

# Smart Phone and Internet Addiction among Undergraduate Medical Students

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## Abstract

**Background:** Smartphone is an indispensable miracle of artificial intelligence in the hands of global netizens. The internet and smartphones have a strong potential for addiction. Excessive usage of these technologies can have adverse effects on physical, social, and psychological well-being of the users.

**Objective:** To assess the prevalence of Smartphone and Internet addiction and the associated factors among medical students.

**Methodology:** Cross-sectional study was conducted among 202 undergraduate medical students. Data was collected using pre-tested and pre-designed proforma after taking informed consent on voluntary basis. Smartphone addiction scale - short version (SAS-SV) and Internet addiction test (IAT) was used to assess smartphone and internet addiction respectively. Descriptive statistics and Chi-Square test and odds ratio was applied..

**Results:** Among 202 undergraduate medical students 41.58% were addicted towards smartphone. 55.45% were having internet addiction, of which 39.60% and 15.35% were having mild and moderate level. 53.75% who were addicted to smartphone were having moderate and mild levels of internet addiction. This finding was found to be statistically significant ( $\chi^2 = 57.609$ ,  $df = 1$ ,  $p = 0.0001$ ,  $OR = 13.4429$ )

**Conclusion:** Smartphone addiction and internet addiction are related proportionally. It is necessary to create awareness regarding the ill health effects and to promote physical, social, and mental well-being among students from the undergraduate level.

**Keywords:** Addiction, Internet, Medical student, Smartphone, Undergraduate

## Introduction

A smartphone is a portable computer device that combines mobile telephone functions and computing functions into one unit, which was released in the

year 1994.<sup>1</sup> Each and every day, most of us rely on our smartphones to communicate, research, and for entertainment. The usage of smartphone has grown over time and can be anticipated to increase further also.<sup>2</sup> Smartphones are considered as an essential item,

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an integral tool necessary for communicating and connecting to families, friends and work or even used for educational purposes and during emergencies.<sup>3</sup> They have become an integral part of life and plays a pivotal role in the current global scenario.<sup>4</sup> A multitude of leisure activities drive smartphones usage, which include gaming, music, photo and video sharing on social networks like Facebook, Twitter, WhatsApp, Instagram, Snapchat and many others. Smartphone users in developing countries like India is showing an uphill curve more evident among younger age group population.<sup>5</sup>

Worldwide, smartphones were used by 6.05 billion people in 2020 and is expected to be 6.37 billion in 2021 and will further increase to 7.33 billion in 2025.<sup>6</sup> With this expeditious usage of smartphones, we are into the era of new kind of health disorder called "smartphone addiction (SA)/abuse/misuse" which unfortunately has emerged as a challenging public health problem needing prompt attention, so, as to avoid untoward consequences.<sup>7</sup>

College students are the most rapid adopters of cell phone technology and research suggests association prevails between smartphone usage and their health and academic achievements.<sup>8</sup>

In the days, where mental health is as crucial as physical health, increased usage might be related to sleep disturbances and depression.<sup>9</sup> Internet has become one of the basic necessities of livelihood for electronic commerce, sharing of information and entertainment.<sup>10</sup>

Initially devised for information exchange and research purpose, internet has literally percolated every aspect of human life including social communication, education, health seeking, banking, business, administration, shopping, and entertainment. This progress has made our lives easy but overuse or misuse of internet can lead to pathological and addictive effects.<sup>11</sup>

Students are most vulnerable for cultivating dependency on the internet. This can be attributed to factors like availability of time, unlimited access to the Internet, limited or no parental supervision, for educational purposes and communication. Smartphone and Internet addiction can have a detrimental impact on identity formation and may

negatively affect cognitive functioning, affecting academic performance, indulging in risky activities, and poor dietary habits.<sup>12</sup>

These addictions are associated with decline in social circle, depression, loneliness, low family function, lower self-esteem and life satisfaction.<sup>13</sup> Hence, this study was conducted to assess the prevalence of Smartphone and Internet addiction among undergraduate medical students.

## Methodology

**Study design and duration:** Cross-sectional study was conducted for a period of three months from July-September 2021 after obtaining approval from the Institutional Ethics Committee.

**Study area:** SDM College of Medical Sciences and Hospital, Dharwad, Karnataka which is a tertiary care and teaching hospital.

**Study population:** Undergraduate medical students from all the professional years.

**Inclusion criteria:** Medical students who accepted to get enrolled in the study on voluntary basis after taking written informed consent.

