

Internet Addiction Prevalence and Risk Factors: A Cross – Sectional Study among Dental Students in Modinagar City

Lav Kumar Niraj^{1*} Ritu Gupta² Ashish Singla³ Kuldeep Dhama⁴ Irfan Ali⁵ Basavaraj P⁶

¹Tutor, Department of Public Health Dentistry, Divya College of Dental Sciences and Research, Modinagar, India.

²Senior Lecturer, Department of Public Health Dentistry, Divya College of Dental Sciences and Research, Modinagar, India.

³Reader, Department of Public Health Dentistry, Divya College of Dental Sciences and Research, Modinagar, India.

⁴Tutor, Department of Public Health Dentistry, Divya College of Dental Sciences and Research, Modinagar, India.

⁵Tutor, Department of Public Health Dentistry, Divya College of Dental Sciences and Research, Modinagar, India.

⁶Professor and Head, Department of Public Health Dentistry, Divya College of Dental Sciences and Research, Modinagar, India.

ABSTRACT

Background: Internet is a global computer network providing a variety of information and communication facilities, consisting of interconnected networks using standardized communication protocols. Internet use has been increasing with very high speed in the worldwide. Internet usage is a double ended sword acting as a boon or bane depends upon the usage of internet.

Materials and Methods: A questionnaire based cross sectional study was carried out on the dental students, aged 18 to 34 years in Modinagar city, Uttar Pradesh, India. A total of 490 students using internet were included in the study. Young's Internet addiction scale, consisting of 20-item, based upon five-point Likert scale was used and subjects were classified into normal users (score <30), mild (score 30-49), moderate (score 50-79) and severe (score >79) internet addiction.

Results: Of the total 490 students, 409 students were fulfilled the questionnaire and were finally included in the study. Thus, majority (53.5%) of the participants were female. In the present study out of 409 participants, 187 (45.7%) subjects were having mild internet addiction, 131 (32.0%) subjects were having moderate internet addiction.) and 91 (22.2%) were not addicted to internet use; none of subjects were having severe internet addiction. Relationship between level of addiction with time spent and amount spent is significant.

Conclusion: Internet addiction is growing problem among dental students, so it is necessary to develop strategies for prevention of internet addiction as well as therapeutic interventions, which is vital for promoting healthy and safe use of the Internet. The need of the hour is to create awareness among the public, plan public health policies with regard to this behavioral addiction, and conduct further research to support the same.

Keywords: Internet Addiction; Internet Addiction Score; Young's Internet Addiction Scale; Likert Scale.

INTRODUCTION

Internet is a global computer network providing a variety of information and communication facilities, consisting of interconnected networks using standardized communication protocols. Internet use has been increasing with very high speed in the worldwide.

Hence, the use of internet by the adults in the field of education, entertainment, communication and information sharing has been increasing nowadays [1]. A research conducted by IAMAI (Internet and Mobile Association of India) indicates that the number of mobile Internet users in India is expected to double and cross the 300 million mark

Received: Oct. 6, 2016; Accepted: Nov. 19, 2016

*Correspondence Dr. Lav Kumar Niraj.

Department of Public Health Dentistry, Divya College of Dental Sciences and Research, Modinagar, India.

Email: lav.niraj98@gmail.com

by 2017 from 159 million users at present. Though India has less Internet penetration at 19% compared with other developed and developing economies that have up to 90% penetration, the country has the third-largest Internet user base in the world, with more than 300 million users [2].

Internet usage is a double ended sword acting as a boon or bane depends upon the usage of internet. The use of internet for the purpose of education, knowledge, research, information searching and sharing, learning and training, seminars, webinars, telecommuting has positively changed the way the people live and markedly improved their quality of life [3]. While the internet use has proved to be highly productive technology tool, the excessive and impulsive usage of internet particularly for the purpose of social networking, messaging, pornography has led to sort of addiction for internet usage particularly among the youth [4]. The term 'internet addiction' was first coined by Dr. Ivan Goldberg in 1995 to describe 'pathological and compulsive use of internet' [5]. As Griffiths (1998) stated that, "excessive use of the Internet may not be problematic in most cases but the limited case study evidence suggests that for some individuals, excessive Internet use is a real addiction and of genuine concern" [6].

