Original Article

Internet addiction among MBBS students at a New Delhi medical college: Prevalence and determinants of a silent pandemic

Husain Abbas[1], Nazish Rasheed[2], Utsav A. Mani[3], Mukesh Kumar[3]

[1]Department of Medicine, JNMC, AMU, Aligarh, Uttar Pradesh, India, [2]Department of Community Medicine, LHMC, New Delhi, Delhi, India, [3]Department of Emergency Medicine, KGMU, Lucknow, Uttar Pradesh, India

Abstract

Background and Objective: The 21st century has witnessed a surge in global internet usage, particularly in developing nations like India. Internet addiction, also known as pathological internet use (PIU) or internet addiction (IA), has emerged as a mental health concern, especially among university students. This study aimed to investigate the prevalence of IA among MBBS students in a medical college in Delhi, India, and explore the association of IA with sociodemographic and internet usage patterns. **Materials and Methods:** A cross-sectional observational study was conducted among 300 undergraduate medical students. Data was collected using a self-administered questionnaire, which included the Internet Addiction Test (IAT) developed by Dr. Kimberley Young. The IAT measures various aspects of internet use, and scores are categorized as normal user, mild addiction, moderate addiction, and severe addiction. Descriptive statistics and chi-square tests were used for data analysis. **Results:** The mean age of onset of internet use was 14.4 ± 1.6 years. Smartphones were the most common devices used for internet access (96.3%), and the mean daily internet usage was 2.9 h ± 0.9 (standard deviation [SD]). The study found that 70.7% of students maintained a permanent login status. The majority of subjects used the Internet for coursework (89.7%) and information searches (88.7%). The prevalence of IA was significant, with 90% of participants being addicted to varying degrees. The grading of IA revealed 10% with no addiction, 54.6% with mild addiction, 32% with moderate addiction, and 3.3% with severe addiction. **Conclusion:** IA is a prevalent public health concern among medical students in Delhi, with a majority of participants being addicted to some extent. Females showed a higher proportion of addiction compared to males. Certain internet activities, such as social networking and watching online videos, were significantly associated with IA. The study highlights the need for recognizing IA as a public health concern and further research to understand its impact on the youth. Longitudinal studies are recommended to observe the development and progression of IA over time.

Keywords: Internet addiction, internet gaming disorder, pathological internet use

Introduction

The onset of the 21st century has witnessed an unprecedented surge in global internet usage, with developing nations like India experiencing a remarkable growth rate. According to the latest reports, as of January 2023, there are 5.04 billion internet users worldwide. China has the most internet users, with 1.412 billion, followed by India with 1.408 billion, the United States with 331.9 million, and Indonesia with 273.8 million. The growth of internet usage in India has been rapid in recent years. In 2012, there were only 12.6% internet users in India. This number has increased fourfold in the past decade, and it is expected to continue to grow in the years to come. Students have become highly reliant

Address for correspondence: Dr. Utsav A. Mani, 602/B-Wing, Indraprastha Estate, D-65, Acharya Narendradev Marg, New Hyderabad, Nirala Nagar, Lucknow – 226 020, Uttar Pradesh, India.
E-mail: utsavanandmani.kgmu@gmail.com

Received: 30-07-2023 **Revised:** 12-09-2023
Accepted: 03-10-2023 **Published:** 06-03-2024

Access this article online

Quick Response Code:

Website: http://journals.lww.com/JFMPC

DOI: 10.4103/jfmpc.jfmpc_1242_23

How to cite this article: Abbas H, Rasheed N, Mani UA, Kumar M. Internet addiction among MBBS students at a New Delhi medical college: Prevalence and determinants of a silent pandemic. J Family Med Prim Care 2024;13:730-5.

on the Internet, devoting a significant portion of their time to both academic and extracurricular pursuits. Researchers have even labeled this extensive internet usage among university students as pathological internet use (PIU), identifying it as a novel mental health concern affecting individuals engrossed in online activities.[1] Moreover, investigations have pointed to the heightened vulnerability of the younger population, particularly college students, owing to their specific psychosocial and environmental characteristics.[2,3]

