

Young Internet Addiction Test and Depression, Anxiety and Stress Scales-42 were used to Assess the Internet Addiction and Psychological Problems among Adolescents in North India.

Ramesh Verma, Ginni Agrawal, Vinod Chayal,
Meenakshi Kalhan, Varun Arora, Raj Kumar

Department of Community Medicine, Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak - 124001, Haryana, India

Abstract

- Background:** Internet has profoundly changed the way of work, communicate and live, but sometimes it may leads to addiction that called Internet Addiction and psychological problems among users. India ranks second with 560 million in term of internet users and the global prevalence of internet users is 56.33% while in India it ranges 0.7% to 18.88%.
- Methodology:** The study was conducted in both government and private senior secondary schools of urban area of Rohtak. There are 68 private and 21 government senior secondary schools in urban Rohtak.
- Results:** The study found out that the prevalence of internet users was 86% and the sex wise, male adolescents were using more internets as compared to female adolescents.
- Discussion:** This hard fact that the number of internet users and internet addiction are increasing day by day in the adolescents. This might be due to social and some psychological factors such as loneliness, stress and anxiety in daily life, lower life satisfaction or self-esteem in adolescents.
- Conclusion & Recommendations:** The study recommends that seminars or extra classes or parent-teacher meetings in the schools related to internet usage can play an important role in making students aware of causes and effects of internet addiction

Key Words: Adolescent, Internet, Stress, Anxiety, Addiction

Introduction

The internet is one of the most successful examples of the benefits of sustained investment and commitment to research and development of information infrastructure. It has profoundly changed the way we work, communicate and live, but sometimes it may leads to addiction that called Internet Addiction (IA) and psychological problems among users. Researchers and physicians suggest that the concept of IA should not to be taken lightly, as there are negative consequences of excessive use of Internet especially among adolescents. Neuroscientific evidence indicates that IA has negatively impact on affect cognitive functioning, leading to poor academic performance, engagement in risky activities,

Address for correspondence

Dr Vinod Chayal, Associate Professor, Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak - 124001, Haryana, India E-Mail: drvinodchayal@gmail.com

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poor dietary habits, low quality of interpersonal relations and self-injurious behavior in adolescents [1]. The global prevalence of internet users is 56.33% [2]. Today, in terms of internet usage, India ranks second with 560 million internet users, ahead of many other developed countries [3,4]. Whereas, the prevalence of IA worldwide is 6%, while in India it ranges 0.7% to 18.88% [5].

Adolescents are the most frequently and vulnerable to use internet because of easily availability of mobile phone and cheap internet connection, have enough time, no supervision of guardian and lack of social interaction. The study said that use of internet is associated with attention-deficit/hyperactivity disorder, depressive symptom, anxiety, low self esteem, shyness, and social stress [6]. Goel D. et al conducted a study on the prevalence of internet users and IA among 987 adolescents and reported 74.5% were internet users according to Young's criteria and 0.7% were found to be addicts [7]. Yadav P. et al concluded a strong positive correlation between internet addiction and depression, anxiety and stress. IA may become clinical health issue

hence needs extensive research even in developing nations [8]. 17.2% of adolescents met the criteria for problematic internet use according to Tan Y. et al while 40.0% were also classified as suffering from sleep disturbance, and 54.4% of students had depressive symptoms. Problematic internet use was significantly associated with depressive symptoms and sleep disturbance [9]. Kayastha B. et al revealed that majorities (70.5%) of the adolescents were normal users, 23% had a mild addiction, 6% had a moderate addiction and 0.5% had a severe addiction. Their demographic variables like age, class and occupation of fathers had significant association with IA [10]. Menon S. et al studied the differences between gender and internet usage, and quoted that there were statistically significant differences between the students in terms of this variable [11].

IA among adolescents is an emerging major public health problem and shows the positive correlation with stress, anxiety or depression. In India, there is paucity of data regarding internet users and IA among school going adolescents and few such type of study has been conducted in Haryana. Hence, this study was planned with the aim to found out the internet addiction and psychological problems among adolescents according to Young Internet Addiction Test and Depression, Anxiety and Stress Scales-42 in urban area of Rohtak (Haryana) North India.

Methodology

The study was conducted in both government and private senior secondary schools of urban area of Rohtak city of Haryana. There are 68 private senior secondary schools and 21 government senior secondary schools in urban Rohtak and the study included school going adolescents studying in class 8th to 12th of the government and private senior secondary schools. The study was descriptive and cross-sectional in design and carried out in the year 2018. Definition used for internet user was "someone aged 2 years and above who went online in the past 30 days" [11]. Sample size was calculated using the formula $4PQ/L^2$ where P was the prevalence of internet users and consider as 74.5% [7], The allowable error was taken as 5% thus sample size comes out to be 548 but study recruited 600 students. Students who gave informal consent to participate in the study were included but

students who were absent from the school on the days of the visit or students who were not willing to participate in the study were excluded. The permission of Institutional Ethics Committee was obtained before the commencement of the study.

