

Research Article

A cross sectional study to assess the effects of excessive use of smartphones among professional college going students

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ABSTRACT

Background: Smart phones have now become an essential part of life. However, despite the convenience it brings to use, sometimes it might affect our daily life in a negative sense. The objective of the study was to explore the pattern of mobile phone usage among professional college going students in Indore, India also to examine the extent of addictive behaviour towards the usage of mobile phones.

Methods: A total of 300 students of different streams having smartphones were surveyed regarding the usage of smartphone considered as population and simple random sampling technique was used. A well-structured and administered questionnaire was used to elicit the responses. The collected data were analysed with the help of various tools and techniques to draw meaningful inferences and conclusion which were obtained using Excel and some using SPSS. The study was conducted during September 2014 to December 2014.

Results: In present study maximum number of the students used smartphone around 4 hours daily and mostly the use was for communication & social networking. Majority of students used their smartphone at home, thought that they used smartphone more than expectation, felt uncomfortable without their smart phone, got irritated by frequent notifications of smart phone and got angry when someone interrupts them while using smart phone.

Conclusions: Most of the students felt that over uses of smartphones make their lives more sedentary, dry eyes and headache, feel disturbances in their sleep. Also, they spend excess money on mobile recharges although they prefer to use internet over their own creativity for any project.

Keywords: Smartphones, Usage, Health hazards

INTRODUCTION

Smartphone is a mobile phone with advanced computing ability, combining the functions of a multimedia player (allowing for music/video storage and playback) and a personal digital assistant (PDA), offering mobile Internet connectivity, built-in GPS and camera, and the ability to run a wide variety of third party applications (such as games, communication software, applications offering weather or traffic information etc.¹

Smart phones have now become an essential part of life. However, despite the convenience it brings to use,

sometimes it might affect our daily life in a negative sense. One of the typical examples is the overuse of smartphone. Smartphone can easily get our attention and distracts us. People, especially students, therefore are easily overusing the smart phone. The distractions lower students' productivity and take their time. It also lowers the quality of the work done.¹

Today's generation do not know of a world that does not include the Internet and easy access to technology. Parents of iGen youth, however, are "digital immigrants".²

Smart phones keep people from being as productive as they could be. It doesn't leave much for our own creative thoughts to flourish.³

Smartphone are also linked to many sleep problems. If you take your phone to bed instead of relaxing your brain, you are feeding it with more thoughts. It's hard to fall asleep when your brain is buzzing with new information.^{3,4}

Texting while driving is a horrible idea. Yet, so many people still do it. Taking eyes off the road even for a second to read a text or respond can easily cost their life or the life of someone else.^{3,5}

Today smartphone's enable consumers, advertisers and publishers how to better engage, socialize using the ubiquitous experience this advanced platform by leveraging it's of the firm. The focus of income statement is on the operating revenues and expenses. User groups of financial reports for decision-making require data related to all easy to use and availability characteristic.⁶

METHODS

In this study 300 students of different streams (e.g. Medical, Engineering, Management, Arts) 75 from each streams were selected from 4 randomly selected colleges of Indore. A well-structured and administered questionnaire was prepared and distributed to students of different streams from colleges of Indore. 300 students from all levels have been surveyed for the purpose of data collection. The data was collected based on convenience methodology. Students aged 18-25 years who agreed to

give the written informed consent have been considered as respondents to collect information. The data collected were analyzed through percentages and frequencies in which the data were presented in table formats, pie charts and histograms which were obtained using Excel and some using SPSS (Statistical Package for Social Science). The study was conducted during September 2014 to December 2014.

RESULTS

Present study was conducted as a cross-sectional observational study to study the effects of excessive use of Smartphone among college students of different educational streams and how smartphones are affecting their lifestyles. In this study 300 students of different streams (e.g. Medical, engineering, management, arts) 75 from each streams were selected from 4 randomly selected colleges of Indore. In our study maximum number of the students was used smartphone around 4 hours daily and mostly they used smartphone for communication & social networking. Majority of students used their smartphone at home, thought that they used smartphone more than expectation, felt uncomfortable without their smart phone, got irritated by frequent notifications of smart phone and got angry when someone interrupts them while using smart phone. Most of the students felt that over uses of smartphones make their lives more sedentary, dry eyes and headache, feel disturbances in their sleep. Majority of students felt that they spend excess money on mobile recharges although they prefer to use internet over their own creativity for any project. Out of 300 students, 40% students use smartphones for 2-4 hours.

Table 1: Average time spent on smartphone daily.

Time	Medical	Engineering	Management	Arts	Total	Percentage
< 2 Hours	30	15	26	27	98	32.67
2-4 Hours	29	33	27	31	120	40
4-6 Hours	15	23	17	15	70	23.33
6-8 Hours	1	4	2	2	9	3
>8 Hours	0	0	3	0	3	1

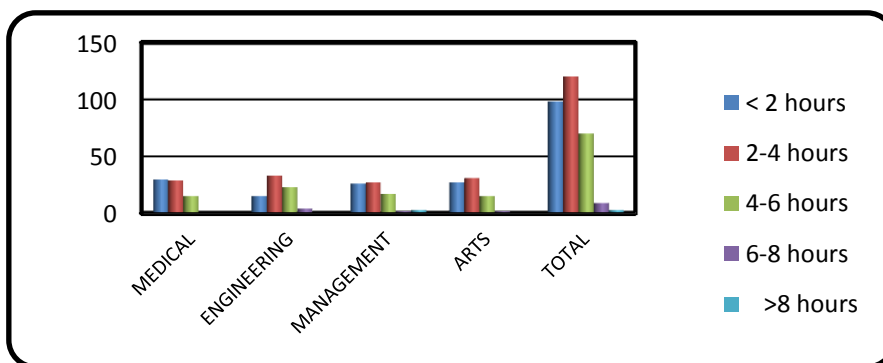


Figure 1: Average time spent on smartphone daily.

