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# Prevalence of internet addiction and its impact on selected psychological parameters among UG nursing students

Jitendra S. Parmar, Samundy Kumbhakar

## Abstract:

**BACKGROUND:** Currently, the use of the internet is one of the most important tools, which may lead to negative or positive impact on college or school students. The excessive use of electronic media may lead to change in the mood, an inability to resist internet usage, a diminishing social life, withdrawal symptoms while unengaged, affecting self-esteem, and adverse work or academic consequences. The main objective of this study is to explore Internet use and its impact on selected psychological parameters such as depression and insomnia among undergraduate (UG) nursing students.

**MATERIALS AND METHODS:** A total of 385 college students selected by purposive sampling technique were included in the study. Young's Internet Addiction Test (YIAT20) for Internet addiction (IA) assessment, and Beck's depression inventory Scale to assess level of depression, and insomnia severity index (ISI) scale to measure insomnia were used.

**RESULTS:** Among 385 participants, 175 and 210 were male and female, respectively. Demographic variables such as pursuing course, study year, use of Internet/day; and the purpose of Internet use such as social networking, games, entertainment, pornography, and news were significantly associated with IA. Depression and insomnia were found to be correlated with IA.

**CONCLUSION:** Internet usage more than the normal limit has a profound effect on college or school students, in particular, depression and insomnia. At times, it ends up in problems in their social and family relationship.

## Keywords:

Depression, insomnia, Internet addiction

## Introduction

In recent decades, Internet usage has dramatically increased the advancement in media and technologies, particularly during this pandemic by providing updates of COVID impact, thereby eliminating human geographical barriers. Nowadays, it has become an important part of life to use the Internet among youngsters for education as well as communication purposes. Internet addiction (IA) refers to the habit or practice of excessive use of the

Internet, which results in mood altering experience; when psychological trauma arises. Psychological parameters refer to psychological problems resulting from IA such as depression and insomnia. On the positive aspect, the Internet is used to facilitate research, communication, and for business transactions. However, it led some to indulge in pornography, excessive gaming, chatting, and even gambling.<sup>[1]</sup>

Certain socio-cultural factors (e.g., demographic factors, internet access availability, and acceptance), biological vulnerabilities (e.g., genetic factors,

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Faculty of Nursing, UP  
University of Medical  
Sciences, Saifai,  
Uttar Pradesh, India

## Address for correspondence:

Dr. Samundy Kumbhakar,  
Nursing College,  
Uttar Pradesh University  
of Medical Sciences,  
Saifai, Etawah - 206 130,  
Uttar Pradesh, India.  
E-mail: [samundyk@gmail.com](mailto:samundyk@gmail.com)

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neurochemical processes abnormalities), psychological predispositions (e.g., personality characters, negative effects), and specific features of the Internet to explain excessive engagement in Internet activities are some of the etiological factors of excessive Internet use.<sup>[2]</sup> Some mental health practitioners and researchers consider excessive Internet use as a symptom of mental disorder such as anxiety or depression rather than a separate entity.<sup>[3]</sup>

Warning signs of IA include thoughts about previous online activity or anticipation of the next online session, spending more time in Internet use until they achieve satisfaction and repeated or unsuccessful efforts to control or cut back Internet use. In addition, Internet users may have feeling of restlessness, moodiness, depression, or irritability when attempting to reduce Internet use. They may remain online longer than originally intended leading to jeopardy or risking loss of significant relationships, job, educational, or career opportunities due to the use of the Internet. Perhaps, they lie to family members, therapists, or others regarding the extent of Internet involvement. At times, Internet use is a way to escape from certain problems or to get relieved from a dysphoric mood (e.g., feelings of hopelessness, guilt, anxiety, and depression). Internet addicted users may have feels of guilt and defensiveness or feeling of euphoria while performing internet-based activities.<sup>[4]</sup>

Pain and numbness in hands and wrists (Carpal tunnel syndrome), eyes getting dried, or strained vision, back and neck pains; severe headaches, sleep disturbances and pronounced weight gain or loss are some of the physical symptoms caused by Internet or computer addiction.<sup>[1]</sup>

