Compulsive Internet Use and its Association with Eating Patterns, Self Esteem, and Body Dissatisfaction: A Cross-Sectional Study among Medical Students

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Abstract:

Background: Compulsive Internet use (CIU) is defined as the inability to control excessive Internet use, the loss of all significance of time spent offline, the intense irritability that results from being cut off from the Internet, and the progressive degradation of a person's job, societal & domestic lives1. This study aimed to investigate the relationship between CIU, disordered eating patterns, Self-esteem, and Body dissatisfaction in medical students.

Objective: To assess the relationship between Compulsive Internet use, Eating attitudes, Self-esteem, and Body dissatisfaction among medical students & Interns of a Medical college.

Materials and Methods: It is a Cross-sectional study conducted at Government Medical College, Anantapur. The study sample size includes 494 medical students and interns at Government Medical College, Anantapur, in Andhra Pradesh. 192(38.8%) were male and 302(61.1%) were female. A Sociodemographic data form including personal information was used to determine Age, Gender, year of study, Substance use, medical illness, Types of devices used, and purpose of using the internet. Young's Internet addiction test was used to measure CIU, the Eating Attitudes Test (EAT-26) to determine aberrant eating attitudes, and the Rosenberg Self-esteem Scale (RSE) to assess Self-esteem Body Shape Questionnaire (BSQ) for body dissatisfaction. Data were analysed in SPSS version 25.0. Chi-square test, Correlation and linear regression were used for data analysis.

Results: The mean age of the sample was 21.2 years (SD 1.78), with 61.6% female & 38.8% male participants. Data analysis showed a significant positive correlation between CIU, Disordered eating patterns (<0.0001), Self-esteem (<0.0001) and body dissatisfaction (<0.0001). Concerning Sociodemographic variables, all the variables were significant in terms of age & considerable association was found between Body dissatisfaction & Gender.

Conclusions: This study's findings indicate that CIU is substantially associated with disordered eating patterns, Self-esteem, Body dissatisfaction & Age group.

Keywords: Compulsive Internet use, Internet addiction, Body dissatisfaction, Self-esteem, Medical students.

Introduction

Although the Internet is a relatively new tool, it has already assumed a significant global position. Worldwide, 4.9 billion people actively use the Internet, which is growing by 5% each year, according to an assessment by World Population Review [1-2]. When it comes to the Indian subcontinent, there are 932 million Internet users [2]. Due to easy accessibility & low cost, the number of Internet users has increased many fold in the past decade. Compulsive Internet use (CIU) or Internet Addiction is defined as the inability to control excessive Internet use, the loss of all significance of time spent offline, the intense irritability that results from being cut off from the Internet, and the progressive degradation of a person's job, societal, domestic lives [1]. The prevalence of CIU was found

to be 19% overall in a systematic review, and meta-analysis Joseph J conducted, which included Fifty studies conducted in 19 states of India [3]. Our literature review highlighted that excessive time spent online is linked to an unhealthy lifestyle, lack of sleep, diminished self-worth, irregular eating habits, academic difficulties & issues related to body image, especially in young individuals. Issues related to body image may be brought on by the consumption of social media sites that promote pictures with unrealistic body standards. Owing to this concern with body image, individuals may adopt a variety of physiological ailments. Leading a sedentary life, consuming junk food, sitting for hours together, and lacking exercise may result in weight-related issues. Medical students are not

exempt from these negative impacts of excessive internet use. Research on Internet Addiction, Disordered Eating, and related factors has been done in several countries in great detail. However, there isn't enough literature on this subject written by Indian authors. Our study of the literature revealed a lack of research on how internet use affects eating habits, self-esteem & body dissatisfaction in India. This study was intended to close this gap and contribute to the existing literature.

Materials and Methods

Study setting: Government Medical College, Anantapur.

Study design: Cross-sectional study

Duration of study: 4 months from ethical committee approval.

Study Population: Participants were undergraduate medical students & Interns of a Medical college.

Inclusion Criteria:

1. Medical students & Interns
2. Those who gave written informed consent to participate in the study

Exclusion Criteria:

1. Participants who are seeking treatment for a medical or mental illness
2. Those with Substance dependence
3. Those who are on any type of diet control programme
4. Those who were not willing to give written informed consent

Sampling method: Convenient sampling

Sample size: At 95% confidence interval, 10% relative precision (l) using 46% prevalence rate of Compulsive internet use according to the study conducted by Dorai et al.[4] the minimum sample size was calculated to be 470 using the formula.

