Research Article

Internet addiction and mental health among medical students of selected university in Mangalore, Karnataka

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ABSTRACT

Background: Internet addiction (IA) is maladaptive pattern of internet use leading to clinically significant impairment or distress. It has a varied prevalence between countries and states due to varied criteria and sample studied. **Objectives:** The objectives are to study the magnitude of IA and its impact on mental health among medical students of a selected University in Mangalore, Karnataka, and also to assess the association of various sociodemographic variables with IA. **Materials and Methods:** A cross-sectional study was conducted among all the M.B.B.S students residing in the hostel of a selected university located in Mangalore, Karnataka, for 1 month. Sociodemographic profile of the study participants and information on IA and mental health were collected using pre-designed and pre-tested questionnaire. **Results:** Mean age of the study participants was 20.62 ± 1.463 and 32.9% of the internet users were using internet for ≥38 h per week. With Young's IA (YIAT) test, internet users were divided into 3 categories, namely, 46.2%, 32.9%, and 4.4% as average users, possible addicts, and internet addicts, respectively. There was a statistically significant difference in mean scores of severe depression subscale of General Health Questionnaire - Twenty Eight across two groups of YIAT test ($t = 0.448$; $P = 0.015$). Marital status and weekly hours of internet use were the statistically significant predictors of IA ($P < 0.05$). **Conclusion:** Prevalence of IA was higher in contrast to other studies, and its impact on mental health warrants stringent efforts for higher studies, early diagnosis, and prevention.

KEY WORDS: Internet Addiction; Medical Students; Mental Health; Mangalore

INTRODUCTION

Internet addiction (IA) term was first coined by Dr. Ivan Goldberg, where as K. Young described it later in the year 1996 as problematic internet use.[1] According to K Young, IA is defined as "use of the internet for more than 38 h per week" and can also be defined as "maladaptive pattern of internet use leading to clinically significant impairment or distress".[2] K Young had developed 8 criteria to diagnose IA based on Diagnostic and Statistical Manual of Mental Disorders – IV (DSM IV) for pathological gambling that includes preoccupation with the use of the computer, think about previous online activity/ anticipation of next online session, craving more and more time at the computer, making efforts to cut back on computer use or stop and failing repeatedly, feeling of emptiness, depression and irritation when not at the computer or when attempting to cut down, staying online longer than originally intended, jeopardising or risks losing significant relationships, job, career, or education because of internet, hiding the extent of computer/ internet use to family and friends, and use of the internet as a way of escaping from problems or of relieving a dysphoric mood.[3]

Prevalence of IA varies from country to country and a meta-analysis of 31 nations across 7 world regions found

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pooled prevalence of 6%, with the highest prevalence being in the middle east (10.9%), followed by North America (8.0%) and Asia (7.1%).[4] There was a rapid surge of internet users in India according to report published in 2013 with 42 million internet users in 2013 when compared to 5 million in 2000,[1] and the prevalence of IA in India according to various studies[5-7] was found to be ranging from 0.4% to 3.8%, respectively.

Consequences of IA are varied, ranging from social withdrawal, self-neglect, poor diet, family problems, repetitive strain injury, and backache, and IA having an impact on sedentary lifestyle can also be a risk factor for obesity, deep vein thrombosis, pulmonary embolism, and associated complications. Late night internet use may have a significant impact on sleep leading to sleep deprivation, job loss, and poor academic or work performance. IA has been found to be a risk factor for depression, anger problems, and anxiety disorders.[2] A study by Cheng C *et al*.[4] also reported that those with excessive internet use had high scores on anxiety and depression.

There is a paucity of studies on IA and mental health among medical students in India, and thus, this study aimed to put a step ahead to identify the magnitude of IA and its impact on mental health among medical students residing in hostel of selected university in Mangalore and also to assess the association of various sociodemographic variables with IA.

MATERIALS AND METHODS

A cross-sectional study was conducted among the M.B.B.S students, belonging to various academic year and residing in the hostel of selected medical college situated in Mangalore, Dakshina Kannada District of Coastal, Karnataka. The study was carried out for 1 month during the year 2016.

All the students who were willing to participate on voluntary basis and without any psychiatric morbidity or drugs that are likely to produce anxiety or depressive symptoms were included in the study.

Total enumeration method was employed for selecting study participants, and thus, a total number of study participants were 340. The study was approved and ethical clearance was obtained by the Institutional Ethics Committee, and necessary permission was sought from the concerned authority of the selected university. After obtaining written informed consent from all the study participants, the data were collected using a pre-designed and pre-tested questionnaire, the questionnaire was divided into 3 parts; the first part includes data regarding demographic variables such as age, religion, type of family, and marital status, and number of hours of internet use per week was collected.

