Prevalence Of Internet Addiction And Its Association With Depression, Anxiety And Stress Among Nursing Students Of Bhavnagar – A Cross-Sectional Study

Dr. Mohit Makwana*, Dr. Ghanshyam Ahir, Dr. Jivraj Damor*****

*Resident Doctor, **Associate Professor, Department Of Community Medicine, Government Medical College, Bhavnagar – 364001, *** Professor & HOD, Department Of Community Medicine, Medical College Baroda, Vadodara - 390001.

Abstract: Background: In these modern times of digitization, the use of Internet has become a part of everyday life. Exponential use of internet has resulted in internet addiction in recent times. Students are particularly at risk because of their unique personal and academic needs. The present study aimed to estimate the prevalence of internet addiction (IA) and its relationship to depression, anxiety, stress and academic performance among nursing students of Bhavnagar. Material And Methods: A cross-sectional study was conducted among nursing students of Government College of Nursing, Bhavnagar. A pretested, predesigned, self-administered questionnaire was used for data collection. Internet addiction was assessed using Young's Internet addiction Scale while the prevalence and severity of depression, anxiety and stress were assessed by Depression Anxiety, Stress Scale. Result: Out of 364 students who had participated in the study, Majority (89.3%) of them were female. The mean age of the respondents with internet addiction was 19.4 years. The overall prevalence of Internet addiction was 42.6%, where mild IA was 28.8%, moderate IA was 12.6% and Severe IA was 1.1%. There was a significant association between Internet addiction and depression (odds ratio=7.61, p<.001), anxiety (odds ratio=5.54, p<.001), stress (odds ratio=9.35, p<.001) and academic performance (odds ratio=2.64, p<.05). Conclusion: Internet Addiction is potentially high among nursing students. It is a serious problem with a profound impact on mental health. Therefore, early intervention is crucial. It is necessary to take interventional measures and educate students about the optimal use of the Internet. [Makwana M Natl J Integr Res Med, 2023; 14(3): 19-24, Published on Dated: 18/05/2023]

Key Words: Academic Performance, Anxiety, Depression, Internet Addiction, Nursing Students, Stress

Author for correspondence: Dr. Mohit Makwana, Resident Doctor, Department Of Community Medicine, Government Medical College, Bhavnagar - 364001. E-Mail: mohitmakwana10@gmail.com

Introduction: The Internet has revolutionized the computer, smart phones and communications world like never before. The rate at which the world has changed in the last few decades has been simply astonishing. With the ease of internet access, especially during a pandemic, everyone has moved closer to the digital era. Everyone has been compelled to be more digitally active than ever before.

According to Kimberly Young, a well-known researcher in this field, "Internet addiction is defined as any online-related, compulsive behaviour which interferes with normal living and causes severe stress on family, friends, loved ones, and one's work environment. Internet addiction is also known as Internet dependency or Internet compulsivity. By any name, it is a compulsive behaviour that completely dominates the addict's life[1]."

Compulsive internet use can have a detrimental effect on one's daily life, work, and relationships. When a person begins to feel more comfortable with their online friends than with their real-life ones, or when they find themselves unable to resist the urge to play games, gamble, or compulsively check the internet or their smart phone, they may be exhibiting signs of overusing the internet. This can lead to a range of issues, from decreased productivity to strained relationships. It is important to recognize the signs of compulsive internet use and take steps to address it.

When mental health professionals first encountered patients who had difficulty controlling their internet use, they quickly recognized the potential for academic failure, relationship issues stemming from excessive internet use, and compulsive online shopping leading to catastrophic financial problems. Research on internet addiction and depression demonstrated that the overuse of the internet, which results in a disruption of the normal lives of an individual and the people around him, was associated with an increase in the frequency of depression[2,3].

The aim of present study is to estimate the prevalence of internet addiction among nursing students and assess the association of depression, anxiety, stress and academic preformation with internet addiction.

Objectives: 1. To estimate the prevalence of internet addiction among nursing students of Bhavnagar 2. To determine the association of depression, anxiety, stress and academic preformation with internet addiction.

Material & Methods: Study Design: The present study used a cross sectional design, where the participants were assessed for internet addiction along with depression, anxiety, stress and their academic performance.

Study Setting And Sample: Study included nursing students from Government College of Nursing, Bhavnagar. All nursing students who were present in the classroom during data collection period were contacted for the study. Total 364 nursing students were enrolled in the study.

Data Collection: Permission was obtained from Ethics Committee, Government Medical College of Bhavnagar to conduct the study. Written permission was taken from the authorities of nursing institute. Nursing students were contacted post lecture/session in classroom.

Initially, purpose of study was explained to all the participants and informed consent was taken. A self-designed, pre-tested, semi-structured questionnaire was used for data collection in English and vernacular language (Gujarati). After approval of Ethics Committee (EC), Government Medical Collage, Bhavnagar, a pilot study was conducted among 12 students for testing the self-designed questionnaire.

