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Internet addiction and its correlates among undergraduate students of health sciences in coastal Karnataka: A cross-sectional study

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Abstract---Internet has become the most important part of everyone's life, especially the youth who are found to be dependent on it for various reasons, which is a direct effect of rapid expansion of technology around the globe. The present study was conducted to assess the magnitude of internet addiction among undergraduate students of health sciences of coastal Karnataka and to find the risk factors for internet addiction among undergraduate students of health sciences of coastal Karnataka. A cross-sectional study was conducted among 1300 students of a private university of coastal Karnataka. A pre-tested semi-structured questionnaire was used to collect data. Young's Internet addiction test and depression, anxiety and stress

test. Descriptive statistics were reported, and Chi-square test was used to assess the relationship between expected outcomes. Out of these 884 (68%) were females and 416 (32%) were males. Among the 1300 participants, 1118 (86%) were normal users, 156 (12%) had mild addiction, 26 (2%) had moderate to severe addiction. Internet addiction was significantly associated with factors such as availability of own personal gadgets ($P < 0.001$), use of smartphone ($P < 0.001$), exposure to internet at a very young age, internet usage for the purpose of exploring new things and building new relationships online and frequency of internet usage for more than 2–3 h/day. The study also identified a significant association of internet addiction with mother's education and father's occupation. With increase in internet addiction, there was subsequent increase in the level of depression, anxiety, and stress. Although internet is considered as a boon to the mankind as it helps us to connect to the entire globe and also everyone is compelled to use it for various purpose, however, we need to know what is the optimum level of usage, beyond which its use can be addictive and can hinder our activities of daily living.

Keywords---internet addiction, anxiety, depression, stress, Coastal Karnataka.

Introduction

The act of engagement in rewarding stimuli despite of adverse consequences is known as addiction, which is a chronic brain disorder.¹⁻⁴ Internet addiction, gambling, shopping, food addiction etc also constitute addiction, which does not only mean substance abuse. There is no doubt that internet has emerged as one of the fastest and easiest mode of communication which also connects millions of computers globally. Internet possesses a threat or negative impact especially on the young minds, although undoubtedly internet has made this world a luxurious place to live in. Internet addiction is an impulse control disorder that does not involve an intoxicant, as described by Kimberly Young.⁵ Internet habits of every individual differs. Due to work related issues some might be compelled to use internet copiously while some might be totally dependent on the social networking sites just to be in touch with family and friends far off. But when internet use starts interfering with one's professional life, personal relationships, and other activities of daily living it is considered problematic.

Youths are heavy users of newer electronic forms of communication, which is a fact being proved by various studies conducted worldwide. A study conducted on the digital lives of generation Z (people born between 1994 and 2004) reported around 58% of generation Z now inclined to give up watching TV in favour of browsing internet on a mobile phone.⁶ The psychological status of the youth who are in the crucial developmental phase of their life is negatively impacted due to excessive use of internet as suggested by some of the studies.⁷ A significant relationship between internet addiction and factors such as depression, anxiety, and stress has been indicated by several studies.⁸⁻¹⁰ Several studies on internet

addiction have also indicated that internet use has a negative impact on one's social involvement and psychological well-being.¹¹

Social isolation fosters internet addiction, a fact that is identified by Kathai et al.¹² Youngsters those who are constantly receiving an emotional support from the parents, have lesser involvement with internet, which has proved that parental bonding also has a significant impact on internet addiction.¹³ Studies have also shown that participants who have control over their lives are less likely to be addicted to the internet.¹⁴ In India internet addiction among the younger generation is becoming a major public health concern, as it is increasing at an alarming trend. These reports have emphasized the need to undertake this study and to estimate the prevalence of internet addiction and identify its associated factors. Hence the present study was conducted to assess the magnitude of internet addiction among undergraduate students of health sciences of coastal Karnataka and to find the risk factors for internet addiction among undergraduate students of health sciences of coastal Karnataka.

Materials and Methods

The present study was a cross-sectional study conducted in the month of December 2019 among the health sciences students of Srinivas University, Mangalore. According to a previous pilot study conducted by Sharma B et al⁷ in Karnataka the prevalence rate of internet addiction was 4%. Assuming that the expected prevalence is 10%, with a relative precision of 20% and design effect of 1.5%, the sample size was calculated to be 1296. A two-stage cluster sampling technique was employed where in, in the first stage 10 undergraduate health sciences courses were selected from Srinivas University, Mangalore using random sampling method using random number table. In the second stage a fixed number of 130 students were selected from each course to reach the required sample size. All the students who were present in the class during the time of data collection were included in the study. Ethical clearance for the study was obtained from the Institutional Ethics Committee of Srinivas Institute of Medical sciences and Research Institute, Mangalore vide letter no: 2019/12/10/1 dated 10/12/2019. Participation in the study was voluntary and data was obtained after obtaining written informed consent from all the study participants. A pre-tested semi-structured questionnaire was used for data collection. The questionnaire consisted of the following details:

