Internet Addiction among Medical Students and Its Impact on Academic Performance: An Indian Study

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Abstract

Background: Internet has become an indispensable part of medical student’s life. They may experience difficulty in reducing the duration and frequency of internet use, gradually getting addicted to it. The literature on internet usage among Indian medical students is limited and there are hardly any Indian studies correlating Internet addiction and academic performance. This study aimed to determine the prevalence of Internet addiction among medical students and its correlation with academic performance.

Methods: A cross sectional study was performed among first year to final year medical students from a medical college in South India. Their internet activities were assessed using Internet addiction Questionnaire developed by Kimberly Young. Academic performance was assessed based on the sessional marks obtained in respective subjects. Descriptive / inferential statistics including correlation and ordinal regression was used for analysis.

Results: A total of 381 students participated in the study. Out of them, females were 294(71.9%) and males were 107 (28.1%). Prevalence of internet addiction was found to be 61.4%. Among them 149 students (63.7%) had mild, 83 had moderate (35.5%) and 2 (.8%) had severe addiction. Academic performance had a negative association with internet addiction.

Conclusion: Prevalence of internet addiction was very high among Indian medical students. Internet Addiction had a negative impact on their academic performance. Early prevention from internet addiction should be emphasized. Awareness is very much important to take up the issue at higher level and to implement measures for preventing it.

Keywords: Internet Addiction, medical students, Indian, academic performance.
Introduction
In the present century of Information and technology, Internet has become a basic necessity of our society. It’s an important tool for social interaction, information and entertainment. Unlike in the past, Computers are now part of school student’s curriculum. It has gained great importance among students and adolescents. They grow up with internet and computers. As they use internet to the formal parts of their education, they go online to enhance their social lives\(^1\),\(^2\).

Use of internet by medical students is unavoidable as it has revolutionized the medical practice with the increasing use of telemedicine and evidence based medicine.\(^3\) Students use internet for literature searches and for other relevant medical information, as it’s inexpensive and freely accessible.\(^4\) However judicious usage of internet is highly recommended by psychologists and educators as over usage can lead to related physical and psychological problems.\(^5\) As per literature, usage of internet for 38 hours per week on average may lead to problems such as lack of sleep and excessive tiredness. Furthermore, this affects their study performance due to poor concentration in class.\(^6\)

Recent reports from China, Korea, and Taiwan indicated that interactive online gaming has reached addictive proportions\(^7\) and those medical students who spend their time intensively and inappropriately on internet are prone to get addicted to it.\(^8\)

The term “internet addiction” (IA) otherwise known as internet addiction disorder is documented as a psychiatric ailment with precise diagnostic and management principles\(^9\) but yet to get included in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*\(^10\). In the American Journal of Psychiatry, US psychiatrist Jerald Block states that “IA appears to be a common disorder that merits inclusion in DSM-V”.\(^11\)

The global relevance of internet addiction among medical students is rising and its growing negative impact on physical, psycho social and academic performance is worrisome. A study done in Malaysia, reported Internet Addiction among medical students as 36.9 %\(^12\). Another study done in China showed a negative correlation between internet usage and academic records\(^13\). Overall academic performance and there by the development of knowledge, skills and attitude will be affected adversely by IA.

The literature on internet usage among Indian medical students is limited and there are hardly any Indian studies correlating Internet addiction and academic performance. This study aimed to determine the prevalence of Internet addiction among medical students and its correlation with academic performance from a medical college in India.

Materials and Methods

Study setting and criteria
This Cross sectional study was conducted between November 2017 and March 2018 in a medical college in South India. Medical students from first year to final year were selected for the study. Those Medical students who were using internet and who were willing to participate in the study were enrolled in the study. Students who were diagnosed to have psychological distress or any systemic illness and those who were unwilling to participate were excluded from the study.

Ethics Clearance was sought from the Institutional Ethics Committee (IEC) before conducting the study and a written informed consent was taken from the students prior to the study.

Data collection
A peer validated questionnaire was distributed to collect data regarding student’s identity, demographic and socio-economic status, patterns of their internet usage and the purpose of its use. Internet Addiction Diagnostic Questionnaire (IAT)\(^1\),\(^4\),\(^14\)-\(^16\) developed by the Center for Internet Addiction, USA was used to collect the data regarding internet usage. The questionnaire contains 20 questions that examine the symptoms of IA based upon a five-point Likert scale. After all the questions are answered, the numbers for
each response were added up to obtain a final score.
0 □ Not applicable
1 □ Rarely
2 □ Occasionally
3 □ Frequently
4 □ Often
5 □ Always
The severity impairment index was determined as follows:(1, 14-16)
None: 0-30 points
Mild: 31-49 points. (Respondent is an average online user who may surf the Web a bit too long at times, but has control over your usage.)
Moderate: 50-79 points. (Respondent may be experiencing occasional or frequent problems because of the Internet and consider its full impact on life.)
Severe: 80-100 points: (Respondent has significant problems in life due to Internet usage and should evaluate the impact of the Internet and address the problems directly caused by Internet usage.)
Sessional marks in their respective subjects were collected from the concerned departments and the average mark was calculated for assessment of academic performance. Academic performance was graded as good, average and poor if the average sessional marks in their respective subjects were between 100 - 65 %, 65-50 % and less than 49% respectively.

