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Prevalence and Associated Risk Factors of Internet Addiction in College Going Students in Nanded city

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ABSTRACT

Introduction: There has been an explosive growth in the use of internet not only in India but also worldwide in the last decade. The internet is used by some to facilitate research, to seek information, for interpersonal communication, and for business transactions. It was necessary to evaluate pattern of internet usage, risk factors and prevalence of internet addiction in college students.

Methods: This cross-sectional study was carried out in different colleges across in the Nanded Waghala City Municipal Corporation during the period March – April 2016.Pre-validated, Pretested, structured questionnaire was developed. Young's 20-item scale for Internet addiction (YIAT) was applied to qualify for the prevalence of Internet addiction. The 12-item General Health Questionnaire has excellent psychometric properties as a screening instrument for psychiatric disorders in nonclinical settings.

Results: This study of college students aged 17-25 years with marginally high male representation (54%), identified 30 % and 35 % as students with mild and moderate Internet addiction respectively. Binary logistic regression found Internet addiction to be associated with male gender, continuous login status, online friendships and online relationship.

Conclusions: This study's results shows that Internet addiction is a growing public health issue, having multiple risk factors and varied patterns of Internet use, in a place where the Internet is becoming an inclusive part of an individual's personal and social life.

Key words: College students, Internet addiction, Internet use patterns, prevalence, YIAT, GHQ.

INTRODUCTION

Over the past decade, the concept of Internet addiction has grown in terms of its acceptance as a legitimate clinical disorder often requiring treatment. While much attention has been paid to Internet addiction in the academic and clinical fields, developing universal standards of care and assessment have been difficult because the field is culturally diverse and terminology in the academic literature has varied from Internet addiction to problematic Internet use, pathological Internet use, and pathological computer use, in the same way that different inventories are used for their assessment[1].

There has been an explosive growth in the use of internet not only in India but also worldwide in the last decade. The internet is used by some to facilitate research, to seek information, for interpersonal communication, and for business transactions. On the other hand, it can be used by some to indulge in pornography, excessive gaming, chatting for long hours, and even gambling[2].

College students are especially vulnerable to developing dependence on the Internet, more than

most other segments of the society. 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; limited or no parental supervision; an expectation of Internet/computer use implicitly if not explicitly, as some courses are Internet-dependent, from assignments and projects to communication with peers and mentors; the Internet offering a route of escape from exam stress, all of which make Internet overuse a significant cause of concern for parents and faculty[3].

But, we all know that there are several other websites also available on the internet which provides unhealthy and anti-social contents to the children. We have evidence that excessive use of social networking sites lead to the depression and anxiety. Now there is a flood of social networking sites[4].

In India, use of internet is enormous, especially in the young population. Hence, it was found necessary to evaluate pattern of internet usage, risk factors and prevalence of internet addiction in college students in Indian setting and to establish relationship with their mental health. With this background, we undertook the present study to take a close look on this issue.

METHODOLOGY

This cross-sectional study was carried out in different colleges across different streams (Arts, Science, Commerce, Poly-technique) in the Nanded Waghala City Municipal Corporation during the period March – April 2016.

The sample size was calculated considering prevalence of Internet addiction to be 45.8 % from study conducted by Krishnamurthy et.al [3], and for a 95% confidence level and 5% absolute precision of the estimate, the final sample size came to be 381.

Sample selection

A multistage cluster random sampling design was applied to target recruitment. There were four zones under Nanded Waghala City Municipal Corporation. All wards under each zone were listed and one college from each zone was randomly selected. Higher secondary, undergraduate, graduate, and postgraduate colleges in the selected wards were randomly selected and then contacted for permission to conduct the study. The study was made with students of all the colleges where permission was granted. Of the 12 colleges that were contacted, 8 colleges gave immediate permission to conduct the study.

College approval and written informed consent were obtained for all students who participated. A pilot study was done on 40 students; subsequent suggestions were incorporated before the start of the study.

Data collection and measures of Internet addiction

Pre-validated, Pre-tested, structured questionnaire was developed. All questionnaires were distributed to the participants in campus settings and were collected onsite after 30 min. The questionnaires were anonymous and self-administered.

