Research Report

EMOTIONAL INTELLIGENCE, PERCEIVED STRESS, AND INTERNET USE BEHAVIOUR AMONG UNDERGRADUATE MEDICAL STUDENTS-A CROSS-SECTIONAL STUDY

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ABSTRACT

Aim: To find the pattern and characteristics of Problematic internet use and to determine the relationship between Internet Addiction, Perceived stress and Emotional Intelligence among medical students.

Materials and methods:

In this cross-sectional study, using convenience sampling, 368 study participants were selected from the undergraduate medical students of a medical college in North Kerala. After getting written informed consent, socio-demographic data sheet, Internet Addiction Test (IAT), Schutte Self Report Emotional Intelligence Test (SSEIT) and Perceived Stress Scale (PSS) were filled up by the participants. Completed responses were scored and analyzed using SPSS 18.0.

Results: Problematic internet use among the participants was 65.7%. In the sample, 42.9% had mild internet addiction, and 22.8% had moderate internet addiction. There was a positive correlation between scores of IAT and PSS and a negative correlation between scores of IAT and SSEIT. A pattern of increased levels of perceived stress and decreased levels of emotional intelligence was noticed with increasing levels of internet addiction scores.

Conclusion: Young medical students were found to have mild and moderate levels of internet addiction and were high in perceived stress. Those with an addiction pattern of internet use also showed lower levels of emotional intelligence. It is crucial to identify those with lower levels of emotional intelligence and intervene effectively for stress management to reduce the internet overuse and emotional sequelae of it.

Keywords: Internet Addiction, Perceived stress, Emotional intelligence, Medical students

INTRODUCTION

The internet has become an integral part of our day to day life. According to the internet world stats, there are 4.6 billion internet users globally; who form 59.6% of the world population and 50.9% of this is in Asia. There was 1187% growth in internet usage worldwide in the past decade.[1]

With the emergence of clinical cases presenting with psychological problems and work difficulties associated with excessive internet use,[2] several studies were conducted in this area. The existence of an entity called Internet Addiction is a topic of debate among experts. Nevertheless, the inclusion of Internet Gaming Disorder in section III of the updated version of DSM-5 within the category of Non-Substance Related Addictive disorders points out that Internet Addiction could be another candidate for this category in future.

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Emotional intelligence is defined as the capacity to reason about emotions and for emotions to enhance thinking. It includes abilities to accurately perceive emotions, to access and generate emotions to assist thoughts, to understand emotions and emotional knowledge, and to regulate emotions to promote emotional and intellectual growth reflectively.[4] Literature shows that emotional intelligence can predict perceived stress.[5] A positive relationship exists between perceived stress and internet use behaviour according to a recent study.[6]

This study is put forth as an attempt to throw light on the relationship between internet use behaviour, emotional intelligence, and perceived stress among youngsters. We hypothesized that problematic internet use would be more in medicos, with high perceived stress and low emotional intelligence.

AIMS AND OBJECTIVES

- To study the prevalence, pattern, and characteristics of problematic internet use among medical students.
- To determine the relationship between Internet Addiction, Perceived stress, and Emotional Intelligence among medical students.

MATERIALS AND METHODS

A cross-sectional study was conducted among the undergraduate medical students of a medical college in north Kerala. Every year, around 250 students join for MBBS in this institution. Permission from the head of the institution, the institutional research committee, and the ethics committee were taken. A sample size of 336 was calculated using the formula $N=4pq/d^2$ N=sample size, p= prevalence according to a previous study (8.24)[7], q=100-p=91.76, d=an absolute precision of 3%). The convenience sampling method was used in enrolling the study participants. The study was started in July 2019 and completed in one month.

