



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 8, Issue, 6, pp. 17828-17833, June, 2017

**International Journal of
Recent Scientific
Research**

DOI: 10.24327/IJRSR

Research Article

STUDY TO ASSESS THE CORRELATION OF INTERNET ADDICTION WITH DEPRESSION, ANXIETY AND STRESS AMONG COLLEGE STUDENTS AT A SELECTED COLLEGE OF DELHI UNIVERSITY WITH A VIEW TO DEVELOP AN INFORMATION BOOKLET ON INTERNET ADDICTION

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DOI: <http://dx.doi.org/10.24327/ijrsr.2017.0806.0428>

ARTICLE INFO

Article History:

Received 17th March, 2017
Received in revised form 12th
April, 2017
Accepted 04th May, 2017
Published online 28th June, 2017

Key Words:

Internet Addiction, Depression, Anxiety, Stress, Internet Addiction Test, College Students

ABSTRACT

A descriptive survey design with quantitative approach was used to collect data from 200 undergraduate and postgraduate college students at selected college of Delhi University to assess the relationship of internet addiction with depression, anxiety and stress. The data was collected in the month of February 2017 using standardized IAT (Internet Addiction Test) and DASS (Depression, Anxiety, Stress Scales).

Most of the 111(55.5%) of the students had moderate internet addiction, 75(37.5%) had mild internet addiction, 8(4%) were normal internet user and 6(3%) of the students had severe internet addiction. Maximum 88(44%) of the students belongs to 20-22 years age group. 116(58%) of the students were females and 84(42%) were males. Most of the students 91(45.5%) were from urban residence. Most of the students parental education was up to graduation level with 62(31%) among the mothers and 81(40.5%) among the fathers. Most of the 132(66%) student's father's occupation were from non-IT background. Equal group was homogenous in terms of the field of education of students within the course. Maximum number of 159(79.5%) of the students were enrolled in the course with duration of 3 years.

Most of the 70(35%) of the students spent 3-4 hrs on internet per day. The purpose of internet use for maximum 94(47%) of the students was for academic and entertainment.

Findings shows that internet addiction is positively correlated with depression ($r = 0.32, p < 0.05$), anxiety ($r = 0.29, p < 0.05$) and stress ($r = 0.30, p < 0.05$). 76(38%) of the students had moderate level of depression, 75(37.5%) had extremely severe level of anxiety and 90(45%) had moderate level of stress. There was a significant association of internet addiction with the age, gender, habitat, time spent on internet per day and purpose of internet use at a significant level of 0.05.

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INTRODUCTION

Who Expert Committee (1964) has considered overuse as a "dependence syndrome" to replace addiction or habituation. This is categorized either as substance abuse, such as from psychoactive drugs, alcohol and tobacco under ICD-10, or a behavioral addiction, such as internet addiction.

The term 'internet addiction' was first proposed by Ivan Goldberg for pathological internet use in 1996. The IAD is a compulsive-impulsive spectrum disorder consists of at least three subtypes: excessive gaming, sexual preoccupations, and e-mail/text messaging.

All of the variants share the following four components:

1. Excessive use, often associated with a loss of sense of time or a neglect of basic drives
2. Withdrawal, including feelings of anger, tension, and/or depression when the computer is inaccessible
3. Tolerance, including the need for better computer equipment, more software, or more hours of use
4. Negative repercussions, including arguments, lying, poor achievement, social isolation, and fatigue.

Types: - Internet Addiction is an impulsive-control problem and five subtypes have been defined:

1. Cybersexual Addiction
2. Cyber-Relational Addiction
3. Net Compulsions

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4. Information Overload
5. Computer Addiction

KW Beard. *et al.* (2001) recommends that the following five diagnostic criteria are required for a diagnosis of internet addiction. (a) feeling preoccupied with the Internet, (b) need to use the internet with- increased amounts of time in order to achieve satisfaction, (c) unsuccessful efforts to control, cut back, or stop internet use, (d) restless, moody, depressed, or irritable when attempting to cut down or stop internet (e) staying online longer than originally intended. Additionally, at least one of the following must be present (f) jeopardized or risked the loss of a significant relationship, job, educational or career opportunity because of the internet, (g) lying to family members, therapist, or others to conceal the extent of involvement with the internet and (h) using the internet as a way of escaping from problems or of relieving a dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, depression). Internet addiction is the term which is used for the extensive utilization of internet which affects an individual functioning leading to nervous breakdown It is also another type of addiction, which involves experience of withdrawal symptoms when the desire object of addiction is taken away, an inability to control its use, developing tolerance to it, avoiding routine work, and losing interests in other hobbies. Here, the desire object of addiction is Internet.

