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A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents

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Abstract

Introduction: Internet addiction is a major problem of the world and not merely restricted to India. Amidst abnormal and excessive internet use, concern is the implication it may have on the vulnerable brain of children.

Aim: To study the prevalence of internet addiction and related behavioural problems in students of adolescent age group in an Indian A grade city.

Materials and Method: A cross-sectional study comprising of 1150 students of various streams in 3 different colleges of Lucknow was conducted after obtaining Institutional Ethics Committee approval and permission from the concerned colleges with consent of the students. Students were assessed by a self-administered semi-structured proforma and The Internet Addiction Test (IAT; Young, 1998) after giving them brief instructions. Dukes Health Profile was used to assess the physical, psychological and social index of their life. The subjects were classified into potential addicts, near addicts, and definite addicts for due comparison.

Results: 1150 adolescents took part in the study, 805 (70%) were male and 345 (30%) were females. The mean age of subjects was 15.46 years. Of the total, about 74.5% were potential addicts. According to Young's original criteria, 0.7% were found to be definite addicts. Subjects with excessive use of internet also had problems of anxiety, depression, and anxiety depression.

Conclusion: Science is a good servant but a bad master. In today's era of internet use, we must learn to limit the use of internet in order to prevent this under recognized problem from becoming a health hazard of future.

Keywords: Internet, Addiction, Adolescent, Behavioural problem

Introduction

Internet has changed the world upside down. The internet provides a new communication medium that enables access to unlimited resources of information across various topics. However it has also opened the Pandora's box of potential detrimental side-effects. In general, adolescents have been found to spend more time on the Internet than adults, predisposing themselves to internet addiction. Internet addiction among adolescents manifests as refusal to attend school and mental health problems, such as loneliness, low self-esteem, insufficient sleep, anxiety disorders.

Internet addiction just like other addictions disrupts studies, school life, and other aspects in the daily life of an individual adolescent. Prevalence studies on internet addiction among adolescents have reported large variations among countries. Addiction rates have been found to be very high in few European countries like Israel and Asian countries like South Korea, Japan, Taiwan and China. The differences in the prevalence of internet addiction are also attributed to diverse study designs, different assessment methods, and sampling from different sub-populations in various studies. Most importantly, the level of 'problematic' Internet addiction has not been determined. Prevalence data in Japanese adolescents have not been reported until recently. In addition, no discussions have been noted on the association between the severity of Internet addiction and mental health in Japanese adolescents.[1] Worldwide, there are already 3 billion internet users whereas in India, internet user base expanded to over 17% in the first six months of 2015 to 354 million.[2]

It is a double edged sword as it has made our lives extremely easy, on the other hand there are also many problems associated with it. Misuse of internet, as well as its excessive usage can produce pathological behavioural problems in its users.[3] This uncontrolled usage of internet has been defined by different names in different studies and one such name is internet addiction, while other commonly defined terminologies are internet addiction disorder, pathological internet usage, and Internet dependency.[4,5,6,7,8,9] Side effects of Internet have been recognized since long but it being defined as a psychological problem was not done before 1992.[10] However ,the charming picture changed thereafter. Internet addiction, hence, also started being considered a type of pathological behaviour, an addiction and it has been a subject of huge interest for research.[11] However it is astonishing that internet addiction has not been included in Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, whereas Internet gaming disorder is a part of section labelled "conditions for further study", which tells us about the under recognition the problem has received.[12]

Internet addiction is a global problem and its gravity as measured by various studies varies form from 05% to 40% depending on the type of population

studied, methods adopted, and procedure protocol adopted in the study.[13] Studies show that children especially of adolescent age group and students are more liable to get affected by internet menace because of their friable social structure, peer pressure and non-stagnant psychological demand of their mind.[14,15] Multiple additional factors have been implicated like adolescent do not have a tendency to make proper usage of time by proper planning. Also, in today's time there is free and unlimited access to high speed internet at almost all public places besides the place where they study. Studies today are also demanding and hence require frequent internet use. Peer pressure, alluring applications and advertisements of smart phones, tablets and other gadgets have increased the love for internet among adolescents. It is also worth mentioning that parents today do not give enough time to their kids and neither act as their guide in day to day life. Adolescence is an age in which a person explores himself, develops relationships and tries to connect with the world in his own distinct manner, develops identity and internet helps him do so by giving him the horizon in which he wants to grow.[16] Internet allows a person to be more expressive in his expressions, emotions and involvement in social circles as it is a virtual mode which does not require two people to be physically present for interaction. However, few students do not fall in line with the reality that it is a virtual world with tendency to make serious relationships by this easier method.

