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ORIGINAL ARTICLE

How common is Internet Gaming Addiction among Undergraduates of Health Sciences Programs Active on Social Media in Karachi? A Cross-Sectional Survey

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ABSTRACT

Objective: This study aimed to assess the frequency of internet gaming addiction among undergraduate medical students of Karachi, its effect on their academic performance, and their overall health status.

Methods: This cross-sectional study was conducted in selected government and private medical colleges of Karachi from November 2021 to March 2022. Medical students, who were enrolled in year 1 to year 5 of undergraduates health sciences programs of government and private sector of Karachi and had a smartphone and internet connection for past 1 year were included in the study. Internet gaming disorder scale (IGDS-9) was used to determine the proportion of addicted medical undergraduates.

Results: Out of 400 medical students, 212 (53%) students were at risk of getting addicted and 13 (3.3%) students were found to be addicted to internet gaming. Male students were found significantly higher at risk of developing internet gaming addiction and were found to be more addicted as compared to female students i.e., 202 (50.5%) vs. 198 (49.5%) (p-value < 0.001) respectively. Students who had a higher-grade point average (GPA) 230 (57.5%) were significantly lesser at risk of developing internet gaming addiction as compared to 170 (42.5%) students who had a lower GPA (p-value 0.003).

Conclusion: More than half of the study population with predominant males was at risk of developing gaming addiction and they exhibited more health-related effects. Their academic grades were also affected. It is imperative to counsel this cohort for reducing the effects of internet gaming addiction.

Keywords: Academic Performance, Addiction, Internet Gaming Disorder, Medical Students.

INTRODUCTION

The internet has changed the world by transforming people's access to information and communication. By January 2021, there were 61.3 million internet users reported in Pakistan which has increased by 21% during the corona virus disease (COVID) lockdown.[1] A study stated that 95% of students with college or graduate degrees are internet users.[2] According to the report of business world, the gaming market worth was only $41 billion in 2016 which increased to $98 billion in 2020 due to its continuous and increasing demand among teenagers, it is estimated that this market will grow to $272 billion by 2030.[3]

In the latest edition of the Diagnostic and Statistical Manual of Mental disorders (DSM-5), American Psychiatric Association (APA) introduced the "Internet gaming disorder" which affects a minority of the players.[4] Playing mobile games for a longer period of time results in health issues including visual defects and fatigue.[5] It causes laziness in the person and raises the risk of obesity.[6] Excessive usage also results in sleep deprivation of adolescents as they are willing to skip their meals and even forgo their normal sleep patterns since the online games cannot be stopped once started.[7]

A study reported that excess mobile gaming of 3 to 4 hours leads to back pain and neck pain among teenagers and also results in a negative impact on their mental health.[8,9] It has been reported that male teenagers are more involved in playing mobile games as compared to females. Excessive gaming can lead to gaming disorders which can affect the academic performance of medical students as their routine is quite hectic.[10]

Some research has been done on the psychological relationship between mobile game addictions however there is a paucity of literature on internet gaming

addiction among medical undergraduates in Karachi Pakistan. A study done in Rawalpindi has reported the frequency of internet addiction in medical undergraduates as 90.3% with online gaming as a significant risk factor.[11]

Medical undergraduates have more academic pressure and longer education years than other college students. Computer and mobile games provide a way for medical undergraduates to relax. However, this is the case only if this is used in moderation. This study aims to assess the frequency of internet gaming addiction and its effect on students' academic performance and overall health status among medical undergraduates of Karachi.

METHODS

This cross-sectional study was conducted in selected government and private medical colleges of Karachi from November 2021 to March 2022. Approval for the study was taken from the Institutional Review Board of Jinnah Sindh Medical University (JSMU/IRB/2021/-575) and permission for data collection was taken from selected medical colleges in the government and private sector.

Medical students, of either gender, who were enrolled in year 1 to year 5 of undergraduates health sciences programs (MBBS, DPT, BDS, D-Pharmacy and Nursing) of government and private sector of Karachi and had smartphone and internet connection for past 1 year were recruited through convenience sampling. Students who refused to give consent were excluded. The sample size of 378 was calculated using Open Epi version 3 with an error limit of 5%, confidence level of 95% and anticipated frequency of 56.5%.[12] However, 400 medical undergraduates were included to account for non-response and missing data.

The online questionnaire used was the Internet Gaming Disorder Scale-Short Form (ISGDS9-SF), which is a brief standardized psychometric tool to assess internet gaming addiction. It was developed by Dr. Halley M. Pontes and for the reuse of his above-mentioned scale; he has given permission to everyone for research and non-commercial purpose only.[13]

Total scores obtained by summing up all responses given to all nine items of the IGDS9-SF and were ranged from a minimum of 9 to a maximum of 45 points, with higher scores being indicative of a higher degree of Internet Gaming Disorder. The values <15 indicate without internet gaming addiction and addiction, values between 16-32 indicate persons are at high risk for developing internet gaming addiction while persons having a score greater than 32 indicate a person with internet gaming addiction. Grade point average (GPA) of 3.4 to 4.0 was labelled as higher GPA whereas 3.39 to 2.1 as lower GPA.