$\frac{z_{(1-\alpha/2)}^2 p(1-p)}{l^2}$. 494 subjects were recruited in this study.

Data Collection: Data was collected by principal investigator using a Self-administered questionnaire.

Study Tools:

1. A Semi-structured sociodemographic data form including personal information was used to determine Age, Gender, year of study, Substance use, medical illness, Types of device used & Purpose for which internet was used.
2. Young's Internet Addiction Test.
3. Eating Attitudes Test-26 (EAT-26).
4. Rosenberg Self-esteem scale (RSE).
5. Body Shape Questionnaire (BSQ).

Ethical consideration: Clearance was obtained from the Institutional Ethics Committee, and permission was taken from the college authority of Government Medical College, Anantapur. Before beginning the study, written informed consent was taken from the participants. The study only included individuals who provided written, informed consent.

Statistical Methods: Data was entered in MS Excel 2021. Internet Addiction, eating patterns, Self-esteem, and body dissatisfaction were primary outcome variables. For quantitative variables, descriptive analysis using Mean and Standard Deviation, and for categorical variables, Frequency and proportion were performed. Chi-square was used as a test of association. Correlation analysis was performed to study the association between outcome variables. p-value of <0.05 was considered statistically significant. Data were analyzed using the software Statistical Package for Social Sciences (SPSS version 25.0).

Results

A total of 494 participants were included in the final analysis. The mean age of the study sample was 21.2 years (SD 1.78) with 61.6% female & 38.8% male participants. The majority of the participants were 3rd MBBS students (25.9%), followed by 1st MBBS students (23.4%). The majority (91%) of the participants were using Smartphone and tablets as their main Internet device. Majority (42%) of the participants used internet for Entertainment, followed by social media & studying. (Table 1)

Table 1: Characteristics of Study population (n= 494)

Variables	Number	Percentage
Age in years (Mean ± SD)	21.2 ± 1.78	
Gender		
Male	192	38.8%
Female	302	61.1%
Year of study		
1st MBBS	116	23.4%
2nd MBBS	72	14.5%
3rd MBBS	128	25.9%
4th MBBS	92	18.6%
Intern	86	17.4%

Main device		
Computer	4	0.8%
Computer + smartphone	40	8%
Smartphone + Tablet	450	91%
Main purpose of using the Internet		
Communication with others	72	14.5%
Entertainment	208	42%
Other	10	2%
Social media	120	24.2%
Studying	80	16.1%
Work	4	0.8%

The prevalence of Internet addiction was found to be 61.1%, Among which 192participants (38.9%) had no addiction, 218 (44.1%) had mild addiction, 8. (16.2%) had Moderate addiction & 4 (0.8%) had severe addiction (Figure 1). Around 58 participants had disordered eating patterns in the current study (Figure 2). The self-esteem was observed in 31.6% (n= 156) of the population (Figure 3). In the current study 24 participants (5%) had body shape concerns (Figure 4).
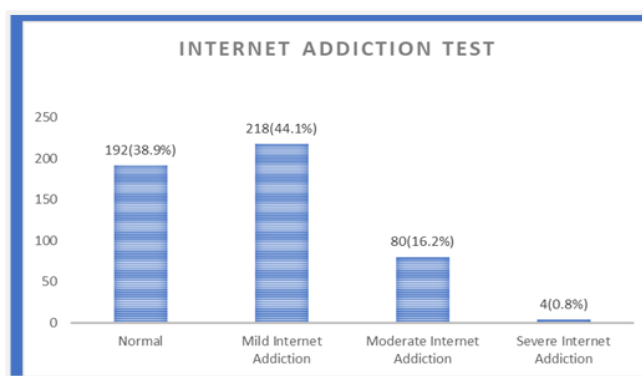