Studies have shown that the prevalence of Internet addiction has increased in recent years from 3% to 26.8% in countries like Hong Kong and 46.8% in provinces of China.[4,5] Many experts attribute the main causes of PIU to excessive internet usage or the misuse of certain internet functions. A related terminology more widely used is Internet addiction (IA), which has been described as the usage of the Internet more than 12 h a week or the usage of the Internet to impair daily functioning.[6-8] It is noteworthy to know that PIU or IA are not currently included in the 5th version of the Diagnostic and Statistical Manual of Mental Disorders (DSM). However, the DSM-5 does include a condition called internet gaming disorder (IGD) in Section III, which is the section for conditions that warrant further research. The prevalence of IGD has been reported to be very wide and varied between 1–50%.[9,10] With the rise in the YouTuber community, which relies on livelihood by streaming content and the assistance provided by artificial intelligence (AI) in today's time, it is noteworthy to understand that the prevalence of IA would be more than IGD. A study done in India pre-COVID-19 pandemic stated the prevalence of IA to be between 20–40%, a rate that definitely will be higher today.[11,12]

Materials and Methods

Study type: This is a cross-sectional observational study.

Study population and sample size: The study was done on MBBS (Bachelor of Medicine and Bachelor of Surgery) students in a medical college in Delhi. Based on the software Epi Info 7, after opening the software and creating a new project, the population under study was defined. Epidemiologic Calculation Tool was accessed by clicking on "Analysis" in the top menu bar and selecting "StatCalc." From the list of calculators on the left, Sample Size and Power were selected. Various parameters, such as the expected proportion (p), desired confidence level, desired width of the confidence interval, design effect (usually 1 for simple random sampling), nonresponse rate (of 30%), and the total population size, were entered. Once all parameters were set, the result was calculated to view the sample size result, which was 248 in this case. Complete entries in forms were found in 300 participants who were analyzed.

Data collection tools: The study sample was taken from a medical college in New Delhi. Students who gave informed consent were included. The study duration was for 2 months. The study was approved by the Institutional Ethics Committee of Hamdard Institute of Medical Sciences and Research, New Delhi. The inclusion criteria of the study were for all students studying in MBBS who had used the internet for the past 6 months. The study excluded all students who were below the age of 18 or not willing to give consent. The administered questionnaire consisted of two sections. The first section was to know about the participant's profile, access to the internet, availability of the internet, and other questions to understand their daily routine and internet usage. The second section had the detailed Internet Addiction Test (IAT), a 20-statement questionnaire developed by Dr. Kimberley Young.[11] After reading each statement carefully, based on the 5-point Likert scale, the students had to select the best response that described them. If two choices seemed to apply equally well, the choice that best represented how subjects were most of the time during the past month had to be selected. The IAT measures various aspects of internet use, such as academic issues, behavior that is compulsive in nature, a general lack of competence in household activities, relationship issues, and emotional problems. The test has been validated for both adult and adolescent populations, demonstrating good internal consistency and concurrent validity. Scores on the IAT can be categorized as follows: a total score of <20 indicates a normal user, scores between 20 and 49 represent mild addiction, scores between 50 and 79 indicate moderate addiction, and scores between 80 and 100 indicate severe addiction.

Statistical analysis: The data was entered into a computer-based spreadsheet and thoroughly checked for errors before being analyzed. Descriptive statistics, such as proportions, means, and standard deviations (SDs), were presented. The data analysis was performed using SPSS, and the chi-square test was used to analyze qualitative variables. A significance level of $P < 0.05$ was considered for all statistical correlations. In addition, chi-square tests were employed to examine the association between IA and sociodemographic variables, as well as variables related to internet usage patterns.

Results

In total, 322 undergraduate medical students were surveyed. Complete entries were recorded only in 300 participants, who were included in the subsequent analysis.

As evident , most subjects were in the 21–22-year age group [Table 1]. The mean age of participants was 20.8 years ± 1.4 (SD); the range for age was between 18–24. The mean age of onset of internet use was 14.4 ± 1.6 years (SD).

Table 2 depicts the distribution of the study population on the basis of gender. It was found that 51.3% of the population was female; however, 48.6% of the population was male.

Table 3 depicts the academic year-wise educational level of the study population. It was found that the maximum number of subjects, that is, 33% each, were from MBBS 2nd and 3rd Professional year, and 17% each were from 1st Professional and 3rd Professional part 2 year.

Table 4 represents the marital or relationship status of respondents. Most of the study subjects were single (63%), 21.3% were in a relationship, and 12.3% of respondents did not declare their relationship status.