Two government and two private senior secondary schools were selected randomly by lottery method from this list. 150 students from each school were selected. 30 students from each class 8th, 9th, 10th, 11th and 12th were selected randomly. Students were apprised of the study and written consent of their parents has been sought. The selected students were interviewed by administering a pre-tested semi-structured interview schedule in a separate class room and Internet addiction was assessed using Young Internet Addiction Test (IAT) [12] while the psychological problems were assessed by using Depression, Anxiety and Stress Scales-42 (DASS-42) [13]. The data was entered in the MS EXEL spread sheet, coded appropriately and chi-square statistical test was applied in SPSS 20 software. The correlation was studied by applying Spearman rank correlation coefficient and Kruskal-Wallis test and $p < 0.05$ was use as the level of significance.

Observations

The present study recruited 600 adolescents from the senior secondary school of Rohtak city. Out of total subjects, 55.8% (335) male adolescents while 44.2% (265) were female adolescents. The study found prevalence of internet users was 86% (516/600) adolescents while the sex wise distribution, 57.6% (297) male were using internet and 42.4% (219) female adolescents were using internet (Tables 1).

The Internet Addiction Test (IAT) score was used to determine the presence or absence of internet addiction in the adolescents and it consists of 20 items that measures mild, moderate and severe level of Internet Addiction. It consists of 20 items. Total up the scores for each item and grades as Normal users those scores ≤ 19 , those scores 20-49 were graded as mildly addicts while 50-79 scores were moderately addicts and those scored 80-100 were severely addicts. After calculating the IAT score among internet users and the study revealed that 33.14% were

Table 1: Sex-Wise Distribution of Adolescents According to the Internet Users

Internet users	Male (%)	Female (%)	Total (%)
Yes	297 (57.6)	219 (42.4)	516 (86)
No	38 (45.2)	46 (54.8)	84 (4.26)
Total	335 (55.8)	265 (44.2)	600 (100)

n = 600

normal users/ non addicts of internet while 45.35% adolescents were mildly addicts, one fifth (20.93%) were moderately and rest 0.58% were severely addicted to internet use. Gender wise, half male and one third female were mildly addicted while 0.67% male and 0.45% female were severely addicted of internet (Table - 2).

The study used DASS -42 score to assess the grades of depression, anxiety and stress. The DASS-42 has 42 domains in each depression, anxiety and stress scales and after calculation the grading of each psychological problem was categories as follows:

Psychological Problem	Normal	Mild	Moderate	Severe	Very severe
Depression	0-9	10-13	14-20	21-27	28+
Anxiety	0-7	8-9	10-14	15-19	20+
Stress	0-14	15-18	19-25	26-33	34+

The present study studied the prevalence and grading of depression, anxiety and stress and also statically evaluated the correlation between sex of adolescent and DASS-42 score with each psychological problem. The prevalence of depression according to DASS-D score comes out to be 18.42% among internet users while 2.91% and 1.16% adolescents were having severe and very severe depression, respectively. Statistically, after studying the correlation between sex of participant with grading of depression, it was found significant ($p < 0.01$). 11.63% adolescents had anxiety when calculated after using DASS-A scale adolescents but 11 (2.13%) participants and 12 (2.23%) subjects had also severe anxiety and very severe anxiety respectively among those using internet. Sex wise

Table 2: Internet Addiction among Adolescents according to Internet Addiction Test Score

IAT Score	Type of user	Total (%)
≤19	Normal user	171 (33.14)
20-49	Mild internet addiction	234 (45.35)
50-79	Moderate internet addiction	108 (20.93)
80-100	Severe internet addiction	3 (0.58)

n=516

grading of anxiety was also studied and revealed that more males were severely anxious as compared to females and after applying the chi square test the sex wise and grading of anxiety was found statistically significant ($p < 0.01$). Third psychological problem i.e stress was assessed by using DASS-S score and also studying the relationship between sex of adolescents and the level of stress among internet users and depicts that 17.25% adolescents were having stress after using internet while 1.55% subjects and 0.39% subjects had severe and very severe stress respectively also. The study also found out that more male had severe stress as compared to their counterpart and this association was found statistically significant ($p > 0.05$) (Table-3).

Table 3: Psychological Problems Identified among Internet users according to the DASS-42 Score

DASS-Depression Score					
No Depression	Mild Depression	Moderate Depression	Severe Depression	Very Severe Depression	Chi-Square test
421 (81.58)	41 (7.95)	33 (6.40)	15 (2.91)	6 (1.16)	$X^2=17.59$, df = 5, p value <0.01
DASS-Anxiety Score					
No Anxiety	Mild Anxiety	Moderate Anxiety	Severe Anxiety	Very Severe Anxiety	Chi-Square test
456 (88.37)	19 (3.68)	18 (3.49)	11 (2.13)	12 (2.33)	$X^2=23.92$, df = 5, p value <0.01
DASS-Stress Score					
No Stress	Mild Stress	Moderate Stress	Severe Stress	Very Severe Stress	Chi-Square test
427 (82.75)	46 (8.91)	33 (6.40)	8 (1.55)	2 (0.39)	$X^2=18.06$, df = 5, p value <0.01

n = 516

(Figures in Parentheses Indicate Percentage)

Discussion

In the last decade, the use of internet growing very rapidly not only in India, but also worldwide. Internet usage in the country has exceeded half a billion people for first time and registered an annual growth of 18% while mobile internet usage is growing at the rate of nearly 85% per annum, It is estimated by the end of this year the number of internet users will reach 627 million. The internet users are now equal in both gender and reported that 42% women comprising of total internet users [14]. In India, few studies have been conducted on internet addiction among adolescents. The present study is a step to understand the extent of internet addiction and their psychological problems among adolescents.

