



Internet Addiction among Medical Students and Its Impact on Academic Performance: An Indian Study

Authors

Athulya G Asokan^{1*}, V. Abraham Varghese², Rajeev A³

¹Assistant Professor of Medicine, Pushpagiri Institute of Medical Sciences and Research Centre, Tiruvalla, Kerala, India

²Associate Professor of Medicine, Pushpagiri Institute of Medical Sciences and Research Centre, Tiruvalla, Kerala, India

³Additional Professor of Community and Family Medicine, AIIMS Mangalagiri, Andhra Pradesh, India

*Corresponding Author

Dr Athulya G Asokan

Assistant Professor of Medicine, Pushpagiri Institute of Medical Sciences and Research Centre Tiruvalla, Kerala Pin: 689101, India

Email: athulyaroopak@gmail.com, Phone no: 8156813625

Abstract

Background: *Internet has become an indispensable part of medical student's life. They may experience difficulty in reducing the duration and frequency of internet use, gradually getting addicted to it. The literature on internet usage among Indian medical students is limited and there are hardly any Indian studies correlating Internet addiction and academic performance. This study aimed to determine the prevalence of Internet addiction among medical students and its correlation with academic performance.*

Methods: *A cross sectional study was performed among first year to final year medical students from a medical college in South India. Their internet activities were assessed using Internet addiction Questionnaire developed by Kimberly Young. Academic performance was assessed based on the sessional marks obtained in respective subjects. Descriptive / inferential statistics including correlation and ordinal regression was used for analysis.*

Results: *A total of 381 students participated in the study. Out of them, females were 294(71.9%) and males were 107 (28.1%). Prevalence of internet addiction was found to be 61.4%. Among them 149 students (63.7%) had mild, 83 had moderate (35.5%) and 2 (.8%) had severe addiction. Academic performance had a negative association with internet addiction.*

Conclusion: *Prevalence of internet addiction was very high among Indian medical students. Internet Addiction had a negative impact on their academic performance. Early prevention from internet addiction should be emphasized. Awareness is very much important to take up the issue at higher level and to implement measures for preventing it.*

Keywords: *Internet Addiction, medical students, Indian, academic performance.*

Introduction

In the present century of Information and technology, Internet has become a basic necessity of our society. It's an important tool for social interaction, information and entertainment. Unlike in the past, Computers are now part of school student's curriculum. It has gained great importance among students and adolescents. They grow up with internet and computers. As they use internet to the formal parts of their education, they go online to enhance their social lives^(1,2).

Use of internet by medical students is unavoidable as it has revolutionized the medical practice with the increasing use of telemedicine and evidence based medicine.⁽³⁾ Students use internet for literature searches and for other relevant medical information, as it's inexpensive and freely accessible.⁽⁴⁾ However judicious usage of internet is highly recommended by psychologists and educators as over usage can lead to related physical and psychological problems.⁽⁵⁾ As per literature, usage of internet for 38 hours per week on average may lead to problems such as lack of sleep and excessive tiredness. Furthermore, this affects their study performance due to poor concentration in class.⁽⁶⁾

Recent reports from China, Korea, and Taiwan indicated that interactive online gaming has reached addictive proportions⁽⁷⁾ and those medical students who spend their time intensively and inappropriately on internet are prone to get addicted to it.⁽⁸⁾

The term "internet addiction" (IA) otherwise known as internet addiction disorder is documented as a psychiatric ailment with precise diagnostic and management principles⁽⁹⁾ but yet to get included in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*⁽¹⁰⁾. In the American Journal of Psychiatry, US psychiatrist Jerald Block states that "IA appears to be a common disorder that merits inclusion in DSM-V"⁽¹¹⁾.

The global relevance of internet addiction among medical students is rising and its growing negative impact on physical, psycho social and academic

performance is worrisome. A study done in Malaysia, reported Internet Addiction among medical students as 36.9 %⁽¹²⁾. Another study done in China showed a negative correlation between internet usage and academic records⁽¹³⁾. Overall academic performance and there by the development of knowledge, skills and attitude will be affected adversely by IA.