In 2017, the Telecom Regulatory Authority of India reported that over 422 million people are actively using the internet, with sustained growth.<sup>[5]</sup> Many researchers reported excessive Internet use is correlated with poor mental health and low quality of life.<sup>[6]</sup> Carli *et al.*<sup>[7]</sup> found 75% of studies in a systematic review on IA showed positive correlations with depressive symptoms, 57% with anxiety symptoms, cent-percent with attention deficit hyperactivity disorder symptoms, 60% with obsessive-compulsive disorder symptoms, and 66% with hostility and aggression. Ho *et al.*'s<sup>[8]</sup> meta-analyses reported higher rates of psychiatric diagnoses among Internet users, including alcohol abuse, attention deficit and hyperactivity disorder, depressive disorders (26.3% vs. 11.7%), and anxiety disorders (23.3% vs. 10.3%). Wildt *et al.*<sup>[9]</sup> found in his study that 56.4% met criteria for one personality disorder, whereas 28.4% for at least two among participants diagnosed with IA. Furthermore, a recent case-control study among patients with depressive disorders showed high rates of IA (36%).<sup>[10]</sup>

A survey reported that in India studies have shown 1.3% IA prevalence rate among general population,<sup>[11]</sup> where higher rates of IA are seen among college participants (11.8%) than adolescence (0.7%).<sup>[12-15]</sup> In a study among health professionals, higher prevalence of severe IA was reported among dental students (2.3%) in comparison to medical students (1.2%).<sup>[16]</sup> The average person spends about 6 h a day using the Internet, worldwide. Nearly 43% of Americans go online several times a day. A Canadian survey reported that 86% of school-aged children in Ontario use social media daily among which about 16% of them spend more than 5 h a day on social media sites.<sup>[17]</sup>

A report published by Arthur Zukerman reported in April 2020 that 59% of the global population (approximately 4.57 billion people) were active Internet users. Among those, 50.3% are in Asia, 15.9% in Europe, 11.5% in Africa, 10.1% Latin America, 7.6% North America, 3.9% Middle East, and 0.6% in Oceania. Furthermore, 59.3% of the Chinese adult population are active internet users, whereas 89% of the US citizens are active Internet users. The report further reveals that 61% of Internet users are addicted to it. A study reported that 65.5% of junior high school students belong to the IA-risk group.<sup>[18]</sup>

Due to the pandemic, the Internet usage among the youngsters doubled. At times, online classes were made mandatory for attendance. The use of the Internet led to addiction, anxiety, depression, and insomnia. Keeping this in mind, current study is undertaken to take a closer look on this issue among nursing students. The main objective of this study is to explore Internet use and its impact on selected psychological parameters such as depression and insomnia among undergraduate (UG) nursing students. Also, this study is to explore the association of IA with selected demographic variables.

## Materials and Methods

### Study design and setting

In the present study, a single-group explorative descriptive cross-sectional approach was followed. The study was conducted in Uttar Pradesh University of Medical Sciences among enrolled nursing students in a nursing college.

### Study participants and sampling

The statistical population of the study included 385 students studying in nursing discipline recruited through purposive sampling technique from November to December 2021. The students who have enrolled in nursing discipline were included in this study but incomplete questionnaires were excluded.

### Data collection tool and technique

Data were collected from study participants during the college hours. The purpose of the study and the method how to use the questionnaire were explained. The confidentiality and trust worthiness were ensured. Following the written consent of the participants, the responses were collected from the students via a Google form.

Research team developed a questionnaire in four forms. The first part included structured questionnaire consisting of socio-demographic variables comprising age, gender, marital status, place of residence, pursuing course, year of the study, Internet used per day, source of Internet use, and purpose of Internet use. The amount spent on Internet recharge per month was prepared to collect the participant's details and details of the Internet use. *The second part was Dr Kimberly Young's Internet Addiction Test*, a 20-item scale, which was used to assess the presence and intensity of Internet dependency. Each item was rated on a 5-point scale ranging from 0 to 5, where the highest score is 100 points. The score of 80 to 100 indicates severe dependence upon the Internet. The third part was *Beck's depression Inventory Scale*, which includes 21 items, and was used to measure the presence of depression. For each item, a 3-point scale ranging from 0 to 3 was used, the maximum score was 63 points. The higher the score, the greater the severity of depression. Extreme depression is considered when the score is above 40. Finally the last part, to assess insomnia, *Insomnia Severity Index (ISI)*, which has 7 items, was used. A 5-point scale ranging from 0 to 4 was used to rate each item, where the utmost score is 28 points. The higher the score, the higher the severity of insomnia. The content validity of the questionnaire was approved by 10 experts from the same university. The reliability of the questionnaire was determined for internal consistency with Cronbach's alpha coefficient, which was 0.86 for 30 students.

### Data analysis

To analyze the data, descriptive tests such as frequency, percentage, mean, and standard deviation (SD) and analytical tests were conducted to indicate that the data were sampled from a population with a normal distribution. The association between demographic data and IA and psychological parameters mean score was examined using the Chi-square test using the SPSS software. There was a significant difference at the level of  $P < 0.05$ .

