Original Research Article

Internet addiction, behavioural aspects, and health related problems associated with it: a cross sectional study among engineering students of Jabalpur district

Aditya Thakur*, Kunal Peepre, Anshi Vaswani, Khyati Gupta, Aman Verma, Dhananjay Singh, Pradeep Kasar

Department of Community Medicine, N.S.C.B Medical College, Jabalpur, Madhya Pradesh, India

*Correspondence:
Dr. Aditya Thakur,
E-mail: adityathakur701@gmail.com

ABSTRACT

Background: With the rise of new generation gadgets, the risk of "internet addiction" is emerging as a significant behavioral addiction pandemic to be tackled worldwide. Internet addiction can be defined as an impulse disorder. Objective of the study was to determines the level of Internet addiction in Students. To identify the behavioural and any health-related problems associated with internet addiction among students.

Methods: This study was a cross sectional study carried out in 7 different engineering colleges of Jabalpur city during the period of 1st July 2016 to 30th September 2016.

Results: In present study the prevalence of internet addiction was found to be 74 %. 26 % of the participants were found with no internet addictions whereas 55 % and 17.67 % of the participants were found to be mild and moderate addicted whereas only 1.33 % of the participants were severely addicted to internet addiction. Participant who has internet addiction has 84.8 % of yelling and annoying behavior while 86.5 % participants with internet addiction have secretive and defensive behavior. Association was found to be highly significant (p = <0.001). Ill effects like problem related to eye have significant effect on the participants with internet addiction i.e. 66.17 %. Association of problem related to eye problems with internet addiction was significant with the p = 0.02.

Conclusions: The problem is alarming and progressing to an addictive state in the near future Interventions like setting boundaries and detecting early warning signs of underlying psychopathology at the earliest are required.

Keywords: Addiction, Behavior, Internet, Students

INTRODUCTION

The Internet has become one of the most essential instruments of urban man for information, job opportunities, and education to entertainment, including social media sites and networking and is gradually becoming a structural part of our day to day life.

With the advent of new age smart phones, tablets, and computers, the Internet is readily accessible to the general population or "at the fingertips."

There have been growing concerns globally for what has been labeled as "internet addiction." The term "internet addiction" was proposed by Dr. Ivan Goldberg in 1995 for pathological compulsive internet use.[1] Internet addiction is one of the latest forms of addiction that has attracted the attention of popular media and researchers in recent years. Internet addiction is well-defined as any online-related, compulsive behavior which interferes with normal living and causes severe stress on family, friends, loved ones, and one's work environment. In tandem with the splurge in access to the Internet globally, with the rise

of new generation gadgets, the risk of "internet addiction" is emerging as a significant behavioral addiction pandemic to be tackled worldwide.[2]

Internet addiction has been called Internet reliance and Internet compulsivity. It is a compulsive behavior that completely dominates the addict's life. Internet addicts make the Internet a more significant than family, friends, and work. The Internet becomes the establishing principle of addicts' lives.

On other hand it is a contemporary problem brought by easy access to computer and online information. Internet addiction can be defined as an impulse disorder. some of the characteristic of this problem are similar to those of pathological gambling.[3]

Internet use in India has an explosive growth since last decade and is a continuing process with faster expansion, leading to a generation of grim concern of it, being extreme getting to a problematic addiction form.

According to the study done in India in 2012, out the total population of 1.2 billion, the number of Internet users (both urban and rural) is around 205 million. It is estimated to increase to 243 million by June 2014, and India will be the second-leading country after China which currently has the highest Internet user base of 300 million.[4] Indian online surveys have revealed that 4-10% of the users come under the criteria for internet addiction.[5]

There has been a huge disparity in the true figures in establishing the prevalence of internet addiction and also there has been an absence of large scale epidemiological studies on internet addiction. College students are particularly exposed to developing dependence on the Internet, more than most other segments of the society. Out of these college students, Student belonging to the Information technologies and Computer science is the most vulnerable group. Factors like limitless access to internet, internet dependent courses, communication with peers and mentors through assignments and projects might attribute to the problem and makes Internet overuse a considerable cause of concern for parents and faculty.

The present study is an attempt to determine the level of internet addiction and various behavioral aspects related to it. It will also help to identify any health-related problems associated with internet addiction among these IT and CS students.