LITERATURE SURVEY

Arefin A *et al.* (2016) studied internet dependence and its association with depression among 400 undergraduate students of North South University, Bangladesh. Among 400 respondents, male and females were 56% and 44%. About 101(25.3%) students were found as internet dependent and 264 (74.8%) were depressed. About 31.4% respondents were internet dependent with depression ($p < 0.001$) and OR was 3.00 (1.71-5.26) i.e., internet dependent were more likely to have 3 times risk to develop depression. Besides 16.8% had mild to moderate depression, 65.3% had major depression and 17.8% had no depression and it was statistically highly significant ($p < 0.001$).

Khalil *et al.* (2016) conducted a study to investigate the prevalence of internet addiction among nursing students and its association with their mental health and academic performance among 147 female students of king Saud Bin Abdul-Aziz University for Health Sciences, Jeddah.

The results revealed that 59.6% were average on-line users compared with 38.4% and 2.1% experiencing both moderate and severe internet addiction. 64.6% were experienced with depressive symptoms compared with only 35.4% who were normal. A significant correlation was found between internet addiction, time spent on internet and depressive symptoms ($r = 0.335$ and $r = 0.205$).

Younes F *et al.* (2016) conducted a study to assess potential internet addiction and relationship between potential internet addiction, insomnia, depression, anxiety, stress and self-esteem among 600 students of three faculties, medicine, dentistry and pharmacy at Saint-Joseph University. The Internet addiction score was 30 ± 18.474 ; potential internet addiction prevalence was 16.8% (95% confidence interval: 13.81-19.79%) and it

was significantly different between males and females (p -value = 0.003), with a higher prevalence in males (23.6% versus 13.9%). Significant correlations were found between potential internet addiction and insomnia, stress, anxiety, depression and self-esteem (p -value < 0.00); Insomnia severity index and Depression anxiety stress scale sub-scores were higher and self-esteem lower in students with potential internet addiction.

Chaudhari B.L. *et al.* (2015) conducted a study to evaluate the prevalence of internet addiction and study its correlation with depression and anxiety among 282 medical students. The results showed the prevalence of internet addiction among medical students to be 58.87% (Mild-51.42%, Moderate-7.45%). Both depression and anxiety had mild positive correlation with internet addiction which is statistically significant at $p < 0.0001$.

Alshehri A *et al.* (2015) studied the prevalence of internet addiction and its association with psychiatric co-morbidities among 279 university students. More than half of them (54.1%) were females. Majority of them (98.2%) were using internet. Internet addiction was reported among 4% whereas possible addiction was reported among 45.3% of them. Internet addiction was significantly associated with longer average daily time of using the internet as well as missing college days, at 1% level of significance. There is a significant positive relationship among internet addiction and depression, anxiety and stress. The depression, anxiety and stress levels are significantly higher for females compared to males, at 5% level of significance. The depression and anxiety levels are significantly higher for administration and finance stream students compared to medical students, at 5% level of significance.

Panicker J *et al.* (2014) conducted a study to examine the Problematic Internet Use (PIU) and its relationship with loneliness, depression, anxiety and stress among 84 junior college students in and around Ulhasnagar. The data was analysed using correlation analysis. The result showed significant correlations between PIU, loneliness, depression, anxiety and stress. PIU is related positively to loneliness ($r = 0.25$, $p < 0.01$), to depression ($r = 0.31$, $p < 0.05$), ($r = 0.20$, $p < 0.05$) and stress ($r = 0.41$, $p < 0.01$).

Akin A *et al.* (2011) conducted a study to examine the relationships between internet addiction and depression, anxiety and stress among 300 university students in turkey. In correlation analysis, internet addiction was found positively related to depression, anxiety and stress. According to path analysis results, depression, anxiety and stress were predicted positively by internet addiction. This research shows that internet addiction has a direct impact on depression, anxiety and stress.

Statement of the Problem

A correlational study was conducted among college students of 17-25 years of age at a selected college of Delhi University with following objectives:

- To assess Internet Addiction among College Students.
- To assess the level of Depression, Anxiety and Stress among college students

- To find out the correlation between Internet Addiction and Depression, Anxiety and Stress among college students
- To study the association of Internet Addiction with selected demographic variables
- To develop and disseminate an information booklet on Internet Addiction

MATERIALS AND METHODS

A non-experimental study using quantitative approach and correlational design was conducted for 200 college students between the age group of 17-25 years studying at a selected college of Delhi University who were present at the time of study.