Study Tool: Self-designed, pre-tested, structured questionnaire was used for data collection. Two tools were used in the questionnaire to determine internet addiction and Depression, anxiety and stress among participants.

The Internet Addiction Test (IAT) was created by Young (1998) to evaluate the existence and intensity of internet addiction. These 20 elements evaluate attributes and demeanours related to obsessive use of the internet that comprises escapism, compulsivity, and dependency. Each item is rated on a 5-point scale ranging from 0 to 5. The maximum score is 100 points. The higher the score is, the higher is the severity of your problem.

Total scores that range from 0 to 30 points are considered to reflect a normal level of Internet usage; scores of 31 to 49 indicate the presence of a mild level of Internet addiction; 50 to 79 reflect the presence of a moderate level; and scores of 80 to 100 indicate a severe dependence upon the Internet.

The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress.

Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content.

The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia and inertia.

The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal.

It assesses difficulty relaxing, nervous arousal, and being easily upset / agitated, irritable / over-reactive and impatient. Scores for depression, anxiety and stress are calculated by summing the scores or the relevant items.

Data Analysis: Data entry was done in Microsoft excel software and data analysis was done in Epi Info software version 7.0 with appropriate data checks in order to avoid errors in data entry.

Nominal variables were summarized as counts and percentages. The association between demographic data, internet addiction and psychological parameters mean score was examined using the Chi-square test. There was a significant difference at the level of $P < 0.05$.

Ethical Considerations: Study was approved by Ethics committee (EC), Government Medical College, Bhavnagar in July-2021. Informed consent was obtained from the participants after explaining the nature and purpose of the study in the understandable language.

Results: Out of 364 students who had participated in the study, Majority (89.5%) of them were female. The mean age of the respondents with internet addiction was 19.4 years. Table 1 is showing the socio-demographic characteristics of the study participants.

Table 1: Socio-Demographic Characteristics Of The Study Participants (N=364)

Characteristics		Frequency (%)
Gender	Male	39 (10.7)
	Female	325 (89.3)
Academic Year	1st year	123 (33.8)
	2nd year	110 (30.2)
	3rd year	87 (23.9)
	4th year	38 (10.4)
	Internship	6 (1.6)
Current Residence	Home	47 (12.9)
	Hostel	317 (87.1)
Home Town	Rural	197 (54.1)
	Urban	167 (45.9)
Relationship Status	Single	339 (93.1)
	In Relationship	20 (5.5)
	Married	5 (1.4)
BMI Category	Normal Weight	153 (42)
	Obesity	21 (5.8)
	Overweight	20 (5.5)
	Underweight	170 (46.7)
School Medium	Gujarati	286 (78.6)
	Hindi	3 (0.8)
	English	75 (20.6)
Daily Time Spent On Internet	< 2 Hours	18 (4.9)
	2 to 4 Hours	262 (72)
	5 to 6 Hours	55 (15.1)
	>6 Hours	29 (8)

Table 2: Distribution Of Severity Of IA

Scoring Interval*	Internet Addiction	Frequency (N=364)	Percentage (%)
0 To 30	No Addiction	209	57.4
31 To 49	Mild	105	28.8
50 To 79	Moderate	46	12.6
80 To 100	Severe	4	1.1

*as per Young's Internet addiction test.

The prevalence of Internet Addiction (IA) was 42.6% where mild IA was 28.8%, moderate IA was 12.6% and Severe IA was 1.1%.

Table 3: Association Of IA With Depression

Internet Addiction	Depression			OR (95% CI)
	No	Yes	Total	
No	185(88.5)	24 (11.5)	209 (100)	7.61 (4.48, 12.9)
Yes	78(50.3)	77(49.7)	155(100)	
Total	263(72.3)	101(27.7)	364(100)	
Chi Square: 64.8, P< .001				

A Chi-square test was applied to investigate the association between the internet addiction and depression. All expected cell frequencies were greater than five. The odds ratio and its 95% confidence limits were calculated to measure the magnitude of the association. A 5% level of significance was used to evaluate significance of association, i.e. the p-value was considered significant if it was less than 0.05. There was a significant association between the internet addiction and the depression (P-value: <.001) with the group of internet addiction having 7.61 times the odds of the depression than the group without internet addiction (odds ratio 95% CI: 4.48, 12.9).

Table 4: Association of IA with Anxiety

Internet Addiction	Anxiety			OR (95% CI)
	No	Yes	Total	
No	173(82.8)	36(17.2)	209(100)	5.54 (3.43, 8.94)
Yes	72(46.5)	83(53.5)	155(100)	
Total	245(67.3)	119(32.7)	364(100)	
Chi Square: 53.4, p< .001				

A Chi-square test was conducted to investigate the association between the internet addiction and anxiety. There was a significant association between the internet addiction and the anxiety (P-value: <.001) with the group of internet addiction having 5.54 times the odds of the anxiety than the group without internet addiction (odds ratio 95% CI: 3.43, 8.94).