However, addiction with internet can cause serious problems like loss of productivity at work, behavioural problem, social maladjustments, poor academic results, in somnolence, impaired appetite, tension type headache, refractory problems of eyes, poor interaction in relationships leading to their failure.[17,18,19] Additionally, studies have shown that addictions like tobacco, alcohol besides anxiety disorder coexist with this problem.[20]

It is a difficult task to measure the problem of internet addiction in today's student. Although there are many scales but Young's scale is the best among thems. Young initially prepared an 8-question Internet Addiction Diagnostic Questionnaire (DQ) which was based on DSM IV. Thereafter, she included 12 new items to the Questionnaire, finally developing an Internet Addiction Test (IAT). Young's IAT, at present is the only available test whose psychometric properties have been tested by Widyanto and McMurran.[21]

In India, though underestimated, use of internet is enormous, especially in the young population. Hence, it was found necessary to study pattern of internet usage in young adults in Indian setting and its relationship with their mental and physical health. With this background, we undertook the present study to take a close look on this issue.[22]

Objective

The aim of the study was to study the prevalence of problem of internet addiction and its associated behavioural problems in school going adolescent population of Lucknow.

Materials and Method

Design: The cross-sectional study was done in 3 different colleges in the city of Lucknow during the period of August 2016–February 2017. It covered about 1150 college students (aged 14-17 years) having access to the internet for the past 6 months. The semi-structured proforma along with the scales were distributed in classes, each with roughly 40 students, and necessary instructions were given.

The study was conducted after obtaining the approval from ethical committee of the Institution and permission was sought from the college authorities of all the colleges. Of the total 1200 students, 50 could not be included in the study as they were not using internet. Thus, a total of 1150 students were finally included in the study.

Tools: The tools used in this study were as follows:

A preformed proforma that contained details of demographics, educational qualification and status, purpose of using the internet (like education, entertainment, business transactions, or social networking), money spent per month, place of access (home, cybercafé, or workplace if working part-time), the time of day when the internet is accessed the most (by choosing between morning, afternoon, evening, or night), and the average duration of use per day. Data was collected only from those who used internet at least daily in the last 6 months. The Internet Addiction Test (IAT; Young, 1998) as explained earlier was a 20-item 5-point likert scale that measures the severity of self-reported compulsive use of the internet. Total internet addiction scores were calculated, with possible scores for the sum of 20 items ranging from 20 to 100. The scale showed high internal consistency, with an alpha coefficient of 0.93 in the present study.

According to Young's criteria, total IAT scores 20-39 represent potential addicts with partial control of their internet use, scores 40-69 represent possible addicts with frequent problems caused by their internet use, and scores 70-100 represent definite internet addicts with significant problems caused by their internet use.

The much famed Duke Health Profile is a 17-item generic questionnaire instrument developed to measure adult self-assessed functional health status quantitatively during a 1-week time window.[23] It is appropriate for both subject and non-subject groups. It can be used by the subjects themselves or by any another person. The assessment time is less than 5 min. It is mandatory that all questions be answered. There are 11 scales with maximum score for each scale being 100 and minimum being 0. 6 scales (i.e., physical

health, mental health, social health, general health, perceived health, and self-esteem) measure function, with high scores indicating better health. 5 scales (i.e., anxiety, depression, anxiety-depression, pain disability) measure dysfunction, with high scores indicating greater dysfunction. Both the internal consistency (Cronbach's alpha) and temporal stability (test-retest) testing have supported reliability of the DUKE. Validity has been duly supported for the DUKE scales by (a) comparison of the DUKE scores with scores of other health measures for the same patients, (b) comparison of DUKE scores between patient groups having different clinical diagnostic profiles and severity of illness, and (c) prediction of health-related outcomes by DUKE scores. Reliable Convergent and discriminant validity have been shown when comparing with other instruments.

Results

In our study there were initially 1200 students, however 50 were excluded. The1150 adolescents who participated in the study included 805(70%) females and 345 (30%) males. Subjects had more girls than boys as the data was collected during routine lectures and the attendance of girls might have been more. The mean age of adolescents was 15.46 (standard deviation, 0.61). The subjects belonged to different streams: 34.7% to science, 30.5% to commerce, and 34.8% to arts. The SPSS version 16.0 was used for statistical analysis of the data collected. Using Young's original criteria, the users were divided into groups: 74.5% as Potential addicts, 24.8% as Possible addicts, and 0.7% as Definite addicts. Significant usage differences were evident based on the gender of user. Males in comparison to females were significantly more likely to be addicted ($x2$=10.2, P=0.006). Potential and the possible addicts used the internet mostly for social networking, academic purposes, chatting, emailing, gaming, and downloading media files and pornography. The purpose of using the internet was significantly different for addicts. They indulged more in social networking, chatting, and downloading media files ($x2$=76, P<0.001).

