

**Observational Study**

## **Relationship of loneliness with internet addiction in students from medical colleges of central India: An observational study**

Dr. Vedant Murkey<sup>1</sup>, Dr. Bhakti Murkey<sup>2\*</sup>, Dr. Mukund Murke<sup>3</sup>,  
Dr. Anirban Chakraborty<sup>4</sup>

### **ABSTRACT**

**Introduction:** Internet addiction disorder has gained increasing recognition in the last two decades, especially in the young and adolescent population. With internet accessible easily on their fingertips through the means of mobile phones, the prevalence and severity of internet use has also expanded. However, depression and loneliness have been studied as perpetuating factors in the excessive use of internet. This study aims at assessing the relationship between loneliness and internet use amongst medical students in India. **Methodology:** A randomized sample of 454 medical students was evaluated for presence and severity of loneliness, depression as well as internet and mobile phone use, with the help of appropriate and validated assessment tools. The collected data was analyzed for any significant correlations. **Results:** Loneliness, depression and use of mobile phones and internet in both settings was found to be equivocal, irrespective of the socio-demographic background. Loneliness correlated significantly ( $p < 0.05$ ) and positively with the students' age, relationship status, BDI score (depression) and IAT score (internet addiction). **Conclusion:** The study demonstrates a strong positive correlation between loneliness, relationship status, depression and the excessive use of mobile phones and internet, in medical students from both urban and rural areas.

**Keywords:** *Internet addiction, Loneliness, Depression, Mobile phone*

Internet addiction disorder (IAD), more commonly called problematic internet use (PIU) was first described by Ivan Goldberg in 1995.<sup>[1]</sup> Other habits such as reading online, playing computer games, or watching a staggering amount of internet videos or movies are troubling to the extent of interference with normal life. IAD is often divided into subtypes such as excessive, overwhelming or inappropriate indulgence in pornography, gaming, social networking, blogging, email or shopping. Trochim & Kane identified seven clusters of PIU

<sup>1</sup>Junior Resident, Department of Ophthalmology, Smt. Kashibai Navale Medical College and General Hospital, Pune, Maharashtra, India

<sup>2</sup>Assistant Professor, Department of Psychiatry, Pacific Medical College and Hospital, Udaipur, Rajasthan, India

<sup>3</sup>Associate Professor, Department of Psychiatry, Panjabrao Deshmukh Memorial Medical College and Hospital, Amravati, Maharashtra, India

<sup>4</sup>Junior Resident, Department of Psychiatry, Panjabrao Deshmukh Memorial Medical College and Hospital, Amravati, Maharashtra, India

**\*Responding Author**

**Received: August 05, 2020; Revision Received: September 12, 2020; Accepted: September 19, 2020**

## Relationship of loneliness with internet addiction in students from medical colleges of central India: An observational study

using a concept mapping approach, namely: psychosocial risk factors, physical impairment, emotional impairment, social and functional impairment, risky internet use, impulsive internet use and internet use dependence. [2]

Over the past decade, internet addiction as a concept has gained acceptance as a legitimate clinical disorder often requiring formal treatment. Teenagers who excessively use their cell phone are more prone to disrupted sleep, restlessness, stress and fatigue. [3] Studies have shown that excessive and pathological use of internet especially via mobile phones adversely affects the mental health and overall achievement of students. [4,5] Young internet users seem to be at a higher risk of developing an addiction as compared to older ones. [6,7] Studies have also shown that internet addiction is associated with loneliness and depression. [8-10] However, effect on loneliness on pattern of internet use has not been specifically explored in Indian population, especially in the medical fraternity.

This study aims at exploring the emergence of internet addiction amongst students from medical colleges in Central India and studying the relationship between loneliness and internet use. It also compares the difference in the pattern and severity of internet use across rural and urban settings.