A validated Socio-demographic data tool was developed to assess the age, gender, habitat, mother's education, father's education, father's occupation, course enrolled, duration of the course enrolled, time spent on internet per day and purpose of internet use.

Internet Addiction Test (IAT) was used to assess the internet addiction among college students. The IAT was developed by Dr. Kimberly Young, 1998 and it consists of 20 questions was adopted to evaluate the respondents' level of internet addiction. Each item is scored using a five point Likert scale, a graded response can be selected (1 = "rare" to 5 = "always"). The validity of Internet Addiction Test (IAT) is high face validity (Widyanto L *et al* 2004) and the reliability of Internet Addiction Test (IAT) is 0.899 in Cronbach's Alpha (Sally, 2006).

Depression Anxiety Stress Scale (DASS) was used to assess the depression, anxiety and stress among the college students. The DASS is a 42-item self-administered questionnaire designed to measure the magnitude of three negative emotional states: depression, anxiety, and stress. The DASS-Depression focuses on reports of low mood, motivation, and self-esteem, DASS-Anxiety on physiological arousal, perceived panic, and fear, and DASS-Stress on tension and irritability.

Depression Anxiety Stress Scale (DASS) is a construct (Lovibond 1995) and convergent validity (Crawford and Henry 2003) and the reliability of Depression Anxiety Stress Scale (DASS) three scales considered adequate with 0.71 for depression, 0.79 for anxiety and 0.81 for stress (Brown *et al*, 1997).

A validated information booklet on internet addiction was disseminated to the college students after the administration of the questionnaires (Internet Addiction Test (IAT) and Depression Anxiety and Stress (DASS) scales).

Ethical approval was taken from the Students Union Authority and Principal of the College of Delhi University to conduct the study. Written informed consent was taken from the study sample regarding their willingness to participate in the research study and the purpose for carrying out research study was explained to the subjects. Confidentiality of the information of the sample was maintained.

Data was analyzed by descriptive and inferential statistics i.e. frequency and percentage distribution, Pearson's correlation coefficient and chi-square test at 0.05 level of significance.

RESULTS

Frequency and percentage distribution of college students according to their demographic variables revealed that most 40.5% of the students were from 17-19 years, then 44% of students were 20-22 years, 15.5% of the students were of 23-25 years. Most 42% of the college students were males and 58% of the students were females. Most 45.5% of the students were from urban residential area, then 29% of the students were from semi-rural residential area and 25.5% of the students were from rural residential area. Few 3% of the students mothers were illiterate, 9.5% of the students mothers were of primary education, 22% of the students mother's education were of secondary education, 28.5% of the students mother's education were of higher secondary education, 31% of the students mothers education were of graduation and 6% of the students mothers education were of post-graduation. Very few 1.5% of the students fathers were illiterate, then 5.5% of the students father's education were of primary education, 16% of the students father's education were of secondary education, 40.5% of the students father's education were of graduation and 10.5% of the students father's education were of post-graduation. The data further shows that 34% of the students were from IT professional and 66% of the students fathers were from non-IT professional. Equal number 25% of the students were from economics department, 25% of the students were from science department, 25% of the students were from English department and 25% of the students were from computer science department. More than half 79.5% of the duration of course enrolled by the students were of 3 years and 20.5% of the duration of course enrolled by the students were of 2 years. 27% of the students were used to spend 1-2 hrs on internet per day, 35% of the students were used to spend 3-4 hrs on internet per day, 25.5% of the students were used to spend 5-6 hrs on internet per day and 12.5% of the students were used to spend more than 6 hours on internet per day. Few 11% of the students purpose of internet use were academic, 7% of the students purpose of internet use were entertainment, 5.5% of the students purpose of internet use were gaming, 47% of the students purpose of internet use were both academic and entertainment, 17% of the students purpose of internet use were both entertainment and gaming, 7% of the students purpose of internet use were both academic and gaming and 5.5% of the students purpose of internet use were of any other.

Table 1 Frequency and Percentage Distribution of College Students According to Their Internet Addiction Score

N = 200			
S. No	Internet Score	Frequency	Percentage
1	Below (0-19)	8	4%
2	Average range (20-49)	75	37.5%
3	Above average (50-79)	111	55.5%
4	Significantly above average (80-100)	6	3%

Maximum Score: 100; Minimum Score: 0

Data in Table 1 indicates that half of the proportion (111)55.5% of students were moderate addicted internet users, 75(37.5%) of the students were mild internet addicted internet users, 8(4%) of the students were normal internet users and 6(3%) of the students were severely addicted internet users.