### Ethical consideration

Ethical permission was obtained from Ethics Committee

of Uttar Pradesh University of Medical Sciences. Informed consent was received from every participant before the study.

## Results

In total, 385 students participated in this study, out of which 200 hundred students were categorized under mild, moderate, and severe IA. The students were undergraduates studying in a nursing college. The majority of students were females (54.5%) and unmarried (94.3%).

### Socio-demographic characteristics

Table 1 illustrates that the majority of participants were female (54.5%). Further, 94.3% were unmarried

**Table 1: Socio-demographic of Internet user's characteristics (n=385)**

Characteristics	f (%)
Gender	
Male	175 (45.5)
Female	210 (54.5)
Age	
<18 years	38 (9.9)
19-22 years	164 (42.6)
23-26 years	110 (28.6)
27-30 years	55 (14.3)
>30 years	18 (4.7)
Marital status	
Unmarried/Single	363 (94.3)
Married	22 (5.7)
Place of residence	
Hostler	324 (84.2)
Day Scholar	61 (15.8)
Pursuing course	
B.Sc Nursing	231 (60)
GNM	147 (38.2)
ANM	07 (1.8)
Year of study	
1 <sup>st</sup> year	150 (39)
2 <sup>nd</sup> year	113 (29.4)
3 <sup>rd</sup> Year	111 (28.8)
4 <sup>th</sup> year	11 (2.9)
Internet used per day	
0-2 h	112 (29.1)
3-4 h	196 (50.9)
5-6 h	43 (11.2)
>6 h	34 (8.8)
Source of internet	
Mobile	381 (99)
Laptop	4 (1)
Amount spent for recharge	
<Rs. 100/-	17 (04.4)
Rs 101 - Rs 200/-	178 (46.2)
Rs 201 - Rs 300/-	138 (35.8)
>Rs 300/-	52 (13.5)

and were hostlers. Most of them were pursuing B.Sc Nursing course and the highest number of participants were in their first year. More than half (50.9%) of them used the Internet 3–4 h/day while the source of the internet for almost all was mobile. The majority (42.6%) of participants were in the age group 19–22 years.

Table 2 shows that the majority of them used Internet between 31 and 60 min for academic activity (44.2%) or entertainment (44.2%); less than 30 min for social

networking (40.3%) or news (60.8%), and 0 min for games (74.8%) or pornography (72.5%).

Table 3 reveals that the majority (48.1%) of the participants had no IA, whereas 32.2%, 18.2%, and 1.6% of them had mild, moderate, and severe IA, respectively.

Table 4 demonstrates the participants had mild (22.1%), borderline/moderate (11.9%), and severe depression (5.19%), respectively.

Table 5 shows 24.4% of the participants had subthreshold insomnia, whereas 4.7% and 1.6% had moderate and severe insomnia, respectively.

Table 6 reflects demographic variables such as pursuing course, study year, use of Internet/day; and the purpose of Internet use such as social networking, games, entertainment, pornography, and news were significantly associated with IA.

**Table 2: The purpose of internet usage (n=385)**

Purpose	
Social networking sites	
0 min	25 (6.5)
1-30 min	155 (40.3)
31-60 min	143 (37.1)
61-120 min	45 (11.7)
>120 min	17 (4.4)
Games	
0 min	288 (74.8)
1-30 min	71 (18.4)
31-60 min	18 (04.7)
61-120 min	06 (01.6)
>120 min	2 (0.5)
Academic activity	
0 min	16 (4.2)
1-30 min	75 (19.5)
31-60 min	185 (48.1)
61-120 min	75 (19.5)
>120 min	34 (8.8)
Entertainment	
0 min	23 (06)
1-30 min	121 (31.4)
31-60 min	170 (44.2)
61-120 min	53 (13.8)
>120 min	18 (4.7)
Pornography	
0 min	279 (72.5)
1-30 min	72 (18.7)
31-60 min	28 (07.3)
61-120 min	0
>120 min	06 (01.6)
News	
0 min	58 (15.1)
1-30 min	234 (60.8)
31-60 min	72 (18.7)
61-120 min	14 (03.6)
>120 min	07 (01.8)

**Table 3: Young's Internet Addiction Level (YIA20) (n=385)**

Sample	Young's Internet Addiction Level (YIA20)			
UG students	Normal (0-30)	Mild (31-49)	Moderate (52-79)	Severe (80-100)
385	185 (48.1%)	124 (32.2%)	70 (18.2%)	06 (01.6%)

## Discussion

Although a number of studies were done before pandemic on IA, this study is a preliminary step toward understanding the extent of IA among nursing students during the pandemic. The IA test is the only valid tool to assess Internet usage. The highest number of participants fall between the age group of 19–22 years (42.6%). Mostly unmarried (94.3%) participated in this study. And, 60% of them pursued B.Sc Nursing. Nearly 39% of the participants were studying in the first year. Approximately, 196 (50.9%) of the students used the internet for 3–4 h daily. The average money spent on internet recharge by the majority participants 178 (46.2%) was from Rs 100/- to 200/-.

