Internet addiction among medical and health sciences students and its association with usage patterns - a cross sectional study in South India

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Abstract
Background: The explosive growth of the internet in the last decade has had a huge impact on communication and interpersonal behaviour. Though the internet was originally designed to facilitate communication and research activities, the dramatic increase in the use of the internet has led to internet addiction. **Aims and objectives:** This study was conducted with the objective to determine the prevalence of internet addiction among medical and health sciences students and its association with usage patterns. **Materials and methods:** This cross sectional study was conducted on medical and health sciences students, at PSG Institute of Medical Sciences and research, Coimbatore, India. A total of 490 students were selected by simple random sampling. Validated Young's internet addiction scale consisting of 20 items, based upon five point likert scale was used to measure internet addiction and subjects were classified into normal user (score<50) and addicted user (score ≥50). Descriptive statistics, univariate analysis and logistic regression were done to analyse the data. **Results:** The prevalence of internet addiction was 28.57%. The usage patterns significantly associated with internet addiction were chatting while online (p<0.05), making friends through online (p<0.001), online purchases (p<0.01), playing games online(p<0.001) and using internet for social networking (p<0.05).Conclusion: Internet addiction is a growing problem among medical and health sciences students. It is essential to develop methods for controlling internet addiction which is vital for promoting healthy and safe use of internet.
Key words: Internet addiction, Medical students, Internet addiction score, Young's internet addiction scale, Likert scale.

Introduction

The world at the turn of the 21st century has witnessed an explosive growth of internet users. Globally around 3.77 billion people are using the internet [1]. In Asia it has grown from 114 million internet users on December 2000 to 1.07 billion in June 2012.In India, there were about 137 million internet users in June 2012 as compared to 5 million in 2000[2].Though internet use is an important means of obtaining information from others, it can also prove to be problematic due to its dysfunctional use[3]. The term 'internet addiction' was proposed by Dr.Ivan Goldberg in 1995 and later it has been recommended to

include internet addiction in Diagnostic and Statistical Manual of mental disorders, fifth edition(DSM 5)[4,5].Many studies found that increased level of depression is associated with those who become addicted to internet and it also leads to functional impairment in daily life. Studies have also shown that younger internet users are more at risk of becoming internet addicts than older users[5]. Internet addiction in adolescence can have a negative impact on identity formation and may negatively affect cognitive functioning lead to poor academic performance. It can also lead them to engage in risky activities[3]. Psychological and environmental factors in the lives of professional college students may leave them disproportionately vulnerable to internet addiction. This can be attributed to several factors including the following: availability of time, ease of use, unlimited access to the internet, the psychological and developmental characteristics of young adulthood,

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limited or no parental supervision for various usage patterns, include chatting while online, making friends while online, online purchases, watching online news, playing games online, listening music online and using internet for social networking. However the exact association of internet addiction with usage patterns are not clear[6-9].The aim of the present study is to access the prevalence of internet addiction among medical and health sciences students and its association with usage patterns.

Materials and methods

This cross sectional study was conducted at PSG Institute of Medical Sciences and Research,Coimbatore and PSG College of physiotherapy, Coimbatore during April to June 2019.The study got approval from Institute Human Ethic Committee. Consent of the students was obtained and confidentiality of the study participants was ensured before the start of the study. With an expected prevalence of 50% and 10% allowable error of the prevalence, the estimated sample size needed for the study was 400 and with an expected 20% non-response, the required sample size was 500.50% of the students from each batchof PSG Institute of Medical Sciences and Research, Coimbatore and PSG College of physiotherapy, Coimbatore (first year, second year, third year and fourth year)were selected by using simple random sampling procedure, and they have explained about the objectives of the study and the self-administered questions were given and collected back after filling the required details. Thus the study was conducted among 490 students. First part of the questionnaire incorporates seven questions about the details of internet usage patterns and each was categorized as never, rarely, occasionally, frequently, often and always. The second part of the questionnaire is "The Young's IAT(Internet Addiction Test) "developed by Dr.Kimberly Young (1998),is one of the most reliable scales for evaluating internet addiction[10]. This scale comprises of 20 questions, each given a score ranging from 0 to 5 (0=never, 1=rarely, 2=occasionally, 3=frequently, 4=often, 5=always). The internet addiction score was constructed by adding the scores of reply on the second part of the questionnaire. Participants were classified based on the internet addiction scores as: normal user (score as: <50) and addicted user (score as : >=50). The data were analyzed using SPSS version 24. Descriptive statistics were calculated based on mean and standard deviation for quantitative variables and percentages for categorical variables. Initially the association between internet addiction and internet usage patterns was assessed using Chi-square test and then performed a Multiple Logistic Regression analysis. In multivariate analysis the categorization has changed as never, occasionally (specifies the combination of rarely, occasionally and frequently) and often (specifies the combination of often and always) mentioned in the questionnaire. The p value less than 0.05 was considered as statistically significant.

