Original Article

A Study on Internet and Gaming Addiction, Hikikomori Trait and Insomnia Status among Medical Undergraduates at one of Cities of Western India

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Abstract

Background: College students appear more vulnerable in developing a dependence on the internet. Individuals with hikikomori are frequently reported to have social contact predominantly via the internet.

Objectives: To find the prevalence of internet addiction, gaming addiction, hikikomori trait and insomnia amongst medical undergraduates and to study their association with various determinants.

Methodology: The present cross-sectional study was conducted among first to final-year medical students studying at various medical colleges in Indian city from February to May 2021. Data collection was done after obtaining the ethical permission of the Institute. A total of 400 students who gave consent were sent an electronic questionnaire.

Results: The mean age of study participants was 20 ± 1.58 years. Internet addiction was present in 189(47.2%) participants, gaming addiction in 128 (32%) students and hikikomori trait was found in 98(24.5%) students. There was a statistically significant association between different grades of insomnia and internet, gaming addiction, and hikikomori trait (< 0.0001) in the present study.

Conclusion: Internet addiction was present in almost half of the medical students while gaming addiction was seen in nearly one third of the students. Male gender and hostel stay had a statistically significant association with internet addiction, gaming addiction, insomnia and hikikomori trait.

Keywords: Humans, Male, Internet Addiction Disorder, Hikikomori, Prevalence, Sleep Initiation and Maintenance Disorders, Cross-Sectional Studies, Behavior, Addictive, Students, Surveys and Questionnaires, Internet, Electronics, Informed Consent,

INTRODUCTION

In the present century of information and technology, the internet has become a basic necessity of our society. It's an important tool for social interaction, information and entertainment.[1] There have been growing concerns worldwide for what has been labeled as "Internet addiction". Kandell defined Internet addiction as "a psychological dependence on the Internet, regardless of the type of activity once logged on".[2]

College students as a group appear more vulnerable in developing a dependence on the internet than any other segment of society because they have a strong drive to develop a firm sense of identity, to develop meaningful and intimate relationships, and usually have free and easily accessible connections.[2] Medical students globally use it as another main source of health-related information and means for further academic pursuance.[3] However psychologists and educators highly recommend judicious usage of internet as over usage can lead to related physical and psychological problems.[1] These may be poor academic performance, sleep deprivation, headache, eyestrain, poor dietary habits, etc.[3]

Gaming disorder is characterized by craving of the person to play video games.[4] For internet gaming disorder, the prevalence globally varies from 0.7 to 15.6% among adults.[5]

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In recent years a particularly severe syndrome of social withdrawal which was first identified in Japan, called hikikomori has emerged which is defined as "a phenomenon in which persons become recluses in their own homes, avoiding various social situations (e.g., attending school, working, having social interactions outside of the home, etc.) for at least six months". Individuals with hikikomori are frequently reported to have social contact predominantly via the internet and some reports suggest overlap with heavy internet use.[6]

Having healthy behavior and physiology is impossible without normal sleep pattern. Even a small reduction in the amount of sleep, especially when accompanied with a varying sleep schedule, may cause fatigue.[7] Internet addiction could be a major concern in medical students aiming to develop into health professionals. The implications of this addiction and its association with sleep and self-esteem can hinder their studies, impact their long-term career goals and have wide and detrimental consequences for society as a whole.[8]

Due to the paucity of literature, the present study was conducted with the aim of shedding light on internet and gaming addiction, insomnia and hikikomori trait among medical undergraduates of Ahmedabad City.

OBJECTIVES

The objective of study were to study the prevalence of internet addiction, gaming, addiction, and hikikomori trait among medical undergraduates, to assess grade of insomnia and its relation to internet and gaming addiction, hikikomori trait, to assess relation between the sociodemographic profile of study participants with internet and gaming addiction, hikikomori trait and grades of insomnia.

