Original Research Article

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A cross-sectional study to assess internet addiction among medical undergraduate students of government medical college in Agra, India

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ABSTRACT

Background: Internet has become an essential part of one's life in this modern era where technology is taking over the world. Risk of Internet addiction (IA) has increased in this year 2020, due to Coronavirus disease 2019 (COVID-19) pandemic, where most of time students are restricted to their homes thus relying on social media to be in touch with outer world, moreover surfing of web, as well as online learning practices increased their screen and internet exposure time. Hence, we conducted a study to assess internet addiction among medical undergraduate students of Government Medical College in Agra.

Methods: This descriptive cross-sectional study was conducted among 600 medical undergraduate students of S.N. Medical College, Agra. A self-administered, pre-validated questionnaire was used and a total of 488 students responded. E-questionnaire consist of questions about demographic information and internet usage pattern, it also contains Young's IA test scale to measure internet addiction. Data obtained was analyzed and inferences were drawn.

Results: The prevalence of IA was 61.5%. Mean ± Standard deviation (SD) age of the participants was 22.27±1.59 years and 48.36% were males. IA was significantly associated with male students, higher family income group and higher year of academic course. IA was also statistically significant with higher number of years since using internet, greater screen and internet usage time.

Conclusion: Internet addiction is a growing problem among students of professional courses especially in medical colleges. IA has psychological, physical, and social impact on student's life. So, it is necessary to develop strategies for prevention of internet addiction.

Keywords: Internet, Addiction, Cross-sectional study, Medical students

INTRODUCTION

Addiction is a chronic brain disorder characterized by compulsive engagement in rewarding stimuli despite adverse consequences. ¹⁻⁴ Addiction does not mean only of substance abuse (chemical) but it also includes behavioral addiction like internet addiction, gambling shopping, food addiction etc. Internet user population world-wide has increased from 360 million in December 2000 to 4.8 billion in June 2020. The internet can foster various addictions including addiction to game-playing, pornography, auction sites, social networking sites and

surfing of web.⁵ Internet addiction may also be called compulsive internet use, problematic internet use (PIU), internet dependence.⁶ Internet addiction disorder is characterized by pre-occupation with internet, need to spend long periods online, repeated attempts to reduce internet use, time management problems, environment distress, deception regarding time spent online, and mood modification through internet use.⁷ As adolescents (12-19 years) and emerging adults (20-29 years) access the internet more than any other age groups and undertake a higher risk of overuse of the internet, the problem of Internet addiction (IA) disorder is most relevant to young people.⁸

Some researchers and mental health practitioners see excessive Internet use as a symptom of another disorder such as anxiety, social phobia or depression rather than a separate entity. The increase in penetration of high-speed internet coupled with affordability of computer devices in India over the last few years has led to emergence of IA as reported by some recent studies. 10,11 Risk of Internet addiction has increased this year (2020) may be due to Coronavirus disease 2019 (COVID-19) pandemic, where most of time people are restricted to their homes in order to avoid social gathering, thus relying on social media applications to be in touch with fellow peoples, moreover work from home as well as online learning practices increases their exposure time to screen and internet. 12,13

With this background, a study was conducted to assess internet addiction among medical undergraduate students of Government Medical College in Agra, India

METHODS

After obtaining the Institutional Ethical Committee clearance, this online survey based cross sectional study was done among medical undergraduate students of S. N. Medical College, Agra. We disseminated the equestionnaire using WhatsappTM through the aid of class representatives that helped us to contact and deliver the survey to the entire students of all the four professional years. This online survey was carried out from September 13th, 2020 to September 21st, 2020 among a total 600 medical undergraduate students in the college and out of which only 488 students participated in the study.

A semi-structured, pre-validated, self-administered equestionnaire has three parts. First part includes relevant demographic information along with their academic year. Second part contains questions regarding internet usage patterns viz. years since started using internet, screen time per day (hours), hours of internet usage time per day (hours), most common type of internet connection used, most commonly device used for accessing internet, most common location for internet access. Last part consists of Young Internet addiction test (IAT) questionnaire developed by Dr. Kimberly Young. It is a 20-item questionnaire that measures the presence and severity of internet dependency. Cronbach's alpha for internal consistency has been reported as 0.0889.14 It has been validated in various countries and has been used in some studies in India. 15-17 The responses are based on a 5-point Likert scale. The severity of internet addiction is evaluated in the following manner: scores of 0-30 as no, 31-49 mild, 50-79 moderate, and 80-100 severe impairment. Data was entered in a computer-based spreadsheet and data collected was further analyzed by Statistical package for social sciences (SPSS) version 21. chi-square test was applied for testing the association of internet addiction with demographic variables and variables related to internet usage patterns.