As displayed in Figure 1, the computing device owned by students for using the internet was mostly smartphones (96.3%). The mean number of hours spent online per day by students was 2.9 h ± 0.9 (SD). The mean hours spent online by students with IA was 3.12 ± 0.7 h; however, the time spent online by nonaddicted students was 1.57 ± 0.5 h. Permanent login status was reported by 70.7% of students. All participants had access to the internet through Wi-Fi at college or workplace (100%). The mean duration of sleep for study participants was 6.51 ± 0.7 h. The mean hours of sleep among students with IA was 6.39 ± 0.6 h, whereas among those students without addiction was 7.46 ± 0.6 h.

As shown in Figure 2, the maximum study subjects reported spending INR 300–600 per month on availing of Internet facility.

Table 1: Age-wise distribution of the study population (*n*=300)

Age in yrs	Frequency	Percentage
18–19	28	9.3
19–20	22	7.3
20–21	57	19
21–22	83	27.7
22–23	72	24
23–24	38	12.7

Table 2: Distribution of study population based on gender (*n*=300)

Sex	Frequency	Percentage
Male	146	48.6
Female	154	51.3

Table 3: Academic year-wise distribution of study population (*n*=300)

Class	Frequency	Percentage
MBBS First Professional	50	16.7
MBBS Second Professional	100	33.3
MBBS Third Professional part 1	100	33.3
MBBS Third Professional part 2	50	16.7

Table 4: Frequency distribution of study population on the basis of marital/relationship status (*n*=300)

Marital/Relationship status	Frequency	Percentage
Single	199	66.33
In a relationship	64	21.3
Undeclared	37	12.3
Married	0	0
Separated/Divorced	0	0

Table 5 depicts that most of the participants responded that they were using the internet for doing coursework (89.7%), searching for information (88.7%), and watching movies and news (85.7%). The least number of subjects were using it for online gaming (29.7%). A sizeable number of respondents were also using the internet for chatting or for online friendships.

As shown in Table 6 and Figure 3, most subjects (90%) were addicted to the internet, although to a variable degree. Only 10% of subjects were found to be not addicted. Average online users (mild addiction) were found to be maximum (55%). They were surfing the web a bit too long at times but had control over their usage. Subjects experiencing occasional or frequent problems (moderate addiction) because of the internet was 32%. In 3% of subjects, internet usage was causing significant problems (severe addiction) in life.

As depicted in Table 7, a chi-square test was applied to test the association of IA with the sociodemographic variables and the variables related to internet usage patterns; a *P*-value <0.05 was considered as statistically significant. Female gender, initial years of college life, relationship status single, and residential status other than home (hostel, rented accommodation) were found to be significantly associated with IA.

Discussion

The mean age of onset of internet use was 14.4 ± 1.6 years (SD) in our study. Even lower mean age of onset of internet use was reported in other studies at 11.3 years (SD 1.73).[13] A personal device was owned universally by all subjects for using the internet in the current study as compared to only 63.6% of the participants in the study done at Vadodara among adolescents.[13] Similar to our results, smartphones are owned by 95.8% of subjects,[14] though others have reported lower use rates, also at 63.6%.[13] For other devices also, similar results were obtained as in our study that is – laptop was used by 64.0% of subjects, desktop by 26.8% of subjects, and tablets by 15.53% of subjects.[14]

The mean number of hours spent online per day by students was 2.9 h ± 0.9 (SD) in the present study. Higher number of

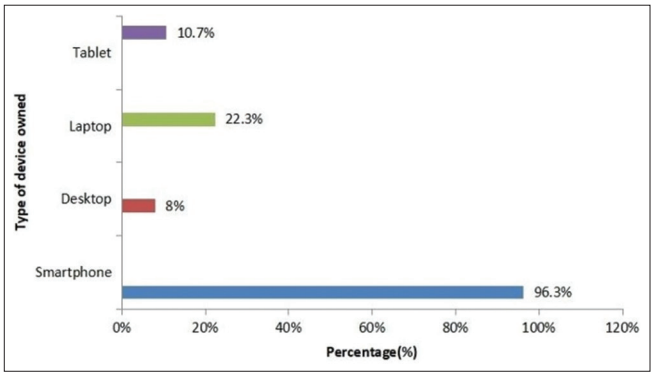

Figure 1: Type of device(s) owned by respondents for using internet (*N* = 300)