MATERIALS AND METHODS

The present cross-sectional study was conducted among first to final-year medical students studying at various medical colleges of Ahmedabad city. Permission of the Institutional Ethics Committee was obtained before initiating the study. The study duration was from February to May 2021. A list of all medical students studying in various colleges of Ahmedabad city was obtained. The number of participants required for the study was selected through simple random sampling technique. The study subjects who gave consent were sent an electronic questionnaire.

A sample size of 400 was determined by formula $(1.96)^2*p*q/l^2$ where p was assumed as 50% due to unavailability of prevalence of hikikomori trait in India, q as 100-p & l as 10% of p i.e.[5] Moreover, 5% additional data was collected to overcome the non-response by the selected participants.

Data collection tools include internet addiction test for internet addiction,[9] IGDS9-SF(Internet gaming disorder scale-short form) for online gaming addiction[10] and HQ-25[11] for hikikomori trait. Insomnia severity index (ISI)[12] was used for knowing the prevalence and grades of insomnia.

Table 1: Socio-Demographic Profile of study participants (n=400)

Variables	Subclass	Frequency (%)
Age (in completed years)	<20 years	261 (65.3)
	≥20 years	139 (34.8)
Gender	Male	207(51.7)
	Female	193 (48.3)
Year of MBBS	First	56 (14)
	Second	132 (33)
	Third	128 (32)
	Fourth	84 (21)
Stay	Hostel	174 (43.5)
	Local	190 (47.5)
	Paying guest	36 (9)
Socioeconomic status* (Modified B.G. Prasad Classification)	Class 1	365 (91.3)
	Class 2	34 (8.5)
	Class 3	1 (0.3)

*AICPI September 2021=123.3[13]
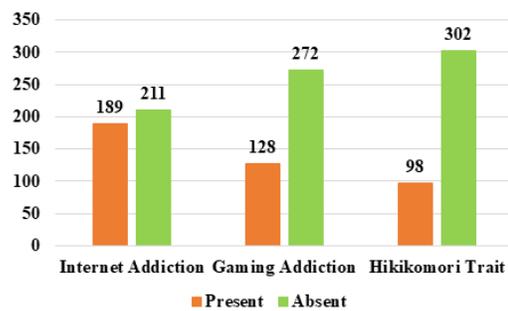
Figure 1: Prevalence of internet addiction, gaming addiction and hikikomori trait among study subjects (n=400)
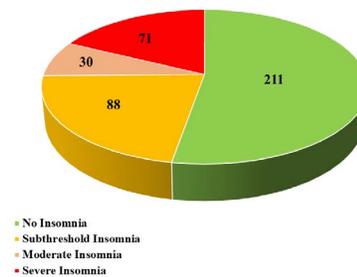
Figure 2: Grades of insomnia among study participants (n=400)

The Inclusion criteria were medical students studying in Ahmedabad city and having a smartphone with an internet connection.

Data entry was done in MS Excel and analyzed using Statistical Package for Social Sciences version 26. For statistical analysis, frequency, percentage, mean, and standard deviation were applied, and the Chi-square test was applied for the association test. *p-value* <0.05 was considered as a statistically significant association between the variables.

RESULTS

The mean age of study participants was 20 ± 1.58 years. Out of total subjects, male students were 207(51.7%) while females were 193 (48.3%). Students studying in the second year were maximum [132 (33%)] followed by third-year [128 (32%)] and fourth year [84 (21%)] (Table 1).

The majority of the students belonged to local city [190 (47.5%)] followed by hostel stay [174(43.5%)] and those living as paying guests[36 (9%)].As per modified B.G. Prasad Classification,[14] 365(91.3%) participants belonged to socioeconomic class 1 while 34(8.5%) belonged to socioeconomic class 2 and 1(0.3%) belonged to socioeconomic class 3 (Table 1).