In this study, 32.2%, 18.2%, and 1.6% were found to have mild, moderate, and severe IA, respectively. Similar study results were found by Guo *et al.*,<sup>[19]</sup> where the prevalence of first-year undergraduates at Sichuan University with mild, moderate, and severe IA was 37.93%, 6.33%, and 0.20%, respectively. In contrast, in Kumar's study, moderate and severe users of the internet reported were 31.5% and 39.5% of the students, respectively.<sup>[1]</sup> Tran *et al.*,<sup>[20]</sup> in his study, found 21.2% of participants suffered from IA. A study in China during the COVID pandemic reported that addictive Internet use (IAT ≥ 70) included 2.68% participants, whereas 33.37% participants showed as problematic Internet users (69 ≥ IAT ≥ 40).<sup>[21]</sup> Internet addicts included 15.51% study subjects, whereas 49.19% were overusers in another study.<sup>[22]</sup> A Croatian preliminary study reported that 35.4% of



**Table 4: Beck's depression inventory Scale (n=385)**

Sample	Beck's depression inventory Scale				
UG Students	Normal (1-10)	Mild (11-16)	Borderline (17-20)	Moderate (21-30)	Severe (31-40)
385	188 (48.8%)	85 (22.1%)	46 (11.9%)	46 (11.9%)	20 (05.19%)

**Table 5: Insomnia Severity Index (ISI) (n=385)**

Sample	Insomnia Severity Index (ISI)			
UG students	No clinical significance (0-7)	Sub threshold (08-14)	Moderate (15-21)	Severe (22-28)
385	267 (69.4%)	94 (24.4%)	18 (04.7%)	06 (01.6%)

the participants had some signs of internet addiction, whereas 3.4% of them revealed high levels of addiction.<sup>[23]</sup>

In the current study, female participants (54.5%) were higher than the opposite gender (45.5%). Similar study findings were found by Guo *et al.*,<sup>[19]</sup> where the rate of moderate IA was higher in the female gender than in the male gender. Černja reported that boys had higher scores on social problems as well as neglecting work while lack of self-control scored the highest among girls.<sup>[23]</sup> Gender may not play a key role in IA<sup>[20,24]</sup> and was also confirmed by Tran *et al.*<sup>[20]</sup> that there were no differences in gender and the study concluded IA is a common problem among young Vietnamese; and the prevalence of IA among them is the highest as compared to other Asian countries. In contrast, Kang *et al.*<sup>[24]</sup> and Oberiri<sup>[25]</sup> reported men are more vulnerable to IA than women.

In the present study, several parameters such as pursuing course, study year, use of internet per day; and the purpose of internet use such as social networking, games, entertainment, pornography and news were significantly associated with internet addiction. Jain *et al.*<sup>[22]</sup> found that socioeconomic parameters such as graduation level, time spent/day online, place of internet use, smoking, and alcohol had significant association with IA. Large proportion of the students (89.6%) claimed to make use of the internet for their academic purposes.<sup>[25]</sup> A community-based cross-sectional study revealed the prevalence of IA among the internet users to be 85% ( $n = 466$ ). The associated factors with IA included spending more time on the internet, having mental distress, playing online games, khat chewing, and alcohol use. The study suggests that the prevalence and effect of IA have become an evident public health problem; carrying out public awareness campaigns may be a fruitful strategy to reduce it.<sup>[26]</sup>

In this study, 99% of the participants used mobile for internet surfing. Many studies reported that 60.2% of students depend more on their mobile devices to access the internet for educational and entertainment purposes.<sup>[27-29]</sup>