### **METHODOLOGY**

The Ethical Committee for research purpose at Mahatma Gandhi Institute of Medical Sciences, Sewagram provided ethical clearance and approval for the study. The study was designed as cross-sectional observational, conducted on a total of 454 medical students. The sample collection was done by recruiting medical students randomly from each of 3<sup>rd</sup> to 8<sup>th</sup> semesters, from two urban and two rural medical colleges. Students of either gender, aged between 18 and 25 years with easy access to internet via mobile phones were included in the study, while excluding those with a history of psychiatric disorders such as substance use or affective disorder.

Informed consent was taken from each participant for the study and a set of standardized questionnaires was applied to assess the values of the study variables. A semi-structured proforma was circulated in order to record the socio-demographic details of the participant, apart from the following assessment tools:

**Mobile Phone Dependence Questionnaire**<sup>11</sup>

**Internet Addiction Test**<sup>12</sup>

**UCLA Loneliness Scale**<sup>13</sup>

**Beck's Depression Inventory**<sup>14</sup>

The data was statistically analyzed using the Statistical Package for Social Sciences (SPSS) software 26.0. Pearson's Correlation Co-efficient was calculated for identifying the correlations between loneliness and mobile phone/internet addiction, with p value < 0.05 considered as significant.

### **OBSERVATIONS AND RESULTS**

The mean age of the population was approximately 20.9 years, in both urban and rural settings (Table 1). There was a preponderance of female medical students in both settings (Table 2).

**Relationship of loneliness with internet addiction in students from medical colleges of central India: An observational study**

**Table 1: Distribution of population as per Age**

Area	N=454	%	Minimum	Maximum	Mean	Std. Deviation
Urban	253	55.7	17.00	27.00	20.97	1.887
Rural	201	44.3	18.00	26.00	20.91	1.70

**Table 2: Distribution of population as per Gender**

Area	N=454	Male	%	Female	%
Urban	253	103	40.71	150	59.29
Rural	201	89	44.28	112	55.72

In the urban setting, students from 6<sup>th</sup> semester volunteered in higher numbers, compared to rural setting, wherein more number of 2<sup>nd</sup> semester students participated (Table 3). Overall, there was no significant difference in the distribution of subjects across the semesters (p value = 0.21 i.e. > 0.05).

**Table 3: Distribution of population as per Semesters**

Semester	Urban	%	Rural	%
2 <sup>nd</sup>	68	26.88	77	38.3
4 <sup>th</sup>	58	22.92	35	17.4
5 <sup>th</sup>	1	0.40	3	1.5
6 <sup>th</sup>	73	28.85	56	27.9
8 <sup>th</sup>	53	20.95	30	14.9
<b>Total</b>	253	100.00	201	100.0
<b>χ<sup>2</sup>-value</b>	5.77			
<b>p value</b>	0.21, NS, p>0.05			

The rates of academic failure were higher in students from urban setting (8.7%) as compared to rural (2.9%). The family history of psychiatric illnesses was relatively more in students from rural setting. An equal proportion of students from both settings reported that they were in a relationship (Table 4). None of these values were found to be statistically significant.

**Table 4: Distribution of population as per family history, academic failures and relationship status**

N=454	Urban	%	Rural	%	χ <sup>2</sup> -value	P-value
<b>Family History</b>	3	1.19	6	2.99	1.02	0.31 NS, p>0.05
<b>Failure History</b>	22	8.70	6	2.99	3.19	0.07 NS, p>0.05
<b>In a Relationship</b>	65	25.69	56	27.86	0.10	0.75 NS, p>0.05

The assessment tool of MPDQ was used to measure the severity of use of mobile phones with a score of 40 considered as a cut-off for dependency. A mean MPDQ score of 24.40 and 24.25 was observed in urban and rural medical setting, respectively. Interestingly only 9.88% of students from urban areas were found to have high dependency of mobile phone use as compared to 11.44% of rural. However, the comparative distribution was found to be insignificant (p=0.81). There was a slight predominance of mobile phone in rural areas (Table 5).