The literature on internet usage among Indian medical students is limited and there are hardly any Indian studies correlating Internet addiction and academic performance. This study aimed to determine the prevalence of Internet addiction among medical students and its correlation with academic performance from a medical college in India.

Materials and Methods

Study setting and criteria

This Cross sectional study was conducted between November 2017 and March 2018 in a medical college in South India. Medical students from first year to final year were selected for the study. Those Medical students who were using internet and who were willing to participate in the study were enrolled in the study. Students who were diagnosed to have psychological distress or any systemic illness and those who were unwilling to participate were excluded from the study.

Ethics Clearance was sought from the Institutional Ethics Committee (IEC) before conducting the study and a written informed consent was taken from the students prior to the study.

Data collection

A peer validated questionnaire was distributed to collect data regarding student's identity, demographic and socio-economic status, patterns of their internet usage and the purpose of its use.

Internet Addiction Diagnostic Questionnaire (IAT),^(1,14-16) developed by the Center for Internet Addiction, USA was used to collect the data regarding internet usage. The questionnaire contains 20 questions that examine the symptoms of IA based upon a five-point Likert scale. After all the questions are answered, the numbers for

each response were added up to obtain a final score.

- 0 Not applicable
- 1 Rarely
- 2 Occasionally
- 3 Frequently
- 4 Often
- 5 Always

The severity impairment index was determined as follows:^(1, 14-16)

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.)

Sessional marks in their respective subjects were collected from the concerned departments and the average mark was calculated for assessment of academic performance. Academic performance was graded as good, average and poor if the average sessional marks in their respective subjects were between 100 - 65 %, 65-50 % and less than 49% respectively.

Statistical Analysis

Statistical analysis was performed using the SPSS 20.Descriptive /inferential statistics including Analysis of tables with Pearson's chi-square test, means with analysis of variance (ANOVA), correlation between continuous variables and ordinal regression were done as applicable. A *p*-value of <0.05 was considered to be significant.

Results

A total of 381 students participated in the study. Among them, females were 294(71.9%) and males were 107 (28.1%).Majority of them stayed at hostel and used internet for their both academic

and entertainment activities.93 % of total respondents used Whats App account and 76% of them used face book account for social communication. WhatsApp was the preferred communication tool for majority of them and most of them preferred portable gadgets for accessing internet.

Based on IAT Questionnaire 234 respondents (61.4%) were found addicted to the internet. On further categorizing internet addiction based on score, 149 students (63.7%) had mild, 83 had moderate (35.5%) and 2 (.8%) had severe addiction . 79% of male respondents were addicted to Internet as compared to 56% of female respondents and the difference was statistically significant. (p value 0.001)

When internet addiction was analyzed among various batches, the incidence was found to be higher among respondents of intermediate batches and the difference was found to be statistically significant. (p value 0.000)

Table 1 shows comparison of patterns of internet usage and socio demographic data among students with and without addiction. Presence of Face book and Whats App accounts and increased frequency of its usage had a positive association with internet addiction. Similarly respondents using internet for more than 2 hours a day and more than an hour for social communication also had positive correlation with internet addiction.

When the association between internet addiction and academic performance was studied, negative correlation was observed between the two variables as depicted in the scatter diagram figure 1 but strong determinants for academic performance were found to gender and batch than internet addiction as studied by multiple ordinal regressions (Table 2).

Table 1: Association of socio demographic factors and patterns of internet use with internet addiction