The questionnaire contained four parts:

1. Socio demographic information,
2. Details regarding patterns of internet use, and
3. Young's Internet Addiction Test (YIAT).
4. General Health Questionnaire 12-items

Young's 20-item scale for Internet addiction (YIAT) was applied to qualify for the prevalence of Internet addiction. It is a 20-item questionnaire measured on the five-point likert Scale. 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 (1). The excellent psychometric properties of the questionnaire are well-documented in the literature. YIAT, developed for screening and measuring levels of Internet addiction, has been the most widely used and well-tested for its psychometric properties[5].

In a recent meta-analysis study drawing from a large sample of studies conducted to determine the overall value for the reliability YIAT, the mean differences showed that it is more reliable in college students and probably in Asia. The overall cronbach's computed from the studies was 0.889 [95% confidence interval (CI) 0.884-0.895]. The standard deviation of the alpha was low, at 0.049. Widyanto and Mcmurran performed the most comprehensive study on the psychometric properties of YIAT, where a factor analysis of the YIAT revealed six factors (explaining 68% of variance): 1. salience, 2. Excessive use, 3. neglecting work, 4. anticipation, 5. lack of control, and 6. neglecting social life. These factors showed good internal consistency and concurrent validity, with salience being the most reliable (α= 0:82). The six factors were all significantly correlated (Pearson's r) with each other, with correlations ranging from r = 0:62 to r = 0:226[5].

The 12-item General Health Questionnaire (GHQ-12), a brief self-report measure, has excellent psychometric properties as a screening instrument for psychiatric disorders in nonclinical settings [(6)]. The

items focus on various aspects of respondents' psychological disposition, for example problems with sleep (Have you recently lost much sleep over worry?), strain (Have you recently felt constantly under strain?), happiness (Have you recently been feeling reasonably happy, all things considered?) or stress (Have you recently been feeling unhappy or depressed?). The questions compare how the respondents' present state differs from their usual state. For the scoring, a four-point Likert scale (0,1,2,3) was used with sum score ranging from 0 to 36. Higher score indicates lower psychological well-being[7]. Score up to 18 considered normal and higher than 18 considered high for analysis purpose.

Of the total 425 students who were given the questionnaire, 400 returned completely filled questionnaires, around 7 could not be included in the study as they were not Internet users, and 5 submitted incomplete forms. Thus, a total of 388 students were finally included in the study.

Statistical analysis

The STATA ver 13.1 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. For a study conducted among Japanese college students, a sensitivity of 0.87 and a specificity of 0.98 were reported for the same screening tool.[8] Using this, the true prevalence of the addiction rates were calculated using a formula (Test Positivity Rate + Specificity)-1/ (Sensitivity + Specificity)-1.(Table 4)

Descriptive statistics has been used to examine the association of factors of the questionnaire with Internet addiction. The frequency and odds ratio with CI has been reported for all variables where the P values (<0.05) was significant. Binary logistic regression was performed with Internet addiction as the dependent variable and independent variables including several demographic and other variables.

RESULTS

Socio demographic Characteristic of the study population and pattern of Internet use are depicted in Tables 1 and 2.

Average daily use of internet and monthly expenditure on the Internet that could be the consequence of excessive Internet use, were proportionately high among those with moderate and mild addiction, and these significant outcomes of Internet addiction are depicted in Table 3.

With absolutely no prevalence of severe internet addiction, moderate levels of addiction seem to be at par with what has been reported elsewhere in the literature in the same population. Mild Internet addiction though is slightly on the higher end. The exact findings have been reported in Table 4.

Table 5 shows association between internet addiction and GHQ12 score categories which found statistically significant.

The factors associated with Internet addiction were investigated, for which the chi-square test was applied. A summary of the significant risk factors has been shown in Table 6.

Table 1: Socio demographic characteristics of study participants (n = 381)

Socio demographic characteristics	Students (%)
Age	
17-18	57 (14.96)
19-20	174 (45.67)
21-22	91 (23.88)
≥ 23	59 (15.49)
Gender	
Male	206 (54.07)
Female	175 (45.93)
Year of study	
First	135 (35.43)
Second	181 (47.51)
Third	65 (17.06)
Place of stay	
Own	245 (64.3)
Hostel	52 (13.65)
Rent	84 (22.04)