A semi-structured proforma specially drafted for the study which contains socio-demographic variables like age, gender, marital status, accommodation status, number of years in medical college and details of the substance use and internet accessibility. Young's Internet Addiction Test (IAT), a 20-item scale that measures the presence and severity of internet dependency, is used in this study. The maximum score of this scale is 100. The scores between 0 to 30 denotes a normal level of internet usage, 31 to 49, a mild level of internet addiction, 50 to 79, moderate level of internet addiction and 80 to 100, severe internet dependence.[8] A 33 item self-report scale, The Schutte Self Report Emotional Intelligence Test (SSEIT) is used for assessing Emotional Intelligence. The total score is the sum of the ratings for the 33 items after reversing the responses of three items (items 5,28 and 33).[9] The Perceived Stress Scale (PSS) is a 10 item rating scale, used for measuring the perceptions of stress. Scores are obtained by reversing responses to the four positively stated items (items 4,5,7,8) and then summing across all scale items.[10]

The concept, purpose and method of the study and the administration of the tools were explained to each batch of students by the principal investigator by visiting them in the lecture halls during the intervals between their theory classes. A total of 392 students, from various batches, had expressed interest in participating in the study and had given written informed consent, were enrolled. More participants were enrolled expecting the possibility of delayed, forgotten and incomplete submissions. Hard copies of the socio-demographic and clinical data sheet, IAT, PSS and SSEIT scales, in English, were distributed in each batch. On pre-decided dates, representatives of each batch collected all the forms filled up by the participants of their batch and handed over to the investigators. To prevent revealing the identity and to protect privacy, no participant could hand over the filled-up forms directly to the investigators and no personal information like name or contact number was collected from them. Data from 368 participants, which were available after excluding the incomplete forms, were used for the analysis.

STATISTICAL ANALYSIS

The data obtained were analyzed using the statistical package for social services version 18.0 (SPSS 18) for windows. Descriptive data for categorical variables were computed in terms of frequency and percentages, and for the continuous variables, mean and standard deviations were calculated. Comparisons were made by Chi-square test and analysis of variance (ANOVA). Correlation between different variables was studied by using Pearson's correlation coefficient.

P-value <0.05 was considered significant for this study.

RESULTS

Out of the 392 enrolled participants, 368 returned completed forms giving a response rate of 93.9%. Around 70% of our study participants were between 21 and 23 years of age, and 66.8% were females. About 91.3% were staying in hostels, and 98.9% were unmarried. The socio-demographic characteristics of the sample are given in Table 1.

No evidence of any substance dependence was identified, but 4.8 % of the participants had experimented on various substances including tobacco, alcohol and cannabis.

Table 1: Socio-demographic characteristics of the sample

Socio-demographic Variables	No of subjects (N=368)	Percentage
Age groups		
18-20	99	26.9
21-23	262	71.2
24-28	7	2
Gender		
Male	122	33.2
Female	246	66.8
Accommodation		
Hostel	337	91.6
Home	4	8.4
Year of study (MBBS)		
4th	122	33.2
3rd	76	20.7
2nd	112	30.4
1st	58	15.8
Marital Status		
Unmarried	364	98.9
Married	4	1.1
Substance experimented		
Tobacco	5	1.4
Alcohol	9	2.4
Cannabis	2	0.5
LSD	1	0.3
Opioids	1	0.3
Other substances	8	2.2
Internet use on their smartphone		
Yes	366	99.5
No	2	0.5
Years online		
1-5	259	70.4
5-10	102	27.8
10-14	7	1.8
Using the internet for academics		
Yes	305	82.9
No	63	17.1

Table 2: Percentage of time spent on various non-academic online activities

Online activity	Percentage
Adult entertainment sites	
>40% of time	5.1
<40 % of time	26.9
Not using	67.9
Chat room	
>40% of time	21.8
<40 % of time	34.6
Not using	43.8
Instant messaging	
>40% of time	23.1
<40 % of time	45.6
Not using	31.3
Online gaming	
>40% of time	6
<40 % of time	26.6
Not using	67.4
Online shopping	
>40% of time	4.9
<40 % of time	56.3
Not using	38.9
Recreational surfing	
>40% of time	24.5
<40 % of time	38.3
Not using	37.2