Statistical Analysis
Statistical analysis was performed using the SPSS 20. Descriptive / inferential statistics including Analysis of tables with Pearson's chi-square test, means with analysis of variance (ANOVA), correlation between continuous variables and ordinal regression were done as applicable. A p-value of <0.05 was considered to be significant.

Results
A total of 381 students participated in the study. Among them, females were 294(71.9%) and males were 107 (28.1%). Majority of them stayed at hostel and used internet for their both academic and entertainment activities. 93 % of total respondents used WhatsApp account and 76% of them used Facebook account for social communication. WhatsApp was the preferred communication tool for majority of them and most of them preferred portable gadgets for accessing internet.
Based on IAT Questionnaire 234 respondents (61.4%) were found addicted to the internet. On further categorizing internet addiction based on score, 149 students (63.7%) had mild, 83 had moderate (35.5%) and 2 (.8%) had severe addiction. 79% of male respondents were addicted to Internet as compared to 56% of female respondents and the difference was statistically significant. (p value 0.001)
When internet addiction was analyzed among various batches, the incidence was found to be higher among respondents of intermediate batches and the difference was found to be statistically significant. (p value 0.000)
Table 1 shows comparison of patterns of internet usage and socio demographic data among students with and without addiction. Presence of Facebook and WhatsApp accounts and increased frequency of its usage had a positive association with internet addiction. Similarly respondents using internet for more than 2 hours a day and more than an hour for social communication also had positive correlation with internet addiction.
When the association between internet addiction and academic performance was studied, negative correlation was observed between the two variables as depicted in the scatter diagram figure 1 but strong determinants for academic performance were found to gender and batch than internet addiction as studied by multiple ordinal regressions (Table 2).
Table 1: Association of socio demographic factors and patterns of internet use with internet addiction

|                              | Internet Non addiction % | Internet addiction % | P value |
|------------------------------|--------------------------|----------------------|---------|
| **Gender**                   |                          |                      |         |
| Male                         | 25.2%                    | 74.8%                | .001    |
| Female                       | 43.8%                    | 56.2%                |         |
| **Home town**                |                          |                      |         |
| Urban                        | 35.8%                    | 64.2%                | .64     |
| Semi urban                   | 40.2%                    | 59.8%                |         |
| Rural                        | 40.9%                    | 59.1%                |         |
| **Place of stay**            |                          |                      |         |
| Hostel                       | 38.9%                    | 61.1%                | .39     |
| Home                         | 28.6%                    | 71.4%                |         |
| Others                       | 60%                      | 40%                  |         |
| **Purpose of internet use**  |                          |                      |         |
| Entertainment                | 100%                     | 0%                   |         |
| Academic                     | 12.5%                    | 87.5%                | .043    |
| Both                         | 39%                      | 61%                  |         |
| **Face Book Account**        |                          |                      |         |
| No                           | 62.5%                    | 37.5%                | <.0001  |
| Yes                          | 31.4%                    | 68.6%                |         |
| **Access to face book**      |                          |                      |         |
| Many times a day             |                          |                      |         |
| Once or twice a day          | 12.8%                    | 87.2%                | .000    |
| Once or twice a week         | 34.8%                    | 65.2%                |         |
| Once or twice a month        | 41.8%                    | 58.2%                |         |
| Access to WhatsApp           |                          |                      |         |
| Yes                          | 78.3%                    | 21.7%                | .000    |
| No                           | 78.3%                    | 21.7%                |         |
| **Preferred gadget**         |                          |                      |         |
| Portable                     | 43.8%                    | 56.2%                | .428    |
| Non portable                 | 38.8%                    | 61.2%                |         |
| Mixed                        | 31.7%                    | 68.3%                |         |
| **Preferred communication tool** |                      |                      |         |
| Email                        | 100%                     | 0%                   |         |
| Face book                    | 43.5%                    | 56.5%                |         |
| WhatsApp                     | 37.1%                    | 62.9%                |         |
| Web board                    | 33.3%                    | 66.7%                | .004    |
| Mixed                        | 28.6%                    | 71.4%                |         |
| **Average time spent on internet/day** |                  |                      |         |
| < 2 hrs                      | 60.3%                    | 39.7%                | .000    |
| 2 - 4 hrs                    | 14.4%                    | 85.6%                |         |
| >4 hrs                       | 3.6%                     | 96.4%                |         |
| **Average time spent for social communication** |                  |                      |         |
| < 1 hr                       | 57.6%                    | 42.3%                | .000    |
| 1-2 hr                       | 23.8%                    | 76.1%                |         |
| >2 hrs                       | 1.56%                    | 98.4%                |         |