The Internet addiction in the young and adolescents can have a greater impact on identity formation and may negatively affect the behavior of adults, leading to impairment of academic performance and impart poor dietary habits [1]. Excessive use of internet leads to sleep patterns typically disrupted due to late night logins. Due to this type of activity, sleep deprivation occurs and this causes excessive fatigue often making academic or occupational functioning hampered and may decrease one's immune system, leaving the addicted adolescence helpless to disease [7]. Additionally, there are increased chances for carpal tunnel syndrome, back strain, or eyestrain [7]. While the physical side-effects of utilizing the Internet are mild compared to chemical dependency, addictive use of the Internet will result in familial, academic, and occupational impairment [7]. The greatest challenge to increased adoption of internet based information in developing countries like India is limited financial resources. In India, the internet usage has been increased nowadays, and is assume

that this increase would be reflected among health personnel for education and clinical practice purposes by Kumar S et.al.in 2010 [3].

The specific diagnosis of the internet addiction is often complicated by the fact that there is currently no accepted set of criteria for addiction. Of all the diagnoses referenced in the DSM-IV, Pathological Gambling was viewed as most akin to the Pathologic nature of Internet use [7]. Young's IAT, developed for screening and measuring levels of Internet addiction, and has been the most widely used and well-tested for its psychometric properties [8]. The rationale for choosing Young's diagnostic questionnaire for the study was that it is the first global psychometric measure and hence has been extensively and frequently used across many studies globally, is self-completed, has been validated on adult and adolescent populations, and has good internal consistency reliability as well as concurrent validity [1].

This study attempts to understand the patterns, prevalence, and risk factors for Internet addiction among college students in Modinagar City, Ghaziabad (UP), India. Unfortunately, there has been no similar study published from the National capital Region (NCR) of India.

NEED FOR THE STUDY

Since young adults are considered more prone to internet addiction, and also because of easy and quick access of dental students to internet, so because of negligence towards this issue would cause personal, social, and educational difficulties. There are no such any studies published in India on Internet addiction among dental students. Therefore, we decided to determine the extent of this problem and its related factors among dental students.

MATERIALS AND METHOD

This cross-sectional study was carried out in the Dental Institution of Modinagar city, Ghaziabad (UP) during the period of May-June 2016. The study covered about 490 dental students (18-34 Years) representing undergraduates from first to final year, interns and postgraduates in first, second and third year of curriculum. Of the total 490 students, 454 returned filled questionnaires,

around 10 could not be included in the study as they were not Internet users, and 35 submitted forms that were incomplete. Thus, a total of 409 students were finally included in the study. College approval and written informed consent were obtained for all the students who participated. The study was approved by the Institutional Review Board. A pilot study was done on 20 students; subsequent suggestions were incorporated before the start of the study.

Data collection and measures of Internet addiction

The questionnaire consisting of multiple choice questions was prepared regarding the socio demographic information of study subjects, patterns of internet usage: (years of internet usage, time spent on internet usage, mode, purpose of internet usage, monthly expenditure on internet usage) and Level of internet addiction using Young's Internet Addiction Test (IAT). All questionnaires were distributed to the participants in classroom settings at a predetermined time and were collected onsite after 30 min. The questionnaires were anonymous and self-administered.

Young's 20-item scale for Internet addiction (YIAT 20) is a 20-item questionnaire measured on the five-point Likert Scale. The items of the IAT, each rated from 1 (rarely) to 5 (always), include compulsive behavior related to use of the Internet, the occupational or academic difficulties, lack of competence at home, problems in interpersonal relations, and emotional problems.

After all the questions have been answered, numbers for each response are added to obtain a final score. The higher the score range, the greater the level of addiction; normal range: 0-30 points, mild: 31-49 points, moderate: 50-79 points, and severe: 80-100 points.

