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Internet use pattern, Internet addiction and its association with academic performance among medical students

Dr. Malik Shanawaz Ahmed[1], Dr. Ishan Kumar Parashar[2], Dr Arslan Neyaz[3], Dr Mohammed Parvez[4*]

1. Department of Community Medicine, Maharaja Suheldev Autonomous State Medical College, Bahraich, Uttar Pradesh, India
2. Department of Biochemistry, Maharaja Suheldev Autonomous State Medical College, Bahraich, Uttar Pradesh, India
3. Department of Community Medicine,Hind Institute of Medical Sciences, Sitapur, Uttar Pradesh, India
4. Department of Paediatrics, Maharaja Suheldev Autonomous State Medical College, Bahraich, Uttar Pradesh, India

***Corresponding Author:**Dr Mohammed Parvez,Department of Pediatrics, Maharaja Suheldev Autonomous State Medical College, Bahraich, Uttar Pradesh, India.
Email: parvezmohd3181@gmail.com

ABSTRACT

Introduction: Internet was developed to make communication easier, quicker, and to facilitate safe exchange of information. With ever increasing presence of internet in our work and leisure related activities the boundaries between functional and dysfunctional internet usage have become blurred. This study was conducted among medical students in a medical college in North India with the objective to assess internet behavior pattern, to estimate the prevalence of internet addiction and whether internet addiction impacts their academic performance. **Methods:**This was a cross-sectional study conducted among medical students from a medical college in North India. Internet Addiction was assessed using Internet Addiction Diagnostic Questionnaire, developed by K. Young in 1997. This contains 20 questions that examine the symptoms of internet addiction based upon a five-point Likert scale. Academic performance was assessed on the basis of Internal & University marks obtained in last one year. **Results:** The study shows that internet addiction is very common among medical students with 44.2% of medical students having some level of addiction. Mild addiction was observed in 21.9% students with 13.1% & 9.2% of them having moderate and severe internet addiction respectively. Being Male, using internet mostly for entertainment, starting to use internet at younger age, longer hours of internet usage & more frequent use of it everyday were found to significantly impact levels of internet addiction. It also had a significantly detrimental impact on academic performance.**Conclusion**: A substantial number of students had internet addiction with negative impact on academic performance. Immediate measures such as early diagnosis and management need to be taken to safeguard their educational progress and long-term career goals.

Keywords: Internet addiction, Medical Students, Academic Performance.

Introduction:

Internet was developed to make communication easier, quicker, and to facilitate safe exchange of information. The internet today has become an essential part of our life so much that it's difficult

to imagine our life without it. It has become a major source of information, communication and entertainment. With advent of social media our use of internet for communication has increased manifolds.For medical studentinternet provides a quick source of information including medical research. With advancing technology and emphasis on evidence-based medicine and telemedicine our usage and reliance on internet is bound to increase in near future.

With ever increasing presence of internet in our work and leisure related activities the boundaries between functional and dysfunctional internet usage have become blurred. With increasing usage of internet, we are currently noticing an increasing prevalence of internet addiction (IA)[1]. Dr. Ivan Goldberg was the first to coin the term of internet addiction in 1995 to describe"pathological and compulsive use of internet"[2]. Whether to define internet addiction either as a mentaldisorder or as a behavioral syndrome has been acontroversial topic[3,4], but recently under Diagnosticand Statistical Manual (DSM-V) it has beencharacterized as diagnosable behavioral condition[5,6].

Few studies have been conducted to study internet addiction among medical students but not many of them have assessed its relation to academic performance. This study was conducted among medical students in a medical college in North India with the objective to assess internet behavior pattern, to estimate the prevalence of internet addiction and whether internet addiction impacts their academic performance.

Material and Methods:

This cross-sectional study was conducted amongstudents in a medical college in North India. All medical students of all batches who had at least appeared in First Professional exams and were willing to participate were included in the study. Students who were already diagnosed with psychological distress or any systemic illness were excluded from study. Ethical clearance was taken from institutional ethics committee and written informed consent was taken from students before enrollment in study.

