

Relationship between Internet Addiction, Depression, and Obesity among Dental Students – A Cross-sectional Study

Ananthalekshmy Rajeev^{1*}, Basavaraj Patthi², Monika Kumari¹, Ambar Khan¹, Gyanendra Pandey³, Kumar Abhishek⁴

¹Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, Niwari Dehat, Uttar Pradesh, India.

²Department of Public Health Dentistry, Anil Neerukonda Institute of Dental Sciences, Bheemili, Andhra Pradesh, India.

³Department of Oral Medicine Diagnosis and Radiology, Purvanchal Institute of Dental Sciences, Badgahan, Uttar Pradesh, India.

⁴Department of Oral and Maxillofacial Surgeon, Practitioner, Patna, Bihar, India.

Abstract

Background: In this modern era, internet addiction, depression, and obesity are some of the extensive problems which have major public health implications. In India, even though there are several studies which independently analyses the relationship between internet addiction, depression, and obesity, no study evaluated their relation unitedly. The present study was conducted to assess the relationship between internet addiction, depression, and obesity among dental students in Ghaziabad, India. **Materials and Methods:** A descriptive cross-sectional study was conducted among 450 dental students. The ethical clearance for the study was obtained from the Institution Review Board of the college. Association between internet addiction, depression, and obesity among dental students was assessed using Chi-square analysis. Any $P \leq 0.05$ was considered statistically significant. **Results:** The response rate of this study was 89.1%. Out of the 401 study participants, 65.8% were female and 34.2% were male. The mean age of the participants was 22.11 ± 4.007 . On assessing the relationship between internet addiction, depression, and obesity (body mass index [BMI]) among dental students, it was found that there is a highly significant association ($P \leq 0.05$) between each variable. **Conclusion:** The present study findings can be concluded that internet addiction affects the depression status as well as BMI of dental students.

Keywords: Body mass index, Dental students, Depression, Internet addiction, Obesity

INTRODUCTION

Over the past two decades, internet diffusion has rapidly increased and became an integral part of our daily life.^[1] It is anticipated that, globally, there are more than 600 million internet users.^[2] In India, adolescents and young adults are the major users of this technology, which allow rapid and easy access to information, interpersonal communication, entertainment, and social relationships.^[1,2] The potential usage of the internet has both positive and negative influences on the individuals.^[3]

In 1995, Goldberg coined the term “internet addiction” for problematic or pathological compulsive internet use.^[4,5] Internet addiction has been defined as an individual’s uncontrollable use of the internet that has created psychological, social, and/or work problems in one’s life.^[2] Nowadays, internet addiction has become one of the most significant international mental health problems.^[2] Recent studies indicated that some users were becoming addicted to Internet in much the same way that others became addicted to drugs, alcohol, or gambling.^[6]

The university students are one of the important groups who use the internet for educational purposes, accessing virtual libraries, conducting research studies, and recreational activities. Thus, due to ease of access to the internet and absence of self-control, they are more prone to internet addiction.^[2]

Several studies found out numerous negative consequences of the internet addiction among students including academic failure, poor family relationships, impaired social functioning, sleeping disorders, eating disorders, and emotional and psychiatric problems.^[2,7] Depression is one of the most

Address for correspondence: Dr. Ananthalekshmy Rajeev, Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, Niwari Dehat, Uttar Pradesh, India.
E-mail: ananthalekshmyrajeev@gmail.com

Received: May 28, 2021; **Accepted:** Jun 10, 2021; **Published:** July 15, 2021

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

How to cite this article: Rajeev A, Patthi B, Kumari M, Khan A, Pandey G, Abhishek K. Relationship Between Internet Addiction, Depression, and Obesity Among Dental Students – A Cross-sectional Study. J Res Adv Dent 2021;12(5):1-171.

Access this article online

Website:
www.jrad.co.in

DOI:
<https://doi.org/10.53064/jrad.2021.12.5.36>

common mental disorders which have a bilateral correlation with internet addiction.^[8] Experts also suggest that increasing incidence of depression is furthermore related with high prevalence of obesity.^[9]

In this modern era, internet addiction, depression, and obesity are some of the extensive problems which have major public health implications.^[2,7,10] In India, even though there are several studies which independently analyze the relationship between internet addiction, depression, and obesity, no study evaluated their relation unitedly. Hence, the present study was conducted to assess the relationship between internet addiction, depression, and obesity among dental students in Ghaziabad, India.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted among 450 students of dental college in Ghaziabad. The study included all the undergraduate students, interns, and postgraduate students. Confidentiality of participants was strictly maintained and informed consents were taken from all the participants. The ethical clearance for the study was obtained from the Institutional Review Board of the dental college where this study was carried out.

Data collection

Demographic data including age, gender, and educational status of each study participants were recorded. Two standardized instruments were used for the assessment of internet addiction and depression status among the participants. Obesity is measured using body mass index (BMI) since it is the most common, easiest, and inexpensive method.