**Exclusion criteria:** Medical students who did not agree to participate on voluntary basis and not ready to give written informed consent.

**Sample size:** 275 medical students from all professional years were considered for the study, of which 202 students accepted to get enrolled for the study on voluntary basis after giving consent and remaining 73 students who did not agree to participate in the study were excluded from the study population. The sample size was 202.

**Sampling procedure:** Convenient type of sampling was done and a total of 202 students accepted to get enrolled for the study on voluntary basis after giving consent.

**Study instrument:** The proforma consisted of two parts - Part I and Part II. Part I consisted of socio-demographic details, Part II consisted of Smartphone addiction scale - short version (SAS-SV)<sup>14</sup> and Internet addiction test (IAT)<sup>15-17</sup> to assess smartphone and internet addiction respectively.

**Smartphone addiction scale - short version (SAS-SV):**<sup>14</sup> The SAS-SV is a validated scale originally constructed in South Korea, but published in English (Kwon, Kim, et al., 2013). It contains ten items rated on a dimensional scale (1 “strongly disagree” to 6 “strongly agree”). The total score ranges from 10 to 60 and it provides a cut-off value for addiction, which is 31 for boys and 33 for girls.

**Internet addiction test (IAT):**<sup>15-17</sup> Developed by Dr. Kimberly S. Young. This questionnaire consists of 20 statements. The IAT total score is the sum of the ratings given by the examinee for the 20 item responses. Each item is rated on a 5-point Likert scale ranging from 0 to 5. The maximum score is 100 points. The higher the score is, the higher is the severity of your problem. Total scores that range from 0 to 30 points reflect a normal level of Internet usage; scores of 31 to 49 indicate the presence of a mild level of Internet addiction; 50 to 79 reflect the presence of a moderate level; and scores of 80 to 100 indicate a severe dependence upon the Internet.

**Data collection:** Data was collected after taking written informed consent from the students, who agreed to participate in the study on voluntary basis using the proforma.

**Statistical analysis:** Data collected was analysed using SPSS software version 27.0. Descriptive statistics was done and Chi-square ( $\chi^2$ ) test was applied to determine association between two categorical variables. Odds Ratio (OR) with 95% confidence interval was calculated. Statistical significance was set at 5% ( $p < 0.05$ ).

**RESULTS:** A total of 202 medical students participated in the study. Majority were females 103 (50.99%). Mean age of the study participants was  $20.34 \pm 2.34$  years. Table 1 depicts gender-wise distribution usage of smartphone. Of the 202 study participants, it was found that all of them were using smartphone, of which 50.82% females were using the smartphone. Majority, 52.48% participants were using the smartphone for around 5 to 10 hours per day, of which 56.60% were females and 43.40% were males.

Table 2 depicts the details of smartphone addiction using Smartphone addiction scale - short version (SAS-SV). 41.58% were addicted, of which 64.29% were males. This finding was statistically significant ( $\chi^2 = 13.427$ ,  $df = 1$ ,  $p = 0.00024803$ ,  $OR = 2.9200$ ; 95% CI: 1.6338 to 5.2188).

Table 3 shows the distribution of study participants in relation to Internet addiction using Internet addiction test (IAT). Of the total 202 study participants, 55.45% were having internet addiction, of which 39.60% and 15.35% were having mild and moderate levels of internet addiction. This finding was not statistically significant ( $\chi^2 = 0.775$ ,  $df = 1$ ,  $p = 0.37867469$ ).

Table 4 depicts the comparison of internet addiction in relation to smartphone addiction. It was found that 93.55% and 53.75% who were addicted to smartphone were having moderate and mild levels of internet addiction. This finding was statistically significant ( $\chi^2 = 57.609$ ,  $df = 1$ ,  $p = 0.0001$ ,  $OR = 13.4429$ ; 95% CI: 6.4078 to 28.2019).

**Table 1: Gender-wise distribution of participants in relation to smartphone usage and duration of usage (n=202):**

Smartphone usage	Male		Female		Total	
	No.	%	No.	%	No.	%
Regular	90	49.18	93	50.82	183	90.59
Sometimes	9	47.37	10	52.63	19	9.41
Rare	0	0.00	0	0.00	0	0.00
Duration of Usage (Hours/day)	Male		Female		Total	
	No.	%	No.	%	No.	%
< 5 hours	44	51.76	41	48.24	85	42.07
5 to < 10 hours	46	43.40	60	56.60	106	52.48
≥ 10 hours	9	81.81	2	18.19	11	5.45