Data was collected using a pre-tested questionnaire. The questionnaire consisted questions regarding socio-demographic profile and internet usage pattern. Modified BG Prasad classification was used to assess socio-economic status of the familyto which the student belonged. Internet Addiction was assessed using Internet Addiction Diagnostic Questionnaire (IAT), developed by K. Young in 1998[7]. This contains 20 questions that examine the symptoms of IA based upon a five-point Likert scale[8,9].The psycho- metric properties of the IAT showed that it's a reliable and valid measure (Cronbach's α=0.76) that has been used in various researches on IA[10]. The severity impairment index denoting IA was determined as follows[8,9]:

None: 0-30 points

Mild: 31–49 points. (Respondent is an average online user who may surf the Web a bit too long at times, but has control over your usage.)

Moderate: 50–79 points. (Respondent may be experiencing occasional or frequent problems because of the Internet and consider its full impact on life.)

Severe: 80–100 points: (Respondent has significant problems in life due to Internet usage and should evaluate the impact of the Internet and address the problems directly caused by Internet usage.)

Professional, Internal assessment & Sessional marks of past one year in their respective subjects were collected from the concerned departments and the average mark was calculated for assessment of academic performance. Total marks were converted into percentage of marks achieved on average for analysis purpose.

The questionnaire was self-administered andidentifiers such as name or roll number were not asked in order to maintain privacy and elicit fair responses. Data entry and Statistical analysis was done using SPSS 20. Chi square test was used for categorical variables. Association between academic scores and IAT scores was assessed using Pearson's correlation coefficient.

Results

The study was conducted to assess internet usage pattern, it's addiction and its impact on academic performance of medical students. A total of 360 students participated in this study. Table 1 depicts the demographic profile and internet usage pattern. Majority of students (65%) were males and belonging to urban areas (68.9%). Almost everyone was staying in hostel (92.2%) with very few day scholars. Mean age of students was 20.6 years. Most of them (63.1%) started using internet between the age of 15-18 years with 87.5% preferring portable gadgets like smartphones and tablets for accessing internet. Facebook and WhatsApp accounts were held by 84.2% & 96.7% respectively. Facebook account was accessed more than 3 times a day by 29.4 % students with 22.4 % of them checking the WhatsApp message as soon as they received one. Only 30% had their major reason for internet usage being academic. WhatsApp was preferred tool of communication for 53.1% of students with more than 70% of them stayed actively online for more than 2 hours a day.

As per IAT scores IA was noted in 44.2% of medical students. Mild addiction was observed in 21.9% students with 13.1% & 9.2%of them having moderate and severe IA respectively (Table 2).

Factors affecting IA were also assessed in this study and the results for the same is depicted in table 3. Males were significantly more addicted with early age of access to internet and being actively online for longer durations also had significant association with internet addiction. Those using internet mainly for academic purpose were less likely to be addicted to it. Significantly higher frequency of access to Facebook & WhatsApp were noticed in those addicted to internet. Socio-economic status, place of residence and hometown being urban or rural had no significant impact on prevalence of IA.

Marks obtained in university, pre-university and sessional exams were taken from respective departments and percentage of marks was calculated for each student. Correlation of marks obtained with IAT scores was looked into. Higher IAT scores show more addiction. A significantly negative correlation was observed between percentage of marks obtained and IAT scores with correlation coefficient, r being -0.13 with p value of 0.01.

Table 1: Demographic variables and internet use pattern among medical students

Variable		n (%)
Gender	Male	234 (65)
	Female	126 (35)
Home Town	Rural	248 (68.9)
	Urban	112 (31.1)
Place of Residence	Hostel	332 (92.2)
	Day Scholar	28 (7.8)
Socio-economic Class	I	85 (23.6)
	II	119 (33.1)
	III	82 (22.8)
	IV	46 (12.8)