Assessment of internet addiction

Internet addiction was assessed using Young's internet addiction test. It is a 20-item 5-point Likert scale that measures the severity of self-reported compulsive use of the internet. Total internet addiction scores are calculated, with possible scores for the sum of 20 items ranging from 20 to 100. According to Young's criteria, total IAT scores 0–30 are considered to reflect a normal level of internet usage; 31–49 represent mildly addicted users with complete control of their internet use; scores 50–79 represent moderately addicted users with frequent problems caused by their internet use; and scores 80–100 represent highly addicted users with significant problems caused by their internet use.^[11,12] In this study, mild, moderate, and severe users were collectively taken as addicted population. There is a very good internal consistency of questionnaire with an alpha coefficient of 0.89 in the present study.

Assessment of depression

To assess depression, Beck Depression Inventory (BDI) was used. The BDI is one of the most widely used instruments not only for assessing the intensity of depression in patients with depressive disorders but also for screening of depression in normal populations. The BDI questionnaire consisted of 21

questions with four answers and the participants could fill it in within minutes. The participants were asked to read every question carefully, and among the options, they were asked to tick the one that best describes their past and present condition. The answers to each question had a score from 0 to 3. The sum of this test's scores fluctuated between 0 and 63 scores. Scores 0–9 denoted normality, scores 10–16 marked mild depression, scores 17 to 29 marked moderate depression, and scores 30–63 indicated major depression.^[13]

BMI acquisition

Standing height was recorded without shoes on a wall mounted measuring tape to the nearest of centimeters (<5 mm and >5 mm). Weight was recorded without shoes on a weighing machine with a least count of 500 g. BMI was calculated by the formula: $BMI = \text{weight (in kg)} / \text{height (m)}^2$. International obesity task force has proposed the standards for adult obesity in Asia and India, according to which a cutoff point of 18.5 kg/m² is used to define thinness or acute under nutrition while a BMI of 23 kg/m² indicates overweight and a BMI of over 25 kg/m² is referred to as obesity.^[14]

Statistical analysis

The data were compiled and tabulated in Microsoft Excel spreadsheet and were subjected to frequency distribution analysis using the Statistical Package for the Social Sciences software (SPSS) 21.0 (SPSS Inc., Chicago, IL, USA). Association between internet addiction, depression, and obesity among dental students was assessed using Chi-square analysis. Any $P \leq 0.05$ was considered statistically significant.

RESULTS

The study was conducted among 450 dental students among which 401 students provided the entire data. The response rate was 89.1%.

Out of the 401 study participants, 65.8% were female and 34.2% were male. About 91.5% of students were hostellers while 63.8% of the students were non-vegetarian and the rest were vegetarian. The mean age of the participants was 22.11 $\pm$ 4.007 (Table 1).

In the present study, internet was used for chatting by 84.3% of the dental students among which only 14.8% were with internet addiction and the rest 85.2% were not addicted. A high prevalence of internet use for online shopping and academic purpose among students was also seen. However, among the risk factors, only social media usage among students showed a significant association with internet addiction ($P \leq 0.05$) (Table 2).

On assessing the relationship between internet addiction and depression among dental students, it was found that there is a highly significant association ($P \leq 0.05$) which can be inferred from Tables 3 and 4 illustrated the association of BMI with internet addiction and depression among dental students and these results were also highly significant ($P \leq 0.05$).

Table 1: Demographic data of the study population (n = 401)

Demographic data	Number	Percentage
Gender		
Male	137	34.2
Female	264	65.8
Educational status		
1 st year students	76	19
2 nd year students	74	18.5
3 rd year students	78	19.5
4 th year students	6	1.5
Interns	81	20.1
Postgraduates	86	21.4
Place of stay		
Day scholar	34	8.5
Hosteller	367	91.5
Type of diet		
Vegetarian	145	36.2
Non-vegetarian	256	63.8
Mean age	22.11±4.007	

Table 2: Risk factors for internet addiction (n = 401)

Variable	n (%)	Without addiction (%)	With addiction (%)	P-value
chatting				
Do not use	63 (15.7)	56 (88.9)	7 (11.1)	0.442
Use	338 (84.3)	288 (85.2)	50 (14.8)	
Social media usage				
Do not use	90 (22.4)	86 (95.6)	4 (4.4)	0.003**
Use	311 (77.6)	258 (83)	53 (17)	
Online shopping				
Do not shop	80 (20)	74 (92.5)	6 (7.5)	0.055
Shop	321 (80)	270 (84.1)	51 (15.9)	
Academic purpose				
Do not use	117 (29.2)	101 (86.3)	16 (13.7)	0.843
Use	284 (70.8)	243 (85.6)	41 (14.4)	

Table 3: Association of internet addiction with depression among the study population

Internet addiction Interpretation	Depression		Chi-square Value	P-value
	Absent (%)	Present (%)		
Not addicted	312 (90.7)	32 (9.3)	22.233	<0.001**
Addicted	39 (68.4)	18 (31.6)		

Table 4: Association of BMI with internet addiction and depression among the study population

Variables	BMI				Chi-square value	P-value
	Normal (%)	Underweight (%)	Overweight (%)	Obese (%)		
Internet addiction interpretation						
Not addicted	222 (64.5)	52 (15.1)	53 (15.4)	17 (4.9)	5.542	0.136
Addicted	32 (56.1)	6 (10.5)	13 (22.8)	6 (10.5)		
Depression						
Absent	234 (66.7)	45 (12.8)	59 (16.8)	13 (3.7)	30.643	<0.001**
Present	20 (40)	13 (26)	7 (14)	10 (20)		

BMI: Body mass index

DISCUSSION

The present study assessed the prevalence of internet addiction among dental students and also analyzed the relationship between internet addiction, depression, and obesity BMI.