- Socio-demographic profile: It included socio-demographic characteristics of the participants which contained questions such as age, gender, student status, family background, and socio-economic status¹⁵.
- Characteristics of internet usage: This part included questions on characteristics of internet usage such as availability of personal gadgets, use of smartphone, age at which participants started using internet, frequency and basic need of internet usage, settings where internet is frequently accessed, online preferences, and knowledge on impact of internet on health
- Young's Internet addiction test: To measure the level of Internet addiction, Young's IAT (1998). It consists of 20 different questions and based on the five-point Likert scale. The respondents are expected to choose and give the

best response that determines the degree to which internet usage affects their daily routine, social and family life, productivity, sleeping pattern, feelings, and other activities of daily living. Its scoring ranges from 0 to 100 and based on the scoring the respondents are classified as normal users (0–30, mild (31–49), moderate (50–79), and severe (80–100) internet addiction

- Depression, anxiety, and stress scale (DASS21): The DASS is a 21-item self-report questionnaire that provides scores on three subscales, depression (7 items), anxiety (7 items), and stress (7 items). Each item is scored from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time). In completion of DASS, the respondents are required to indicate the presence of symptoms over the past week.

Statistical analysis

Data was analysed using Statistical Package for Social Sciences 21 version (SPSS Inc., Chicago, IL). Descriptive statistics were reported for all the variables and Chi-square test was used to signify the associated factors. $P < 0.05$ was considered as statistically significant.

Results

The final sample included in the study was 1300. Out of these 884 (68%) were females and 416 (32%) were males. Among the 1300 participants, 1118 (86%) were normal users, 156 (12%) had mild addiction, 26 (2%) had moderate to severe addiction. The study revealed that females were more addicted to the internet than males. Internet addiction was significantly associated with factors such as availability of own personal gadgets ($P < 0.001$), use of smartphone ($P < 0.001$), exposure to internet at a very young age, internet usage for the purpose of exploring new things and building new relationships online and frequency of internet usage for more than 2–3 h/day. Interestingly, the study also identified a significant association of internet addiction with mother's education and father's occupation [Table 1].

Table 1
Association between internet addiction and sociodemographic characteristics
(n=1300)

Association between internet addiction and socio-demographic characteristics				
	Internet addiction			Chi square value (P value)
	Normal n (%)	Mild n (%)	Moderate to severe n (%)	
Gender				
Female	754 (58)	104 (8)	26 (2)	12.523 (0.002)
Male	364 (28)	52 (4)	0	
Father's education				
Primary	0	0	0	57.08 (0.00)
Secondary	494 (38)	78 (6)	0	

PUC	104 (8)	0	0	
Degree and above	520 (40)	78 (6)	26(2)	
Mother's education				
Primary	0	0	0	56.96 (0.00)
Secondary	710 (54.6)	113 (8.7)	9 (0.7)	
PUC	203 (15.6)	5 (0.4)	0	
Degree and above	205 (15.8)	38 (2.9)	17 (1.3)	
Father's occupation				
Salaried	549 (42.2)	62 (4.8)	13 (1)	20.88 (0.00)
Self-employed	489 (37.6)	78 (6)	5 (0.4)	
Others	80 (6.2)	16 (1.2)	8 (0.6)	
Mother's occupation				
Salaried	47 (3.6)	5 (0.4)	0	11.23 (0.19)
Self-employed	191 (14.7)	17 (1.3)	0	
Others	880 (67.7)	134 (10.3)	26 (2)	
Place of residence				
Urban	708 (54.5)	104 (8)	18 (1.4)	0.99 (0.608)
Rural	410 (31.5)	52 (4)	8 (0.6)	
Current place of stay				
Home	78 (6)	0	0	82.95 (0.00)
Outside	1040 (80)	156 (12)	26 (2)	
Socio-economic status (modified BG Prasad Classification) *				
Class I	546 (42)	78 (6)	0	64.39 (0.00)
Class II	519 (39.9)	52 (4)	26 (2)	
Class III	53 (4.1)	26 (2)	0	
Class IV	0	0	0	
Class V	0	0	0	

Table 2
Association between internet addiction and depression (n=1300)

Association between internet addiction and depression		
Internet		Chi

addiction	Depression					square Value (P value)
	Normal	Mild	Moderate	Severe	Extremely severe	
Normal	728 (56)	234(18)	104(8)	26 (2)	26 (2)	29.50 (0.002)
Mild	104 (8)	26(2)	26 (2)	0	0	
Moderate to severe	26 (2)	0	0	0	0	

Table 3
Association between internet addiction and anxiety (n=1300)

Association between internet addiction and anxiety						
Internet addiction	Anxiety					Chi square Value (P value)
	Normal	Mild	Moderate	Severe	Extremely severe	
Normal	520 (40)	338 (26)	182 (14)	52 (4)	26 (2)	73.4 (0.00)
Mild	52 (4)	52 (4)	26 (2)	26 (2)	0	
Moderate to severe	26 (2)	0	0	0	0	