	V	28 (7.8)
Age at first internet usage	<10	48 (13.3)
	10-15	227 (63.1)
	15-18	73 (20.3)
>18		12 (3.3)
Preferred Gadget	Portable	315 (87.5)
	Non-portable	45 (12.5)
Major internet usage for	Entertainment	252 (70)
	Academic	108 (30)
On Facebook	Yes	303 (84.2)
	No	57 (15.8)
Access Facebook	>3 times a day	89 (29.4)
	1-2 times a day	117 (38.6)
	1-2 times a week	57 (18.8)
	1-2 times a month	40 (13.2)
WhatsApp	Yes	348 (96.7)
	No	12 (3.3)
Access WhatsAppAs soon a message comes		78 (22.4)
	Many times, a day	152 (43.7)
	1-2 times a day	82 (23.6)
	1-2 times a week	27 (7.8)
	1-2 times a month	9 (2.6)
Preferred Communication Tool	Email	32 (8.9)
	Facebook	91 (25.3)
WhatsApp		191 (53.1)
	Others	46 (12.8)
Time spent online	<2 hours	83 (23.1)
	2-4 hours	168 (46.7)
>4 hours		109 (30.3)

Table 2: Prevalence of Internet Addiction among Medical Students

Internet Addiction	n (%)
None	201 (55.8)
Mild	79 (21.9)
Moderate	47 (13.1)
Severe	33 (9.2)

Table 3: Factors associated with internet addiction

Variable		No Addiction	Mild Addiction	Moderate Addiction	Severe Addiction	P value
Gender	Male	118 (50.4)	56 (23.9)	34 (14.5)	26 (11.1)	*0.03*
Female		83 (65.9)	23 (18.3)	13 (10.3)	7 (5.6)	
Home Town	Rural	134 (54.0)	59 (23.8)	33 (13.3)	22 (8.9)	0.6
	Urban	67 (59.8)	20 (17.9)	14 (12.5)	11 (9.8)	
Place of Residence	Hostel	181 (55.2)	75 (22.6)	44 (13.3)	32 (9.6)	0.3
Day Scholar		20 (71.4)	4 (14.3)	3 (10.7)	1 (3.6)	

Preferred Gadget	Portable	169 (53.7)	73 (23.2)	44 (14.0)	29 (9.2)	0.1
Non-Portable		32 (71.1)	6 (13.3)	3 (6.7)	4 (8.9)	
Major internet usage for	Entertainment	126 (50.0)	60 (23.8)	38 (15.1)	28 (11.1)	*0.005*
	Academic	75 (69.4)	19 (17.6)	9 (8.3)	5 (4.6)	
Time spent online	<2 hr	47 (56.6)	25 (30.1)	7 (8.4)	4 (4.8)	0.001
	2-4 hr	125 (74.4)	21 (12.5)	12 (7.1)	10 (6.0)	
>4 hr		29 (26.6)	33 (30.3)	28 (25.7)	19 (17.4)	
Age at first internet usage	<10 years	20 (41.7)	19 (39.6)	7 (14.6)	2 (4.2)	*0.02*
10-15 years		138 (60.8)	36 (15.9)	29 (12.8)	24 (10.6)	
16-18 years		35 (47.9)	22 (30.1)	10 (13.7)	6 (8.2)	
>18 years		8 (66.7)	2 (16.7)	1 (8.3)	1 (8.3)	
Access Facebook	>3 times a day	29 (32.6)	22 (24.7)	21 (23.6)	17 (19.1)	<0.001
1-2 times a day		58 (49.6)	33 (28.2)	16 (13.7)	10 (18.6)	
	1-2 times a week	27 (47.4)	18 (31.6)	7 (12.3)	5 (8.8)	
	1-2 times a week	30 (75.0)	6 (15)	3 (7.5)	1 (2.5)	
Access WhatsApp	As soon a message comes	22 (28.2)	23 (29.5)	19 (24.3)	14 (18.0)	<0.001
	Many times, a day	97 (63.8)	28 (18.4)	15 (9.9)	12 (7.9)	
1-2 times a day		48 (58.5)	20 (24.4)	9 (11.0)	5 (6.1)	
1-2 times a week		17 (63.0)	6 (22.2)	3 (11.1)	1 (3.7)	
1-2 times a month		5 (55.6)	2 (22.2)	1 (11.1)	1 (11.1)	
Socio-economic Class	I	48 (56.6)	19 (22.4)	10 (11.8)	8 (9.4)	0.9
	II	68 (57.1)	25 (21.0)	15 (12.6)	11 (9.2)	
	III	48 (58.5)	26 (31.7)	11 (13.4)	7 (8.5)	
	IV	25 (54.3)	10 (21.7)	7 (15.2)	4 (8.7)	
	V	12 (42.9)	9 (32.1)	4 (14.3)	3 (10.7)	