Results

Among 490 students studied, 120 students were from first year, 134 students were from second year, 132 students were from third year and 104 students were from fourth year (Table 1). It was observed that 140 (28.57%) were having internet addiction. In first year, the prevalence was 23.6%, second year, the prevalence was 25.7%, third year the prevalence was 35% and in final year it was 15.7%.There was no significant difference in the prevalence between the years of study. The findings are presented in Table 2.Table 3 shows the factors significantly associated with IA. It was observed that chatting while online (p<0.001), making friends through online (p<0.001), online purchases (p<0.001), visiting news websites (p<0.01), playing games online (p<0.001), listening music online (p<0.01) and using internet for social networking (p<0.001) were significantly associated with internet addiction in univariate analysis. Table 4 shows the factors significantly associated with internet addiction in multivariate analysis. It was observed that chatting while online (p<0.05), making friends through online (p<0.001), online purchases (p<0.01), playing games online (p<0.001) and using internet for social networking (p<0.05) were significantly associated with internet addiction. The adjusted odds ratios for those who occasionally chatting while online when compared to those who never chat while online was 2.004 (95% confidence interval=0.607-6.609) and often chatting while online when compared to those who never chat while online was 3.506 (95% confidence interval=1.058-11.616). Similarly the adjusted odds ratios for those who occasionally make friends through online when compared to those who never was 0.845(95% confidence interval=0.472-1.513) and oftenmake friends through online when compared to those who never was 3.438 (95% confidence interval=1.681-7.032). Adjusted odds ratios for those who occasionally use internet for online purchasing when compared to never purchases online was 1.448 (95% confidence interval=0.699-2.998) and often use internet for online purchasing when compared to never purchases online was 3.079 (95% confidence interval=1.384-6.849). The adjusted odds ratio for

those who play online games occasionally when compared to never was 1.302 (95% confidence interval=0.719-2.356) and often play online games when compared to never was 3.547 (95% confidence interval=1.952-6.446). The odds ratios for those who use internet for social networking occasionally when compared to never use was 1.709 (95% confidence interval= 0.306-9.553) and often use internet for social networking when compared to never was 3.738 (95% confidence interval=0.682-20.477).

Discussion

In the present study the prevalence of internet addiction was 28.57%. The finding is comparable with the prevalence of 18.88% as reported by Chathoth V M et al., in a study conducted in Mangalore[11]. Another study on internet addiction disorder among medical students in China reported a prevalence of 16.2%[12]. The published study of Nalwa K et al., which evaluated internet addiction by using Davis Online Cognition Scale in school-going children aged 16-18 years, reported a prevalence of 18%[13].However some studies have also reported higher prevalence of internet addiction. NaffiseMashaeiet al. observed the prevalence of internet addiction in students of Rafsanjan University of Medical Sciences, Iran, as 51.3% mild, 5.4% moderate and 0.9% severe, while 42.4% students were not addicted to the internet[14]. The variation in prevalence can be attributed to the criteria used and the samples studied. In general,studies have shown that internet addiction is growing problem among students of professional courses[3].On observing the explosive growth of internet users among students of professional courses, it is important to study Internet Addiction (IA) among medical and health science students. Though many of the students uses internet as a tool for achieving their personal and educational goals, some suffer from a loss of control over their internet usage and it results into IA[15-22]. Huge blocks of unstructured times in universities, unlimited access to internet and full encouragement for students from faculty in using different internet applications can lead them to more addict to internet. In such a situation our study helps in understanding extend of internet addiction among the subjects.In this study, playing online games was associated with IA. The finding has been substantiated by previous study conducted by M. C. Anusha Prabhakaran et al. published in 2016[3]. 'Internet gaming disorder' (IGD) has been included in the most recent Diagnostic and Statistical Manual of mental disorders, fifth edition(DSM5), as a new condition requiring further research[23]. Internet provides wide variety of online games and a large number of students were addicted to it. Many students have tendency to spend more time in online gaming and less time with their family. Thus they become heedless of things happening around and get mentally depressed. Also many researchers found that internet game players experiences symptoms like mood modification, tolerance and salience[24].Online purchasing was found to be associated with IA. It's a fact that online purchasing is common and became a trend among college students. Since online shopping is more convenient than offline shopping and simple procedures of payments, people became more addicted to online purchasing. Apart from these, it is relatively cheaper also.There is a large growth in use of mobile phones among students and which was followed by increase in use of social media. In our study internet addicted students found to spend a huge time on social networking and online chatting. Social media has been created to connect people and to build relationships and some students use it for entertainment. As a result it affects their daily life and this is to be avoided. The negative habit of excessive use of social media has become a subject of much discussion and research[25-30]. Our study reveals that making friends through online is significantly associated with IA. With the introduction of platforms such as Facebook, Twitter, and Snap chat, students may choose to contact using these platforms and avoids direct meetings. The excessive use of these types of social networking sites resulted problematic [31,32]. A study conducted by Hong et al.(2014) reports that depressive character and Facebook usage significantly predicts Facebook addiction which is a subset of IA[29]. Internet has made for many things banking, communication, accessing music, news and movies in a more convenient way. But there is a dark side that surrounds the internet. The problems it causes are viewed as more important and serious when compared to its many benefits[33-36]. The new generation leads the population into a totally wired society. This wired society needs more protection than old days against the attendant risks of the technological revolution. Internet addiction among students became a serious issue in India that needs further investigation and prevention[37].The parents and teachers should be carefully active in preventing the excessive use of internet and consequently the development of adverse physical and mental issues. Moreover it is necessary to commence strategies for prevention of internet addiction and problematic internet usage.Our study has several limitations. First, the prevalence of internet addiction is difficult to establish accurately because of limitations related to the population screened, the reluctance of subjects to participate and unreliability on