Table 5: Association of IA with Stress

Internet Addiction	Stress			OR (95% CI)
	No	Yes	Total	
No	198(94.7)	11(5.3)	209(100)	9.35 (4.68, 18.7)
Yes	102(65.8)	53(34.2)	155(100)	
Total	300(82.4)	64(17.6)	364(100)	
Chi Square: 51.4, P< .001				

A Chi-square test was conducted to investigate the association between the internet addiction and stress. There was a significant association between the internet addiction and the stress (P-value: <.001) with the group of internet addiction having 9.35 times the odds of the stress than the group without internet addiction (odds ratio 95% CI: 4.68, 18.7).

Table 6: Association Of Internet Addiction With Academic Performance

Internet Addiction	Academic Performance			OR (95% CI)
	Good$	Poor#	Total	
No	202(96.7)	7(3.3)	209(100)	2.64 (1.03, 6.79)
Yes	142(91.6)	13(8.4)	155(100)	
Total	344(94.5)	20(5.5)	364(100)	
Chi Square: 4.35, P< .05				

$ Percentage of previous exam more than 60% is considered as good academic performance. # Percentage of previous exam less than 60% is considered as poor academic performance.

A Chi-square test was conducted to investigate the association between the internet addiction and academic performance. There was a significant association between the internet addiction and the academic performance (P-value: <.05) with the group of internet addiction having 2.64 times the odds of the stress than the group without internet addiction (odds ratio 95% CI: 1.03, 6.79).

Discussion: A cross sectional study was conducted among 364 nursing students of Government College of Nursing, Bhavnagar during June 2022. The present study aimed to estimate the prevalence of internet addiction and

its relationship to depression, anxiety, stress and academic performance among nursing students of Bhavnagar.

This study found that prevalence of internet addiction among health professional student of Bhavnagar was 42.6%, out of which 28.8% were having mild internet addiction, 12.6% were having moderate internet addiction and 1.1% were having severe internet addiction. There are 57.4% students were normal internet user having no internet addiction.

Our findings were similar to the study conducted in Jabalpur city. Arvind Sharma et al.[4] conducted a cross sectional study with objectives to determine the level of Internet addiction and behavioral aspects among students of professional courses. The internet addiction test scoring revealed that 57.3% as normal users, 35.0% as case of mild, 7.4% as moderate and 0.3% as severely addicted to internet.

In contrast to our findings, Goel D et al. in Mumbai reported the prevalence of internet addiction at 0.7% among 987 students of various faculties across the city of Mumbai[5].

Differences in geographical and cultural settings may be responsible for such differences in prevalence. A study on medical students in China reported a prevalence of 16.2%[6]. Haque M et al., found 49% and 32% of the medical students in Malaysia was mildly and moderately addicted to internet respectively[7].

There was a significant association between the internet addiction and depression (OR: 7.61, 95% CI: 4.48-12.9, p<.001), anxiety (OR: 5.54, 95% CI: 3.43-8.94, p<.001), stress (OR: 9.35, 95% CI: 4.68-18.7, p<.001) and academic performance (OR: 2.64, 95% CI: 1.03-6.79, p<.05).

Similar to our findings, a study conducted in Assam showed those having internet addiction are found to be more depressed (odds ratio=14, 95% CI=7.9-24.6), stressed (odds ratio=12, 95% CI=5.5-25.7) and anxious (odds ratio=3.3, (95% CI=1.9-5.6), as compared to those who are not having internet addiction. There was a significant association between Internet addiction and depression, anxiety, and stress (P < 0.0001)[8]. Another study conducted in pharmacy students showed depression, anxiety and stress were significantly related to potential internet addiction (p-value = < 0.001, < 0.001, < 0.001 respectively)[9].

A study conducted among medical students in Pakistan showed academic performance was also significantly associated with Internet addiction score (p <0.001)[10].

These studies corroborate our findings of significant association between depression, stress, and anxiety and Internet addiction (P < 0.001). The cause and effect relationship between Internet addiction and depression, stress, and anxiety could not be established considering the cross-sectional design of the study.

Limitations: Psychopathological symptomatology in the participants was not assessed before administering the Internet Addiction Test and Depression Anxiety Stress Scale 21. Personality characteristics of the participants would also have potentially influenced the responses of the participants and thus confounded the overall responses.

Conclusion: There is high prevalence (42.6%) of internet addiction among nursing students of Bhavnagar. There was no significant difference in internet addiction across both genders in our study.

There was a significant association between Internet addiction and depression (odds ratio=7.61, p<.001), anxiety (odds ratio=5.54, p<.001), stress (odds ratio=9.35, p<.001) and academic performance (odds ratio=2.64, p<.05).

Considering high prevalence (42.6%) of internet addiction, early intervention is needed to overcome the problem of Internet addiction among nursing students.

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