Questionnaire validation

The questionnaire was pretested on 20 students who were not included in the main study and comprised 15% of the study sample for reliability and validity. The questionnaire based study was carried out among the 490 students regarding the usage of internet. Reliability of the questionnaire was assessed using Test-Retest showed measured kappa (k) of 0.82 and weighted kappa (k) of 0.88 and internal consistency of the questionnaire was ascertained by Chronbachs-Alpha (α) was found to be $\alpha = 0.80$. Construct validity of the questionnaire was assessed using spearman's correlation coefficient between individual parameter/construct and overall score of the construct.

Statistical analysis

The SPSS version 17.0 (IBM SPSS Statistics) was used for statistical analysis of the data collected. Sociodemographic variables and patterns of Internet use have been denoted by frequency tables. The prevalence of Internet addiction was described in terms of percentage, Mean and Standard deviation. Chi-square test was used for analyzing categorical variables.

RESULTS

Table 1: Socio demographic characteristics of study participants (n=409).

Socio demographic variables	n	%
Age(years)		
18-21	164 (40.1%)	40.1%
22-25	147 (35.9%)	35.9%
26-29	94 (23.0%)	23.0%
>30	4 (1.0%)	1.0%
Gender		
Male	190	46.5%
Female	219	53.5%
Education Qualification		
Undergraduate students	322	78.7%

Postgraduate students	87	21.3%
Permanent Residence		
Rural	84	20.5%
Urban	325	79.5%
Father Occupation		
Business	88	21.5%
Self-employed	27	6.6%
Private	20	4.9%
Government	231	56.5%
Professional	43	10.5%
Mother's Occupation		
Homemaker	225	55.0%
Private	15	3.7%
Business	19	4.6%
Self-employed	150	36.7%
Year of study		
1 st year UG	73	17.8%
2 nd year UG	80	19.6%
3 rd year UG	63	15.4%
4 th year UG	63	15.4%
Intern	43	10.5%
PG	87	21.3%
Medium of instruction during schooling		
English	368	90.0%
Hindi	41	10.0%

Table 2: Patterns of Internet use.

Variables	Number (%)
1. Since how many years do you use internet?	
Less than 1 year	5(1.2%)
1-3 years	18(4.4%)
4-6 years	134(32.8%)
7-10 years	96(23.5%)
More than 10 years	156(38.1%)
2. How many hours do you spend your time on Internet use?	
0-5 hours/Week	345(84.4)
5-10 hours/Week	48(11.7)
>10 hours/Week	16(3.9)
3. What amount of money do you spend on internet use per month?	
Less than Rs.300/Month	180(44.0)
Rs.300-600/Month	186(45.5)
More than Rs. 600/Month	43(10.5)
4. Which gadget would you often used for accessing internet?	
Desktop	40(9.8)
Laptop	74(18.1)
Tablet	2(0.5)
Mobile Phone	293(71.6)

5. Which login status do you follow? a. Log In and Off occasionally during the day b. Permanently Online	289(70.7) 120(29.3)
6. Which mode of internet access do you use most commonly ? a. Wi-Fi b. Broadband c. Data card d. Mobile Internet	113(27.6) 24(5.9) 12(2.9) 260(63.6)
7. Which is the most common location of internet access for you? Residence Cybercafe Library Classroom Computer lab Hostel Other public places	81(19.8) 0 27(6.6) 5(1.2) 0 292(71.4) 4(1.0)
8. For which purpose do you mostly access internet? News Social networking Academic Purposes	18 (4.4) 355(86.8) 36 (8.8)

Table 3: Relationship of Time spent using internet with gender, Age and Educational qualification

Characteristics	Time spent using internet			Chi Square	P value
	0-5 hours	5-10 hours	>10 hours		
Male	163(85.8%)	20(10.5%)	7(3.7%)	.576	0.750 (NS)
Female	182(83.1%)	28(12.8%)	9(4.1%)		
18-21 years	139(84.8%)	22(13.4%)	3(1.8%)	5.064	0.536 (NS)
21-25 years	125(85.0%)	15(10.2%)	7(4.8%)		
26-29 years	77(81.9%)	11(11.7%)	6(6.4%)		
More than 30 years	4(100.0%)	0(0%)	0(0%)		
UG student(BDS)	273(84.8%)	40(12.4%)	9(2.8%)	5.469	0.065 (NS)
PG student (MDS)	72(82.8%)	8(9.2%)	7(8.0%)		

Table 4: Relationship of Amount spent using internet per month with gender, Age and Educational qualification.

