Research Report

PREVALENCE OF INTERNET ADDICTION AND ITS RELATIONSHIP WITH DISORDERED EATING AMONG MEDICAL COLLEGE STUDENTS IN SOUTH INDIA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: The easy availability of various gadgets with the provision of faster internet at affordable prices has exponentially increased internet usage in the past few years. This study aimed to estimate the prevalence of internet addiction and describe its association with disordered eating in medical college students. **Methods:** This cross-sectional study was conducted on 300 medical college students in south India. After obtaining ethical clearance and informed consent, students were given a questionnaire containing sociodemographic variables, Young's Internet Addiction Test (IAT), and Eating Attitudes Test questionnaires (EAT). Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency, and proportion for categorical variables. Categorical outcomes were compared between study groups using the chi-square test. Univariate binary logistic regression analysis was performed to test the association between the variables. **Results:** The prevalence of internet addiction was 46.7% in this study. Disordered eating was found to be 12.3% in medical students. Internet addiction was observed to be more in the younger age group. (P <0.001) A significant association was obtained between internet addiction and disordered eating. (P <0.05). **Conclusion:** Nearly half of the medical students in this study were addicted to the internet, and disordered eating was also high among medical students. A closer look into the aspects like internet addiction and eating disorders is required, as these may silently impact the life and productivity of the budding doctors.

Keywords: Body Mass Index, Feeding and Eating Disorders, Internet Addiction, Internet Usage.

INTRODUCTION

The internet has become a necessary part of the present society, and its utilisation has increased exponentially over the last decade. The subsequent changes in the behaviour of an individual, the way they relate to each other, and to society have drawn attention to the condition, Internet addiction (IA).[1]

Internet addiction is not listed among the non-substance addictions in the fifth edition of the (DSM Diagnostic and Statistical Manual of Mental Disorders -5), but "internet gambling disorder" is listed in the appendix as a condition that requires further study.[2] A systematic review and meta-analysis conducted among college students in India by Joseph J reported an overall prevalence of IA as 19%.[3] Various studies have shown that IA is related to certain lifestyle-related factors in adolescents, like irregular food habits, physical

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inactivity, short duration of sleep, and increased use of alcohol and tobacco.[4]

Eating disorders are characterised by a persistent disturbance of eating or eating-related behaviour that results in the altered consumption or absorption of food and significantly impairs physical health or psychosocial functioning.[5] An Indian study reported a prevalence of 1.25% of disordered eating among children and adolescents.[6] A meta-analysis has reported an association between internet addiction and eating disorders, based on the data collected from 16,520 university students.[7] Mood regulation function was found to connect IA and disordered eating (as an alternative to food).[8] However, IA may increase body image dissatisfaction (through sedentariness) or the pressure to be slim (through online interactions or exposure to advertisements on weight loss), the common risk factors for disordered eating habits.[9]

Studies on the association of internet addiction and eating disorders and their respective prevalence are scarce in the Indian setting. The impact of these disorders on medical students hampers their academic performance and their clinical learning. Hence, the present study intends to assess the prevalence of internet addiction and its relation to disordered eating in medical college students.

MATERIALS AND METHODS

Study population and Study site: Participants were first-year students to interns of a medical college in south India.

Inclusion Criteria: Those who were willing to participate in the study

Exclusion criteria: Participants with chronic diseases, those who are under treatment for mental or physical illness, and who are under any diet control regimen were excluded

Study design: Cross-sectional study

Sampling method: Subjects were recruited in each group by convenient sampling till the sample size was achieved.

Sample size: The sample size was calculated assuming the prevalence of Internet addiction as 10.1% as per the study by Alpaslan AH et al.[10]. The other parameters considered for sample size calculation were 4% absolute precision and 95% confidence level. The formula given by Daniel WW et al.[11] was used for sample size calculation. The required sample size as per the calculation was 219. To account for a non-participation rate of about 30%, another 66 subjects were added to the sample size. Hence the final required sample size would be 285. The final samples considered were 300 to get better results.