the historyof internet usage revealed by study subjects. Hence its accuracy is unknown. A large study covering a wide geographical area can be done using the internet addiction scale for generalization and more accuracy in estimating the prevalence of internet addiction.Further analysis of socio demographic and life style factors associated with IA will be reported in a subsequent paper. Despite these limitations this study has several strengths. We have used a validated questionnaire to measure the internet addiction. Same investigators collected the data and hence reduced inter-observer bias. We have collected the data by wide stratifications in selection procedure by considering both medicine and health sciences students and from various batches.

Table 1: Distribution of the students studied

Year of study	College of physiotherapy			College of medicine			Grand total
	Male	Female	Total	Male	Female	Total	
First year	13	32	45	38	37	75	120
Second year	17	33	50	29	55	84	134
Third year	20	30	50	36	46	82	132
Fourth year	14	31	45	30	29	59	104
Total	64	126	190	133	167	300	490

Table 2: Prevalence of Internet Addiction

Year	Total students	Internet addicted students Number (percentage)
First year	120	33(23.6)
Second year	134	36(25.7)
Third year	132	49(35)
Fourth year	104	22(15.7)
Total	490	140(28.57)

Table 3:Association between internet addiction and usage pattern in univariate analysis

Variables		Number having IA	Percentage	Chi-square	P-value
Chatting while online*	Never	4	10	60.011	0.000
	Rarely	15	14.2		
	Occasionally	32	23.9		
	Frequently	37	30.3		
	Often	33	62.3		
	Always	19	54.3		
Making friends through online*	Never	26	19	70.220	0.000
	Rarely	35	19.4		
	Occasionally	33	34.4		
	Frequently	16	39		
	Often	16	84.2		
	Always	14	82.4		
Online purchases*	Never	14	14.6	37.374	0.000
	Rarely	40	24.1		
	Occasionally	31	26.1		
	Frequently	34	48.6		

	Often	12	57.1		
	Always	9	50		
Visiting news websites*	Never	14	22.6	16.742	0.005
	Rarely	29	21.5		
	Occasionally	37	26.2		
	Frequently	32	36		
	Often	15	38.5		
	Always	13	54.2		
Playing games Online*	Never	28	16.5	56.884	0.000
	Rarely	21	21		
	Occasionally	21	27.6		
	Frequently	24	38.7		
	Often	16	41		
	Always	30	69.8		
Listening Music online*	Never	8	21.6	17.612	0.003
	Rarely	8	16.3		
	Occasionally	19	19.8		
	Frequently	27	27		
	Often	41	34.5		
	Always	37	41.6		
Using internet for social networking*	Never	2	8.7	72.772	0.000
	Rarely	8	13.1		
	Occasionally	19	18.1		
	Frequently	23	17.7		
	Often	44	45.4		
	Always	44	59.5		

*significantly associated with p<0.05

Table 4:Association between internet addiction and usage patterns in multivariate analysis

Variables		Adjusted odds ratio	95% CI	
			Lower	Upper
Chatting while online* p=0.023	never	1	-	
	Occasionally	2.004	0.607	6.609
	often	3.506	1.058	11.616
Making friends through online* p=0.000	never	1	-	
	Occasionally	0.845	0.472	1.513
	often	3.438	1.681	7.032
Online purchases* p=0.006	never	1	-	
	Occasionally	1.448	0.699	2.998
	often	3.079	1.384	6.849
Visiting news websites p=0.362	never	1	-	
	Occasionally	0.849	0.393	1.832
	often	1.233	0.550	2.765
Playing games online* p=0.000	never	1	-	
	Occasionally	1.302	0.719	2.356
	often	3.547	1.952	6.446
Listening Music online p=0.304	never	1	-	
	Occasionally	0.542	0.196	1.496
	often	0.789	0.300	2.072
Using internet for social networking* p=0.011	never	1	-	
	Occasionally	1.709	0.306	9.553
	often	3.738	0.682	20.477

*significantly associated with p<0.05

Conclusion

Internet addiction was observed in over one third of the subjects. The explosive growth of the internet in the last decade had a huge impact on communication and inter-personal behavior. The present study unfolds that internet addiction is in majority of the medical students and is a reality that it requires timely helpful action of detection of internet addiction. Therefore it needs greater importance in professional institutions such as medical colleges and it is necessary to develop strategies for prevention of internet addiction, which is vital for promoting healthy and safe use of the internet.

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