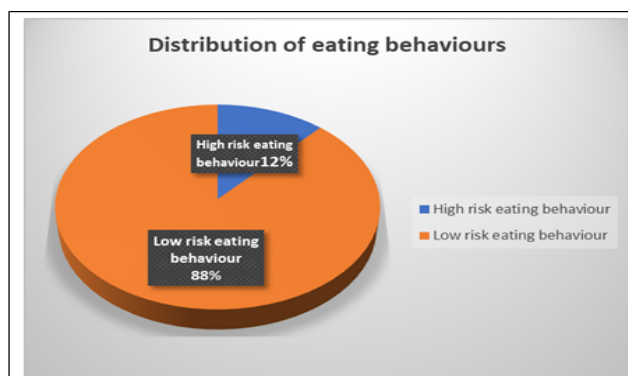**Figure 1: Prevalence of Compulsive Internet Use as per Young's Internet addiction test**

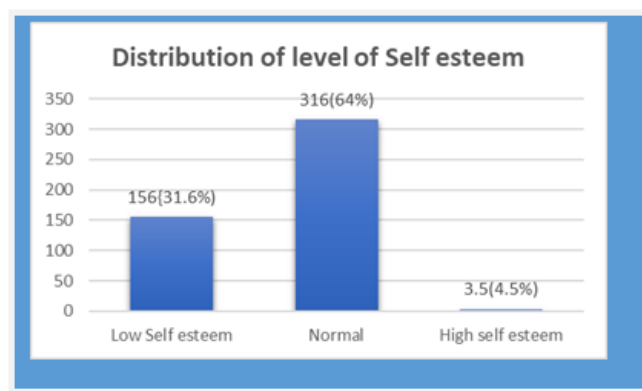**Figure 2: Distribution of eating patterns of the study participants.**

Figure 3: Distribution of level of self-esteem of the study participants
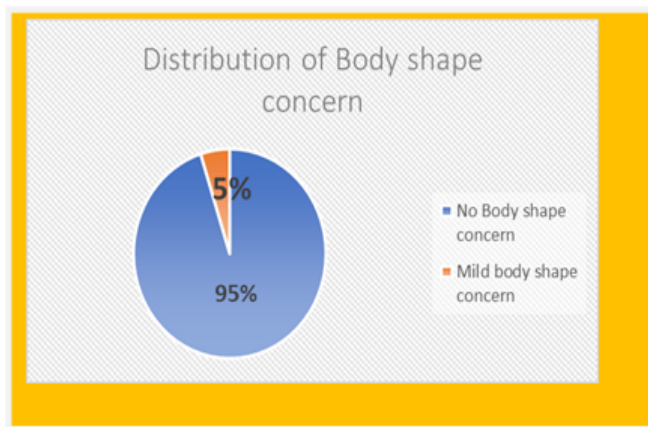
Figure 4: Distribution of body shape concerns of the study participants

With respect to Sociodemographic variables Gender of the participant showed a significant association with Body dissatisfaction, where Female participants showed greater body shape concern than male participants (p<0.05). (Table 2). The main device used & Purpose of using the Internet showed significant association with Compulsive Internet use in the current study (Table 2). The Chi-square test has shown a statistically significant association between Internet addiction & Disordered eating patterns (p<0.005) (Table 3). Internet addiction was Positively correlated with Disordered eating (<0.0001), Body shape concerns (<0.0001) & negatively correlated with Self-esteem (<0.0001) (Table 4). The age of the study population showed a correlation with all the outcome variables (Table 5).

Table 2: Association of sociodemographic and internet usage characteristics with outcome variables

Variables	IAT		EAT		BD		RSE	
	x^2	p	x^2	P	x^2	p	x^2	P
Gender	3.3	0.348	0.24	0.87	5.23	**0.022***	2.12	0.345
Year of study	21.58	**0.042***	3.81	0.43	17.62	**0.001***	28.11	**<0.0001***
Device	54.93	**<0.0001***	5.7	0.056	2.66	0.265	3.84	0.42
Purpose of usage	48.83	**<0.0001***	14.52	**0.013***	3.93	0.56	22.09	**0.015***

Table 3: Association of internet addiction with disordered eating patterns

Internet addiction	Disordered eating		Total
	Absent	Present	
NORMAL	176(91.7%)	16(8.3%)	192
MILD	194 (89%)	24(11%)	218
MODERATE	64(80%)	16(20%)	80
SEVERE	2(50%)	2(50%)	4
Total	436(88.3%)	58(11.7%)	494
Chi square: 13.18, df 3, p 0.004 Statistically significant			