**Relationship of loneliness with internet addiction in students from medical colleges of central India: An observational study**

**Table 5: Distribution of population as per MPDQ Score**

MPDQ Score	Urban	%	Rural	%	$\chi^2$ -value	p-value
<b>≤ 40</b> Low Dependency	228	90.12	178	88.56	0.05	0.81
<b>&gt;40</b> High Dependency	25	9.88	23	11.44		
<b>Total</b>	253	100	201	100		
<b>Mean</b>	24.40		24.25			
<b>SD</b>	12.03		12.17			

The IAT measured the severity of internet use in participants, wherein a cut-off score of 50 indicated the presence of internet addiction. Mean IAT scores of 31.09 and 31.68 were observed in medical students from urban and rural settings, respectively. About 15% of students from urban areas had internet addiction compared to 13.9% of students from rural areas ( $p=0.84$ ) (Table 6).

**Table 6: Distribution of population as per IAT Score**

IAT Score	Urban	%	Rural	%	$\chi^2$ -value	p-value
<b>≤ 50</b> Controlled Internet Use	214	84.58	173	86.07	0.04	0.84
<b>&gt;50</b> Internet Addiction Present	39	15.42	28	13.93		
<b>Total</b>	253	100	201	100		
<b>Mean</b>	31.09		31.68			
<b>SD</b>	18.69		17.99			

The BDI assessed presence and severity of depressive symptoms in the population, wherein a score of  $\leq 11$  suggested no depression, 12-30 mild and  $>30$  severe depression. The overall mean BDI score in urban medical students was found to be  $10.8(\pm 10.63)$ , which was slightly higher when compared to  $9.97(\pm 8.82)$  found in rural medical students. About 28% of rural medical students and 20.9% of urban medical students showed a mild level of depression. The BDI scores between urban and rural medical students were not found to be significantly different ( $p=0.31$ ) (Table 7).

**Table 7: Distribution of population as per BDI Score**

BDI Score	Urban	%	Rural	%	$\chi^2$ -value	p-value
<b>&lt;11</b> Residual symptoms	156	61.66	119	59.20	3.54	0.31
<b>11-20</b> Mild Depression	53	20.95	58	28.86		
<b>21-30</b> Moderate Depression	29	11.46	19	9.45		
<b>&gt;30</b> Severe Depression	15	5.93	5	2.49		
<b>Total</b>	253	100	201	100		
<b>Mean</b>	10.80		9.97			
<b>SD</b>	10.63		8.82			

**Relationship of loneliness with internet addiction in students from medical colleges of central India: An observational study**

The UCLA was applied in order to identify how many of the students are likely to be lonely. A score of less than 21 rules out loneliness while 21 -30 suggests moderate, and >30 suggests severe levels of loneliness. Mean scores of loneliness were similar in students from both urban and rural settings. Up to 89% medical students (rural more than urban) reported of experiencing severe loneliness. This severity of perceived loneliness brings to notice the vulnerability and predisposition to depression & subsequent morbidity in these students (Table 8).

**Table 8: Distribution of population as per UCLA Score**

UCLA Score	Urban	%	Rural	%	$\chi^2$ -value	P-value
<b>&lt;21 Normal Tendency</b>	6	2.37	1	0.50	0.36	0.83
<b>21-30 Moderate Loneliness</b>	26	10.28	20	9.95		
<b>&gt;30 Severe Loneliness</b>	221	87.35	180	89.55		
<b>Total</b>	253	100	201	100		
<b>Mean</b>	42.67		42.77			
<b>SD</b>	9.23		9.23			

Comparison of the study variable by independent t-test revealed an equivocal prevalence of loneliness, depression and use of mobile phones and internet in the study group across both settings, irrespective of the socio-demographic background (Table 9).