Table 2 Frequency and Percentage Distribution of Level of Depression among College Students

N=200

Level of Depression	Range	Frequency	Percentage
Normal	0-9	38	19%
Mild	10-13	20	10%
Moderate	14-20	76	38%
Severe	21-27	61	30.5%
Extremely severe	28+	5	2.5%

Maximum Score: 28+; Minimum Score: 0

Data in Table 2 indicates that majority 76(38%) of the students had moderate level of depression, 61(30.5%) of the students had severe level of depression, 38(19%) of the students were normal, 20(10%) of the students had mild level of depression.

Table 3 Frequency and Percentage Distribution of Level of Anxiety among College Students

N=200

Level of Anxiety	Range	Frequency	Percentage
Normal	0-7	28	14%
Mild	8-9	3	1.5%
Moderate	10-14	36	18%
Severe	15-19	58	29%
Extremely severe	20+	75	37.5%

Maximum Score: 20+; Minimum Score: 0

Data in Table 3 indicates that majority 75(37.5%) of the students had had extremely severe level of anxiety, 58(29%) of the students had severe level of anxiety, 36(18%) of the students had moderate level of anxiety, 28(14%) of the students were normal and 3(1.5%) of the students had mild level of anxiety.

Table 4 Frequency and Percentage Distribution of Level of Stress among College Students

N = 200

Level of Stress	Range	Frequency	Percentage
Normal	0-14	51	25.5%
Mild	15-18	40	20%
Moderate	19-25	90	45%
Severe	26-33	19	9.5%
Extremely severe	34+	0	0%

Maximum Score: 34+; Minimum Score: 0

Data in Table 4 indicates that majority 90(45%) of the students had moderate level of stress, 51(25.5%) of the students were normal, 40(20%) of the students had mild level of stress, 19(9.5%) of the students had severe level of stress.

Table 5 Correlation between Internet Addiction and Depression, Anxiety and Stress among the college students

N=200

S.No	Correlation Between	Mean	r	P
1	Internet Addiction and Depression	53.84 ± 18.38 and 16.74 ± 7.45	0.32	<0.05
	Internet Addiction and Anxiety	53.84 ± 18.38 and 16.45 ± 7.01	0.29	<0.05
3	Internet Addiction and Stress	53.84 ± 18.38 and 17.58 ± 7.10	0.30	<0.05

Data in Table 5 depicts that there was a significant ($p < 0.05$) positive correlation ($r = +0.32$) between the internet addiction and depression indicating high score of internet addiction lead to high level of depression.

There was a significant ($p < 0.05$) positive correlation ($r = +0.29$) between the internet addiction and anxiety indicating that high score of internet addiction lead to high level of anxiety.

There was a significant ($p < 0.05$) positive correlation ($r = +0.30$) between the internet addiction and stress indicating that high score of internet addiction lead to high level of stress.

Table 6 Chi-square Value Showing Association of Internet Addiction with the Selected Demographic Variables

N=200

S.No	Demographic variable	Internet Addiction score		Total	χ^2	Df
		<50	>50			
1	Age					
	• 17-19	48	33	81	21.96	2
	• 20-22	21	67	88		
• 23-25	14	17	31			
2	Gender				8.219	1
	• Male	25	59	84		
	• Female	58	58	116		
3	Habitat				12.80	2
	• Urban	49	42	91		
	• Semi-rural	22	36	58		
4	• Rural	12	39	51	NS	1
	Occupation of Father					
	• IT	24	43	67		
5	• Non-IT	59	74	133	21.27	3
	Time spent on internet per day					
	• 1-2 hrs	36	18	54		
	• 3-4 hrs	27	44	71		
	• 5-6 hrs	14	37	51		
	• >6 hrs	6	18	24		
6	Purpose of internet use				40.2	6
	• Academic					
	• Entertainment	4	18	22		
	• Gaming	2	12	14		
	• Academic and entertainment	1	10	11		
	• Entertainment and gaming	61	34	95		
3	• Academic and gaming	8	26	34	7	10
	• Any other	4	10	14		

*- significant ($p < 0.05$)

NS- Not Significant ($p < 0.05$)

Table 6 shows that chi-square value computed between internet addiction and the various selected demographic variables. The table depicts that there was a significant association between internet addiction and Age (21.96), Gender (8.219), Habitat (12.80), Time spent on internet per day and Purpose of internet use (40.2) while there was not a significant association of internet addiction and occupation of father (1.33). This means that increase in the age leads to internet addiction, female gender are more prone to get internet addiction, urban residence is closely associated to internet addiction, those who spend 3-4 hrs on internet per day prone for internet addiction and those whose purpose of internet use were both academic and entertainment closely associated with internet addiction.

