Study of the Pattern of Internet Use and Internet-related Behavior among Medical College Students

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Abstract

Background: In today's day and age, the Internet has had unarguably the largest impact on everyday human life. It would be appropriate to designate/name this age as the "Internet Age." Internet use is facilitating notable improvements in many fields but with increasing use of the internet, many individuals are becoming preoccupied with the internet, unable to control their use, and jeopardizing their employment and personal relationships. We have evaluated the patterns of Internet use among medical students and the changes in behavior pattern observed in students. **Materials and Methods:** In this cross-sectional study at a tertiary care teaching hospital, a questionnaire was used to collect information about the various aspects and patterns of Internet usage and Internet-related behavior among students. **Results:** One hundred undergraduate medical students participated in the current study. Students spent more than 17 h/week using the Internet. The time spent on the Internet for work and study-related purposes was equal to time spent on socializing. The questionnaire on feelings and experiences on Internet use indicated addiction and habituation/dependency on the Internet and guilt among some students for Internet addiction. Some students who are addicted to the Internet sought aid from different sources to reduce their dependency on the Internet. **Conclusion:** Self-control, restricting the use of the Internet for other than study, work and professional purposes, motivation to the disciplined use of the Internet, and the mentoring facility could help reduce Internet addiction in undergraduate medical students.

Keywords: Behavior changes, Internet, Internet addiction, pattern of Internet use, socializing

INTRODUCTION

The discovery of the Internet has changed the way things were done before the invention of the Internet.[1] It has brought the world together and made it possible to connect to each other from the different aspects of life, different regions of the world, and many other benefits. Previously, after the discovery of the Internet, there was a need for a bigger computer system to assess the Internet but with recent technological development, the Internet has been brought to the fingertips.[1,2] In today's world, the Internet is one of the most important as well as essential things. "Nomophobia, i.e., panic and severe anxiety in the absence of a mobile phone" is on the rise among populations worldwide.[3] Addiction to mobile phones started with the introduction of the iPhones in 2007 and has been growing thereafter. The innovations and applications of the Internet progressed at an extreme pace along with smartphones**.**[1,3] In India currently, there are more than 658 million Internet users

in 2022. It accounts for the second-largest Internet market in the world. Internet use is dominated by mobile phone users both in rural and urban areas. In pre-COVID India, digitalization had spread in about 50% of India. In India, the use of the Internet and Internet-based services has increased from 40% to 100% during and post-COVID.[4]

The use of Internet-based services was adopted by educational institutions, i.e., online-based teaching modules, and examinations were conducted online, during and after COVID. The students are more comfortable studying material available online which also included audio-visual lectures, recorded lectures, and animations to understand complex individuals among others.[4] While the academic use of the Internet is

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primarily intended for faculty research and communication, the Internet has also become an important part of student life. However, apart from the ethical use of the Internet, i.e., digitalization-based services the Internet is used more for socializing. Although the hybrid model of teaching has been in practice post-COVID the use of the Internet has not decreased, and the use of the Internet for other than educational purposes is comparatively increasing.[4,5] Particularly for medical students, the Internet has helped them with knowledge in the form of presentations, e-textbooks, audio-video lectures, and medical research but on the negative side, with respect to the busy schedule of student's mobile phones, socializing platforms tend to distract from studies and learning process.[5,6] A newer concept of telemedicine flourished during COVID and continues to do so in near future along with evidence-based medicine, this is all due to the might of the Internet.[7] The increasing use of the Internet has crossed the line from its functional and productive use to nonfunctional to pseudo use.[7] It is quite affirmative to state that despite being aware or cautious the student is lured to using smartphones or the Internet. Alarmingly, the use of the Internet has progressed to the level of addiction in many. Internet addiction can be referred to as, "the pathological and compulsive use of the Internet." The diagnostic and statistical manual of mental disorders-5 (DSM-5) has described Internet gaming addiction as a diagnosable behavioral condition.[8]

Some studies have suggested mobile use to be a risk factor for the physical and mental health of medical students and also for Internet addiction. Very few studies have evaluated the pattern of Internet use till now, but the lack of Internet-related behavior was not addressed. This study aimed to evaluate the patterns of Internet use among medical students and delve into their thoughts and opinions about the use of the Internet to see what kind of an impact it has made on their lives socially and professionally.