RESULTS

A total of 600 medical undergraduate students were approached through Whatsapp to complete the self-administered, pre-validated e-questionnaire out of which 488 students had filled up the e-questionnaire, giving response rate of 81.33%. The mean (\pm Standard deviation (SD)) age of population was 22.27 \pm 1.59 years with 48.36% males and 51.64% females. Around half (47.54%) were staying away from home i.e., in hostel or paying guest accommodation or rented flats etc. Proportion of students in combined 1st and 2nd prof and in final prof part 1st and 2nd year were 47.55% and 52.45% respectively.

The prevalence of internet addiction was 61.5% (300/488). The level of internet addiction was mild among 41% (200/488), moderate among 19.7% (96/488) and 4 (0.8%) participants had severe addiction. While 38.5 % (188/488) of the participants were completely free from internet addiction (Table 1).

Table 1: Prevalence of IA among medical undergraduate students in accordance to severity.

Degree of internet addiction	Prevalence, N (%)
No internet addiction	188 (38.5)
Mild internet addiction	200 (41.0)
Moderate internet addiction	96 (19.7)
Severe internet addiction	4 (0.8)

67.80% of male students had IA at the time of interview while 55.55% of female students had internet addiction and observed differences were found to be statistically significant (χ^2 =7.7106; p=0.005). Among, students having monthly family income \leq 50,000, 57.69% of them had internet addiction while among those having monthly family income greater than 50,000, 65.78% had internet addiction and results were found to be statistically significant (χ^2 =7.650; p=0.005). It was also found that 50.84% of combined 1st and 2nd professional year students had internet addiction while 71.42% of final year part 1st and 2nd year students had internet addiction, the observed differences were highly significant (χ^2 =21.796; p \leq 0.00001) (Table 2).

Among those respondents who have been using the internet since ≤ 8 years 56.38% had internet addiction while among those using internet since > 8 years 78.57% of respondents had internet addiction and the observed differences were found to be highly statistically significant (χ^2 =17.939; p=0.000023). Statistically significant association was seen with greater screen time per day (in hours) and internet addiction (χ^2 =5.734; p=0.0166). Also, highly statistically significant association was seen between greater number of hours of Internet use per day and internet addiction (χ^2 =68.428; p \leq 0.0001) (Table 3).

Table 2: Results of bivariate analysis showing the association of internet addiction with certain demographic and academic characteristics (n=488).

	Internet addict	tion		
Characteristics	Absent N (%)	Present N (%)	Total	P value
Age (in years)				
≤20	56 (45.16)	68 (54.84)	124	$\chi^2 = 3.091$
>20	132 (36.26)	232 (63.74)	364	p=0.0786
Sex				•
Male	76 (32.20)	160 (67.80)	236	$\chi^2 = 7.7106$
Female	112 (44.45)	140 (55.55)	252	p=0.005*
Current residence				
Home	90 (35.20)	166 (64.80)	256	$\chi^2 = 2.579$
Others#	98 (42.25)	134 (57.75)	232	p=0.108
Monthly family income			·	•
≤50,000	115 (42.31)	145 (57.69)	260	$\chi^2 = 7.650$
>50,000	73(34.22)	155 (65.78)	228	p=0.005*
Professional year of study				
I and II year	116 (49.16)	120 (50.84)	236	$\chi^2 = 21.796$
Final year part-I and II	72 (28.58)	180 (71.42)	252	p≤0.00001*
Belongs to background				
Urban	132 (38.83)	208 (61.17)	340	$\chi^2=0.0423$
Rural	56 (37.83)	92 (62.17)	148	p=0.837

^{*}Statistically significant, #Others included hostel or paying guest accommodation or rented flats etc.

Table 3: Association of internet addiction with certain internet usage characteristics (n=488).