Information about the IA was obtained using YIAT test,[8] which consists of twenty 5-point Likert type questions. The questionnaire helps in identifying the degree to which their internet use affects their daily routine, social life, productivity, sleeping pattern, and feelings. The minimum score is 20, and the maximum is 100, higher the score, greater the problems internet use causes. A score of 20–39 points is an average online user who has complete control over his/her usage, A score of 40–69 signifies frequent problems due to internet usage, and a score of 70–100 means that the internet is causing significant problems.

The mental health will be assessed using General Health Questionnaire - Twenty Eight (GHQ 28),[9] a well-validated questionnaire, with good interrater reliability. This is a screening tool used to pick up higher levels of emotional distress and to identify those at risk for developing psychiatric illnesses. It has 28 items that are scored on a Likert scale, with a higher score indicating a higher level of emotional distress. A score of >23 is considered as a cutoff for the presence of emotional distress, and such persons are at higher risk for developing significant psychopathology.

The analysis was performed using the SPSS Version 16.0. Descriptive statistics in terms of mean and standard deviation was applied for continuous variables and in terms of frequency, percentages, and proportions for categorical variables. Logistic regression, Chi-square test using Yate's correction for continuity, and Fisher's exact test were applied for categorical variables. Continuous variables were analyzed by the *t*-test. Correlation analysis was done using the Karl Pearson correlation coefficient.

RESULTS

As seen in Table 1, majority of the study participants were in the age group of 21–24 years (51.5%), and the majority were males (55.6%). Majority were belonging to the nuclear type of family (75.6%), and with respect to marital status, majority (95.9%) were unmarried. Study participants belonging to Muslim religion (59.4%) were dominant in the study group and majority belonging to 2nd academic year of M.B.B.S (52.9%), residing in the hostel, and were present at the time of interview, among the study participants.

As depicted in Table 2, 32.9% of the study participants had more than or equal to 38 h of internet use. Of the total study participants interviewed, majority (83.5%) were having the YIAT cutoff of more than 20 and only 4.4% had cutoff of more than 70 that represents the prevalence of IA among the study participants (Table 3).

There was a statistically significant difference in the mean scores of severe depression domain of GHQ-28 across two groups, namely, with YIAT score of <20 and YIAT

Table 1: Sociodemographic profile of the study participants (*n*=340)

Variables	Frequency (%)
Age (years)	
18–20	165 (48.5)
21–24	175 (51.5)
Gender	
Male	189 (55.6)
Female	151 (44.4)
Type of family	
Nuclear	257 (75.6)
Joint	71 (20.9)
Third-generation	12 (3.5)
Marital status	
Married	14 (4.1
Unmarried	326 (95.9
Religion	
Hindu	96 (28.2)
Muslim	202 (59.4)
Christian and others	42 (12.4)
Academic year	
1st	28 (8.2)
2nd	180 (52.9)
3rd	86 (25.3)
4th	46 (13.5)

Table 2: Distribution of study participants depending on weekly hours of internet use (*n*=340)

Weekly internet use (h)	Frequency (%)
<38	228 (67.1)
≥38	112 (32.9)

Table 3: Prevalence of internet addiction IA among the study participants (*n*=340)

Grades	Frequency (%)
No addiction	56 (16.5)
Average user	157 (46.2)
Possibly addict	112 (32.9)
Internet addict	15 (4.4)

IA: Internet addiction

score between 20 and 100 (t = 2.448; P = 0.015) as seen in Table 4, indicating higher mean score of severe depression subscale among study participants with YIAT score between 20 and 100 when compared to study participants with YIAT score <20.

As seen in Table 5, there was no statistically significant correlation seen between IA and psychometric domains of GHQ-28; however, there was a statistically non-significant weak positive correlation seen between IA and severe depression domain of GHQ-28 (P > 0.397), indicating as the scores of IA increases, severity of depression increases.

As seen in Tables 6 and 7, marital status and weekly hours use of internet were the only predictors found to be statistically significantly associated with IA (P = 0.001).

DISCUSSION

The present study was conducted to assess the magnitude of IA and its impact on mental health, as well the association of various sociodemographic variables and weekly hours of use of the internet with IA. In our study, the mean age of the study participants was found to be 20.62 ± 1.463, and 32.9% of the study participants was found to be using internet for more than 38 h per week. When YIAT test was applied, the internet users were divided into three categories, namely, 46.2%, 32.9%, and 4.4% as average users, possible addicts, and internet addicts, respectively. When IA was assessed with various subscales of GHQ-28, it was found that there was higher mean scores of severe depression in individuals with YIAT score of 20–100 when compared to individuals with YIAT score of <20 and that was found to be statistically significant (t = 2.448; P = 0.015) also weak positive correlation seen between IA score and severe depression, but it was found to be statistically non-significant (P > 0.05). On application of Chi-square, marital status and weekly hours of internet use were the statistically significant predictors of IA (P < 0.05).