	Internet Non addiction %	Internet addiction %	P value
Gender			
Male	25.2%	74.8%	.001
Female	43.8%	56.2%	
Home town			.64
Urban			
Semi urban	35.8%	64.2%	
	40.2%	59.8%	
Rural	40.9%	59.1%	
Place of stay			.39
Hostel	38.9%	61.1%	
Home	28.6%	71.4%	
	60%	40 %	
Purpose of internet use			
Entertainment	100%	0%	
Academic	12.5%	87.5%	.043
Both	39%	61%	
Face Book Account			<.0001
No	62.5%	37.5%	
Yes	31.4%	68.6%	.000
Access to face book			
Many times a day	12.8%	87.2. %	
Once or twice a day	34.8%	65.2%	
Once or twice a week	41.8%	58.2%	
Once or twice a month	58.6%	41.3%	
WhatsApp			.000
Yes	78.3%	21.7%	
No	78.3%	21.7%	<.001
Access to WhatsApp			
As and when message comes	26.3%	73.7%	
Many times a day	29%	71%	
Once or twice a day	63.9%	36.1%	
Once or twice a week	69%	31%	
Once or twice a month	66.6%	33.4%	
Preferred gadget			.428
Portable	43.8%	56.2%	
Non portable	38.8%	61.2%	
	31.7%	68.3%	.004
Preferred communication tool			
Email	100%	0%	
Face book	43.5%	56.5%	
WhatsApp	37.1%	62.9%	
Web board	33.3%	66.7%	
Mixed	28.6%	71.4%	.000
Average time spent on internet/day			
< 2 hrs	60.3%	39.7%	
2- 4 hrs	14.4%	85.6%	.000
>4 hrs	3.6%	96.4%	
Average time spent for social communication			.000
< 1 hr	57.6%	42.3%	
1-2 hr	23.8%	76.1%	
>2 hrs	1.56%	98.4%	

p value < .005; considered statistically significant

Figure 1: Scatter diagram showing the correlation between internet addiction and academic performance among males and females

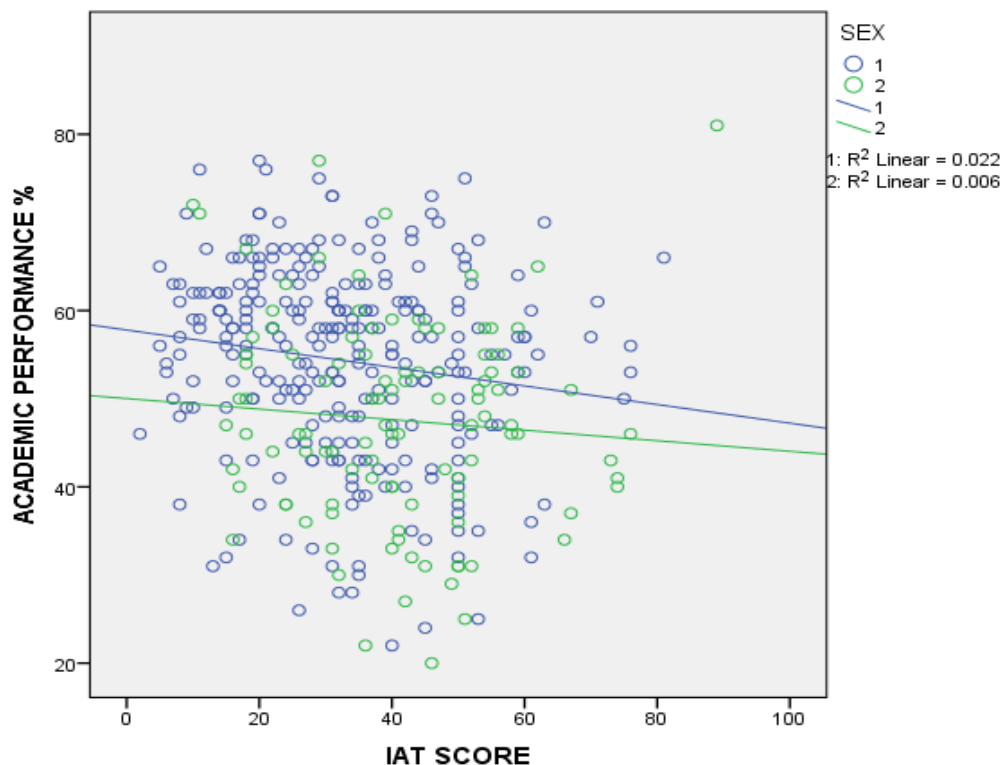


Table 2: Major determinants for academic performance on multiple ordinal regression