Internet addiction was present in 189(47.2%) participants while gaming addiction was present in 128(32%) study subjects. Hikikomori trait was found in 98(24.5%) students. (Figure 1)

Out of total study participants, 211(52.7%) reported of not having insomnia, 88 (22%) participants reported subthreshold insomnia while 30(7.5%) participants reported of having moderate insomnia. Severe insomnia was seen in 71 (17.8%) study subjects (Figure 2).

Table 2 shows associations between sociodemographic variables with internet addiction, gaming addiction, grades of insomnia and hikikomori trait. Internet addiction had a statistically significant association with gender (χ^2:55.56, p<0.0001), stay (χ^2:32.28, p<0.0001) and year of MBBS (χ^2:8.26, p<0.05) of participants. Gaming addiction had a statistically significant association with gender (χ^2:69.12, p<0.0001) and stay(χ^2:48.88, p<0.0001) of medical students. Grade of insomnia had a statistically significant association with gender (χ^2:77.83, p<0.0001), Stay(χ^2:95.1, p<0.0001) and year of MBBS (χ^2:26.20, p<0.01). Hikikomori trait showed a statistically significant association with gender (χ^2:59.96, p<0.0001) and stay of medical students (χ^2:69.64, p<0.0001).

Males had more internet addiction (65.2%), gaming addiction (50.7%) and hikikomori trait (40.5%) than females. Moderate and severe insomnia were seen more in males (9.7% &32.4%, respectively). Hostel staying students had more internet addiction (63.2%),severe insomnia (38.6%) and hikikomori trait (44.8%). Moderate insomnia was more common in students staying as paying guests (11.2%).

Second-year medical students had more internet addiction (56%). Moderate insomnia was more common in fourth-year students(14.2%) than severe insomnia in third-year students(22.7%).

Table 3 shows a statistically significant association between grades of insomnia and internet addictionχ^2:134.60, p<0.0001), gaming addiction (χ^2:186.43, p < 0.0001), hikikomori trait(χ^2:259.80, p < 0.0001).

DISCUSSION

The present study showed that participants had a mean age of 20 ± 1.58 years. Similar studies at Guntur, Andhra Pradesh[4] and Manipur[3] showed a mean ages of 22 ± 4 years and 22.31 years, respectively. This difference could be due to the inclusion of intern doctors in their studies who were not included in the present study. As per the present study, males were 51.7% and females were 48.3%.This result is similar to the studies done at Kolkata[8] (males 51.3%,females 48.7%) and Nagpur[2] (males 56.3%,females 43.6%).

Majority of the students in the present study belonged to upper class(91.3%) followed by upper middle class(8.5%)

Table 2: Association of sociodemographic variables with internet addiction, gaming addiction, grades of insomnia and HQ trait (n=400)

Variable Male (%)		Gender		Stay			Year of MBBS			
		Female (%)	Hostelite (%)	Localite(%)	Paying Guest(%)	1(%)	2(%)	3(%)	4(%)	
Internet addiction	Present	135(65.2)	54(28)	110(63.2)	64(33.6)	15(41.6)	26(46.4)	74(56)	49(38.3)	40(47.6)
	Absent	72(34.8)	139(72)	64(36.8)	126(66.4)	21(58.4)	30(53.6)	58(44)	79(61.7)	44(52.4)
Chi-square (*p-value*)		55.56(<0.0001)		32.28(<0.0001)			8.26(<0.05)			
Gaming Addiction	Present	105(50.7)	23(12)	87(50)	30(15.7)	11(30.5)	13(23.2)	51(38.6)	37(29)	27(32.1)
	Absent	102(49.3)	170(88)	87(50)	160(84.3)	25(69.5)	43(76.8)	81(61.4)	91(71)	57(67.9)
Chi-square (*p-value*)		69.12(<0.0001)		48.88(<0.0001)			5.22(0.15)			
Grade of Insomnia	No insomnia	74(35.7)	137(80)	64(36.8)	126(66.4)	21(58.4)	31(55.4)	62(47)	78(61)	40(47.6)
	Sub-threshold	46(22.2)	42(21.7)	29(16.6)	49(25.7)	10(27.7)	16(28.6)	31(23.4)	18(14)	23(27.3)
	Moderate	20(9.7)	10(5.2)	14(8)	12(6.4)	4(11.2)	4(7.1)	11(8.4)	3(2.3)	12(14.2)
	Severe	67(32.4)	4(2)	67(38.6)	3(1.5)	1(2.7)	5(8.9)	28(21.2)	29(22.7)	9(10.8)
Chi-square (*p-value*)		77.83(<0.0001)		95.1(<0.0001)			26.20(<0.01)			
HQ trait	Present	84(40.5)	14(7.2)	78(44.8)	19(10)	1(2.7)	7(12.5)	38(28.7))	35(27.3)	18(21.4)
	Absent	123(59.5)	179(92.8)	96(55.2)	171(90)	35(97.3)	49(87.5)	94(71.3)	93(72.7)	66(78.6)
Chi-square (*p-value*)		59.96(<0.0001)		69.64(<0.0001)			6.60(0.08)			