METHODS

This study was a cross sectional study carried out in 7 different engineering colleges of Jabalpur city during the period of 1st July 2016 to 30th September 2016. Sample size of 394 was calculated by using formula-Z^2PQ/L^2, P= 53% was considered from previous study and afterward 10% non-respondent rate was also added.[6-10] The final

sample comes to a total of 434 engineering students. After getting the sample size, listing of all 17 engineering colleges in Jabalpur city was done. Multi-stage stratified random sampling was applied for selecting the colleges, semester and students. 7 engineering colleges were randomly selected from all the 17 engineering colleges in Jabalpur city. From all the 8 semesters of CS and IT branch, selections of two semesters were done through stratified sampling. 31 students were randomly selected from each strata i.e. 3rd and 5th semester of age group 18-24years, i.e. 434 students from all the 7 engineering colleges were approached.

Students who has history of using internet in the past 6months were included in the study whereas students those who were not willing to participate were excluded from the history. Study tools used in the study were young's IAT20 and Self-administered questionnaire which contains socio-demographics details.

Young's the internet addiction test is a 20 item 5-point likert scale that measures the severity of self-reported compulsive use of the internet.[11] Total internet addiction scores are calculated, with possible scores for the sum of 20 items ranging from 20 to 100. According to Young's criteria, total IAT scores 20-39 represent average users with complete control of their internet use, scores 40-69 represent over users with frequent problems caused by their internet use, and scores 70-100 represent internet addicts with significant problems caused by their internet use.

Data were coded and validated. Data entry and analysis were using EPI info (version 7) and MS Excel software 2007. Generation of descriptive Statistics was done. Chi-Square test was used to find out any association between the contributing factors and Internet addictions.

The study was done according to world Helsinki declaration and verbal consent were obtained from the participants before administrating questionnaire. Permission was sought from the college authorities of all the respective colleges. Anonymity of participants was maintained by avoiding any information revealing the identity of the participants in the questionnaire.

RESULTS

A total of 434 participants filled the questionnaires, 9 questionnaires were rejected because of being incompletely filled. A total of 425 completed questionnaires were considered for the analysis. Figure 1 shows the distribution of participants according to internet addiction among them as per young's score. 26% of the participants were found with no internet addictions whereas 55% and 17.67% of the participants were found to be mild and moderate addicted to internet respectively. Only 1.33% of the participants were severely addicted to internet addiction. For the comparison purpose we have divided the internet addiction variable into two group i.e.

participants with no internet addiction which constitute about 26% and participants with internet addiction about 74%. Socio demographic details of the participants were compared with the internet addiction as shown in Table 1.

The age of the participant ranges from 17 to 23years. More than 50% of the participants belongs to the >19years of age group. Females were more as compare to male in the study. Out of the total males, 82.5% of the

male were found to be internet addicted. When it was compared with the female group found to be statistically significant. Mother's and father's education of the participants were also compared with the internet addiction. The participant whose father's education was below graduation was found to be more addicted to internet. The difference was also statistically significant. Variables like size of the family and parent's employment had no effect on the internet addiction.

Table 1: Distribution of the respondent according to the socio demographic variable.

Socio-demographic variables	No internet addiction (%)	Internet addiction (%)	Total	P-value#
Age				
≤19	61 (26.4)	170 (73.6)	231 (100)	0.78
>19	49 (25.3)	145 (74.7)	194 (100)	
Gender				
Male	31 (17.5)	146 (82.5)	177 (100)	.008*
Female	79 (31.9)	169 (68.1)	248 (100)	
Mother's education				
Below graduation	20 (18.5)	87 (81.5)	107 (100)	0.07
Graduate and above	90 (28.3)	228 (71.7)	318 (100)	
Father's education				
Below graduation	3 (6.3)	42 (93.7)	45 (100)	0.006*
Graduate and above	107 (29.8)	273 (71.2)	380 (100)	
Size of family				
1-4	60 (24.8)	180 (75.2)	240 (100)	0.464
>4	50 (28.5)	135 (71.5)	185 (100)	
Parents employed				
Both	25 (29.4)	60 (70.6)	85 (100)	0.50
Single (either father/mother)	85 (25)	255 (75)	340 (100)	
Total	110 (100)	315 (100)	425 (100)	

#chi square test applied, *p value = <0.05 statistically significant

Table 2 shows the internet use variables compared with the internet addiction. Participant using internet for educational purposes was more than participant who uses internet for social media and other activities. 82.3% of the participant who uses internet for social media activities was addicted when compared with participants (i.e. 67.5%) who uses internet for education purpose. Participants using internet for social sites purposes were found to be more addictive to internet when compared to educations and other purposes like web designing, online gaming, pornography etc. The difference was found to be statistically significant with P value of 0.01. Participants who spend more than 4hours on internet was found to be more internet addicted. 89.1% of the participants who spends more than 4hours on internet were found to be internet addicted. Variables like money spent per month, source of internet use, years of internet use, device preferred had no association with the internet addiction.