MATERIALS AND METHODS

The study is an epidemiological investigation type of study which was carried out among the students of the tertiary care teaching hospital. Students currently studying in medical college were included in the study. The informed consent form was taken from the students after explaining the study objectives to the students. Those students who were not willing to give consent, those who for whatever reason were not available to answer the questionnaire, or those who were not using the Internet through any means were excluded from the study. One hundred students were enrolled in the study.

Sociodemographic details of the students were recorded in the study, but the identity of the students was kept confidential. There was no intervention in the study. The data were collected by the investigator by means of a questionnaire eliciting information about the various aspects and patterns of Internet usage and Internet-related behavior among students. The Internet Behavior Questionnaire by the Institute for Hygiene and Applied Physiology, Swiss Federal Institute of Technology at Zurich, Switzerland, was referred for designing the questionnaire (Internet Behavior Questionnaire: the English online version).[9] The questionnaire included questions related to socioeconomic status, preferences, and purpose to use the Internet, time spent on the Internet, and behavior related to Internet use and addiction, and the impact on the social life of students. The information was tabulated on a Microsoft Excel sheet and analyzed by means of the (IBM SPSS Statistics, Version 15, USA).

RESULTS

The objectives of the study were to assess the pattern of Internet use by undergraduate medical students, to assess whether the students are addicted to the Internet or not, and to study and understand the effect of Internet use on the behavior of students. A total of 100 students participated in the study. Table 1 shows that 51% of students in the study were male, about 74% of students were living with friends, and the remaining were living with their parents. The mean age of students was 21.81 years and the highest level of education completed was 12th. Students used the Internet for nearly 6 h and 5.5 h for work and spare time, respectively. The number of people students communicated every day through the Internet was more than eight, whereas <2 persons were met physically. Students spent 1.55 h/week on E-mail, 4.23 h/week reading and posting news, and 5.45 h/week surfing/searching the Internet.

Table 1: Demographic status and Internet habits of medical students

Variable	Mean±SD
Sex, *n* (%)	
Male	51 (51)
Female	49 (49)
With whom staying together, *n* (%)	
Friends	74 (74)
Parents	26 (26)
Age (years)	21.81±1.63
Highest level of education completed	12.00±0.00
Internet habits	
h/week using computers - for work (h)	5.96±17.77
5.4 h/week using computers - for spare time (h)	5.48±10.13
Number of people communicating regularly via the Internet	8.22±5.72
Acquaintances made solely through the Internet	3.88±6.55
Number of the persons met personally	1.41±2.8
Since how many years using the Internet	9.00±2.49
h/week for www (Hr)	5.45±5.43
h/week for reading and amp; posting news (h)	4.23±5.40
h/week for International relay chat (h)	1.82±4.64
h/week for E-mail (h)	1.55±3.47
h/week for playing MUD (h)	2.76±6.75
h/week for other services (h)	1.81±4.36
How strongly should the information should be controlled on the Internet (0–100)	53.6±29.9

SD: Standard deviation

Social questions were asked to the medical students and the responses are represented in Table 2. The students responded that the Internet has influenced their social life in a positive way, i.e., the Internet has helped students in work, university, or school (88%), financial life (61%), and social life (79%) related aspects, whereas 52% of students retorted that the Internet has influenced their family life in a negative way.

Table 3 shows Internet usage patterns in medical students. Students responded that the Internet has replaced TV (88%), newspapers (77%), research in libraries (66%), and buying (i.e., products through the Internet) (66%). The Internet is being used for pursuing subculture interests (music bands or TV soaps) by 80% of students, 86% of students prefer the Internet for preparing for holidays, and 92% of students use the Internet for gathering company or product information. Thirty-three percent of students preferred using the Internet for participating in self-help groups, and 46% of students prefer asking for advice (psychological, medical, or religious) on the Internet. Ninety-seven percent of students find the Internet to search for a topic of interest, and if the information on the topic is not found on the Internet, then 52% of people think of searching for the information through conventional methods. Forty-three percent of students check their mail every day, whereas 38% check mail rarely or do not check the mail.