Table 4: Pearson's Correlation between IAT & Age, EAT-26, RSE, BSQ

		Age	IAT	EAT-26	RSE	BSQ
Age	Pearson Correlation	1	-0.092*	-0.093*	0.156**	-0.004
	Sig. (2-tailed)		0.041	0.038	.001	0.936
IAT	Pearson Correlation	-0.092*	1	**0.385****	**-0.364****	**0.530****
	Sig. (2-tailed)	0.041		**0.000**	**0.000**	**0.000**
EAT	Pearson Correlation	-0.093*	0.385**	1	-0.198**	0.510**
	Sig. (2-tailed)	0.038	0.000		0.000	0.000
RSE	Pearson Correlation	0.156**	-0.364**	-0.198**	1	-0.392**
	Sig. (2-tailed)	0.001	0.000	0.000		0.000
BD	Pearson Correlation	-0.004	0.530**	0.510**	-0.392**	1
	Sig. (2-tailed)	0.936	0.000	0.000	0.000	

(IAT= Internet addiction test, EAT-26= Eating attitudes test 26, RSE= Rosenberg self-esteem scale, BSQ= Body shape questionnaire)

Table 5: Linear regression analysis results for Age & outcome variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	19.199	0.687		27.96	0.000	17.850	20.548
	IAT	-0.008	0.006	-0.070	-1.299	0.195	-0.019	0.004
	EAT	-0.026	0.012	-0.113	-2.167	0.031	-0.049	-0.002
	RSE	0.071	0.021	0.170	3.458	0.001	0.031	0.112
	BSQ	0.014	0.005	0.158	2.697	0.007	0.004	0.025
a. Dependent Variable: age								

(IAT= Internet addiction test, EAT-26= Eating attitudes test 26, RSE= Rosenberg self-esteem scale, BSQ= Body shape questionnaire)

Discussion

Regarding Internet Addiction, numerous studies have been conducted on adults across the globe. This study is a preliminary step towards understanding the association of Compulsive internet use with disordered eating patterns, Self-esteem, and body dissatisfaction among medical students. In our study, the prevalence of Internet addiction and disordered eating was 61.1% & 12%, respectively. The prevalence of Low self-esteem and Body dissatisfaction was 31.6% & 5%, respectively. Young's Internet addiction test is found to be the only validated instrument that categorizes Internet users as Mild, Moderate, and severe. In our study, the Total prevalence of Internet addiction was 61.15% (44% Mild followed by 16.2% Moderate & 0.8% Severe), similar to the findings of other studies. Studies by Dorai et al. [4] and Sharma et al. [5] reported a prevalence of 46.7% and 42.7% internet addiction, respectively, among medical and other professional college students in India. According to a meta-analysis, Internet addiction was five times more prevalent in medical students than in students taking different courses [6]. The current study emphasizes the need to pay attention to it as it supports the existing literature's assertion that Internet addiction is more common in medical students. Internet addiction can impede their academic performance and the services they provide. We found a Positive correlation between Age & CIU. As the Age of the participants increased, scores on the Internet addiction test decreased. The prevalence of CIU was the highest in 1st year MBBS students in all the years. This finding was supported by a study done by Dorai et al. [4] in medical students in South India. As the students begin their first year of college, their newly discovered freedom provides them with greater independence, and their free time and social activities are less regulated by their parents. This may be the root of what is ailing them. No link was observed between gender and CIU. These results are backed by earlier research by Celik et al. [1]. However, other studies have reported higher internet use in male participants compared to females. This result may be because both genders are presently using the internet more frequently as young students. Due to easy access to the internet and the ability to use it to fulfil daily demands in various areas, including education, entertainment, communications, and shopping, both male and female students nowadays consider the internet a vital tool. In this study, about 1/5th of the participants had disordered eating, comparable to a study conducted by Dorai et al. [4] in medical students in South India. However, this prevalence was relatively high, as studies on eating disorders have shown a 2-4% prevalence in young adults. This substantial prevalence could also imply an under-detection of eating disorders [7]. The current study showed a positive correlation between CIU and disordered eating (p<0.05). A high score on Young's IAT was positively correlated with a high score on EAT-26. Our scan of the literature revealed equivalent results in studies by Dorai et al.[4] and Celik et al. [1]. Reasons for this include the possibility that individuals have more chance of consuming junk food while online. Individuals might avoid or skip meals when preoccupied with the internet. People who spend excessive time on the internet may need to be made aware of how much they consume when using it since they are continually preoccupied with it. People who use the internet frequently are usually constantly distracted and are typically oblivious to what they are doing, so the regular fulfilment of basic needs may no longer seem relevant. They could unintentionally miss meals online or develop weight issues from unhealthy snacks. They might then develop severe conditions, including eating disorders, which could result in vomiting their meals or eating very little. These behaviours, first displayed without the individual's awareness, may result in eating disorders and poor health. A significant proportion (31%) of participants had low self-esteem in this