**Table 9: Comparison of scores of study variables across urban and rural areas**

Scale	Area	N	Mean	Std. Deviation	Std. Error of Mean	t-test	P-value
<b>MPDQ</b>	Urban	253	24.40	12.03	0.75	0.13	0.89
	Rural	201	24.25	12.17	0.85		
<b>IAT</b>	Urban	253	31.09	18.69	1.17	0.33	0.73
	Rural	201	31.68	17.99	1.26		
<b>UCLA</b>	Urban	253	42.67	9.23	0.58	0.10	0.91
	Rural	201	42.77	9.23	0.65		
<b>BDI</b>	Urban	253	11.05	11.30	0.71	1.11	0.26
	Rural	201	9.97	8.82	0.62		

Evaluation of the factors affecting loneliness revealed a positive association between loneliness and the factors of age, relationship status, BDI score (presence of depression) and IAT score (presence of internet addiction) to a significant level ( $p < 0.05$ ). This highlights the potential risk factors contributing uniquely to the variance of loneliness. The association between loneliness and dependence on mobile phones, along with the family history of psychiatric illness and difference between genders fell short of significance ( $p > 0.05$ ) (Table 10).

**Relationship of loneliness with internet addiction in students from medical colleges of central India: An observational study**

**Table 10: Multiple Regression Analysis of study variables**

Parameters		Un-standardized Co-efficient		Standardized Co-efficient	t	p-value
		B	Std. Error	Odds Ratio		
<b>P A R A M E T E R S</b>	<b>UCLA</b>	26.35	8.47	-	-	-
	<b>Age</b>	0.53	0.22	0.105	2.381	<b>0.018</b>
	<b>Gender</b>	-0.80	0.80	-0.043	0.998	0.319
	<b>Family History</b>	-1.71	2.89	-0.026	0.593	0.553
	<b>Failure History</b>	-0.07	1.67	-0.002	0.044	0.965
	<b>Relationship Status</b>	2.66	0.94	0.128	2.822	<b>0.005</b>
	<b>MPDQ</b>	-0.04	0.04	-0.055	0.964	0.336
	<b>IAT</b>	0.10	0.02	0.211	3.735	<b>0.000</b>
	<b>BDI</b>	0.29	0.04	0.324	7.254	<b>0.000</b>

## **DISCUSSION**

After Dr. Ivan Goldberg introduced ‘internet addiction’ 1995 as ‘pathological and compulsive use of internet’, in 2014 Griffith categorized this term as a subgroup of behavioral addictions. <sup>[14]</sup> Internet has been an evolving tool and has become an essential part of our everyday lives. Meanwhile, psychologists and educators have repeatedly pointed out the negative impact of its use in the form of a wide range of physical and psychological problems. <sup>[15-17]</sup>

Former studies have estimated that 3-13% of all university students are internet addicts. Student population has been seen as greatly susceptible to internet addiction due to numerous reasons such as: easy and unlimited access to internet in the campus, experience of freedom and relief out of the parental control, finding new friends online, encounter with serious problems in the university, a strong urge for usage of the modern technologies and luring by the virtual atmosphere away from the pressure of completing tasks, homework or taking exams. <sup>[18]</sup> However, very few studies have explored problematic internet use (PIU) in the Indian context, especially among medical students.

Also, mobile phones have become an inseparable part of our routine with the rapid advancement in technology. <sup>[19, 20]</sup> Smartphone use enables people to not only converse telephonically but also connect virtually through video or chat-rooms at any time from any place in the world. In fact, the constant use of mobile phones has lead to an emergence of Nomophobia, i.e. the fear of being out of mobile phone contact. A study conducted in the UK stated that 66% of teenagers are troubled with this idea. <sup>[20]</sup>

In this context, we conducted a study after more than two decades of invention of the internet, during which technology had flourished all over the world. While comparing the internet use between medical students from urban and rural settings, some interesting observations were made.

Literature suggests the prevalence of Internet Addiction to be 2% - 20%. <sup>[11, 12]</sup> In line with the observed range, our study found the prevalence of internet addiction to be 14.7%. The tools of IAT, BDI, UCLA were used for assessment of severity of the variables in the study.