Discussion

In our study, we found that 44.2% of students were having some level of IA. This was similar to Krishnamurthy et al in Bangalore reporting 45.8% prevalence of IA[11]. There has been a wide variation in prevalence of IA noted across the world[12,13,14]. While some authors have reported prevalence to be as low as 1.98%[12]some have reported it to be as high as 61.4%[15]. This can be attributed to different study methodologies and study settings. With increasing advances in technology and cheaper cost of internet in India IA is likely to increase in future. Also due to Corona Virus Pandemic students are online for longer period of times for academic purposes. In order to maintain social distancing their outdoor activities are also getting restricted. This may lead them to be online for longer duration during leisure time which may increase prevalence of IA.

Our study reported 9.2% students to be having severe IA. Prevalence rate of severe IA in various studies across the world range from 0.3% to 13.2%[16-21]. Moderate IA was reported by us in 13.1% of students. Other authors have reported prevalence of moderate IA between 7.4% to15.2% in India and other countries[16,17,22,23]. Internet availability, accessibility & cultural acceptance may be responsible for this variation across the world.

Male students were found to more addicted to internet when compared to their female counterparts. Most studies on IA have reported similar findings[11, 15-17].This can be because many authors have found that there is a higher involvement of males in internet chatting, online

gaming, online gambling & pornography since most cultures offer lesser social restriction to males [24-27].

The amount of time an individual spends on internet is one of the crucial factors which increased risk of IA. Our study results indicate that students who were online >4 h per day had higher levels of IA. This was consistent with multiple other studies[15,25,28]. In our study we also noticed that those who were accessing internet more frequently across the day were more likely to be addicted[11,29]. Early age of starting internet use also had a significant association with IA, which was consistent with other studies[30]. These findings imply that increased frequency and duration of usage leads to greater levels of IA.

Those students who use internet mostly for entertainment purpose were more likely to be addicted to it as compared to those who primarily used it for academic purpose. This was consistent with other studies[15,16]. Due to advances in technology, there are multiples of social media & entertainment platforms available in our smartphones. This gives us round the clock access to them, leading to longer times spent and thus more addiction.

Staying in hostels or with their parents did not have an impact on IA in our study. This is in contrast to other authors who have noted that staying with parents led to less of IA[22,31]. This may be because only a small number of students (7.8%) in our study were staying with their parents, leading to a small sample size to lead a meaningful result. The study showed that there was no statistically significant association between socioeconomic status of the family and internet addiction behavior. Similarly, other authors also found that the effect of family economic status had no effect on internet misuse[32,33].

In our study we observed that increasing levels of IAT scores had a significant negative influence on academic scores. Many authors have reported similar findings[15,34,35]. Some authors have noted that internet can distract students from their academics and lose his/her capacity to concentrate on their academic activities[36], thus leading to reduced academic performance.

Our study had certain limitations, the major one being that it is difficult to generalize the results due to differences in socio-demographic & cultural profile of study participants.

Conclusion & Recommendation:

In India, IA reems to be a major mental health condition among medical students. With increasing availability, accessibility and reliance on internet-based technology this is bound to increase in near future. We can't restrict this growth as a lot of good comes from it for individuals, communities and nations. What we need is a rational use of it. In one study it was observed that 53.9% engineering students who knew about IA had made attempts to reduce IA. This indicates that increasing awareness about IA among students is a first initial step towards healthy use of technology.

The negative impact of IA on academic performance should motivate our faculty members to start talking about it with our students. Being the future manpower for an important sector as health if left unheralded IA can huge repercussions. Some actions are also suggested at internet service provider (ISP) levels. Understanding their social responsibility, they may send notification to their users on being actively online at 30 to 60 minutes interval. If required government may bring a law regarding the same. Studies in future may study other outcomes of IA.

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