eldeeb et al. [26] came to the opposite conclusion, finding no correlation between internet addiction and grade performance. Our study on gaming addiction among medical students reveals significant associations with comorbid psychiatric disorders, age and urban residence. In line with our results, Siste et al. [21] observed in a study among indonesian medical students that the prevalence rate of internet gaming disorder with a mean age of 20.23 years. Similarly, in a study by Madeshan et al. [30] among medical students in Kodagu District, it was found that the mean (standard deviation) age of students with IGD was 20.90 years.

In our study, the students from urban areas reported comparatively higher IGD than rural areas; similar results were reported by Madeshan, al et [30] in a study among Medical Students in Kodagu District .Increased IGD in urban areas may be due to restricted outdoor activities (geographical constraint) leading to a sedentary lifestyle and better knowledge about online or offline gaming.

Similarly, a study by Garg et al. [32] found that the majority of the study participants with IGD were from urban area

In line with our results, Abdelghani M. et al (2018) observed in a study among Zagazig University students that the majority of the study participants were from urban areas [33].

In line with our results, González-Bueso V et al. [34] reported an association between IGD and anxiety, depression, attention deficit hyperactivity disorder (ADHD) symptoms as well as social phobia/anxiety and obsessive-compulsive symptoms. In Kim et al. [35] study, it was observed an association between internet gaming disorder (IGD) and Obsessive-Compulsive Symptoms.

CONCLUSIONS

In conclusion, our study conducted among medical students sheds light on the prevalent landscape of behavioral addictions and their profound impact on various facets of academic and mental well-being. The findings reveal alarming rates of excessive internet use and gaming addiction; this behavioral addiction is intricately linked to disruptions in study habits, attention-related challenges, adverse academic outcomes, and elevated levels of depression, anxiety and stress. Additionally, correlations between internet gaming addiction and heightened levels of depression, anxiety and stress were uncovered. The multifaceted nature of this behavioral addiction underscores the importance of comprehensive mental health support and preventive measures tailored to the unique challenges faced by medical students, ultimately aiming to foster a healthier academic environment.

We recommend the incorporation of components addressing gaming addiction into existing mental health programs for medical students. This includes educational modules on recognizing signs of gaming addiction, promoting healthy gaming habits and providing resources for seeking assistance. Creating a supportive environment that encourages open discussions about gaming behaviors is crucial.

No potential conflict of interest was reported by the authors.

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