		Estimate	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Threshold	[GRADE = .00]	-4.891	.010	-8.605	-1.177
	[GRADE = 1.00]	-.282	.882	-3.985	3.422
	[GRADE = 2.00]	2.925	.120	-.766	6.616
Location	[SEX= Female]	-.858	.001	-1.341	-.374
	[SEX=Male]	0 ^a	.	.	.
	[BATCH=2013.00]	-1.631	.000	-2.291	-.970
	[BATCH=2014.00]	-.080	.800	-.703	.542
	[BATCH=2015.00]	.793	.020	.126	1.459
	[BATCH=2016.00]	-2.157	.000	-2.847	-1.467
	[BATCH=2017.00]	0 ^a	.	.	.
	[ADDICTION=.00]	2.713	.148	-.965	6.391
	[ADDICTION= mild]	3.598	.055	-.081	7.276
	[ADDICTION=moderate]	3.494	.063	-.196	7.184
[ADDICTION= severe]	0 ^a	.	.	.	

p value < .005; considered statistically significant

Discussion

The prevalence of internet addiction among medical students was 61.4%. Surprisingly, the prevalence rate was much higher when compared to previous studies done among medical students. A study done in Malaysia among medical students in 2016 reported incidence as 36.9%.⁽¹²⁾ Studies done in China and Iran, in 2010 and 2011 had reported internet addiction as 16.2% and 10.8%

respectively which is much lower compared to this study^(13,17). The increased incidence over few years may be due to the advances in technology making it easily accessible and cheaper for students, thus making them more dependent on it. Almost 2/3 rd of respondents of IA, had mild addiction, 1/3 had moderate addiction and only 2 respondent had severe addiction .Though majority of them stayed at hostel, place of stay did not have

any association with IA. Thus lack of interference from parents was not an important factor in predicting IA.

Males had significantly higher rates of addiction in this study as compared to females and was consistent with studies done in China⁽¹³⁾ and Malaysia⁽¹⁾. Duration of time spent on internet per day was another significant predictor for internet addiction and these findings were similar with a study done in Malaysia⁽¹²⁾. Those students who spend more than 2 hrs on internet were more prone for addiction.

It was observed that respondents from final year and first year had less addiction as compared to intermediate batches. This may be because first year students are under strict supervision and have restrictions for their internet usage. At the same time, final year students preparing for university exams may be more serious with their studies as compared to intermediate batches.

In our study, internet addiction had negative impact on academic performance and these findings were consistent with other studies.^(9,18)

According to Schener, long time use of internet have possible adverse effect on academic performance, behavior and custom of students⁽¹⁹⁾. However academic performance can be influenced by various factors. Gender and batch had more association with academic performance than internet addiction.

Strength and limitations

To my knowledge, this study represents the first study done among Indian medical students in relation to internet addiction and its correlation with academic performance. Major limitation of this study is this was done conducted in a single centre and hence the results cannot be generalized to the student population. Hence a multi centric study is recommended among medical students across various colleges to confirm the association between internet addiction and academic performance.

Conclusion

The prevalence of internet addiction among medical students is high, as 61.4 %, so early prevention from IA should be emphasized. IA affects academic performance negatively and hence it should be used judiciously by medical students. . Male gender, duration of internet usage more than two hours, frequent use of internet for social communication and intermediate batch students had strong association with Internet addiction .Awareness is important at higher level to address the issue and implement measures for its prevention and treatment. As an emerging problem affecting student education, rehabilitation programs may be useful in the future.

Acknowledgements

I would like to acknowledge Dr Sajith Kumar, Convener at MCI Nodal centre Kottayam and Dr Suresh Vaddakedom, Faculty at MCI Nodal centre, Kottayam for their support and guidance.