study. Comparable findings were revealed in a study by Kapoor et al. [8] on female college students from Delhi based on Rosenberg's self-esteem scale. In this study, Self-esteem in students was negatively correlated to CIU (<0.001). Similar findings were reported in the study done by Kapoor et al. [8] The reason behind this may be that frequent internet use acts as a coping mechanism that compensates for deficiencies such as poor self-esteem. They fulfil this self-esteem through regular internet usage by assuming a distinct personality & social identity, which in turn provides a significant deal of satisfaction as a means of compensating for their flaws. This study revealed that 5% of the participants have body shape concerns. It was observed that Females expressed greater body dissatisfaction than males, which was on par with the findings of a study by Neighbours et al. [9] and Sharan et al. [10] A study by Sachdeva et al. [11] in-college students reported that 13% of the study subjects had body shape concerns. However, this study was conducted only in female subjects. Both the above inferences indicate that young females are preoccupied with their physical appearances and are fixated on how they are perceived to be. This study revealed A significant positive correlation between CIU and body dissatisfaction (<0.001). Social media and the internet serve as crucial visual tools that induce people to set up accounts to share images. Sociocultural theory claims that when young individuals are exposed to media with idealized body physiques, they eventually internalize these images by having expectations of unrealistic body appearances. The unrealistic standards portrayed in the media influence how people see their bodies. As a result, people who struggle to attain the ideal physiques portrayed in the media could have a negative perception of their bodies.

This study's findings indicate that CIU is substantially associated with disordered eating patterns, Self-esteem, Body dissatisfaction & Age group

References

1. Çelik CB, Odacı H, Bayraktar N. Is problematic internet use an indicator of eating disorders among Turkish university students? Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity. 2014; 20(2): 167–72.

2. Internet Users by Country, 2021. [Internet]. worldpopulationreview.com. Available from: https://worldpopulationreview.com/country-rankings/internet-users-by-country.

3. Joseph J, Varghese A, Dhandapani M, et al. Prevalence of internet addiction among college students in the Indian setting: a systematic review and meta-analysis. General Psychiatry. 2021; 34(4): e100496.

4. DoraiB L, Alex SS, Pradeep C. Prevalence of internet addiction and its relationship with disordered eating among medical college students in south India: a cross-sectional study. Kerala Journal of Psychiatry. 2021; 34(2): 142-148.

5. Sharma A, Sahu R, Kasar P, Sharma R. Internet addiction among professional courses students: A study from central India. International Journal of Medical Science and Public Health. 2014; 3(9): 1069.

6. Zhang MWB, Lim RBC, Lee C, et al. Prevalence of Internet Addiction in Medical Students: a Meta-analysis. Academic Psychiatry. 2017; 42(1): 88–93.

7. Hudson JI, Hiripi E, Pope HG et al. The Prevalence and Correlates of Eating Disorders in the National Comorbidity Survey Replication. Biological Psychiatry. 2007; 61(3): 348–58.

8. Kapoor A, Upadhyay MK, Saini NK. Relationship of eating behavior and self-esteem with body image perception and other factors among female college students at University of Delhi. Journal of education and health promotion. 2022; 11:80.

9. Neighbors LA, Sobal J. Prevalence and magnitude of body weight and shape dissatisfaction among university students. Eating Behaviors. 2007; 8(4): 429–39.

10. Sharan P, Gupta N, Bhargava R, et al. Eating attitudes and body shape concerns among medical students in Chandigarh. Indian Journal of Social Psychiatry. 2017;33(3): 219.

11. Sachdeva S, Sachdeva R, Goswami S. Body image satisfaction among female college students. Industrial Psychiatry Journal. 2012; 21(2): 168.