DISCUSSION

The present study aimed to assess the prevalence of Internet Addiction and its correlation with selected factors such as Depression, Anxiety and Stress. In the present study, it was found that internet addiction was 55.5% of moderate addiction, 37.5% of mild addiction, 4 % of normal internet usage and 3% of severe internet addiction. Similarly in a study by Subhprada C *et al.* (2017), the prevalence of internet addiction among the study subjects was 52.63% mild, 24.21% moderate, while 23.16% students reported normal internet usage. The results revealed that out of 95 study subjects, 62.2% were males and 37.8% were females. Males were more addicted to internet than females. Whereas in the present study, 47% were males and 58% were females. Females were more addicted to internet than males.

Goel D *et al.* (2013) studied the prevalence of internet addiction and associated existing psychopathology among 987 students of various faculties across the city of Mumbai. The results revealed that 681(68.9%) were females and 306(31.1%) were males. The mean age of adolescents was 16.82 years. 74.5% were moderate users. Using Young's original criteria, 0.7% were found to be addicts. In the present study, (116)58% were females and 84(42%) were males. 55.5% were moderate internet users in the study conducted.

Khalil *et al.* (2016) studied the prevalence of internet addiction among nursing students and its association with their mental health and academic performance among 147 female students of king Saud Bin Abdul-Aziz University for Health Sciences, Jeddah. The results revealed that 59.6% were average on-line users compared with 38.4% and 2.1% experiencing both moderate and severe internet addiction. 64.6% were experienced with depressive symptoms compared with only 35.4% who were normal. A significant correlation was found between internet addiction, time spent on internet and depressive symptoms ($r = 0.335$ and $r = 0.205$). In the present study, 37.5% were average on-line users, 55.5% and 3% were experiencing both moderate and severe internet addiction. A significant positive correlation in the present study was found between internet addiction and depression ($r = 0.32$).

Chaudhari B.L. *et al.* (2015) conducted a study to evaluate the prevalence of internet addiction and study its correlation with depression and anxiety among 282 medical students. The results showed the prevalence of internet addiction among medical students to be 58.87% (Mild-51.42%, Moderate-7.45%). Both depression and anxiety had mild positive correlation with internet addiction which is statistically significant at $p < 0.0001$. Whereas in the present study, Mild-37.5%, Moderate- 55.5% and Severe internet addiction- 3% and both depression and anxiety had positive correlation with internet addiction which is statistically significant at $p < 0.05$.

CONCLUSION

1. Internet Addiction was found to be 55.5% prevalent among the college students
2. Significant positive correlation was found to be between Internet Addiction and Depression, Anxiety and Stress
3. There was a significant association between Internet Addiction and age, gender, habitat, time spent on internet per day and purpose of internet use by the students

Future Scope

- Attitude and awareness of parents regarding Internet Addiction and its impact on the Internet Addiction score of their children.
- A similar study can be done using the other internet addiction scoring tools such as OCS (Online Cognition Scale), CIUS (Compulsive Internet Use Scale) and PRIUSS (Problematic and Risky Internet Use Screening Scale).
- Phenomenological study can be done to assess the quality of life among college students affected by internet addiction.

Acknowledgement

First of all, I thank Almighty God and immense belief on him helped me in each and every step to translate dream into reality. I consider myself proud to express a word of thanks to Principal, Prof. Pranati Barua, Amity college of Nursing who taught us the concept of research and her constant support, encouragement and guidance throughout the research. I express my immense sense of gratitude to Ms. Poonam Sharma, Assistant professor, Department of Psychiatric Nursing, Amity college of Nursing for her support and guidance without whom completion of study could not be possible. I extend my immense sense of gratitude to thank Ms. Manita Dalal, Assistant professor, Department of Obstetrics and Gynecology Nursing for her constant support and guidance without whom the completion of the study could not be possible.

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How to cite this article:

Anjali S et al.2017, Study to Assess the Correlation of Internet Addiction With Depression, Anxiety And Stress Among College Students At A Selected College Of Delhi University With a View to Develop an Information Booklet on Internet Addiction. *Int J Recent Sci Res*. 8(6), pp. 17828-17833. DOI: <http://dx.doi.org/10.24327/ijrsr.2017.0806.0428>