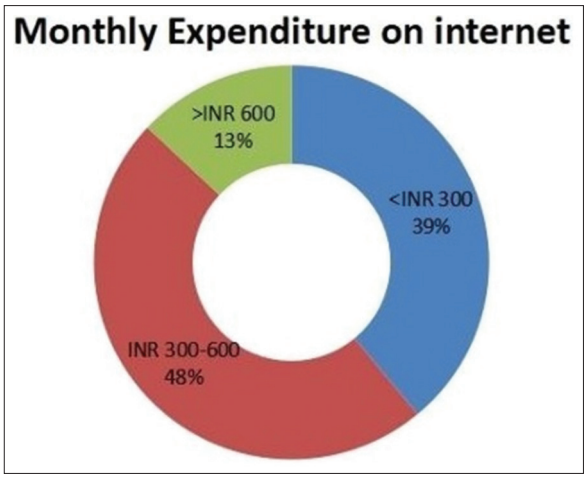

Figure 2: Expenditure per month incurred by students on availing internet services (*N* = 300)

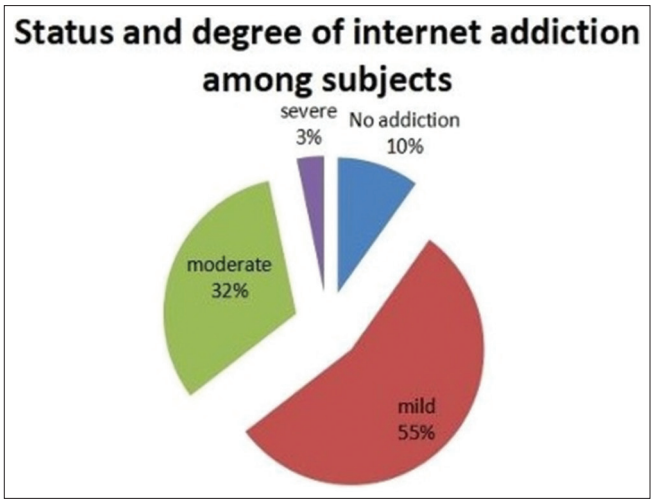

Figure 3: Severity of internet addiction among undergraduate medical students shown by pie diagram (*N* = 300)

hours 3.34 ± 1.80 h/day,[15] 4.4(3.34)[14] were observed in other studies. However, participants who admitted to use the internet for more than 4 h/day were only 5.4%.[13] Quite a high number of students (70.7%) reported keeping a permanent login status compared to other studies (27.9%).[13] In our study, most subjects (48%) were spending INR 300–600, similar to the observation in another study.[15] Internet addicts tend to spend more money and time online, which can lead to financial issues and negatively impact their academic performance. In our study, we observed that students classified as internet addicts spent a significantly larger amount of time on the internet compared to nonaddicted students. This finding is consistent with previous research.[16]

In our study, most participants reported using the Internet for coursework and information searches. However, other studies have shown that activities such as chatting, online friendships, shopping, watching movies, online gaming, and instant messaging are significantly associated with IA. Specifically, internet use for online friendships was identified as a significant predictor of IA, while using the internet for information searches was found to have a protective effect against IA.[13]

Furthermore, we found that certain internet activities were significantly associated with IA, including social networking, watching online videos, and visiting websites with sexually explicit content.[15] Similarly, in a study conducted with young adults in Malaysia, the majority of participants reported using the Internet for social networking, personal emails, work-related surfing, and general information searches.[17] Our study showed that 90% of the study participants were dependent on the Internet to a variable degree. Other researchers have reported that the overall prevalence of IA among medical students was found to be 58.87%, which was less than that observed by us.[15] In other studies done among students in Delhi, the participants observed free from IA were 29.7%,[15] which was higher than that reported in our study. An even greater number of students (41.13%) did not have any IA seen elsewhere.[15] Severe addiction was observed among 3%

Table 5: Activities for which the internet was being used by the study participants (*n*=300)

Activity	Frequency	Percentage
Chatting	239	79.7
Online friendships	233	77.7
Shopping	174	58
Interaction with friends	195	65
Doing coursework	269	89.7
Searching information	266	88.7
Watching movies and news	257	85.7
Online gaming	89	29.7
Instant messaging	108	36

Table 6: Grade of internet addiction among medical students (*n*=300)