p value < .005; considered statistically significant
Figure 1: Scatter diagram showing the correlation between internet addiction and academic performance among males and females

Table 2: Major determinants for academic performance on multiple ordinal regression

|          | Estimate | Sig.  | 95% Confidence Interval |
|----------|----------|-------|-------------------------|
|          |          |       |                         |
| Threshold|          |       |                         |
| [GRADE = .00] | -4.891 | .010  | -8.605 - (-1.177)       |
| [GRADE = 1.00] | -.282  | .882  | -3.985 - 3.422          |
| [GRADE = 2.00] | 2.925  | .120  | -.766 - 6.616           |
| Location |          |       |                         |
| [SEX= Female] | -.858  | .001  | -1.341 - (-.374)        |
| [SEX= Male] | 0a      | ..    | .                      |
| [BATCH=2013.00] | -1.631 | .000  | -2.291 - .970          |
| [BATCH=2014.00] | -.080  | .800  | -.703 - .542           |
| [BATCH=2015.00] | .793   | .020  | .126 - 1.459           |
| [BATCH=2016.00] | -2.157 | .000  | -2.847 - 1.467         |
| [BATCH=2017.00] | 0a      | ..    | .                      |
| [ADDICTION=.00] | 2.713  | .148  | .965 - 6.391           |
| [ADDICTION= mild] | 3.598  | .055  | -.081 - 7.276          |
| [ADDICTION= moderate ] | 3.494  | .063  | -.196 - 7.184          |
| [ADDICTION= severe ] | 0a      | ..    | .                      |

p value < .005; considered statistically significant

Discussion
The prevalence of internet addiction among medical students was 61.4%. Surprisingly, the prevalence rate was much higher when compared to previous studies done among medical students. A study done in Malaysia among medical students in 2016 reported incidence as 36.9%.[12] Studies done in China and Iran, in 2010 and 2011 had reported internet addiction as 16.2% and 10.8% respectively which is much lower compared to this study.[13,17] The increased incidence over few years may be due to the advances in technology making it easily accessible and cheaper for students, thus making them more dependent on it. Almost 2/3 rd of respondents of IA, had mild addiction, 1/3 had moderate addiction and only 2 respondent had severe addiction. Though majority of them stayed at hostel, place of stay did not have
any association with IA. Thus lack of interference from parents was not an important factor in predicting IA.

Males had significantly higher rates of addiction in this study as compared to females and was consistent with studies done in China\(^{(13)}\) and Malaysia\(^{(1)}\). Duration of time spent on internet per day was another significant predictor for internet addiction and these findings were similar with a study done in Malaysia\(^{(12)}\). Those students who spend more than 2 hrs on internet were more prone for addiction.

It was observed that respondents from final year and first year had less addiction as compared to intermediate batches. This may be because first year students are under strict supervision and have restrictions for their internet usage. At the same time, final year students preparing for university exams may be more serious with their studies as compared to intermediate batches.

In our study, internet addiction had negative impact on academic performance and these findings were consistent with other studies.\(^{(9,18)}\) According to Schener, long time use of internet have possible adverse effect on academic performance, behavior and custom of students.\(^{(19)}\) However academic performance can be influenced by various factors. Gender and batch had more association with academic performance than internet addiction.

**Strength and limitations**

To my knowledge, this study represents the first study done among Indian medical students in relation to internet addiction and its correlation with academic performance. Major limitation of this study is this was done conducted in a single centre and hence the results cannot be generalized to the student population. Hence a multi centric study is recommended among medical students across various colleges to confirm the association between internet addiction and academic performance.

**Conclusion**

The prevalence of internet addiction among medical students is high, as 61.4 %, so early prevention from IA should be emphasized. IA affects academic performance negatively and hence it should be used judiciously by medical students. Male gender, duration of internet usage more than two hours, frequent use of internet for social communication and intermediate batch students had strong association with Internet addiction. Awareness is important at higher level to address the issue and implement measures for its prevention and treatment. As an emerging problem affecting student education, rehabilitation programs may be useful in the future.

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