In this study, there were no severely internet addicted students but about 14.21% were mildly or moderately addicted to internet. A study by Kumar *et al.* (2018) showed a 6% prevalence of internet addiction among dental students.^[2] About 84.3% of dental students in this study used internet for chatting, 77.6% used social media, 80% has a habit of online shopping, and 70.8% used internet for academic purposes. In a study by Bhushan *et al.* (2018), 63.1% used internet for chatting, 44% for socializing, 55% for online shopping, and 46.8% for academic purposes.^[4]

Internet addiction showed a statistically significant association with depression status of the dental students in the present study and these results are in agreement with the study by Kumar *et al.* (2018) which found out that depression status was strongly affected by internet addiction.^[2] A study by Orsal *et al.* (2013) also showed a significant positive correlation between levels of depression and internet addiction among university students.^[8] Regarding the relationship between internet addiction and BMI among dental students, our study results could not find a significant association and these results are in agreement with the study done by Bhushan *et al.* (2018).^[4] In contrary to our study findings, a study by Gunduz *et al.* (2019) showed a positive correlation between IA and obesity-related problems among university students.^[7] The present study also showed a significant association between depression status and BMI among dental students and these results are in agreement with the study by Tashakori *et al.* (2016) which showed a positive and significant relationship between BMI and depression among high school female students in Ahvaz city.^[9]

Generalizability of the results possibly will be one of the limitations of our study due to the smaller sample size. It is a fact that studies involving the use of questionnaires are susceptible to acquiescence bias and social desirability bias and this may also remain as another limitation. The strength of our study was the measurement of height, weight, and BMI through standard methods by researcher's team.

CONCLUSION

The present study findings can be concluded that internet addiction affects the depression status of dental students but its association with BMI is uncertain. This implicates the necessity of an immediate need for stringent control over the internet usage at the institutional level. Proper screening methods should be used for prompt detection and management of internet addiction and awareness should be made about the same among the dental students.

REFERENCES

1. Marzilli E, Cerniglia L, Ballarotto G, Cimino S. Internet addiction among young adult university students: The complex interplay between family functioning, impulsivity, depression, and anxiety. *Int J Environ Res Public Health* 2020;17:1-15.
2. Kumar S, Kumar A, Badiyani B, Singh SK, Gupta A, Ismail MB. Relationship of internet addiction with depression and academic performance in Indian dental students. *Clujul Med* 2018;91:300-6.
3. Gautam V, Singh VR, Halwai HK, Dayma A, Rastogi V. Prevalence of internet addiction among BDS students in UCMS, Bhairahawa, Nepal. *Ann Int Med Dent Res* 2020;6:43-5.
4. Bhushan S, Piplani S, Tekkalaki B. Internet addiction and performance of health science students. *Int J Community Med Public Health* 2018;5:3824-8.
5. Goel D, Subramanyam A, Kamath R. A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents. *Indian J Psychiatry* 2013;55:140-3.
6. Young KS. Internet addiction: The emergence of a new clinical disorder. *Cyberpsychol Behav* 1998;1:237-44.
7. Gunduz N, Gokcen O, Eren F, Erzincan E, Timur O, Turan H, *et al.* The relationship between internet addiction and eating attitudes and obesity related problems among university students. *Turk J Clin Psychiatry* 2019;22:266-75.
8. Orsal O, Orsal O, Unsal A, Ozalp SS. Evaluation of internet addiction and depression among university students. *Proc Soc Behav Sci* 2013;82:445-54.
9. Tashakori A, Riahi F, Mohammadpour A. The relationship between body mass index and depression among high school girls in Ahvaz. *Adv Med* 2016;2016:3645493.
10. Luppino FS, de Wit LM, Bouvy PF, Stijnen T, Cuijpers P, Penninx BW, *et al.* Overweight, obesity, and depression: A systematic review and meta-analysis of longitudinal studies. *Arch Gen Psychiatry* 2010;67:220-9.
11. Young KS, de Abreu CN. Internet Addiction. A Handbook and Guide to Evaluation. United States: Wiley; 2011.
12. Widyanto L, McMullan M. The psychometric properties of the internet addiction test. *Cyberpsychol Behav* 2004;7:443-50.
13. Beck AT, Steer RA, Carbin MG. Psychometric properties of the beck depression inventory: Twenty-five years of evaluation. *Clin Psychol Rev* 1988;8:77-100.
14. WHO/IASO/IOTF. The Asia-Pacific Perspective. Redefining Obesity and its Treatment. Obesity: Preventing and Managing the Global Epidemic. Geneva: World Health Organization; 2000.