Table 4
Association between internet addiction and stress (n=1300)

Association between internet addiction and stress						
Internet addiction	Stress					Chi square Value (P value)
	Normal	Mild	Moderate	Severe	Extremely severe	
Normal	676 (52)	234 (18)	130 (10)	52 (4)	26 (2)	260.45 (0.00)
Mild	52 (4)	0	52 (4)	52(4)	0	
Moderate to severe	26 (2)	0	0	0	0	

Discussion

The major purpose of the study was to estimate the prevalence of internet addiction among youth, particularly the health sciences students of a private university in coastal Karnataka and identify its associated factors. The prevalence of internet addiction in the present study was 14%, which was comparatively lesser than the study done in Udupi, Karnataka among undergraduate college students by Sharma B et al⁷ where the prevalence was 44% and the study done by Vijay et al¹⁶ among engineering and arts students where the addiction was 58.7%. This may be owing to the fact that the students of health sciences had a busy curriculum while compared to the engineering and arts students, so that they had less time to spend on internet. Few studies done outside India, namely the study done by Bahrainian and Khazae¹⁷ identified the prevalence of internet

addiction as 40.7% and the study conducted by Jahanian and Seifury¹⁸ reported the overall prevalence of internet addiction to be 44.5%.

In the present study the addiction among females was 14.7% and the addiction among males was 12.5%. This is in contrast to the study done by Sharma B et al⁷, Goel et al⁸, Vijay et al¹⁶ and Jain et al¹⁹ where the prevalence of internet addiction among males was more than females. Our study revealed that students who stayed outside home i.e. in hostel, paying guest etc showed a significantly higher amount of internet addiction when compared to those who were day scholars and stayed at home ($P < 0.001$). This is similar to the study done by Vijay et al¹⁶, whereas the study conducted by Sharma B et al⁷ did not show any association between internet addiction and the place of stay. Mother's education and father's occupation was also significantly associated with internet addiction which is similar to the study conducted by Sharma B et al⁷. It may be because mothers with higher educational status may be more technology friendly and their internet habits might have influenced their children. On the other hand, participants whose fathers were either salaried or self-employed were found to have a higher level of internet addiction. This is in contrast to the study conducted by Asiri et al²⁰ and Krishnamurthy et al²¹ which did not find any significant association between parent's occupation and internet addiction. The present study showed that better socioeconomic status of the family may play a key role in internet addiction as children are more likely to enjoy all the luxury that world has to offer which is similar to the study conducted by Sharma B et al⁷.

In our study it was found that 50% were using internet to explore new things whereas 44% used it for academic purpose. In the study conducted by Vijay et al¹⁶, 64.9% of the participants started using internet for academic purpose and in the study conducted by Sharma B et al⁷, 68.6% started using internet for academic purpose. The present study also determined that longer the duration of internet use, higher the level of addiction which is similar to the results reported by Sharma et al⁷, Rajesh²² and Vyjayanthi S et al²³. In the present study 66% of the participants reported that they would like to use internet at night. In the study conducted by Sharma B et al⁷ more than half of the participants (75.9%) who use internet in the daytime were normal users. Study conducted by Goel et al⁸ found that participants who are addicted to internet use it mostly at night or in the evening. About the online preferences, social networking played a significant role in enhancing internet addiction as the level of internet addiction was higher among those who preferred social networking. These findings can be compared to the study conducted by Sharma B et al⁷, Vijay et al¹⁶ and Kutty NA et al²⁴ who also reported that a vast majority of the participants who were addicted to internet use it for the purpose of social networking.

In the present study it was found that internet addiction was significantly associated with factors such as depression, anxiety, and stress. Increase in internet addiction led to subsequent increase in the level of depression, anxiety, and stress which is similar to the results reported by Sharma B et al⁷. Studies conducted by Panicker et al²⁵ and Ayas et al²⁶ also reported a significant relationship between internet addiction and depression whereas contrast to these findings a study by Reda et al²⁷ did not find any significant association between

internet addiction and depression. A study by Akin et al¹⁰ also identified a positive correlation between internet addiction and anxiety. A significant positive association between internet addiction and anxiety was reported by various national and international studies^{9,21,27,28}. Majority of the participants (76.4%) who were addicted to internet were exposed to environmental stressors in a study conducted by Chathoth et al²⁹.

Conclusion

The prevalence of internet addiction depicted in the present study was 14%, and it was found to be significantly associated with various factors. Although internet is considered as a boon to the mankind as it helps us to connect to the entire globe and also everyone is compelled to use it for various purpose, however, we need to know what is the optimum level of usage, beyond which its use can be addictive and can hinder our activities of daily living. Every intervention regarding prevention of internet addiction should be done right from the tender age of school going children, and they should be educated about the hazards of internet addiction. Counselling sessions should be organized to the students at regular intervals, for which the college faculty should be trained. Sensitization is very essential to the parents to identify the symptoms of internet addiction in their children. School and community based educational programmes should be conducted with targeted measures to reduce internet addiction among adolescents and youth.

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