## Relationship of loneliness with internet addiction in students from medical colleges of central India: An observational study

Researchers in Turkey have used similar assessment tools for studying internet addiction in 40 male subjects.<sup>[20]</sup> Analyses of the observed scores revealed a preponderance of female internet users, creating a probable likelihood of more loneliness, mobile phone and internet dependence skewed towards female gender. Students from rural areas suffered more from mild depression as compared to those from urban, wherein the level of depression seemed to be moderate to severe. A high level of perceived loneliness (UCLA score) was found in students from both settings along with the concomitant excessive use of mobile phones or internet as coping strategies. The students' relationship status and age emerged as major determinants of loneliness, amounting to higher severity of depression and internet addiction amongst elder and single students as compared to younger ones or those in a committed relationship. However, a direct causal interpretation of the observed facts could not be made. In view of understanding the factors underlying the subjective experience of loneliness, studies have found that people use the internet in a variety of ways, in keeping with their own personal preference; thus implying that one's underlying personality influences one's pattern of internet use. A study evaluating the interaction between personality characteristics and internet use identified extroversion and neuroticism as contributory factors in excessive use and postulated that lonely people spend more time online.<sup>[21]</sup> On the other hand, some studies suggest that excess internet use makes the person feels much lonelier, through lack of real intimacy or sentimentality in existing social relationships.<sup>[22, 23]</sup> Assessment of internet addiction and loneliness in secondary and high school students in a study conducted in Turkey on 1157 students found a positive correlation between internet addiction and loneliness ( $p < 0.001$ ). It also reported that obesity (odds ratio: 9.57), "Type A" personality (odds ratio: 1.83), first time usage of internet before age 12 (odds ratio: 2.18), using the internet every day (odds ratio: 2.47) and use the internet more than 2 hours a day (odds ratio: 4.96) were risk factors of internet addiction ( $p < 0.05$ ).<sup>[24]</sup> Another study aimed at understanding the correlation between Affect and Internet Addiction in 90 undergraduate medical students from Mangalore had found a significant positive correlation between Internet Addiction and Negative Affect Score.<sup>[25]</sup> These results are in conformity with the results of our study wherein loneliness and depression were found to worsen the severity of Internet Addiction.

### CONCLUSION

Study of the interaction between loneliness and internet addiction on a population of medical students with a modest sample size demonstrated a strong correlation between loneliness, relationship status, depression and the excessive use of mobile phones and internet. The magnitude of this association was similar in both urban and rural areas. Depression and behavioral addictions mutually perpetuate each other by affecting the ability to self-regulate. Multi-centric studies of similar nature would help with validating these findings in the long term and studying the prognosis of emerging psychological problems in true sense. We recommend that one should be watchful of underlying depression or loneliness in medical students, and motivate them for a balanced and responsible use of the internet.

### REFERENCES

1. Cash H, Rae CD, Steel AH, et al. Internet addiction: A brief summary of research and practice. *Curr Psychiatry Rev.* 2012;8(4):292-298
2. Tochim W, Kane M. Concept Mapping: an introduction to Structured Conceptualization in Health Care. *International Journal For Quality in Health Care* 2005. 17(3) 187-191

**Relationship of loneliness with internet addiction in students from medical colleges of central  
India: An observational study**