In our study, prevalence of IA was found to be 4.4% on YIAT test and this finding was in line with the study conducted by Grover *et al.*,[7] whereas it was found to be much higher than the studies conducted by Goel *et al.*[6] and Srijampana *et al.*[5] and that could be because of variation in the criteria of IA and sample studied.[7]

Our study found statistically significant difference in the mean scores of IA and severe depression scores and a positive correlation between scores of IA and severe depression as seen in Table 4 and 5, indicating as the scores of IA on YIAT increases, severity of depression increase. This findings were in line with the study by Flisher *et al.*[2] on overview of IA, where depression is one of the consequences of IA, and similar findings were found in the study conducted by Goel *et al.*, where excessive internet users had higher scores of depression and anxiety (χ^2=12.26, P < 0.0022).[6] Furthermore, a study conducted by Titsika *et al.* found that adolescents with IA were 3.89 times more likely to get depressed than adolescents without IA (10.5% vs. 0%; P = 0.022).[10]

As seen in Table 6, marital status was the statistically significant predictor of IA, and Table 7 shows that study participants with weekly hours use of internet of

Table 4: Comparison of mean scores of GHQ-28 subscales and IA (*n*=340)

Psychometric domains	IA score	*n*	Mean±SD	*t* value	*P* value
Somatic symptoms	<20	56	13.21±3.499	1.138	0.256
	20–100	284	13.75±3.135		
Anxiety and insomnia	<20	56	13.04±4.348	1.614	0.107
	20–100	284	13.81±3.010		
Social dysfunction	<20	56	12.77±2.997	1.705	0.089
	20–100	284	13.45±2.703		
Severe depression	<20	56	12.48±3.021	2.448	0.015
	20–100	284	13.57±3.032		

GHQ-28: General Health Questionnaire-Twenty Eight, IA: Internet addiction, SD: Standard deviation

Table 5: Karl Pearson's correlation coefficient between IA and GHQ-28 subscales among study subjects (*n*=340)

IA	Mean (S.D)	GHQ-28 domains	Mean (S.D)	*r*	*P* value
	42.95 (20.971)	Somatic symptoms	13.66 (3.199)	−0.013	0.814
		Anxiety and Insomnia	13.68 (3.273)	−0.083	0.125
		Social dysfunction	13.34 (2.761)	−0.048	0.381
		Severe depression	13.39 (3.053)	0.046	0.397

GHQ-28: General Health Questionnaire-Twenty Eight, IA: Internet addiction, S.D: Standard deviation

Table 6: Association of various sociodemographic variables with IA (*n*=340)

Variables	IA		Chi-square value	*P* value
	<20	≥20		
Age (years)				
18–20	24 (42.9)	141 (49.6)	0.864	0.353
21–24	32 (57.1)	143 (50.4)		
Gender				
Male	26 (46.4)	163 (57.4)	2.278	0.131
Female	30 (53.6)	121 (42.6)		
Family type				
Nuclear	41 (73.2)	216 (76.1)	0.205	0.651
Joint and third-generation	15 (26.8)	68 (23.9)		
Marital status				
Married	7 (12.5)	7 (2.5)	11.931	0.001
Unmarried	49 (87.5)	277 (97.5)		
Religion				
Muslim	33 (58.9)	169 (59.5)	0.006	0.936
Hindu and Christians	23 (41.1)	115 (40.5)		
Academic year				
1st	2 (3.6)	26 (9.2)	2.167	0.538
2nd	31 (55.4)	149 (52.5)		
3rd	14 (25.0)	72 (25.4)		
4th	9 (16.1)	37 (13.0)		

IA: Internet addiction

≥38 h were more internet addict (10.7%) than internet users using ≤38 h per week (1.3%) and was found to be statistically significant ($P < 0.001$). This finding is in line with the study by Krishnamurthy *et al.*,[11] wherein study participants with more than 35 h use of internet per week had twice odds of IA than internet users <35 h per week (odd ratio: 2.42; $P < 0.001$) and this finding also fits K young[2] definition of IA.

Table 7: Association of number of hours of internet use per week with IA (*n*=340)

Weekly hours of internet use	YIAT groups				Chi-square value	*P* value
	No addiction	Average user	Possibly addict	Internet addict		
<38	54 (23.7)	105 (46.5)	66 (28.9)	03 (1.3)	26.951	<0.001
≥38	11 (9.8)	43 (38.4)	46 (41.1)	12 (10.7)		

YIAT: Young's internet addiction

There is a rarity of studies in assessing IA among adolescents and young adults and also its impact on mental health. This study had paved a way in highlighting the magnitude of IA and its impact on depression, but the study being cross-sectional in design, generalizibility of the results will be restricted.

CONCLUSION

Our study found a higher prevalence of IA when compared to other studies and also found its association with severe depression. Thus, higher studies are warranted to evaluate the IA and mental health among adolescents and young adults so that early diagnosis and treatment and prevention steps can be imparted.

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