Table 4 demonstrates the feelings and experiences of medical students with regard to Internet use. Fifty-nine percent of students felt to go to the Internet when not online, and 31% of students had a feeling of anticipation when not using the Internet. Twenty-one percent of students often think about what is happening on the Internet when not online. Seventy-five percent of students felt guilty or depressed after using the Internet for a long time. Eighty-five percent of students felt that they spent more on the Internet than they plan and 73% of students lost track of time while using the Internet. Forty-one percent lie about time spent on the Internet. About 57% of students complained that they spent too much time on the Internet and 68% of students tried to restrict the use of the Internet deliberately.

Table 5 demonstrates personal responses on Internet use. Ninety-eight percent of students think that the Internet is necessary for educational and well as professional purposes. Eighteen percent of students actively buy Internet-related books and magazines. Forty-seven percent of students think that they are addicted to Internet use. In pursuit to get rid of Internet addiction, students sought help from different sources available, namely from the Internet (21%), help from the social environment (20%), treatment through a doctor/therapist/clinic (15%), and self-help group near the residence (8%), whereas 18% did not take any help.

Table 6 demonstrates bad habits of internet use. 28% spoke words like "shit, fuck, piss, tits, motherfucker", 63 % of students consumed illegal drugs, 79% of students watched pornography with children while 35% of students watched pornography, and 26% of students watched content on

Table 2: Social questions

Influence of the Internet in	Positive way (*n*=100) (%)
Work, university, school	88
Financial	61
Social life	79
Family life	48

Table 3: Internet usage patterns in medical students

Usage pattern	Frequency (*n*=100) (%)
Internet replacing	
TV	88
Newspapers	77
Research in libraries	66
Buying (products via the Internet)	66
Internet usage for	
Pursuing subculture interests (music bands or TV soaps)	80
Preparing holidays	86
Company or product information	92
Participating in self-help groups	33
Psychological, medical, or religious advice	46
Searching a topic of interest	97
If, topic not found on the Internet, will you search for it with conventional methods?	52
How often checks mail	
Everyday	43
2–3 times/week	10
Once a week	9
Rare or not checking	38

Table 4: Feelings and experiences of Internet use

	Frequency (*n*=100) (%)
Feeling	
Do you feel a strong necessity to go to Internet when not online?	59
Do you feel anticipation before you are using Internet	31
State of mind when Internet connection is fast	1
State of mind when Internet connection is slow	30
State of mind when access to Internet is restricted over a long period of time	18
Do you feel guilty/depressed after using Internet for a long time	75
Does Internet play any role in your dreams	26
Thinking about what is happening on Internet when not using it	21
Experience	
Do you spend more time on Internet than planned	85
Ever lied to friends about time spent on Internet	41
Have you deliberately restricted Internet usage due to previous excessive use	68
How often Internet usage restricted	19
Have you lost track of time when using Internet	73
How often anyone complained that you spend too much time on Internet	57

Table 5: Personal responses on Internet use

Personal responses	Frequency (*n*=100) (%)
Internet necessary for profession/education	94
Do you buy Internet-related books or magazines	18
Consider for yourself the usage of the Internet as an addiction/dependency	47
Look for help if addicted or dependent from the usage of the Internet	
Not at all	18
Through the Internet	21
Self-help group near the residence	8
Treatment through doctor/therapist/clinic	15
Help from the social environment	20
Other help (reading books)	38

Table 6: Bad habits due to Internet use

Bad habits	Frequency (*n*=100) (%)
Words like "shit, fuck, piss, tits, motherfucker"	28
Illegal drugs	63
Euthanasia	31
Sexuality	26
Pornography	35
Pornography with children	79
Extreme politics	51
Instructions for violence application	66

sexuality. 51% and 66% of students watched developed bad habits related to extreme politics and instructions for violence application, respectively.