Study duration: 15 months from February 2019 to May 2020

Ethical considerations: The study was approved by the institutional review board and the ethics committee of the hospital and consent was obtained from the participants.

Data collection tools and clinical examination: General information (age, gender, height, body weight, marital status, details of accommodation) were collected.

Internet Addiction Test (IAT)[1]

The test contains 20 items, which ask respondents to rate how often they show symptoms of damaging internet usage, such as excessive time spent online, neglect of daily routine tasks, disruption of academic or job performance, concealment of online time and behaviours from others, loss of sleep, social isolation, depressive feelings if usage is restricted, and failed attempts to cut down on internet use. Each item is scored from 1 to 5, with one representing "not at all" and five representing "always." Hence, possible total scores range from 20 to 100, with higher scores indicating greater problems associated with internet usage. The following cut-off points were applied to the total IAT score: (Mild: 31-49, moderate 50-79, and severe 80-100). IAT shows well to moderate internal consistency (alpha coefficients 0.54 -0.82). IAT has been evaluated for its content and convergent validity, internal consistency [ἁ =0.88] and test-retest reliability [r =0.82].[12,13]

Eating Attitudes Test-26 (EAT-26)[14]

EAT-26 is a 26-item scale, with each item answered on a 6-point Likert scale ranging from "never" to "always". The most symptomatic response receives a score of 3, the subsequent most symptomatic response receives a score of 2, and the least symptomatic gets 1. The remaining three choices receive a score of 0. Total scores are derived as a sum of the composite items, ranging from 0 to 78. Scores >20 on the EAT-26

indicate abnormal eating attitudes and behaviour, identifying those with high disordered eating tendencies. Savasir and Erol have demonstrated the validity and reliability of its Turkish version; factorial validity was shown in a population sample, and the reliability coefficients of the test were found to be high. In this study, the confidence coefficient of the scale (Cronbach's alpha) was calculated as 0.866, and the coefficient of concordance was excellent (>0.80).[13]

Statistical methods

Internet addiction and the severity of internet addiction were considered as primary outcome variables. Hours of internet usage, duration of refraining from the internet/day, disordered eating, and frequency of checking for updates were considered primary explanatory variables. Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency, and proportion for categorical variables. Categorical outcomes were compared between study groups using the chi-square test. Univariate binary logistic regression analysis was performed to test the association between the explanatory variables and outcome variables. An unadjusted odds ratio along with 95% CI was presented. Variables with statistical significance in univariate analysis were subjected to multivariate regression analysis. Adjusted odds ratio along with their 95% CI was calculated. P-value <0.05 was considered statistically significant. Data were analysed using R studio and coGuide software, V.1.0[15]

RESULTS

Table 1: summary of factors associated with internet addiction (N=300)

Parameter	Summary
Prevalence of Internet addiction	
Internet addiction	140(46.7%)
No internet addiction	160(53.3%)
The severity of internet addiction	
Normal	160(53.3%)
Mild	101(33.7%)
Moderate	38(12.7%)
Severe	1(0.3%)
Disordered eating	
Present	37(12.3%)
Absent	263(87.7%)

A total of 300 subjects were included in the final analysis. The prevalence of internet addiction was found to be 46.7%. Among the study population, 160(53.3%) had no addiction, 101(33.7%) had mild addiction, 38(12.7%) had moderate addiction, and 1(0.3%) had severe internet addiction. Thirty-seven participants (12.3%) had disordered eating in the present study. (Table 1)

The mean age was 20.43 years in the study population, 94(67.14%) were aged between 18 to 20 years, 34(24.29%) were 21 to 23 years, and 12(8.57%) were aged between 24 to 26 years. Among the study population, 53(37.86%) were male participants, and the remaining 87(62.14%) were females. The mean weight was 63.9 kg, with the majority (47.86%) ranging between 41 to 60 kg. The mean height was 164.73 cm, with the majority (67.14%) ranging between 151 to 170 cm. The majority of the participants (51.43%) were 1st-year MBBS students, followed by 27.14% interns and 20.71% second year MBBS students. (Table 2)