	Internet addiction	ı						
Characteristics	Absent N (%)	Present N (%)	Total	P value				
Years since using internet								
≤8	164 (43.62)	212 (56.38)	376	$\chi^2 = 17.939$				
>8	24 (21.43)	88 (78.57)	112	p=0.000023*				
Screen time per day (hours)								
≤4	96 (45.55)	120 (55.55)	216	$\chi^2 = 5.734$				
>4	92 (33.82)	180 (66.18)	272	p=0.0166*				
Internet use per day (hours)								
≤4	140 (56.45)	108 (43.55)	248	$\chi^2 = 68.428$				
>4	48 (20)	192 (80)	240	p=<0.0001*				
Most common type of internet connection used								
WiFi	32 (45.55)	40 (55.55)	72	$\chi^2 = 1.249$				
Others##	156 (37.50)	260 (62.50)	416	p=0.2635				
Most commonly used device for accessing internet								
Mobile phone/tablets	184 (38.33)	296 (61.67)	480	$\chi^2 = 0.452$				
Personal computers	4 (50)	4 (50)	8	p=0.501				
Most common location for internet access								
Residence	172 (38.74)	272 (61.26)	444	$\chi^2 = 0.0954$				
Others ^{\$}	16 (36.36)	28 (63.64)	44	p=0.7574				

^{*}Statistically significant, ##others included mobile phone internet, internet dongle, landline broadband, \$others included classroom, campus, public places and library.

DISCUSSION

In our study among 488 medical undergraduate students, 188 (38.5%) participants had no internet addiction, total prevalence of IA found to be 61.5% where 200 (41.0%)

had mild addiction, 96 (19.7%) participants had moderate addiction and 4 (0.8%) participants had severe addiction. In a study conducted by Karthikeyan et al among medical students found prevalence of mild and moderate internet addiction accounting to 63.8% and 20.2% respectively. 18

In a study by Chaudari et al, the prevalence of internet addiction among medical students was found to be 58.8% with mild and moderate IA accounting for 51.42% and 7.45% respectively. In another study done by Subhaprada prevalence of IA was 52.63% mild and 24.21% moderate while 23.16% students reported free from addiction.¹⁹ In a study conducted in Egypt among 369 medical students, prevalence of IA (moderate and severe) was determined to be 18.88%. Majority (57.77%) confirmed to mild addiction.20 Irrespective of place of study or number of students screened, medical students are vulnerable for internet addiction and mild IA is quite high among them. Higher prevalence of IA in our study might be accounted to the fact that regular classroom teaching has been withheld due to the COVID-19 pandemic. Online learning practices which emerged as an alternative tool as well as the added leisure time has increased their exposure time to screen and internet. Efforts must be taken to increase awareness and prevent the problem of Internet addiction in them. Certain studies have reported prevalence of IA to be different from ours, which can be attributed to the difference in population group studied and variation in cutoffs used for categorizing IA.

We found higher prevalence of IA among male student, many other studies both from India and abroad had showed similar finding.^{11,21} Available data from the community and online surveys as well as clinical samples suggest that Internet addiction appears to have a male preponderance.²²⁻²⁷ Socio-cultural norms might have played a role in gender difference with respect to internet access. It is also suggested that the gender distribution may be explained by the fact that men are more likely to express interest in games, pornography, and gambling activities that have all been associated with problematic internet use.²²

We found no association between age of study participants and IA. Similar findings with respect to age and IA has been reported by certain studies. 15,28,29 We also found higher prevalence of IA among students of higher professional year, another study have reported the same. 29 This might be due to reason that they get more freedom as well as more experience to explore internet as they get promoted to next year in course. However, certain studies reported opposite of this, i.e. initial years of study were associated with higher burden of IA. 15,31

In our study, there was no difference in the prevalence of IA between participants who lived at home and those living away from home. Similar finding was observed among college students of Bengaluru, but in a study from Maharashtra, people staying at private accommodations were at higher risk of IA as compared to those staying at home. 15,11 The differences in internet access and sociocultural differences might have led to this variation.

Higher family income groups have been found to be associated with a higher prevalence of IA in many studies. ^{32,33} This is consistent to our findings too. This may be due to fact that higher income group had more resources

which gave them freedom to access internet in the form of higher spending per month and possessing a high-end internet enabled-devices.