**Table 2: Gender-wise distribution of participants in relation to smartphone addiction(n=202):**

Addiction	Male		Female		Total	
	No.	%	No.	%	No.	%
Not-addicted ( < 31: Male, < 33: Female)	45	38.14	73	61.86	118	58.42
Addicted ( > 31: Male, >33: Female)	54	64.29	30	35.71	84	41.58
Total	99	49.01	103	50.99	202	100.00
$\chi^2 = 13.427$ , df = 1, p = 0.00024 (significant)						
OR# = 2.9200 (95% CI: 1.6338 to 5.2188)						

**Table 3: Distribution of study participants in relation to Internet addiction(n=202):**

Internet Addiction	Male		Female		Total	
	No.	%	No.	%	No.	%
Normal (0 to 30)	41	45.56	49	54.44	90	44.55
Mild (31 to 49)	40	50.00	40	50.00	80	39.60
Moderate (50 to 79)	18	58.06	13	41.94	31	15.35
Severe (80 to 100)	0	0.00	1	100.00	1	0.50
Total	99	49.01	103	50.99	202	100.00
$\chi^2 = 0.775$ , df = 1, p = 0.37867 (not significant)						
OR# = 1.2836(95% CI: 0.7359 to 2.2390)						

\*Internet addiction - Mild, moderate, and severe levels are combined to apply chi-square test and to calculate OR.

**Table 4: Distribution of study participants in relation to smartphone and internet addiction (n=202):**

Internet Addiction	Smartphone Addiction					
	Not-addicted		Addicted		Addicted	
	No.	%	No.	%	No.	%
Not-addicted	79	87.78	11	12.22	90	44.55
Addicted	39	34.82	73	65.18	112	55.45
Total	118	58.42	84	41.58	202	100.00
$\chi^2 = 57.609$ , df = 1, p = 0.0001 (significant)						
OR* = 13.4429(95% CI: 6.4078 to 28.2019)						

\*Internet addiction - Mild, moderate, and severe levels are combined to apply chi-square test and to calculate OR.

## Discussion

In the present study 52.48% participants were using the smartphone for 5 to < 10 hours per day

and 41.58% were addicted to their smartphone. In a similar study done by Telgote S A found that the age of the participants was 18 - 25 years. They

were spending more than three hours per day on smartphone and Smartphone addiction was found to be present among 65.8% medical students.<sup>18</sup>

Another study done by Ghogare AS, concluded that majority 71.1% of the study participants belonged to an age group of 18–21 years, 64.10% participants were spending more than three hours per day and 45.1% were addicted to smartphone.<sup>19</sup> In a study done by Dharmadhikari S P found that 46.15% had smartphone addiction as per SAS-SV scale.<sup>20</sup> In the other study done by Gosh T found that the average time spent on smartphone was around four hours per day.<sup>21</sup> These study findings are in line with our study findings. Hence, duration spent on using the smartphone is an important factor for smartphone addiction.

Our study found that internet addiction among medical students was 55.45, which was in similarity to study done by Ashokan AG found that the prevalence of internet addiction among medical students was 61.4%.<sup>22</sup> Similar study done by Joseph J found that the overall prevalence of internet addiction in 19 states of India was 40.70% and the estimated prevalence of severe internet addiction was 4.6%.<sup>23</sup>

In the present study it was found that 39.60%, 15.35% and 0.50% were having mild, moderate and severe levels of internet addiction respectively. Another study done by Jaiswal A concluded that 48.2%, 42.3% and 3.3% were having mild, moderate and severe levels of internet addiction respectively.<sup>24</sup> A study done by Singh B revealed that 62% of them were using Internet up to a moderate level of addiction.<sup>25</sup> These study findings in contrast to our study shows higher prevalence of internet addiction as those studies were conducted during the lockdown period during which there was increased usage of internet among the students due to excess leisure period as they were confined at home and easy availability of internet.

In our study it was found that 93.55% and 53.75% who were addicted to smartphone were having moderate and mild levels of internet addiction. In a similar study done by Ghogare AS, found that 94.1% of participants who were addicted to smartphone were overusing the internet and this association is

statistically significant ( $p=0.0001$ ).<sup>19</sup> These study findings reflected the fact that internet addiction was more prevalent among medical students who had smartphone addiction.

## Conclusion

Our study concludes that duration of usage and duration of smartphone plays a major role in addiction. Efficient usage of internet must be promoted owing to the fact that the usage turns out to be disorder. Prompt monitoring and interventions, reaching out to students for interaction with caretakers and counselling are ways to have a healthy digital life.

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