DISCUSSION

The increase in the time spent by individuals on the Internet is a very important risk factor and a dangerous health hazard. Forty-seven percent of students in our study felt that they were addicted or dependent on the Internet. In terms of socializing, there was a change in pattern, with students meeting or communicating with more individuals online than in person or offline. Our study results are in line with some similar studies where students spent more time on the Internet and were addicted to it. Shanawaz Ahmed *et al*. reported that 44.2% of students in their study were addicted to the Internet,[7] and a similar Bangalore-based study reported 45.8% of students were addicted to the Internet.[10] Internet addiction was as high as 61.4% in a study, whereas Internet addiction was as low as 1.98% as reported by authors.[11,12] Technological development and cheaper Internet facilities have led to an increase in Internet addiction. iPhones, smartphones, and mobile phones have made it very flexible to use the Internet, and Internet penetration has increased tremendously. This shift was triggered during COVID and social distancing measures have permanently changed the patterns of communicating with people. The digitalization of services and utilities also adds to the use of the Internet, thus adding to the time spent on the Internet. Moreover, leisure activities have increased on the Internet by means of different platforms and could be a factor with the highest risk for Internet addiction.[4,7]

Many students expressed that Internet use has positively influenced their life in terms of work, university, school, financial, and social life. Students spent more time on the Internet by means of activities such as surfing, searching, E-mailing, and chatting. This included a shift in the pattern of using available resources, students use the Internet to know/keep themselves updated about the world, i.e., news, research, developments, politics, and buying products on the Internet among others. This has increased since COVID and is projected to increase further. Seventy-four percent of students live with friends and these students are more prone to Internet addiction, due to the absence of restrictions, and unhealthy and sedentary lifestyles compared to the 26% of students those who live with their parents.[13,14] The Internet is an ocean of information, data, and resources. This has positive as well as negative influences on the students. Students who tend to use the Internet for academic and work-related purposes are less likely to develop Internet addiction. While students who straddle the fine line between being a positive and bad Internet user are more likely to spend more time online without getting anything done. These students are more vulnerable to developing an Internet addiction or already have one. Students spent nearly equal time using the Internet for work-related purposes as well as in spare time this indicates a shift in pattern, symbolizing undesired and unproductive use of the Internet. Some studies have reported similar trends with the use of the Internet.[11,15] The 24×7 availability of the Internet, the facility to use the Internet on mobile phones, and the evolution of social media platforms have contributed to increasing Internet addiction in students.

Some students also felt that they were addicted to the Internet and also felt depressed or guilty after using the Internet for more time than planned. The students addicted to the Internet do not indulge themselves in healthy habits such as exercising or involving themselves in activities that keep body and mind active. This included an increase in perceived stress and reduced subjective happiness as reported in some similar studies from India.[16,17] A study described that the challenging medical course, rural services, internships, tight schedule of students, and future stability related to postgraduation admission and clinical practice and relative stress could be the possible reason for Internet addiction among medical students. First-year students find it hard to accommodate or acclimatize to the new environment, and academic pressure, some students stay away from home and communicate with colleagues and peers, thus it can be a causative factor for stress, and fear of performance may increase the desire to use the Internet and can progress to Internet addiction.[18-20] Progression to Internet addiction is a quick and lucrative process, and self-control and discipline can be the best measure to prevent Internet addiction among undergraduate medical students.

Forty-seven percent of students felt that they are dependent or addicted to the Internet. They sought aid from different means such as self-groups, social environment, reading books, counseling by doctors/therapists, and also from the Internet. Behavioral changes were experienced by some students who said they acquired bad habits due to Internet use, i.e., use of abusive language, use of illegal drugs, euthanasia, sexuality, pornography, extreme politics, and instructions for violence application. The behavior changes were more on the aggressive side, indulging in extreme debates, and rough or harsh communication. In a study, the authors reported that students addicted to the Internet used more gadgets along with mobile phones to use the Internet.[21] This type of behavior change is harmful for students, it impacts their performance of students, and also it is a vulnerable trait for a professional career.[20] Our recommendations support the conclusion of Patel healthy Internet usage, including motivational sessions for the students, social skill training, sessions for students to make them understand the patterns of Internet addiction, and measures to decrease dependency on the Internet.[20] Mentor or counseling by an expert can be a very effective measure in managing Internet addiction in undergraduate medical students. Institutions should provide block-chain based Internet services to students and measures to manage stress and presenteeism should be taken to further help improve the academic performance of students.