Table 3: Internet addiction severity

Severity of internet addiction (IAT Score Range)	No of subjects	Percentage of subjects
No Addiction (0-30)	126	34.2
Mild (31-49)	158	42.9
Moderate (50-79)	84	22.8
Severe (80-100)	0	0

Table. 4 Comparison of PSS and SSEIT scores among different groups as per IAT (N=368)

	No internet addiction (n =126) Mean (SD)	Mild internet addiction (n =158) Mean (SD)	Moderate internet addiction (n =84)	Sum of Squares	df	Mean Square	F	p-value
PSS Score	17.7 (6.11)	20.2 (5.3)	23.5 (5.83)	1649.0	2	824.5	25.05	<0.001
SSEIT Score	122.5 (15.67)	120 (14.02)	115.5 (13.64)	2790.0	2	1395.0	6.61	0.002

IAT-Internet Addiction Test; PSS-Perceived Stress Scale; SSEIT Schutte Self Report Emotional Intelligence Test SD-standard deviation; df –Degree of freedom

Table: 5 Association between the number of years in medical college with the IAT score categories

No of years in the institution	IAT Score categories			χ^2 (df)	p-value
	No Addiction (n=126)	Mild Addiction (n=158)	Moderate Addiction (n=84)		
1	31	59	32		
2	36	27	13		
3	33	49	30	15.05 (6)	0.020*
4	26	23	9		

χ^2=Pearson Chi-square value; df –Degree of freedom; IAT-Internet Addiction Test

Of the participants, 95.5% owned a smartphone and were using the internet for a minimum period of one year. Nearly 83% of the subjects were using the internet both for academic and recreational purposes. Most participants were using the internet for instant messaging and recreational surfing. Less than 33% of the subjects played online games. Table 2 shows the percentage of time spent by the subjects for various online activities other than academics.

As per IAT scoring, 42.9% of the subjects had mild internet addiction, and 22.8% had moderate internet addiction. No one was identified with severe internet addiction, and 34.2% scored below 30, which indicated no addiction, according to IAT. (Table 3)

Table 4 shows mean scores of Perceived stress and Emotional intelligence scales among various scoring levels of IAT. Comparison of the scores PSS & SSEIT using ANOVA across categories of IAT, categorized as no addiction, mild addiction, and moderate addiction, it was found that there was a statistically significant association between internet addiction and increased levels of perceived stress and decreased levels of emotional intelligence.

This study shows a positive correlation between IAT and PSS scores and a negative correlation between IAT and SSEIT scores (Figures 1 and 2). Pearson correlation coefficient for scores of IAT and PSS s was 0.41 and for IAT and SSEIT was -0.24.

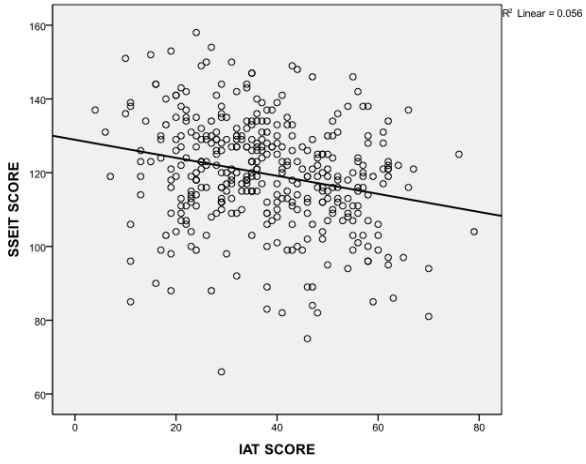
No statistically significant relation was found on comparing various IAT categories with the number of years in medical college using the chi-square test. (Table 5)

DISCUSSION

The current study attempts to evaluate the problematic internet use of medical students and its relationship with perceived stress and emotional intelligence in a teaching institution. Previous studies have highlighted the importance of studying internet addiction (IA) in university students because they are more likely than the general population to use the internet and vulnerable to develop IA [11, 12, 13]