Grading of internet addiction	Frequency	Percentage
No addiction (score<20)	30	10
Mild addiction (20–49)	164	54.6
Moderate addiction (50–79)	96	32
Severe addiction (80–100)	10	3.3

of the study population. Similar to our findings, in a study conducted at Nagpur among Medical students, 3.68% were assessed to be addicts.[18] This is in contrast to the prevalence of IA, which was found to be higher in other studies at 25.3%,[14] 8.7%.[13]

Mild addiction in our study was reported to be 55%. A similar level of mild impairment was observed at 45% in the study conducted among University of Delhi students.[14] A higher proportion of average users of the internet was also reported.[18] Moderate addiction was found to be 32% in our study, similar to the prevalence of possible addicts (34.83%) observed in Nagpur.[18] A lower level of moderate addiction was seen among undergraduate medical students from urban area of Western Maharashtra, 7.45%.[15]

Table 7: Association of Internet addiction with demographic and academic characteristics (*n*=300)

Characteristic	Internet addiction		Total *n* (%)	*P*	Chi-square
	Present *n* (%)	Absent *n* (%)			
Age of subject (in years)					
<20	130 (43.3)	20 (6.7)	150 (50)	=0.05	3.7
>20	140 (46.7)	10 (3.3)	150 (50)		
Sex					
Men	126 (42)	20 (6.6)	146 (48.6)	<0.05	4.32
Women	144 (48)	10 (3.3)	154 (51.3)		
Study year in college					
First Professional	37 (12.3)	13 (4.3)	50 (16.3)	<0.05	17.2
Second Professional	93 (31)	7 (2.3)	100 (33.3)		
Third Professional part 1	94 (31.3)	6 (2)	100 (33.3)		
Third Professional part 2	46 (15.3)	4 (1.3)	50 (16.3)		
Marital/relationship status					
Single	185 (61.7)	14 (4.6)	199 (66.3)	<0.05	10.4
In a relationship	57 (19)	7 (2.3)	64 (21.3)		
Undeclared	28 (9.3)	9 (3)	37 (12.3)		
Current residence					
Home	92 (30.7)	16 (5.3)	108 (36)	<0.05	4.35
Others (hostel/rented accommodation)	178 (59.3)	14 (4.7)	192 (64)		
Login Status					
Intermittent login	145 (48.3)	13 (4.3)	158 (52.6)	>0.05	1.16
Permanent login	125 (41.7)	17 (5.7)	142 (47.3)		
Expenditure					
<Rs 300	102 (34)	15 (5)	117 (39)	>0.05	1.9
Rs 300–600	133 (44.3)	11 (3.7)	144 (48)		
>Rs 600	35 (11.7)	4 (1.3)	39 (13)		

The age of the subject was found to be a significant predictor for hours of internet use daily reported by other studies, which was not observed by us.[17] In our study, a significant difference was observed between the IA among males and females. Females showed a higher proportion of addiction as compared to males in our study. Similar to the study from Nagpur, they found the mean value of total IAT score for male students at 50.71 ± 14.05 and for female students at 52.01 ± 10.91.[18] Although means of total IAT score between male and female students was not found to be statistically significant. Other studies, in contrast, reported males to be more addicted compared to females, and male gender was found to be significantly associated with IA.[13,15] This shows that Internet usage levels of females have increased in recent years. This research was conducted as a cross-sectional study, meaning that it only allows for identifying factors associated with IA at a particular point in time. To gain a deeper understanding of the risk factors contributing to IA, it is essential to plan longitudinal studies. Longitudinal studies would enable the observation of changes over time and establish temporal relationships between variables. Therefore, further research should focus on observing actual behavior or conducting prospective studies to follow up with internet users, which could provide valuable insights into the development and progression of IA.

The study's findings offer important insights into the prevalence and nature of IA among undergraduate medical students, carrying significant implications for both these students and the healthcare system at large. Firstly, it underscores the importance of raising awareness among medical students about the potential risks associated with excessive internet use. Educational programs and curricular integration can help inform them about the signs and consequences of IA, ensuring that future healthcare professionals are well-informed about this emerging issue.

Furthermore, the study highlights the need for healthcare professionals to be trained in recognizing the signs of IA, particularly among young patients. Early identification can lead to timely interventions, potentially preventing more severe addiction-related problems down the road. The study's emphasis on the long-term effects of IA on mental and physical health underscores the importance of further research in this area. Medical students can contribute significantly to this endeavor by engaging in research initiatives aimed at understanding the lasting impact of IA.