Additionally, a section on academic performance and health related effects along with demographic and internet gaming usage information was also enquired from the medical students. The tool was first piloted among undergraduate students active on social media and then modified as per the feedback received. After piloting, it was distributed among the students of different medical colleges in Karachi through electronic-forms. Their responses were noted and transferred to Statistical Package for Social Sciences (SPSS) sheet.

Data entry and analysis were done using SPSS version 20.0. Frequency and percentages were computed for categorical variables like age groups, gender, playing video games, type of institute, academic performance, and device used. Inferential statistics were explored using Chi-square/Fisher exact test to compare internet gaming addiction with sociodemographic characteristics of study participants and factors associated with internet gaming addiction. The p-value of < 0.05 was considered statistically significant.

RESULTS

Out of 400 students, 210 (52.5%) belonged to the age group 18- 21 years, whereas 190 (47.5%) belonged to the age group 22- 25 years. Most of the students were playing video games on smart phones 163 (81.9%). There were 212 (53%) students who were at risk of getting addicted to internet games, while 13 (3%) students were found to be addicted.

There were 202 (50.5%) males who were significantly more at risk of developing internet gaming addiction and were found to be more addicted as compared to 198 (49.5%) females (p-value <0.001). There were 269 (67.2%) students who were playing video games more frequently as compared to 131 (37.8%) who were not playing video games always. These students were significantly more at risk of developing internet gaming addiction and were found to be more addicted than non-players (p-value <0.001). Students who had a higher GPA, 230 (57.5%) were significantly lesser at risk of developing internet gaming addiction as compared to 170 (42.5%) students who had a lower GPA (p-value 0.003). (Table 1)

There were 269 (67.2%) students who played video games frequently out of which 57 (21.2%) participants complained of backache with 45 (79.0%) at risk and 4

Table 1: Comparison of internet gaming addiction with sociodemographic characteristics of study participants (n=400)

Sociodemographic Characteristics	Total	Not Addicted (n= 175)	At Risk (n= 212)	Addicted (n=13)	p-value
Age (in years)					
18-21	210	101 (48.1)	102 (48.6)	07 (3.3)	0.169^
22-25	190	74 (38.9)	110 (57.9)	06 (3.2)	
Gender					
Male	202	70 (34.7)	121 (59.9)	11 (5.4)	<0.001^*
Female	198	105 (53.0)	91 (46.0)	02 (1.0)	
Playing Video Games					
Frequently	269	85 (31.6)	174 (64.7)	10 (3.7)	<0.001~*
Not Always	131	90 (68.7)	38 (29.0)	03 (2.3)	
Type of Institute					
Government	260	110 (43.0)	140 (54.7)	06 (2.3)	0.344~
Private	140	61 (43.6)	72 (51.4)	07 (5.0)	
Academic Performance (GPA)					
2.1 to 3.39	170	58 (34.1)	104 (61.2)	08 (4.7)	0.003^*
3.4 to 4.0	230	117 (50.9)	108 (47.0)	05 (2.2)	
Device used by Frequent Gamers[$] (n=196)					
Smartphone	163	61 (37.4)	96 (58.9)	06 (3.7)	0.648~
Computers/laptops	33	10 (30.3)	21 (63.6)	02 (6.1)	

-GPA: Grade Point Average

[$]The remaining 73 participants (out of 269) chose not to respond to this question, so they were not included in the analysis.

^Chi-Square/~Fisher exact test applied, *p-value ≤ 0.05

Table 2: Frequent playing of video games and its association with internet gaming addiction (n=269)

	Total	Not Addicted (n= 85)	At risk (n= 174)	Addicted (n= 10)	p-value
Health-Related Effects of Frequent Internet Gaming[$]					
Headache	140	47 (33.6)	87 (62.1)	6 (4.3)	0.636^
Irritation in Eyes	126	40 (31.7)	80 (63.5)	6 (4.8)	0.688^
Back Pain	57	8 (14.0)	45 (79.0)	4 (7.0)	0.003~*
Numbness in Fingers	54	10 (18.5)	39 (72.2)	5 (9.3)	0.007^*
Pain in Hand and Fingers	69	19 (27.5)	47 (68.1)	3 (4.3)	0.686~
Internet Gaming Affect Academic Performance					
Yes	57	5 (8.8)	49 (85.9)	3 (5.3)	<0.001^*
No	142	63 (44.4)	74 (52.1)	5 (3.5)	
Not sure	70	17 (24.3)	51 (72.9)	2 (2.9)	
Days Played (per w eek)					
1-3	105	44 (41.9)	58 (55.2)	3 (2.9)	0.014~*
4-7	164	41 (25.0)	116 (70.7)	7 (4.3)	

^Chi-Square/~Fisher exact test applied, *p-value ≤ 0.05, [$]Multiple responses apply

(7%) addicted to internet gaming (p-value 0.003). There were a total of 54 (20.1%) students who complained of numbness of fingers, out of which 39 (72.2%) were at risk and 5 (9.3%) were addicted to internet gaming (p-value 0.007).