We found statistically significant association between more number of years of internet usage and IA, similar findings were reported in certain other studies.^{6,15} We found higher number of hours of internet use and high screen time per day, significantly associated with increased risk of IA. The similar association between duration of internet use and IA has been observed in adolescents from Vadodara and from college students of Mumbai.^{34,11} Outside India similar results were reported in several studies as from South east Asia, Europe and Middle east.^{10,35-37}

We found no association between IA and the type of device/type of internet connection most commonly used for accessing the internet. Another study too have found similar findings.³⁹ However, some authors have reported that owning a smart phone is a significant risk factor for IA.^{29,38} Also no association was found between most commonly used location to access internet and IA, similar finding was seen in a study conducted in North India by Gupta et al.³⁹

CONCLUSION

Finding of our study revealed high magnitude of IA among students of medical colleges. IA has psychological, physical, and social impact on student's life. So, it is necessary to develop strategies for prevention of internet addiction as well as therapeutic interventions, which is vital for promoting healthy and safe use of the Internet. Awareness should be created among the students to improve ability to reduce the occurrence of internet addiction behaviour promoting their healthy growth.

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REFERENCES

- 1. Glossary of Terms. Mount Sinai School of Medicine. Accessed on 20 August 2020.
- Volkow ND, Koob GF, McLellan AT. Neurobiologic Advances from the Brain Disease Model of Addiction. N Eng J Med. 2016;374(4):363-71.
- 3. Angres DH, Bettinardi-Angres K. The disease of addiction: origins, treatment, and recovery. Disease-A-Month. 2008;54(10):696-721.
- Malenka RC, Nestler EJ, Hyman. Reinforcement and Addictive Disorders. Sydor A, Brown RY (editors).
 In: Molecular Neuropharmacology: A Foundation for Clinical Neuroscience 2nd edition. New York: McGraw-Hill Medical. 2009: 364-375.
- Viswanath V, Ann ST, Frank KY, James YLT, Jen-Hwa HP. Children's Internet Addiction, Family-to-

- Work Conflict, and Job Outcomes: A Study of Parent–Child Dyads. MIS Quarterly. 2019;43(3):903-27.
- 6. Chaudhari B, Menon P, Saldanha D, Tewari A, Bhattacharya L. Internet addiction and its determinants among medical students. Ind Psychiatry J. 2015;24(2):158-62.
- 7. Young K. Internet addiction: Evaluation and treatment. Stud Br Med J. 1999;7:351-2.
- 8. Anderson EL, Steen E, Stavropoulos V. Internet use and Problematic Internet Use: A systematic review of longitudinal research trends in adolescence and emergent adulthood. Int J Adolescence Youth. 2017;22(4):430-54.
- 9. Hung CI, Weng LJ, Su YJ, Liu CY. Depression and somatic symptoms scale: A new scale with both depression and somatic symptoms emphasized. Psychiatry Clin Neurosci. 2006;60(6):700-8.
- 10. Yadav P, Banwari G, Parmar C, Maniar R. Internet addiction and its correlates among high school students: A preliminary study from Ahmedabad, India. Asian J Psychiatr. 2013;6:500-5.
- Goel D, Subramanyam A, Kamath R. A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents. Indian J Psychiatry. 2013;55:140-3.
- 12. Beech, Mark. COVID-19 Pushes Up Internet Use 70% And Streaming More Than 12%, First Figures Reveal. Forbes. 2020. Accessed on 20 August 2020.
- 13. Kiraly, Orsolya. Preventing problematic internet use during the COVID-19 pandemic: Consensus guidance. Comprehensive Psychiatry. 2020;100:152180.
- 14. Widyanto L, McMurran M. The psychometric properties of the internet addiction test. Cyberpsychol Behav. 2004;7:443-50.
- Krishnamurthy S, Chetlapalli SK. Internet addiction: Prevalence and risk factors: A cross-sectional study among college students in Bengaluru, the Silicon Valley of India. Indian J Public Health. 2015;59:115-21
- Dean AG, Arner TG, Sunki GG, Friedman R, Lantinga M, Sangam S. Epi Info[™], a Database and Statistics Program for Public Health Professionals. CDC. 2011. Accessed on 20 August 2020.
- 17. Sharma A, Sahu R, Kasar P, Sharma R. Internet addiction among professional courses students: A study from central India. Int J Med Sci Public Health. 2014;3:1069-73.
- Karthikeyan E, Thirunaaukarasu D, Norman P, Vidya DC, Mani G. The association between internet addiction, social phobia and depression in medical college students. Int J Community Med Public Health. 2018;5:4351-6.
- 19. Subhaprada CS, Kalyani P. A cross-sectional study on internet addiction among medical students. Int J Community Med Public Health. 2017;4(3):670-4.
- 20. Shaheen HM, Farahat TM, Gaber HM. Problematic Internet Use among Medical School Students in