This study reports that depression and insomnia were found to be correlated with IA. The majority of the participants had mild depression (85 [22.1%]), followed by borderline cum moderate (46 [11.9%]) and severe depression (20 [5.19%]). The highest number of study participants had no clinical significance of insomnia (267 [69.4%]), followed by subthreshold insomnia (94 [24.4%]), moderate (18 [4.7%]) and severe (6 [1.6%]). Psychiatry features have been found associated with some IA in many studies.<sup>[15,30-32]</sup> Participants with IA were more likely to have issues with self-care, trouble in performing daily routine, suffer from pain or discomfort, anxiety as well as depression.<sup>[20]</sup>

Yu *et al.*<sup>[33]</sup> reported that significant depression (4.2%) were seen among the subjects. The prevalence rates of undergraduate students with IA reported clinically significant depression and serious mental illness were 4.09% and 1.88%, respectively.<sup>[19]</sup>

A study finding showed that IA was associated significantly with insomnia and depression.<sup>[22]</sup>

The study limitation was that the study concentrated on nursing students studying in a nursing college and so the findings of this study cannot be applicable for other professional or school students. In future, a similar study can be conducted in different target populations under multistage sampling or can be done with large sample size or can be conducted with randomization of samples to generalize the findings.

## Conclusion

In conclusion, the current study reports that IA has profound effect on the psychiatric problems such as depression and insomnia. On the basis of the findings, the study recommends a follow up study among larger samples for better generalization. A comparative study can also be done between students studying in urban and rural sectors or with difference discipline.

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**Table 6: Association between internet addiction and demographic variables (n=385)**

	IAT				df, $\chi^2$ , P
	Normal	Mild	Moderate	Severe	
Gender					
Male	55	73	45	2	2, 2.38,
Female	130	51	25	4	0.30 (NS)
Age					
<18 yrs	18	13	3	4	2, 2.38,
19-22 yrs	85	53	24	2	0.30 (NS)
23-26 yrs	54	24	32	0	
27-30 yrs	18	28	9	0	
>30 yrs	10	6	2	0	
Marital Status					
Single	173	117	67	6	2, 0.5,
Married	12	7	3	0	0.77 (NS)
Residence					
Hosteler	151	104	63	6	2, 2.4,
Day scholar	34	20	7	0	0.300 (NS)
Pursuing course					
BSC (N)	111	67	52	1	4, 14.91,
GNM	73	53	17	4	0.001 (S)
ANM	1	4	1	1	
Year of Study					
First year	70	52	22	6	6,23.28,
Second year	68	33	12	0	0.001 (S)
Third year	45	31	35	0	
Fourth Year	2	8	1	0	
Internet use/day					
0-2 hrs	71	33	4	4	6, 25.93,
3-4 hrs	96	61	39	0	0.001 (S)
5-6 hrs	12	18	13	0	
>6 hrs	6	12	14	2	
Internet source					
Mobile	183	122	70	6	2,1.24,
Laptop	2	2	0	0	0.54 (NS)
Purpose					
Social networking					
0 min	20	5	0	0	8, 25.94
0-31 min	89	45	19	2	0.001 (S)
31-61 min	64	41	36	2	
61-121 min	8	30	5	2	
>121 min	4	3	10	0	
Games					
0 min	144	102	40	2	8, 41.04,
0-31 min	38	15	17	2	0.01 (S)
31-61 min	3	4	11	0	
61-121 min	0	2	2	2	
>121 min	0	2	0	0	
Academic					
0 min	9	5	2	0	8, 4.93,
0-31 min	31	29	13	2	0.76 (NS)
31-61 min	90	58	33	4	
61-121 min	39	23	13	0	
>121 min	16	9	9	0	
Entertainment					

**Table 6: Contd...**

	IAT				df, $\chi^2$ , P
	Normal	Mild	Moderate	Severe	
0 min	18	3	0	2	8, 41.38,
0-31 min	60	46	13	2	0.001 (S)
31-61 min	81	48	39	2	
61-121 min	21	23	9	0	
>121 min	5	4	9	0	
Pornography					
0 min	156	80	39	4	6, 18.66,
0-31 min	18	38	16	0	0.001 (S)
31-61 min	11	4	11	2	
61-121 min	0	0	0	0	
>121 min	0	2	4	0	
News					
0 min	28	23	7	0	8, 27.80,
0-31 min	125	71	36	2	0.001 (S)
31-61 min	24	26	20	2	
61-121 min	6	4	2	2	
>121 min	2	0	5	0	
Recharge					
<100	8	5	4	2	6, 10.49, 0.
<Rs. 101-200	93	56	27	2	152 (NS)
<Rs. 201-300	54	51	31	2	
>300	30	12	8	0	

\*\*P<0.05 level (two-tailed), NS - Not significant, S - Significant

**Conflicts of interest**

There are no conflicts of interest.

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