When asked about the perception of internet gaming on academic performance, 142 (52.8%) participants thought that internet gaming has not affected their academic performance, however, 74 (52.1%) were at risk of developing internet gaming addiction (p-value <0.001). There were 164 (60.9%) participants who were playing internet games for a greater duration of the week i.e., 4-7 days and out of them, 116 (70.7%) were at risk of developing internet gaming addiction (p-value 0.014) (Table 2).

DISCUSSION

The current study highlights the frequency of internet gaming addiction among medical undergraduates studying in selected medical colleges in Karachi. In contrast to the previous studies, the frequency of internet gaming addiction in this study was found to be low. Previously, globally studies have reported 8.8% frequency among medical students at King Saud University, Saudi Arabia, 6.9% among medical students from Kerala, India, and 8.5% among another group of medical students in Nepal.[14-16] Even in a local study, the frequency of internet addiction was found to be very high.[11] A study among German adolescents found the frequency of internet gaming addiction to be 1.2% and it was found to be 1.6% among European adolescents.[17,18] This further implies that the large variation observed among previous studies was most likely due to the use of different assessment tools, the threshold for scores, sample size, and population characteristics.

Gender has a prominent association with internet gaming addiction, with a small proportion of males found to be addicted and a significantly larger proportion that was at risk for internet gaming addiction as compared to the females. This is in line with a previous study done at King Saud University, Saudi Arabia, where the frequency was found to be 10.1% in males and 6.3% in females.[14] Similarly, another study conducted among adolescents in Saudi Arabia found the frequency of internet gaming addiction to be 6.4% in males and 4% in females. One study suggested that video game developers focus on targeting a male audience, especially online combat games are designed in a manner to attract the male population, increasing their vulnerability to internet gaming addiction.[19]

Researchers from all over the world have performed studies to find out the motives which attract the young population toward internet gaming.[20-23] Previous studies also suggest free games are attracting more audiences than the premium games i.e., games that are sold at a specific price to download and play, and a large proportion of games either online or offline are free to download and are easily available thus putting more of the population at risk for internet gaming addiction.[24,25]

Our study showed a significant association between internet gaming addiction and student's academic performance, as students who were found to be addicted had lower GPAs, whereas students with higher GPAs were spending less time on video gaming. There are some studies that are congruent to our results who have reported that this can be due to a large amount-of time spent allocated to gaming.[26, 27] It can be assumed that most participants had better control over themselves and they played games preferably during the weekends or not during the days when exams were close. These findings strongly suggest that gaming is not particularly harmful and is a leisure activity until done excessively.

A significant association between internet gaming and the occurrence of physical illness was also observed in our study as there was a positive significant association between back pain and numbness in fingers. Similar findings have been reported in a previous study which has indicated an association between physical distress (headache, eye strain, backache) and gaming usage.[28] All these adverse effects are a chain of effects associated with screen use as also proved by previous research studies.[29-30] Our study adds to the existent literature in support of an association between internet gaming and academic and health related effects among our undergraduates it is enrolled in health sciences programs. However, it is subject to certain limitations. Primarily, while interpreting its findings, it should be kept in mind that the research was limited by its cross-sectional design and hence the results might not be generalizable. Because of the modest sample size and self-reported questionnaires were used to collect information about internet gaming practices so there is always a chance of response bias. There is a need to create awareness among students, teachers, parents, and concerned authorities about the harms associated with excessive internet gaming so addiction can be avoided at all costs.

CONCLUSION

Only a small number of undergraduate medical students were found to be addicted to video games, however more than half of students were at risk of developing internet gaming addiction especially males. There was also a significant association between internet gaming addictions with academic grades of students as grades declined in those students who were addicted. Health-related effects were also reported among students who played internet games which include numbness of fingers and backache. The current results can serve as groundwork for the development of awareness sessions to educate our undergraduate enrolled at health sciences programs for caution against overuse of internet gaming. This essentially will lessen the addiction tendencies of our future healthcare providers and will cause improvement in their overall health status.

ETHICAL APPROVAL: The study was approved by the Institutional Review Board of Jinnah Sindh Medical University Karachi, (Reference Number JSMU/IRB/2021/575, dated: Nov 15, 2021).

AUTHORS' CONTRIBUTIONS: ZA: Proposed the study design and conceptualized the project, analyzed the data. MAS: Wrote the introduction and did literature search. AH: Analyzed the data with ZA and wrote first draft of manuscript. RM & LK: Wrote the result and performed data collection. FA: Data collection and wrote discussion section. All authors approved the final manuscript.

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