Table 3 shows the comparison between the internet addiction and its related ill-effect and behavior changes in the participants. Depression and anxiety was present among 11.42% of the total participants (n= 49). Of those, 73.4% were internet addicted. Statistical significant

difference was found with the P value of 0.01 when chi-square test was applied. Ill-effects like musculoskeletal problem and Sleep disturbance were present i.e. 88.23 % (n=45) and 91.06% (n=112) respectively in the total participants. We found strong association of sleep disturbance and musculoskeletal problems in the participants with internet addiction. Ill effects like problem related to eye have significant effect on the participants with internet addiction i.e. 66.17%. (n=88). Association of problem related to eye problems with internet addiction was significant with the p = 0.02 which is statistically significant. Behavior changes like yelling or annoying and secretive or defensive behavior was present i.e. 63% (n=268) and 69.4% (n= 296) respectively among the total participant.

Participant who has internet addiction has 84.8% of yelling and annoying behavior while 86.5% participants with internet addiction have secretive and defensive behavior. Association between the above behavior changes and internet addiction was found to be highly significant (p = <0.001). Skipping meal during dinner and lunch time was also common among the participants belong to both category i.e. no internet addiction (27.90

%) and with internet addiction (72.10 %). However, we didn't any association among them.

Table 2: Distribution of the respondent according to variables related to internet use.

Internet use Variable	No internet Addiction (%)	Internet addiction (%)	Total	P-value#	
Purpose of internet use					
Education	69 (32.5)	144 (67.5)	212 (100)		
Social sites	30 (17.7)	138 (82.3)	168 (100)	0.010*	
Others	11 (23.4)	34 (76.6)	45 (100)		
Hours spent					
<4hrs	92 (35.4)	168 (64.6)	260 (100)	0.001*	
>4hrs	18 (10.1)	147 (89.1)	165 (100)		
Money spent/month					
<500	64 (25.3)	188 (74.7)	252 (100)	0.617	
>500	46 (26.5)	127 (73.5)	173 (100)		
Source of internet					
Wi-fi	51 (29.6)	127 (71.4)	178 (100)		
Data	48 (23.2)	159 (76.8)	207 (100)	0.234	
Both	11 (27.5)	29 (72.5)	40 (100)		
Years of internet use					
≤4years	44 (27)	119 (73)	163 (100)	0.846	
>4years	66 (25.1)	196 (74.9)	262 (100)		
Device preferred					
Smart phone	67 (27.6)	175 (72.4)	242 (100)	0.296	
Laptop, desktop and others.	43 (23.3)	140 (76.7)	183 (100)		
Total	110 (100)	315 (100)	425 (100)		

chi square test applied, *p value = <0.05 statistically significant

Table 3: Distribution of the respondent according to the ill effects and behavior.

Ill effects	No internet addiction	Internet addiction	Total	P- value#
Depression/ anxiety				
Present	13 (26.6)	36 (73.4)	49 (100)	0.01*
Absent	97 (25.8)	279 (74.2)	376 (100)	
Sleep disturbances				
Present	11 (8.94)	112 (91.06)	123 (100)	<.001*
Absent	99 (32.79)	203 (67.21)	302 (100)	
Problem related to eye				
Present	43 (32.83)	88 (67.17)	131 (100)	0.029*
Absent	67 (22.8)	227 (77.2)	294 (100)	
Musculoskeletal problems				
Present	6 (11.77)	45 (88.23)	51 (100)	0.02*
Absent	104 (27.81)	270 (72.19)	374 (100)	
Behavior Secretive/defensive				
Present	36 (13.5)	232 (86.5)	268 (100)	<0.001*
Absent	74 (47.2)	83 (52.8)	157 (100)	
Yelling /annoying				
Present	45 (15.2)	251 (84.8)	296 (100)	< 0.001*
Absent	65 (50.4)	64 (49.6)	129 (100)	
Skipping meal				
Present	12 (27.90)	31 (72.09)	43 (100)	0.75
Absent	98 (23.04)	294 (76.96)	382 (100)	
Total	110 (100)	315 (100)	425 (100)	