There was a statistically significant difference between internet addiction and age (in years) (P-value <0.05). There was no statistically significant difference between internet addiction in demographic parameters like gender, relationship status, and anthropometric parameters. (P-value >0.05). (Table 2)

The univariate logistic regression analysis had shown a statistically significant association between internet addiction and age group 21 to 23 years (p-value 0.003), accommodation in the hostel with roommate (P-value=0.006) and disordered eating. The strongest association was found with disordered eating (odds ratio=2.34, 95% CI: 1.14 to 4.79, P-value 0.02). After adjusting the effect of other variables in the multivariate logistic regression analysis, age group 21 to 23 years and eating disorder showed a statistically significant association with internet addiction. The odds of internet addiction were increased 2.22 times (P-value = 0.039) in students presented with disordered eating compared to non-internet addiction students. (Table 3)

DISCUSSION

In this study, the prevalence of internet addiction and disordered eating was 46.7% and 12.3%, respectively, in medical students. A significant association was obtained between internet addiction and disordered eating. When sociodemographic variables were compared with

Table 3 Comparison of demographic character with internet addiction (N=300)

Parameter	Internet addiction (N=140)	No internet addiction (N=160)	P-value
Age (in years)	20.43±1.92	21.1±1.31	<0.00†
18 to 20	94 (67.14%)	62 (38.75%)	
21 to 23	34 (24.29%)	91 (56.88%)	<0.001‡
24 to 26	12 (8.57%)	7 (4.38%)	
Male	53 (37.86%)	55 (34.38%)	
Female	87 (62.14%)	105 (65.63%)	0.531‡
Single	128 (91.43%)	148 (92.5%)	
In relationship	12 (8.57%)	12 (7.5%)	0.733‡
BMI (in kg/m2)	23.41±4.52	23.16±4.1	0.614†
<18.5	20 (14.29%)	17 (10.63%)	
18.5-22.9	56 (40%)	66 (41.25%)	
23-27.5	38 (27.14%)	53 (33.13%)	0.514‡
>27.5	26 (18.57%)	24 (15%)	
MBBS year			
First Year	72 (51.43%)	0 (0%)	
Second Year	29 (20.71%)	53 (33.13%)	
Third Year	1 (0.71%)	44 (27.5%)	*
Fourth Year	0 (0%)	57 (35.63%)	
Interns	38 (27.14%)	6 (3.75%)	
Accommodation			
Hostel Stays Alone	13 (9.29%)	22 (13.75%)	
Hostel with Roommate	103 (73.57%)	82 (51.25%)	
Paying Guest – Alone	6 (4.29%)	12 (7.5%)	*
Paying guest with roommate	0 (0%)	9 (5.63%)	
Staying with Parents	18 (12.86%)	35 (21.88%)	

*No statistical test was applied- due to 0 subjects in the cells, ‡Chi-square test †-Independent sample T-test

internet addiction, there was no significant association except for age group.

The observed prevalence of internet addiction of 46.7% (33.7% mild followed by 12.7% moderate and 0.3% severe) is on par with other studies. Studies by Chaudhari B et al. and Sharma et al. reported a prevalence of 58.87% (mild– 51.42% and moderate– 7.45%) and 42.7% internet addiction (35% mild, 7.4% moderate, and 0.3% severe), respectively, among medical and other professional college students, in India.[16,17] A meta-analysis concluded that internet addiction was five times more common in the medical population than in general.[18] This study further confirms the high prevalence of internet addiction in medical college students and the need for a serious inspection of its impact on the students. It can hamper their academic performance and the services they provide.