Grants /Supports: Nil

References

1. Young KS. Caught in the net: How to recognise the signs of internet addiction and a winning strategy for recovery: John Wiley & Sons; 1998.
2. Ng, C. G., Isa, S. M., Hashim, A. H., Pillai, S. K., & Harbajan Singh, M. K. (2012). Validity of the Malay version of the Internet Addiction Test: A study on a group of medical students in Malaysia. *Asia- Pacific Journal of Public Health*, 8, 3528-3552. ISSN: 1941- 2479. doi: 10.1177/1010539512447808
3. Brewer G, Hiscock D. Medical education and practice in the information age. *Postgrad Med J*. 2001 Jul;77(909):425-7
4. Akin A, İskender M. Internet addiction and depression, anxiety and stress. *International online journal of educational sciences*. 2011; 3: 138–148.
5. Greenfield DN. Psychological

- characteristics of compulsive internet use: a preliminary analysis. *Cyberpsychol Behav.* 1999;2(5):403-12. doi: 10.1089/cpb.1999.2.403
6. Antony M, Bieling PJ, Cox BJ, Enns MW, Swinson RP. Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and community a sample. *Psychological Assessment.* 1998;10:176–181.
7. Young, “Internet Addiction: A New Clinical Phenomenon and Its Consequences,” *American Behavioral Scientist*, Vol. 48, No. 4, 2004, pp. 402-415. doi:10.1177/0002764204270278
8. Cheung LM, Wong WS. The effects of insomnia and internet addiction on depression in Hong Kong Chinese adolescents: an exploratory cross sectional analysis. *J Sleep Res* 2011; 20(3): 311-17 doi:10.1111/j.1365-2869.2010.00883.
9. Mainul Haque, Nor Azlina, A Rahman, Md Anwarul Azim Majumder, Seraj Zohurul Haque et al. Internet use and addiction among medical students of Universiti Sultan Zainal Abidin, Malaysia. *Psychol Res Behav Manag.* 2016; 9: 297–307 doi: 10.2147/PRBM.S11927
10. Ronald Pies. Should DSM-V Designate “Internet Addiction” a Mental Disorder? *Psychiatry (Edgmont)* 2009 Feb; 6(2): 31–37. Published online 2009 Feb. PMID: PMC2719452
11. Block JJ. Issues for DSM-V: internet addiction. *Am J Psychiatry.* 2008; 165(3):306–307. DOI: 10.1176/appi.ajp.2007.07101556
12. Ching SM, Hamidin A, Vasudevan R, Sazlyna MS, Wan Aliaa WS, Foo YL et al. Prevalence and factors associated with internet addiction among medical students- A cross sectional study in Malaysia. *Med J Malaysia.* 2017 Feb;72(1):7-11.
13. Liu X, Bao Z, Wang Z. Internet use and Internet addiction disorder among medical students: a case from China. *Asian Social Science* 2010; 6(1): 28- 34. DOI:10.5539/ass.v6n1p28
14. Young KS [webpage on the Internet]. Internet addiction: symptoms, evaluation, and treatment. innovations in clinical practice. In Vande Creek L, Jackson T, editors. *Innovations in Clinical Practice: A Source Book* (Vol. 17; pp. 19–31). Sarasota, FL: Professional Resource Press;1999:1-17. Available from: <http://treatmentcenters.com/downloads/internet-addiction.pdf>.
15. Young, K. S. (1996). Internet Addiction: The Emergence of a New Clinical Disorder. *CyberPsychology & Behavior*, 1, 237-244. doi.org/10.1089/cpb.1998.1.23
16. Net Addiction [webpage on the Internet]. The Center for Internet Addiction. Internet Addiction Test (IAT). Available from: <http://netaddiction.com/internet-addiction-test>.
17. Ghamari F, Mohammadbeigi A, Mohammadsalehi N, Hashiani AA. Internet Addiction and Modeling its Risk Factors in Medical Students Iran. *Indian J Psychol Med* 2011; 33(2): 158-6 doi: 10.4103/0253-7176.92068
18. Sonia Garg, Naveenta Gupta, Shilekh Mittal .Trends of Internet use and its Psychosocial and physical impacts among medical students. *Journal of research in medical education and ethics* 2015;5(2):120-28
19. Schere K. College life on-line: healthy and unhealthy internet use. *Journal of college students development* 1997;38:655-65.