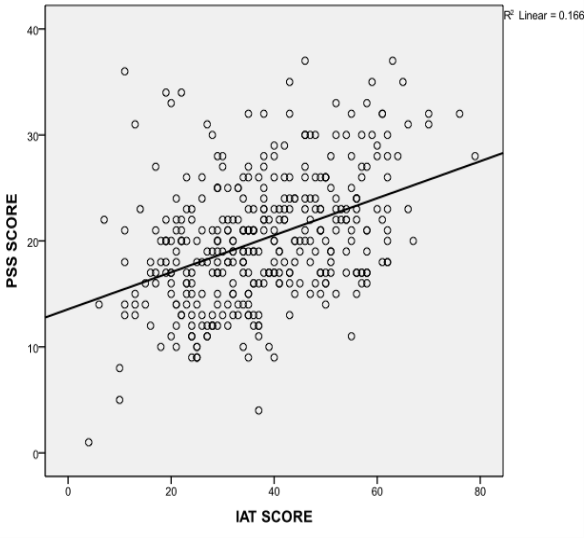
Problematic internet use among the participants was 65.7% in our study. It is higher than the 2015 study findings among undergraduate medical students from India, which was 58.87% [14] and that of a study from Egypt, where it was 47.7%.[15] A study conducted in Indore 10 years back on 242 medical students showed only 9.5% of participants with IAT scores falling under the category of internet addiction.[16] This could be explained based on the technological advancements over the past decade.

Figure 1: Correlation between IAT and PSS scores



IAT: Internet addiction test, PSS: Perceived stress scale, Pearson correlation coefficient:0.41

Figure 2: Correlation between IAT and SSEIT score



AT-Internet addiction test; SSEIT-Schutte self-report emotional intelligence test; Pearson correlation coefficient: 0.24

Interestingly, findings of similar studies on resident doctors from India show a lower prevalence range from 3.8 to 13%.[7,17,18] A meta-analysis published in 2017 pointed out that the prevalence of internet addiction among medical students is five times higher than that of the general population. But the prevalence in that study was only 30.1%.[19]

In our study, 95.5% had their smartphone with which they accessed the internet. A recent study among engineering students from various colleges of north and central India showed that 76% of the participants access the internet with their smartphone.[20] According to Greenfield DN, the availability of a portable device and the resultant threshold reduction has a significant impact on internet use behaviour.[21] Portable devices like smartphones, improve the ease of access to the internet, which is an essential factor that increases the addictive potential. This also hampers the ability to manage and balance time, energy, and attention, which in turn leads to lifestyle changes and behavioural deficits. [22] This suggests that easy accessibility could be an important factor leading to problematic internet use. Other factors could be the rapid expansion of mobile broadband network coverage, smartphone applications, and cheaper internet prices.[20]

Of the total subjects, 66.8% were females, and 33.2% were males. Our sample contained twice more female participants than males. Female predominance among the respondents is noticed in a recent similar study population too.[23]The study also showed that social networking was the most frequently accessed content online by both genders. Less than 33% played online games in the current study. A recent Japanese study among university students showed that female students spend more time in social networking while online games engage males more.[24] Strittmater E. et al. also reported gender differences in the pattern of internet use. According to the same authors, young males with problematic Internet use are more likely to be gamers and have peer relation problems, and young females use social media more and have a high risk of depression. They also found elevated levels of psychopathology and self-harming behaviour in both groups.[25]

In this study, the highest internet addiction score found was 79, and the lowest was four. In a 2020 study among

Pakistani medical students using the same tool, these scores were 93 and 2 respectively. [23] Their median IAT score was 38, which was the same in our study too. Around 42.9% of the subjects were found to be having mild and 22.8% moderate internet addiction as per IAT scores in our study. Chaudhari B. et al. in their sample, identified 51.42% and 7.45% of medicos with mild and moderate addiction respectively.[13]

None of our study participants had severe internet addiction as per IAT, whereas 28.2% showed scores corresponding to severe internet addiction in a study by Javaeed A, Jeelani R et al.[23] The same study showed only 0.9% of participants scored below 30 in IAT. In comparison, our study has 34.2% of participants with scores indicating no internet addiction.