Table: 4 Factors associated with internet addiction univariate & multivariate logistic regression analysis (N=300)

Parameters	Internet addiction		Unadjusted Odds ratio (95% CI)	P value	adjusted Odds ratio (95% CI)	P value
	YES (N=140)	NO (N=160)				
Age group						
18 to 20	94 (67.14%)	62 (38.75%)	0.88 (0.33-2.37)	0.807	0.82 (0.30- 2.21)	0.696
21 to 23	34 (24.29%)	91 (56.88%)	0.22 (0.08-0.60)	0.003	0.21 (0.07 -0.57)	0.002
24 to 26	12 (8.57%)	7 (4.38%)	1		1	
Gender						
Male	53 (37.86%)	55 (34.38%)	1.16 (0.72-1.86)	0.531	*	*
Accommodation						
Hostel Stays Alone	13 (9.29%)	22 (13.75%)	1.15(0.47- 2.80	0.760		
Hostel with Roommate	103 (73.57%)	82 (51.25%)	2.44 (1.29- 4.62	0.006		
Paying Guest – Alone	6 (4.29%)	12 (7.5%)	0.97 (0.31- 3.02)	0.961	*	
Paying guest with roommate	0	9 (5.63%)	0	0.999		*
Staying with Parents	18 (12.86%)	35 (21.88%)	1			
Disordered eating	24 (17.14%)	13 (8.13%)	2.34 (1.14-4.79)	0.020	2.22 (1.04- 4.75)	0.039

* Gender and accommodation were not considered for multivariate because the univariate p-value was >0.05

About 12.3% of students had disordered eating in this study, which was quite high for this population. Studies on eating disorders have found a prevalence of 2-4% among young adults. The high prevalence could also be an indicator that eating disorders are under-diagnosed illnesses.[19] Significant association was observed between internet addiction and eating disorders (P= 0.020). Individuals with an eating disorder had two times higher odds of internet addiction with an odds ratio of 2.34 (CI=1.14, 4.79). Findings of a meta-analysis also concluded a positive relationship between internet addiction and an eating disorder.[7] Further studies on this aspect are needed among the Indian population to identify the deeper impact of this association.

In this study, the majority of the participants were between the ages of 18 to 20 years. Students of younger age were more prone to internet addiction as they tend to use the internet excessively due to poor self-control and lack of parental monitoring.[20] This study had a higher number of females addicted to the internet than males, which is the opposite of what was found in many studies.[16,17]

The mean BMI was 23.41±4.5kg/m², with the majority falling under the normal weight category in this study. Previous studies have found that individuals with internet addiction had a twenty-two times higher risk of obesity.[21]

The first year MBBS students were more addicted to the internet among all the years. To the best of our knowledge, this aspect has not been assessed among MBBS students. However, as per another study on dental college students, interns were more addicted to the internet than in other years.[22] In terms of the relationship status, most of them were single and lived in shared hostel rooms. Similar reports were stated in a study by Mboya IB et al.[23]. Recent studies have found a higher propensity for internet addiction among those staying in rented accommodation than those who stayed with their parents, similar to this study. The reason may

be attributed to boredom, loneliness, ease of access, and lack of supervision among those staying in hostels.[16,24]

Limitations

Due to the cross-sectional study design, no causal inference can be made regarding the observed associations. The data was collected through a self-reported questionnaire; hence, there is a potential recall bias. The sample was restricted to a narrow age group since the internet is widely used across all ages; studies should look into the impact of internet addiction and disordered eating among other age groups. The prevalence of internet addiction and eating disorders were assessed only among medical students who might affect the external validity. The occurrence among other educational settings was not assessed in this study. This study was conducted among educated individuals. Future studies should consider conducting the study in the general population.

Conclusion

Nearly half the medical students in this study were addicted to the internet. Disordered eating was also high among medical students. A closer look into this aspect of addiction and eating disorders is required as these may silently impact the life and productivity of these doctors. These findings suggest that internet addiction has multiple associations and needs to be considered as a serious issue. The emerging generation spends more time online than in the real world; hence thorough research on internet addiction is the need of the hour.

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