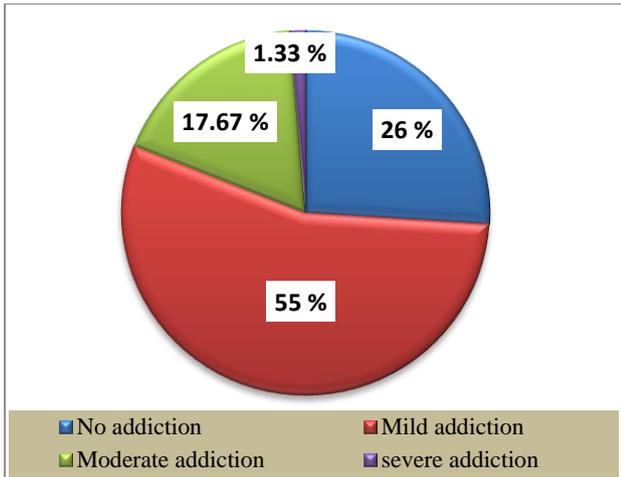# chi square test applied, *p value = <0.05 statistically significant

Figure 1: Distribution of participants according to internet addiction among them as per young's score.

DISCUSSION

The present study had tried to examine the level of Internet Addiction in the Engineering students. It does this by comparing various socio demographic factors, factors related to ill effect and behavior changes with the internet addiction. This study is a preliminary step towards understanding the extent of internet addiction among Engineering students in India.

In present study the prevalence of internet addiction was found to be 74 % among the Engineering students whereas the studies done by Nath K et al and Goel et al the prevalence were 90.95% and 74.5% respectively.[6,7] Finding in our study indicate growing trends for internet addiction, one of reasons may be free internet access, large blocks of free time, courses that require its use and the sudden freedom from parental control and monitoring.

In present study the Prevalence of internet addiction were more in male (82.5%) as compared to female (68.1). The findings of the present study corroborate with previous studies done by Sharma et al and Niemz K et al stating that internet addiction is more common in males than in females.[8,9] These findings may be due to the differential patterns of use between boys and girls. As boys more likely to use the internet for gaming, cybersex usage and gambling.

In our Study finding, father's education had a significant association with students having internet addiction. 71.9% internet addicted students have father who had education up to graduation or above. Fathers whose education was up to graduation and above are more likely to use modern gadgets like phones, tablets and laptops which might play some influential factor in the children's. This finding was in contrast to finding of study done in South Korea by Kim Y et al in which parents' educational status also affected the level of

Internet addiction.[10] High-risk Internet users had parents whose highest level of education was high school graduation or less (27.2% in father and 22.4% in mother, respectively).

Students spends more than 4hour found to have a significant association with internet addiction similar to the finding of the Krishnamurthy N et al and Sharma et al in India and Bidaki et al in Iran.[12,8,13] Greater the time spent on internet greater is the threat of being addicted to internet.

Students who had internet addiction in our study had more sleep disturbance as compared to non-internet addicted students; Association was statistically highly significant with p<0.001. Another study conducted by Kubey et al also suggested the same finding of adverse effects like less sleep.[14] Psychophysical phenomenon that could help to elucidate the negative influence of challenging internet use on sleeping habits can be the night time internet use that causes a state of high arousal which might interfere with the soothing procedures that are essential for sleep.

In the present study yelling and annoying behavior was more common among students having internet addiction i.e. 84.8% similar to the finding of the study done by Pramanik T et al who had reported 31.5 % student had annoying behavior associated with internet addiction.[15] Although it is not understandable whether this behavior precedes the progress of internet abuse or it is a corollary. Students having internet addiction had more musculoskeletal problems with 88.23% (n=45) i.e. pain around the region of neck, shoulders, waist, finger and wrist. Sitting at the computer for longer hours also means that internet addicts are at higher risk in developing carpal tunnel syndrome and backaches because of prolong hours of Internet usage as reported by young B and Shuhail and Bergees in their study.[16,17] Ill effects like problem related to eye have significant effect on the participants with internet addiction i.e. 66.17% (n=88). Association of problem related to eye problems with internet addiction was statistically significant with the p = 0.02 findings corroborates with finding of Kubey et al and Shuhail and Bergees.[14,17] Continuous sitting on computer may leads to dry eyes which in turn leads to vision problem.

CONCLUSION

The prevalence of Internet addiction is significant among Engineering students of Jabalpur city. The problem is alarming, as with increasing and uncontrolled Internet use they may progress to an addictive state in the near future and thus are at an increased risk. By studying the association of internet usage and its effects on human behavior, we can prepare interventions like setting boundaries and detecting early warning signs of underlying psychopathology at the earliest. We can also emphasize our students and their parents through

awareness campaigns so that interventions and restrictions can be implemented at the individual and family levels.

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