Table 3: Association between grades of insomnia and internet addiction, gaming addiction, hikikomori trait

Variable		Grades of Insomnia					
		No Insomnia	Subthreshold	Moderate	Severe	Total	Chi square test statistic (p value)
Internet Addiction	Present	57	35	26	71	189	134.60 (<0.0001)
	Absent	154	53	4	0	211	
Gaming Addiction	Present	22	24	13	69	128	186.43 (<0.0001)
	Absent	189	64	17	2	272	
Hikikomori Trait	Present	8	11	10	69	98	259.80 (<0.0001)
	Absent	203	77	20	2	302	

as per the modified B.G Prasad classification. This result is nearer to the study conducted at Nagpur[2] which also showed that the majority of students belong to upper class(61.48%) and upper middle class(33.62%).

The prevalence of Internet addiction in the current study was found to be 47.2% which is lower as compared to a study done at kerala¹(61.4%) which used a 20 item internet addiction test (IAT) for assessment. Males were more commonly addicted to the internet (65.21%) in the current study which is supported by the results in a previous study at Kolkata[8] which showed that 72.4% of males were internet addicts.

The prevalence of gaming addiction in present study was 32%, much higher than studies done at Kanchipuram (4.25%)[15] and Ludhiana(9%).[16] Both the studies used IGDS9-SF scale for assessment which is used in the present study. This difference could be due to more online classes, staying at home and easy accessibility to the internet during the time of COVID-19 Pandemic in the present study.

A 7.5% of participants showed moderate insomnia while severe insomnia was shown by 17.8% of students. A similar study at Kolkata[8] showed moderate insomnia 22.7% and severe insomnia 8.7%. This difference may be due to differences in sample size, socio-cultural differences and technological advancements in recent times. The hikikomori trait was present in 24.5% of participants in the range of worldwide prevalence[17] (12.64–63.07%).

Internet addiction had a statistically significant association with insomnia (p < 0.0001) as per the current study which is similar to the study at Kolkata(p=0.009).[8] This may be due to excessive mobile usage at bedtime.

The present study showed a statistically significant association between insomnia and gaming addiction (p<0.0001), similar to a study done at Kanchipuram, Tamil Nadu.[15] Possible reason may be the availability of a variety of games online.

Conclusion

Internet addiction was present in almost half of the medical students while gaming addiction was seen in nearly one-third of the students. Male gender and hostel stay had a statistically significant association with internet addiction, gaming addiction, insomnia and hikikomori trait. Second-year medical students had more internet addiction; third-year medical students were commonly associated with severe insomnia; fourth-year students had more commonly moderate

insomnia. Insomnia was significantly associated with internet and gaming addiction as well as the hikikomori trait.

Limitations

This study did not assess the previous and subsequent status of participants. The study sample was limited to one of the cities of western India.

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Conflicts of interest

There are no conflicts of interest.

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