Table 2a: Time spent on internet and computer

Variables	Students (%)
Years of computer use	
1-2yrs	118 (30.97)
2-4yrs	138 (36.22)
5-6yrs	44 (11.55)
7-8yrs	23 (6.04)
> 8 yrs	58 (15.22)
Daily Computer use	
0-2 hrs	216 (56.69)
2-4 hrs	123 (32.28)
4-6 hrs	23 (6.03)
> 6 hrs	19 (4.98)
Years of Internet use	
1-2 yrs	126 (33.07)
2-4 yrs	155 (40.68)
5-6 yrs	36 (9.45)
7-8 yrs	22 (5.77)
> 8 yrs	42 (11.03)
Daily Internet use	
1-2 hrs	127 (33.33)
2-4 hrs	216 (56.7)
4-6 hrs	18 (4.73)
> 6 hrs	20 (5.25)

Table 2b: Pattern of internet use among participants

Pattern of internet use	Students (%)
Expenditure on Internet per month	
< 200 Rs	248 (65.09)
200-400 Rs	87 (22.83)
400-600 Rs	24 (6.3)
>600 Rs	22 (5.95)
Most commonly used gadget for accessing Internet	
Desktop	31 (8.14)
Laptop	31 (8.14)
Tablet	8 (2.1)
Mobile phone	311 (81.63)
Login status	
Log in and off occasionally	159 (41.73)
At end of work log off	123 (32.28)
permanently online	99 (25.98)
Most common mode of Internet access	
Wi-Fi	33 (8.66)
Broadband	18 (4.72)
Data card	32 (8.4)
Mobile Internet	298 (78.22)
Most common location of Internet access	
Residence	184 (48.42)
Cybercafé	45 (11.84)
Library	11 (2.89)
Classroom	7 (1.84)
Computer lab	47 (12.37)
Hostel	33 (8.68)
Other public places	53 (13.95)
Parents know about my internet activities	
Never	55 (14.51)
Rarely	44 (11.61)
Sometime	66 (26.12)
Most of the times	99 (17.41)
Always	115 (30.34)

Binary logistic regression analysis was used to find the most influential predictors affecting outcome (Internet addiction) by using the backward step-wise (conditional) technique. These were male gender, using the Internet for making new friend-ships and getting into relationships online, and having permanently logged-in status increased risk for Internet addiction.

DISCUSSION

The literature has termed Internet addiction frequently in synonymous with pathological Internet use, compulsive Internet use, problematic Internet use, Internet overuse, problematic computer use or pathological computer 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.[3]

The pattern of internet use was seen in our study, majority of students were in age group of 19 to 20 years that were similar to study conducted by authors. [3,9,10] Also majority students were using computer since last 4 years this also similar to study conducted by Krishnamurthy et al [3] but lower than study conducted by Dhok et al. [11]

Majority of students were using internet for last 4 years, this was also found in study conducted by other authors. [3,11–13] Average use of internet per day was up to 3 hrs in our study, this finding also similar to study conducted by Krishnamurthy et al.[3]

Table 3: Outcomes of Internet addiction

Variable	N (%)	Normal	Mildly addicted	Moderately addicted	p value	Odds ratio	95 % CI
Time spent per day using internet							
0-2 hrs	127 (33.33)	59 (46.50)	27 (21.30)	41 (32.30)	0.0002	2.07	1.33-3.22
> 2 hrs	254 (66.67)	75 (29.50)	86 (33.90)	93 (36.6)			
Amount spent on internet per month							
0-300 Rs	310 (81.36)	98 (46.89)	54 (22.84)	77 (27.27)	<0.0001	3.33	2.11-5.27
> 300 Rs	71 (18.63)	36 (20.93)	59 (34.60)	77 (44.77)			

Table 4: Prevalence of Internet addiction

Types of Prevalence	YIAT criteria	Frequency (n)	Apparent Prevalence	True prevalence (95% CI)
Mild	Score 31-49	113	30	32.54 (25.82-39.07)
Moderate	Score 50-79	134	35	39.02 (32.12-46.02)

Table 5 Association between Internet Addiction and GHQ12 score

Internet Addiction	GHQ score		MH corrected Chi Square
	Normal (%)	High (%)	
Normal	110(82.09)	24(17.91)	25.96
Addicted	180(72.87)	67(27.13)	p <0.0001
Total	290(76.12)	91 (23.88)	

After reviewing of several studies it is concluded that the internet affects students' life both positively and negatively. The use of internet among students in India has been bringing a fundamental change in their life styles and their study habits since its inception. The students spend 2-3 hours on the Internet daily to satisfy their various needs

mostly for chatting, connecting with friends, making new friends, telling about their plans and performances, social relations, and other education objectives.[4]