	Amount Spent Per Month			Chi Square	P value
Gender	Less than 300	300-600	More than 600		
Male	80(42.1%)	85(44.7%)	25(13.2%)	2.695	0.260 (NS)
Female	100(45.7%)	101(46.1%)	18(8.2%)		
Age Group					
18-21 years	76(46.3%)	76(46.3%)	12(7.3%)	5.384	0.496 (NS)
21-25 years	60(40.8%)	67(45.6%)	20(13.6%)		
26-29 years	43(45.7%)	40(42.6%)	11(11.7%)		
More than 30 years	1(25.0%)	3(75.0%)	0(0.0%)		
Year of Study					
UG student(BDS)	137(42.5%)	152(47.2%)	33(10.2%)	1.832	0.400 (NS)
PG student(MDS)	43(49.4%)	34(39.1%)	10(11.5%)		

Table 5: Prevalence of Internet addiction; N= 409

Levels of Addiction	IAT Criteria	Frequency (n)	Mean	SD
Normal	<30	91 (22.2)	27.18	3.077
Mild	30-49	187 (45.7)	37.38	4.072
Moderate	50-79	131 (32.0)	52.94	3.381

Table 6: Relationship of Level of addiction with Time Spent, Amount Spent and socio-demographic characteristics.

	Level of Addiction			Chi-Square	P-Value
Time spent	Normal	Mild	Moderate		
0-5 hours/Week	108(31.3%)	137(39.7%)	100(29.0%)	17.263	0.002
5-10 hours/Week	19(39.6%)	8(16.7%)	21(43.8%)		
>10 hours/Week	2(12.5%)	4(25.0%)	10(62.5%)		
Amount spent					
<Rs300/Month	64(35.6%)	47(26.1%)	69(38.3%)	35.511	0.000
Rs300-600/Month	57(30.6%)	91(48.9%)	38(20.4%)		
>Rs600/Month	8(18.6%)	11(25.6%)	24(55.8%)		
Age					
18-21 years	51(31.1%)	57(34.8%)	56(34.1%)	2.631	0.854
21-25 years	48(32.7%)	58(39.5%)	41(27.9%)		
26-29 years	28(29.8%)	33(35.1%)	33(35.1%)		
More than 30 years	2(50.0%)	1(25.0%)	1(25.0%)		

Gender					
Male	49(25.8%)	71(37.4%)	70(36.8%)	6.373	0.041
Female	80(36.5%)	78(35.6%)	61(27.9%)		
Course of study					
UG student(BDS)	102(31.7%)	117(36.3%)	103(32.0%)	0.041	0.993
PG student(MDS)	27(31.0%)	32(36.8%)	28(32.2%)		

RESULTS

Of the total 500 students, 454 returned filled questionnaires, around 10 could not be included in the study as they were not Internet users, and 35 submitted forms that were incomplete. Thus, a total of 409 students were finally included in the study. Of the total of 409 students 190 (46.5%) were the males and 219 (53.5%) were females. Majority of the subjects were in the age group of 18-21 years (40.1%) and 22-25 years (35.9%). Among the participants 77 (18.8%) were the postgraduate students whereas 83(20.3%) , 80 (19.6%) . 63 (15.4%), 63(15.4%) belonged to 1st year, 2nd year, 3rd year , 4th year of BDS course respectively .The total of 329 (79.5%) students belonged to the urban background whereas 84(20.5%) were from rural areas

Table 2 describes the patterns of internet use among the participants. 156 students (38.1%) were using internet for the period of more than 10 years whereas 134 (32.8%) and 96 subjects (23.5%) were using internet for the period of 4-7 years and 7-10 years respectively. Only five subjects (1.2%) were using internet for less than one year.84.4% of the subjects were using internet for the period of 0-5 hrs/week. Very few subjects were using internet for period of more than 10 hrs/week. Regarding the amount spent on internet usage per month, 186 subjects were spending in range of 300-600Rs/Month whereas 180 subjects were spending less than 300 Rs /Month on internet usage .Majority of the participants (63.6%) in the present study were using Mobile phones for the internet access. Regarding the purpose of the internet use, 86.6% used the internet for social networking whereas only 8.8% used it for academic purpose (Table -2).