A study from Southwestern Iran showed 47.4% mild, 38.1% moderate, and 12.9% severe internet addiction levels among undergraduates.[26] The same 2019 study had only1.6% of participants without internet addiction. They identified a significantly higher proportion of senior students with severe internet addiction (16.4%) compared to junior students.

Earlier studies have revealed a positive relationship between perceived stress and Internet addiction among various age groups.[6, 27, 28] Mild and moderate internet addictions in our study were positively associated with a higher level of perceived stress. This finding was consistent with a similar study among resident doctors of a tertiary care hospital of north India.[7]Wu et al. had identified that youngsters with Internet addiction are more stressed than those without IA.[29] Some studies show that highly stressed online gamers use online gaming to relieve their perceived life stress.[30] Al Gamal et al. had pointed out that students who used problem-solving had lesser scores in IAT.[31] Haroon MZ et al. report that short periods of abstinence from the internet especially social networking sites may reduce perceived stress.[32]

We also found a statistically significant inverse relationship between internet addiction and emotional intelligence. Meyer JD and Salovey P, in their book, 'What is emotional intelligence?' had mentioned that higher mental ability for processing social cues and =pressures due to higher emotional intelligence might be helping individuals to understand the harmful consequences of excessive internet use better and making them deal with such stresses effectively.[33]

In a study conducted in Sweden in 2004, people scoring higher on IAT showed poor performance in emotion decoding tasks.34There was a significant reduction in emotional intelligence in students with internet addiction compared to those without it. A decrease in emotional intelligence scores was noticed with the increase in the scores of internet addiction test in the study. A moderate and inverse relation between internet addiction and emotional intelligence was found in a meta-analysis by Ranjbar H and Bakhshi M in 2018.35

There was a statistically significant difference in the emotional intelligence of the subjects in 'no', 'mild' and 'moderate' internet addiction categories. A study conducted by Sanghvi et al. in 30 subjects reported inconsistent findings that there was no significant relation to internet addiction with perceived stress and emotional intelligence.36

In a cross country study among undergraduate students, it was noticed that there was no direct relationship between perceived stress and emotional intelligence, which is inconsistent with this study.37 But they have observed an indirect negative relation with emotional intelligence through resilience.

LIMITATIONS

A generalization of our results to all other medical colleges may not be possible. Data from various government and private medical colleges in both urban and rural settings are required for such a generalization. As the information was collected using self-administered questionnaires, the possibility of social desirability bias is a limiting factor in this study. We had a smaller number of day scholars and male students as participants in our study. Also, the participation from two batches was comparatively less in our sample. Though we had a high response rate of 93.9% in our study, there could be some selection bias due to these. As the participation was anonymous, we couldn't meet the non-respondents and enquire about the reason; knowing which would have helped in planning future studies and interventions. The data is cross-sectional rather than longitudinal, so the findings cannot be used to attribute causal relationships. Prospective studies are

more desirable to study the association of various stressors like academic burden, relationship problems, etc. with the perceived stress. It would have been better if a comparison between those with IAT scores indicating addiction and those with no addiction was possible. As our results showed an approximate 2:1 ratio of addiction and no addiction scores in IAT, such a comparison was not made.

CONCLUSIONS

The prevalence of problematic internet use behaviour among undergraduate medical students was found to be 65.7%. Only mild and moderate levels of internet addiction were present, and they were showing significant perceived stress compared to those with no internet addiction as per IAT. Those with an addiction pattern of internet use also showed lower levels of emotional intelligence. It would be useful to identify those with lower levels of emotional intelligence and intervene effectively with stress management strategies during MBBS. Formal stress management sessions for undergraduate medical students would help reduce or prevent problematic internet use and emotional sequelae and help increase the productivity of the medicos. Future studies need to be carried out to have an in-depth analysis of these factors in various medical college environments and to plan suitable interventions thus to improve the overall mental health status of the undergraduate medical students all over the country.

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None declared.

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