Moreover, medical students themselves, as future healthcare providers, can serve as role models for balanced internet use. They can promote healthy online habits among their peers and future patients. Healthcare institutions should also consider providing guidelines and resources to support individuals in maintaining a healthy balance between their online and offline lives. In summary, this study highlights the urgency of addressing IA as a public health concern and suggests that medical students

can play a vital role in contributing to research, awareness, and advocacy efforts aimed at mitigating the impact of IA on individuals and society as a whole.

Conclusions

IA is a prevalent public health issue. There are pros and cons of the internet, and there is plenty of evidence to support either assessment; however, research into the effects of the internet on the youth is scarce. IA is a silent pandemic yet to be reported. There is a strong need for researchers and clinicians to set parameters and recognize IA as a public health concern.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Lu X, Yeo KJ. Pathological internet use among Malaysia university students: Risk factors and the role of cognitive distortion. Computers in Human Behavior 2015;45:235-42.
2. Young KS, Rogers RC. The relationship between depression and internet addiction. Cyberpsychology & behavior 1998;1:25-8.
3. Sharma A, Sahu R, Kasar PK, Sharma R. Internet addiction among professional courses students: A study from central India. Int J Med Sci Public Health 2014;3:1069-73.
4. Cakmak FH, Gul H. Factors associated with problematic internet use among children and adolescents with attention deficit hyperactivity disorder. North Clin Istanb 2018;5:302-13.
5. Wang S, Xia L, Wang J, Yuan X, Shi Y, Wang X, *et al*. Prevalence and clinical correlates of internet addiction symptoms and their association with quality of life in adolescents with major depressive disorder: A multicenter cross-sectional study. Front Psychiatry 2022;13:819704.
6. Chung TWH, Sum SMY, Chan MWL. Adolescent internet addiction in Hong Kong: Prevalence, psychosocial correlates, and prevention. J Adolesc Health 2019;64:S34-43.
7. Abdel-Salam DM, Alrowaili HI, Albedaiwi HK, Alessa AI, Alfayyadh HA. Prevalence of internet addiction and its associated factors among female students at Jouf University, Saudi Arabia. J Egypt Public Health Assoc 2019;94:12.
8. Afolabi AA, Ilesanmi OS, Adebayo AM. Prevalence and pattern of internet addiction among adolescents in Ibadan, Nigeria: A cross-sectional study. Cureus 2022;14:e22293.
9. Alghamdi MH, Alghamdi MM. Prevalence of internet gaming disorder among intermediate and high school students in Albaha, Saudi Arabia: A cross-sectional study. Cureus 2023;15:e37115.
10. Alfaifi AJ, Mahmoud SS, Elmahdy MH, Gosadi IM. Prevalence and factors associated with Internet gaming disorder among adolescents in Saudi Arabia: A cross-sectional study. Medicine (Baltimore) 2022;101:e29789.
11. Mokshathaa NB, Vishwas S. Internet addiction and gaming disorder during the COVID-19 pandemic among young people in Southern Karnataka. Cureus 2023;15:e42159.
12. Joseph J, Varghese A, Vr V, Dhandapani M, Grover S, Sharma S, *et al*. Prevalence of internet addiction among college students in the Indian setting: A systematic review and meta-analysis. Gen Psychiatr 2021;34:e100496.
13. 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.
14. Gupta A, Khan AM, Rajoura OP, Srivastava S. Internet addiction and its mental health correlates among undergraduate college students of a university in North India. J Family Med Prim Care 2018;7:721-7.
15. Chaudhari B, Menon P, Saldanha D, Tewari A, Bhattacharya L. Internet addiction and its determinants among medical students. Ind Psychiatry J 2015;24:158-62.
16. Salehi M, Norozi Khalili M, Hojjat SK, Salehi M, Danesh A. Prevalence of internet addiction and associated factors among medical students from Mashhad, Iran in 2013. Iran Red Crescent Med J 2014;16:e17256.
17. Kutty NA, Sreeramareddy CT. A cross-sectional online survey of compulsive internet use and mental health of young adults in Malaysia. J Family Community Med 2014;21:23-8.
18. Patil SD, Deshmukh JS, Dagdiya KR. Prevalence and pattern of internet addiction among medical students in Nagpur, Maharashtra. Int J Community Med Public Health 2017;4:2412-6.