Expenditure done Internet per month which was of 248(65.09%) was similar to the study conducted by Krishnamurthy et al, Dhok et al. [3,11] Most commonly used gadget for accessing Internet in our study was mobile phone this also similar to study conducted by Krishnamurthy et al, Dhok et al, Paul et al.[3,11,13]

Observing the explosive growth in internet use among the professional course students, it is important to study internet addiction in this subset of population. Professional course students are a particularly vulnerable on account of the time they spend on the internet. This study is an initial step toward understanding the extent of internet addiction among professional course students in India.[10]

The prevalence of mild Internet addiction [32.54% (95%CI25.82-39.07)] was similar to the Indian past estimates[3,10,11,13], whereas moderate levels of addiction [39.02%(95%CI 32.12-46.02)] was astonishingly higher than above mentioned study. Study conducted by Marahatta SB et al showed prevalence of moderate internet addiction was 40.7 % but it was conducted in Nepal.[9] In the current study, a Cronbach's alpha of 0.9094, suggested good internal consistency of the overall questionnaire.

Today, Educational sector has been deeply influencing by the arrival of Internet and computer in India and it is changing how education is taught, learned and delivered to the students. Yet, internet service is not reached all over the India and even speed in urban areas is very poor and slow. [4]

This is a unique study conducted to prove that excessive use of internet will be a risk factor for poor mental health, rather than specific psychiatric condition. [2,14–16]The assessment tools, young's internet addiction test and GHQ-12 questionnaire have been validated for use in Indian study subjects. [3,4,17–19]

Table 6: Risk factors for Internet addiction

Category	n	Normal	With addiction	OR (95% CI)	p value	aOR (95%CI)	p value
Gender							
Female	175	77	98	2.05(1.34-3.14)	< 0.0001	1.80(1.15-2.84)	0.01
Male	206	57	149				
Year of study							
3rd	65	31	34	1.89(1.10-3.24)	0.02	0.68(0.36-1.23)	0.2
1st & 2nd	316	103	213				
Login status							
Occasional	282	112	170	2.31(1.35-3.91)	0.002	2.22(1.26-3.93)	0.006
Permanent	99	22	77				
Chatting							
Use	152	63	89	1.58(1.03-2.42)	0.03	1.53(0.96-2.45)	0.07
Don't use	229	71	158				
Games							
Use	197	84	113	1.99(1.30-3.07)	0.0015	1.16(0.72-1.87)	0.5
Don't use	184	50	134				
Online friendships							
Make	187	83	104	2.23(1.46-3.44)	0.0002	1.81(1.11-2.93)	0.01
Don't make	194	51	143				
Online relationships							
Make/Break	336	129	207	4.99(1.92-12.96)	0.0001	3.73(1.40-9.92)	0.02
No	45	5	40				

OR= Odds ratio, aOR= Adjusted Odds ratio

Strengths and limitations

The main strength of the study includes selection of samples, which was multistage cluster sampling. Another aspect was the heterogeneous representation of college students, which ensure students from various streams of education. Sampling bias has always been a major drawback of previously conducted studies. This study has tried to significantly fill this bias, as the study participants were not recruited through email, group networks, and postings on websites designed for Internet or other addicts, thereby limiting itself to a self-selected sample of participants who have some interest or psychological investment in the topic and would have been more likely to participate, thus leading to a biased sample.

Participants were recruited from both public and private colleges with academically different streams, having courses that did not essentially requiring large Internet usage. Questionnaires were

answered anonymously, Anonymous answering of the questionnaires and data analysis after pooling ensured that the participants could provide more factual and credible answers without the fear of later consequences.

The bias that might affect results was recall bias and social desirability bias. First, it's a cross sectional study and participants were asked to report details of past use of the Internet, recall bias couldn't be ruled out. Second, there was self-reporting of data, and hence social desirability bias could be present.

CONCLUSIONS

Excessive Internet use is an emerging issue among college going students as our study have highlighted that excessive use of the Internet adversely affects one's physical and mental health and social well-being. This study's results shows that Internet addiction is a growing public health issue, having multiple risk factors and varied patterns of Internet use, in a place where the Internet is becoming an inclusive part of an individual's personal and social life.

RECOMMENDATIONS

The need of the hour is to create awareness among the public, plan public health policies with regard to this behavioural addiction, and conduct further research to support the same.

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