- Menoufia University Egypt. J Child Adolescent Behavior. 2016;4(298):1000298.
- 21. Grover S, Chakraborty K, Basu D. A survey of Internet use pattern among professionals. Ind Psychiatry J. 2010;19:94-100.
- 22. Morahan-Martin J, Schumacher P. Incidence and correlates of pathological Internet use among college students. Comput Human Behav. 2000;16:13-29.
- 23. Yoo HJ, Cho SC, Ha J, Yune SK, Kim SJ, Hwang J, et al. Attention deficit hyperactivity symptoms and Internet addiction. Psychiatry Clin Neurosci. 2004;58:487-94.
- 24. Niemz K, Griffiths M, Banyard P. Prevalence of pathological Internet use among university students and correlations with self-esteem, the General Health Questionnaire (GHQ) and disinhibition. Cyberpsychol Behav. 2005;8:562-70.
- 25. Chou C, Hsiao MC. Internet addiction, usage, gratification, and pleasure experience: The Taiwan college students' case. Comput Educ. 2000;35:65-80.
- 26. Kaltiala-Heino R, Lintonen T, Rimpela A. Internet addiction? Potentially problematic use of the Internet in a population of 12-18 years old adolescents. Addict Res Theory. 2004;12:89-96.
- 27. Johansson A, Gotestam K. Internet addiction: Characteristics of a questionnaire and prevalence in Norwegian youth (12-18 years). Scand J Psych. 2004;45:223-9.
- 28. Dean AG, Arner TG, Sunki GG, Friedman R, Lantinga M, Sangam S, et al. Atlanta: CDC; 2011. Epi Info ™, a Database and Statistics Program for Public Health Professionals.
- 29. Sharma A, Sahu R, Kasar P, Sharma R. Internet addiction among professional courses students: A study from central India. Int J Med Sci Public Health. 2014;3:1069-73.
- 30. Kawabe K, Horiuchi F, Ochi M, Oka Y, Ueno S. Internet addiction: Prevalence and relation with mental states in adolescents. Psychiatry Clin Neurosci. 2016;70:405-12.
- 31. Al-Gamal E, Alzayyat A, Ahmad MM. Prevalence of internet addiction and its association with psychological distress and coping strategies among university students in Jordan. Perspect Psychiatr Care. 2016;52:49-61.
- 32. Cao H, Sun Y, Wan Y, Hao J, Tao F. Problematic internet use in Chinese adolescents and its relation to psychosomatic symptoms and life satisfaction. BMC Public Health. 2011;11:802.
- 33. Ak S, Koruklu N, Yılmaz Y. A study on Turkish adolescent's internet use: Possible predictors of internet addiction. Cyberpsychol Behav Soc Netw. 2013;16:205-9.
- 34. Prabhakaran MC, Patel VR, Ganjiwale DJ, Nimbalkar MS. Factors associated with internet addiction among school-going adolescents in Vadodara. J Family Med Prim Care. 2016;5:765-9.
- 35. Waldo AD. Correlates of internet addiction among adolescents. Psychology. 2014;5:1999-2008.

- 36. Thomée S, Härenstam A, Hagberg M. Computer use and stress, sleep disturbances, and symptoms of depression among young adults A prospective cohort study. BMC Psychiatry. 2012;12:176.
- 37. Al-Gamal E, Alzayyat A, Ahmad MM. Prevalence of internet addiction and its association with psychological distress and coping strategies among university students in Jordan. Perspect Psychiatr Care. 2016;52:49-61.
- 38. Park S, Hong KE, Park EJ, Ha KS, Yoo HJ. The association between problematic internet use and depression, suicidal ideation and bipolar disorder symptoms in Korean adolescents. Aust N Z J Psychiatry. 2013;47:153-9.
- 39. Gupta A. Internet addiction and its mental health correlates among undergraduate college students of a university in North India. J Family Med Primary Care. 2018;7.4:721.

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