Table -3 demonstrates the association of time spent on internet usage with gender, age and course of study (UG/PG). 85.3% of the males were using internet for period of 0-5 hrs whereas 83.15% of the females were using it for the period of 0-5 hrs. 4.1% of the females were using internet for more than 10 hrs as compared to 3.7% among females. In the present study it was found that more of the postgraduate students (8.0%) were using internet for more than 10 hours as compared to undergraduate students (2.8%). The relationship between the time spent on internet usage and socio-demographic variables (age, gender and course of study) was found to be statistically non-significant ($p>0.05$). The relationship between amount of money spent on internet use and socio-demographic variables was also found to be statistically non-significant ($p>0.05$). (Table -4)\

In the present study out of 409 participants, 91 (22.2%) were not addicted to internet use, 187 (45.7%) subjects were having mild internet addiction and 131 (32.0%) subjects were having moderate internet addiction.), none of subjects were having severe internet addiction. (Table -5).Table -6 demonstrates the association of level of internet addiction with time spent on internet usage, money spent on internet usage and socio-demographic variables. Those subject who were using internet for more than 10 hrs were having higher prevalence of moderate internet addiction as compared to those using 0-5 hrs ($p<0.05$).Among the socio demographic variables the prevalence of moderate and mild internet addiction was significantly higher in males as compare to females ($p=0.041$).

DISCUSSION

The literature has termed Internet addiction frequently in synonymous with

pathological Internet use, compulsive Internet use, and problematic Internet use. All of these share some common elements, such as excessive use of the Internet, withdrawal, tolerance, and negative consequences for interpersonal or personal well-being with respect to diagnostic Criteria. The patterns of Internet use were found to be extremely varied, with the majority of students having been using computers for more than 10 years and using internet services at hostel (71.4%) or the residence. Very few were using internet services at the cyber café. The findings are in agreement with the studies carried out by study carried out by Unnikrishnana et al in 2008 among the medical students of Costal India [9]. The probable reason for the present finding is the availability of free Wi Fi services in most of the hostels and financial burden on students in the use of internet services at commercial places like Cyber Cafés.

In the present study 86.8% of dental students were using internet for the purpose of social networking and only 8.8% were using for the academic purposes. The findings are in agreement with the study carried out by Santosh Kumar et al in 2010 among the undergraduate dental students of Darshan Dental Students and Hospital Udaipur which reported 45% of the dental students used the internet for entertainment purpose and 6% used it for the academic purpose [3]. However the findings are in contrast to the findings of some other studies where the internet use was primarily for the purpose of communication through emails reported by Ibrahim et al in 2003 and also by Mattheos et al in 2005 [10,11]. In the present time the social network has become a global phenomenon. In recent years, social networking sites (SNS) like Facebook, Twitter, MySpace, and LinkedIn have become the most visited websites in the world, with Facebook topping the list. Students are increasingly utilizing these social networks for friends' news feeds, personal updates, events and activities, notes, and messages.

It was seen that the majority of the students (84.4%) were using internet for the period of less than 5 hours in a week. Only 3.9% were using internet for more than 10 hrs in a day. The findings are in agreement with the findings of Unnikrishnan et al.in 2008. The findings suggest that students are able to spend less time on internet as they become

busy in their course of study. The IAT scoring revealed 22.2% as normal users, 45.7% as mildly addicted to the Internet, 32.0% as moderately addicted, and no were severely addicted. A study carried out by Choi et al. in 2008 reported that the male students had more internet addiction compared to female students, and in 2001, Hahn and Jerusalem in Berlin reported that males used the Internet more than females; however, the Internet usage levels of females have increased in recent years[12]. No link was found with regard to student's age, there was a significant fluctuation with amount and time spent on internet use