Conclusion

Our study gives an alert signal to academic institutions and students with regard to Internet addiction. The pattern of Internet use indicates an increase in Internet use and leads to Internet addiction and behavior changes. The use of a standardized scale to track behavior changes can be very helpful in reducing changes associated with Internet dependence. Self-control, restricting the use of the Internet for other than study, work, and professional purposes, motivation to the disciplined use of the Internet, and the mentoring facility could help reduce Internet addiction in undergraduate medical students.

Conflicts of interest

There are no conflicts of interest.

References

1. Damor RB, Gamit SP, Modi A, Patel J, Kosambiya J. Pattern of smart phone and internet usage among medical students in Surat, Gujarat-a cross sectional study. Natl J Community Med 2018;9:469-73.
2. Prajapati D, Rastogi S, Kapadia R, Lakhani C, Bhatt R. Usage of mobile phone among medical students in Ahmadabad Gujarat. Int J Sci Res 2014;3:251-3.
3. Shin LY. A comparative study of mobile internet usage between the United States and Korea. J Eur Psychol Stud 2014;5:46-55.
4. De' R, Pandey N, Pal A. Impact of digital surge during COVID-19 pandemic: A viewpoint on research and practice. Int J Inf Manage 2020;55:102171.
5. Dawadi P, Khadka S, Maharjan S, Baniya A, Khadka S, Thapa S, *et al.* Internet addiction among undergraduate medical students of a medical college: A descriptive cross-sectional study. JNMA J Nepal Med Assoc 2022;60:533-6.
6. Ghosh A, Jha R, Kumar Malakar S. Pattern of smartphone use among MBBS students in an Indian medical college. Int J Appl Res 2016;2:389-92.
7. Shanawaz Ahmed M, Kumar Parashar I, Neyaz A, Parvez M. Internet use pattern, Internet addiction and its association with academic performance among medical students. Eur J Mol Clin Med 2022;9:380-7.
8. Connelly C. Hypnosis-based Treatments for Internet Addiction Disorder: Systematic Review; 2022.
9. Internet Behavior Questionnaire: The English Online Version. Available from: https://rauterberg.employee.id.tue.nl/ibq/ibq_engl.html. [Last accessed on 2022 Dec 15].
10. 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.
11. Asokan DA. Internet addiction among medical students and its impact on academic performance: An Indian study. J Med Sci Clin Res 2019;7:670-6.
12. Aboujaoude E, Koran LM, Gamel N, Large MD, Serpe RT. Potential markers for problematic internet use: A telephone survey of 2513 adults. CNS Spectr 2006;11:750-5.
13. 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.
14. Suchandra K, Singh L, Mamidipalli S. An overview of internet addiction in India. The Odisha Journal of Psychiatry 2018. p.6-14.
15. 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.
16. Cardak M. Psychological well-being and internet addiction among university students. Turk Online J Educ Technol 2013;12:134-41.
17. Suresh V, Silvia W, Kshamaa H, Nayak S. Internet addictive behaviors and subjective well-being among 1st-year medical students. Arch Ment Health 2018;19:24.
18. Cherkil S, Gardens SJ, Soman DK. Coping styles and its association with sources of stress in undergraduate medical students. Indian J Psychol Med 2013;35:389-93.
19. Datar MC, Shetty JV, Naphade NM. Stress and coping styles in postgraduate medical students: A medical college-based study. Indian J Soc Psychiatry 2022;33:370.
20. Patel VK. Study of internet use characteristics, perceived stress, and internet addiction among first-year medical students of Jamnagar, Gujarat, India. Indian J Psychiatry 2019;13:44-7.
21. Srijampana VV, Endreddy AR, Prabhath K, Rajana B. Prevalence and patterns of internet addiction among medical students. Med J DY Patil Univ 2014;7:709.