3. Bader G, et al "Does excessive mobile phone use affect sleep in teenagers?" APSS Meeting 2008; Abstract 249
4. Caplan, S. E.; High, A. "Beyond excessive use: The interaction between cognitive and behavioral symptoms of problematic internet use". *Communication Research Reports*. 2006; 23(4): 265
5. Poli R, Agrimi E. Internet addiction disorder: prevalence in an Italian student population. *Nord J Psychiatry*. 2012;66(1):55-9. Doi: 10.3109/08039488.2011.605169
6. Soule LC, Shell LW, Kleen BA. Exploring Internet Addiction Demographic Characteristics and stereotypes of heavy internet use. *J. Computer Info Systems*. 44(1) 64-73
7. Xie YB, Zhou P, Xu LP, et al. Prevalence of internet addiction and the related factors in middle school students in Guangzhou. 2010; 30(8):1801-4
8. Shaw LH, Gant LM. The relationship between internet communication and depression, loneliness, self-esteem and perceived social support. *Cyberpsychology and Behavior*. 5, 157-171, 2002
9. Hardie E, Tee MY. Excessive Internet use: The role of personality, loneliness and social support networks in Internet addiction. *Australian Journal of Emerging Technologies and Society*. (5) 34-47, 2007
10. Morgan C, Cotte SR. The relationship between Internet activities and depressive symptoms in a sample of college freshmen. *Cyberpsychology and Behavior*. (6) 133-142, 2003
11. Johansson A, Göttestam KG (2004) Internet addiction: characteristics of a questionnaire and prevalence in Norwegian youth (12-18 years). *Scand J Psychol* 45: 223-229)
12. Ha JH, Yoo HJ, Cho IH, Chin B, Shin D, et al. (2006) Psychiatric co morbidity assessed in Korean children and adolescents who screen positive for Internet addiction. *J Clin Psychiatry* 67: 821-826
13. Young KS (1998) Internet addiction: The emergence of a new clinical disorder. *Cyberpsychology & Behavior* 1: 237-244
14. Griffiths MD, King DL, Demetrovics Z (2014) DSM-5 Internet Gaming Disorder needs a unified approach to assessment. *Neuropsychiatry* 4: 1-4
15. Yang CK, Choe BM, Baity M, Lee JH, Cho JS (2005) SCL-90-R and 16PF profiles of senior high school students with excessive internet use. *Can J Psychiatry* 50: 407-414
16. Yen JY, Ko CH, Yen CF, Chen SH, Chung WL, et al. (2008) Psychiatric symptoms in adolescents with Internet addiction: Comparison with substance use. *Psychiatry Clin Neurosci* 62: 9-16
17. Ko CH, Yen JY, Yen CF, Chen CS, Chen CC (2012) The association between Internet addiction and psychiatric disorder: a review of the literature. *Eur Psychiatry* 27: 1-8
18. Ko CH, Yen JY, Chen SH, Yang MJ, Lin HC, Yen CF. Proposed diagnostic criteria and the screening and diagnosing tool of Internet addiction in college students. *Compr Psychiatry*. 2009;50(4):378-84
19. Leena K, Tomi L, Arja R. Intensity of mobile phone use and health compromising behaviors -how is information and communication technology connected to health-related lifestyle in adolescence? *J Adolescence*. 2005; 28:35-47
20. Sar AH, Isiklar A. Adaptation of problem mobile phone use scale to Turkish. *Int J Human Sci*. 2012; 2:264-275

**Relationship of loneliness with internet addiction in students from medical colleges of central India: An observational study**

21. Loneliness and Internet use. Amichai-Hamburger, Y.; Ben-Artzi, E. *Computers in Human Behavior*, Vol 19(1), Jan 2003, 71-80
22. In L. A. Peplau & S. Goldston (Eds.), *Preventing the harmful consequences of severe and loneliness*. (pp. 13-46). U.S. Government Printing Office, 1984. DDH Publication No. (ADM) 84-1312
23. H. Odacı, M. Kalkan; Problematic internet use, loneliness and dating anxiety among young adult university students; *Computers & Education*, 55 (2010), pp. 1091–1097
24. Koyuncu T, Unsal A, Arslantas D. Assessment of internet addiction and loneliness in secondary and high school students. *J Pak Med Assoc.* 2014;64(9):998-1002
25. Vidyachathoth, Kodavanji B, Kumar NA, Pai SR (2014) Correlation between Affect and Internet Addiction in Undergraduate Medical Students in Mangalore. *J Addict Res Ther* 5:175. doi:10.4172/2155-6105.1000175

***Acknowledgements***

The author appreciates all those who participated in the study and helped to facilitate the research process.

***Conflict of Interest***

The author declared no conflict of interest.

***How to cite this article:*** Murkey V., Murkey B., Murke M. & Chakraborty A. (2020). Relationship of loneliness with internet addiction in students from medical colleges of central India: An observational study. *International Journal of Indian Psychology*, 8(3), 1026-1034. DIP:18.01.109/20200803, DOI:10.25215/0803.109