It was also found that, most of the addicts used the internet mostly after the school time i.e. in the evening and nights as compared to other users who used it in the mornings and afternoons as well ($x2$=26.4, P=00019). Interesting findings were noted with respect to the place of usage of internet. About 50% of the adolescents with addiction were also working part-time and used the workplace to access the internet. This finding too was statistically significant ($x2$=144, P<0.001). In this study, there was no significant relationship found between internet addiction and the hours of use per day. Moreover, the criteria used in IAT do not take into consideration the exact duration of use. Usually losing track of time while being online and staying online longer than intended are more likely to be seen in addicts than in non-addicts. Duke's Health index was applied, it was found that addicts have low mental, physical, and mental health score. Although no significant relationship was found between self-esteem score and internet addiction, Addicts definitely have high anxiety, depression scores ($x2$=12.26, P<0.0022) [Table 1].

Table 1: Internet use and psychopathology as per dukes health profile

Variables	Potential Addicts n=735	Possible Addicts n=245	Definite Addicts n=7	Kruskal Wallis Test		
				Chi -Square	P Value	Difference
Physical health Score	80.00	70.00	50.00	46.321	8.74E-11	Significant
Mental health Score	70.00	70.00	60.00	21.922	1.74E-05	Significant
Social health Score	80.00	80.00	50.00	4.235	0.1203	Nonsignificant
General health Score	23.00	21.00	16.00	34.792	2.79E-08	Significant
Percieved health Score	50.00	50.00	50.00	4.806	0.0905	Nonsignificant
Self-esteem Score	80.00	80.00	70.00	3.823	0.1479	Nonsignificant
Anxiety Score	75.00	66.00	50.00	29.922	3.18E-07	Significant
Depression Score	70.00	60.00	40.00	37.963	5.71E-09	Significant
Anxiety Depression Score	71.00	64.00	57.00	31.657	1.43E-07	Significant
Pain Score	50.00	50.00	0.00	12.263	0.0022	Significant
Disability Score	100.00	100.00	100.00	1.752	0.4165	Nonsignificant

Discussion

Multiple studies have been conducted across the world, especially among adolescents with respect to internet addiction. This research work is a major step toward understanding the extent of internet addiction among college students in India. Nalwa and Anand investigated the extent of internet addiction in school children in India.[24] The findings of the present study corroborates with previous studies stating that addiction is more common in males than in females.[25,26] Also, the finding that addicts are more likely to use their workplace to access internet is comparable to "Internet Abuse at workplace" reported by Young and Case.[27] But the study done by Young and Case covered managers and company presidents. This could be a confounding factor for comparison as our study had students as subjects. Beard found that employees with access to the internet at their desks spend a considerable amount of their working day engaging in non-work-related internet use.[28]

It is not clear whether depression precedes the development of internet abuse or it is a consequence, yet assessment of the same is imperative.[29] In 2005, a study by Nemiz *et al*.[25] dealt with British university students showed that those students who were pathological internet users had low self-esteem and were socially inhibited online.[29]

The research by Van den Eijinden *et al* showed, whether lower or upper secondary students, adolescents of ages between 11 to 15 years often use internet.[22] Pallanti *et al* showed that the average age of students who have internet addiction is 16.67 ± 1.85.[23] It means that, adolescent who are addicted to internet, are normally in the age range of 14 years old to 18 years old which matches the age range in other studies. Recent study has show that immediate online communication application such as instant messaging and chatting bear a higher addictive potential than other internet application.[32] Besides that, it has also been found that, entertainment was the most salient motive for internet use, followed by passing time, acquiring social information and relaxation. Furthermore, the immaturity of frontal cortical and subcortical monoaminergic brain system is hypothesized to underlie adolescent impulsivity as a transitional trait behaviour.[33] The neurodevelopment process seems to be functional by enhancing the learning drive, on the other hand these process may lead to an increased vulnerability to addictive behaviors in adolescent.[32]

Conclusion

In the last one decade, internet has become an integral part of our life. We wanted to find the prevalence of internet addiction in Indian college population. It can put into three groups using Young's original criteria: 74.5% as moderate users, 24.8% as possible addicts, and 0.7% as addicts. Those towards the addict part of spectrum reported had high anxiety, depression, and anxiety depression score.

In the emerging digital era, where young people have been more exposed to the internet and use online activity as an important form of social interaction it still remains a matter of debate whether to call internet addiction a distinct disorder by itself or a behavioural problem secondary to another disorder. At present, DSM IV has no accepted criteria to diagnose or label internet addiction. In future, if it is added, it is more likely to be classified as an impulse control disorders not elsewhere classified rather than in the diagnostic criteria for substance dependence.[31]

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