Our study suggested a non-significant relationship between the education qualification, age and gender with time spent and money spent in internet. In our study, the main place of internet use was not significantly different between the study groups. Studies found that the location of internet access is a potential risk factor of internet addiction. One of the strengths of this study was that the participants were chosen from all under graduate and post graduate dental students and also related factors of internet addiction were evaluated. However, there are some limitations to our study. First, no interview was conducted to confirm diagnosis of internet addiction. Second, we only tried to establish a relation between internet addiction and potential risk factors without being able to prove any cause and effect relation between them. Finally, some refused to fill out the questionnaires which could negatively affect the strength of our study. Although our study showed that the prevalence of internet addiction was more than other populations and universities, as the prevalence of internet addiction is increasing rapidly worldwide, the studied population is at increased risk of internet addiction. Thus, focusing on related and causing factors can help us design more effective interventions and treatments for this susceptible group. Finally, we suggest that further studies be conducted by interviewing the subjects to determinate the causes and factors related to internet addiction among dental students.

CONCLUSION

Internet addiction is increasing with a more serious problem among dental students, which has psychological, physical, and social impact on

student's life. So it is necessary to develop strategies for prevention of internet addiction as well as therapeutic interventions, which is invigorating for promoting healthy and safe use of the Internet. Awareness should be created among the students to improve ability to reduce the occurrence of internet addiction behavior promoting their healthy growth. India is a developing country that is embracing technological growth at a pace faster than ever. The understanding that Internet use can be a disorder is still in its initial stages in India, and excessive Internet use is an emerging public health issue as research findings have highlighted that excessive use of the Internet adversely affects one's physical and mental health and social well-being. Globally, a number of studies have tried to analyze similar risk factors associated with Internet addiction, and the results of this study provide evidence to support the findings of prior research from an Indian context. This study's results imply that Internet addiction is a prevalent public health issue, having multiple risk factors and varied patterns of Internet use, in a place where the Internet is becoming an integral component of an individual's personal and social life. The need of the hour is to create awareness among the public, plan public health policies with regard to this behavioral addiction, and conduct further research to support the same.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. 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(2):115-21.
2. Internet and Mobile association of India. I-Cube 2015 Study. Available from: <http://www.iamai.in/reports1.aspx>.
3. Kumar S, Tadakamadla J, Tibdewal H, Duraiswamy P, Kulkarni S. Internet usage among undergraduate dental students in India. *Rev. odonto ciênc.* 2010;25(3):261-265.
4. Kuss DJ and Griffiths MD. Online Social Networking and Addiction—A Review of the Psychological Literature. *Int. J. Environ. Res. Public Health* 2011; 8: 3528-3552.
5. Salehi M, Khalili MN, 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(5): e17256.
6. Chou C, Condron L, Belland JC. A Review of the Research on Internet Addiction. *Educational Psychology Review.* 2005; 17(4):363-89.
7. Young KS. Internet Addiction: A New Clinical Phenomenon and Its Consequences. *AMERICAN BEHAVIORAL SCIENTIST.* 2004;48(4): 402-415.
8. Widyanto L, McMurran M. The psychometric properties of the internet addiction test. *Cyber psychol Behav* 2004; 7(4):443-50.
9. Unnikrishnan B, Kulshreshta V, Saraf A, et al. Pattern of computer and internet use among medical students in coastal south India. *South East Asian J Medical Educ* 2008;2(2):18-25.
10. Ibrahim NBM, Lim TA, Yeong SW, Foong A.L.S, Ware J. Utilization of Information Technology in Medical Education: A Questionnaire Survey of Students in a Malaysian Institution. *Medical J Malaysia* 2003; 57:58-66.
11. N. Mattheos N, Schitteck MJ, Nattestad A, Shanley D and Attstrom R. A comparative evaluation of computer literacy amongst dental educators and students. *Eur J Dent Educ* 2005; 9: 32-36.
12. Sahin C. An analysis of internet addiction levels of individuals according to various variables. *Turk Online J Educ Technol.* 2011;10:60-6.