The study recruited 600 adolescents from school and the mean age group of adolescents was 14.80 ± 1.55 years. The study found out that the prevalence of internet users was 86% and the sex wise, male adolescents were using more internets as compared to female adolescents. Some of studies quoted the prevalence of inter users among adolescents were ranged from 74.5% to 98.9% [7, 15].

The Internet Addiction Test (IAT) score was used to determine the presence or absence of internet addiction in the adolescents and it consists of 20 items. After total up the scores for each item and grades as normal users those scores ≤ 19 , those scores 20-49 were graded as mildly addicts while 50-79 scores were moderately addicts and those scored 80-100 were severely addicts. After calculating the IAT score among internet users and the study revealed that 66.86% adolescents had addicted while 33.14% were normal users/ non addicts of internet. Out of total addicted, 45.35% adolescents were mildly addicts, one fifth (20.93%) were moderately and rests 0.58% were severely addicted to internet use. Gender wise, half male and one third female were mildly addicted while 0.67% male and 0.45% female were severely addicted of internet. A close finding on prevalence of internet addiction was reported by Bhatia et al [16]. But Goel D. et al [7] in their study quoted that the overall prevalence of internet addiction was 44% while grading wise 56% were normal users, 358 (27.5%) had mild addiction, 206 (15.8%) had moderate addiction whereas 7 (0.5%) were indicated as severe addicts. The study also revealed that males were more addicted to the internet than females. As compared to our study the prevalence quoted by Goel D et al [7] was less, the difference might be due to different cultural and setting areas.

This hard fact that the number of internet users and internet addiction are increasing day by day in the adolescents. This might be due to social and some psychological factors such as loneliness, stress and

anxiety in daily life, lower life satisfaction or self-esteem in adolescents. The study studied the prevalence and grading of depression, anxiety and stress and also we statically evaluated the correlation between sex of adolescent and DASS-42 score with each psychological problem. The prevalence of depression according to DASS-D score comes out to be 18.42% among internet users while 2.91% and 1.16% adolescents were having severe and very severe depression, respectively. Statistically after studying the correlation between sex of participant with grading of depression, it was found significant ($p < 0.01$). Depressive symptoms was observed among adolescents were 27.5% and 54.4% by Chou et al [17] and Tan et al [9] respectively. Sharma A et al [18] and Kumar N et al [6] found the significant association between sex of subjects and grading of depression. 11.6% adolescents had anxiety in the study while level of anxiety wise, 2.13% and 2.23% subjects had severe anxiety and very severe anxiety respectively among inter users. Sex wise relationship with grading of anxiety was found statistically significant ($p < 0.01$). Yadav P et al [8] noted that there was a strong positive correlation between internet users and depression, anxiety and stress. Gupta A et al [19] found a positive association between anxiety and internet users.

The adolescents who have internet addiction, they must from mental disorder line anxiety sometimes comorbidity like depression may also found. When adolescents suffers from anxiety than they spend more time on internet to change their moods that leads to again mental illness.

Third psychological problem i.e stress was assessed by using DASS-S score and also studying the relationship between sex of adolescents and the level of stress among internet users and depicts that 17.25%. Adolscents were having stress after using internet while 1.55% subjects and 0.39% subjects had severe and very severe stress respectively also. The study also found out that more male had severe stress as compared to their counterpart and this association was found statistically significant ($p > 0.05$). Similar observations were made by Gupta A et al [19] and Younes F et al [20] in their study. They revealed that there is positive relationship between stress and internet users.

Now a day, there is a chapter on computer and internet education in all school curriculums. School teacher and Parents should explain and counseled adolescents about appropriate use of internet and hazards of internet. The prevalence of Internet addiction increasing in developed and in developing countries because this will result in negative consequences on health. The internet addiction drawn attention to the Psychiatrist, Psychological

professionals, Physician, Counselor and the primary health care providers to make policy to combat this emerging infection.

Conclusion and Recommendations

The study concluded that Internet addiction is one of the emerging significant public health problems among adolescents. The prevalence of internet addiction is high and leads to psychological problems like depression, anxiety and stress among adolescents. This issue should address immediately otherwise the situation become worse in coming days. This internet addiction should be appropriately handled at primary level. Hence, policy makers should develop strategies for the prevention of internet addiction and therapeutic interventions at large scale. The study recommends that seminars or extra classes or parent-teacher meetings in the schools related to internet usage can play an important role in making students aware of causes and effects of internet addiction and also primary health care physician should detect early warning signs of internet addiction and should be dealt appropriately.

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