Table 2: Most common use of smartphone.

Options	Medical	Engineering	Management	Arts	Total	Percentage
Social net-working communication	37	55	31	35	158	52.67
Gaming	9	5	12	9	35	11.67
Internet surfing	23	14	19	20	76	25.33
Watching videos	6	1	3	11	21	7

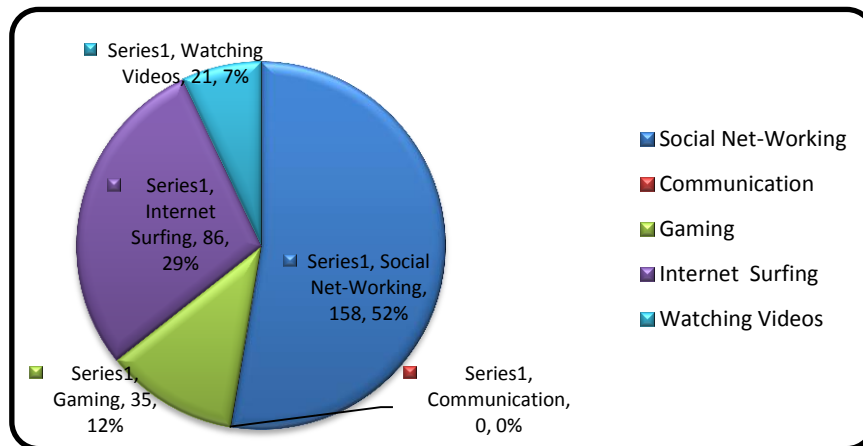


Figure 2: Most common use of smartphone.

Table 3: Most common place of using smartphone.

Place	Medical	Engineering	Management	Arts	Total	Percentage
Home	56	59	33	37	185	61.67
College	9	1	20	9	39	13
Travelling	8	2	17	13	40	13.33
Others	2	13	5	16	36	12

Table 4: Major effects of smartphone as described by the study subjects.

S.N.	Particular	Agree	Disagree	Neither agree nor disagree
1.	Use of smartphone is more than expectation	144	100	56
2.	Use of smartphone while walking	118	95	87
3.	Use of smartphone while having meal	99	111	90
4.	Feeling of discomfort without smartphone	168	81	51
5.	Smart phone affects head and eyes	118	126	56
6.	Irritation because of smartphone	152	72	76
7.	sleep affected due to smartphone	120	127	53
8.	Smartphone uses resulting in Inactivity	117	73	110
9.	Smartphone affects vision	87	96	117
10.	Fall in academic performance due to smartphone	109	136	55
11.	Effect on hearing power due to smartphone	97	144	59
12.	Effect on social life due to smartphone	58	117	125
13.	Interruption while use of smartphone make you angry	110	86	104
14.	Excessive use of smartphone	113	110	77
15.	Effect on concentration in class	83	166	51
16.	Aggressiveness due to gaming	69	143	88
17.	Effect on creativity	148	55	97
18.	Excess expenditure on mobile recharge	128	128	44

- 43.33% students think that they use smartphone more than expectation.
- 39.33% students agree on that they often use smart phone while walking.
- 33% students use smart phone while having meal.
- 56% students feel uncomfortable without their smart phone.
- 42.67% students feel dry eyes and headache because of smart phone.
- 50.66% students get irritated by frequent notifications of smart phone.
- 40% students feel disturbances in their sleep.
- 39% students feel that their lives have become more sedentary because of smart phone.
- 32% students do not feel any diminution in vision.
- 36.33% students experienced fall in their academic performance.
- 48% students did not experience hearing loss due to smart phone use.
- 39% students prefer to spend time with family rather than using smart phone.
- 36.66% students get angry when someone interrupts them while using smart phone.
- 37.67% students feel that people complain of their excessive use of smart phone.
- 55.67% students did not experience lack in concentration in class due to smart phone.
- 47.67% did not feel that they have become aggressive because of gaming.
- 49.33% students prefer to use internet over their own creativity for any project.
- 49.33% students feel that they spend excess money on mobile recharges.

Table 5: The major determinants based on the studies which are affected because of the use of smartphone.

Physical	Mental	Social
Sleep disturbance	Lack of concentration	Low performance
Physical inactivity	Depression	Stress
Altered feeding habits	Irritation	Disconnect
Headache	Aggressiveness	Financial burden
Hearing loss		
Visual impairment		

DISCUSSION

As per the authors knowledge it is first of its kind study in the central India covering all the major effects of the usage of smartphone.

As defined by Tuckman⁷ performance as the obvious expression or demonstration of sympathetic, ideas, skills and knowledge of a person and planned grade clearly indicate the performance of a student. Majority of students use smartphones for leisure purposes and only few uses for educational development purposes.

In a study conducted by Department of community medicine, Bhaskar medical college, Moinabad, Hyderabad on “some of the common health effects of cell-phones amongst students”⁸ reveals that headache was found to be the commonest symptom (51.47%) followed by irritability/anger (50.79%). Other common mental symptoms included lack of concentration and poor academic performance, insomnia, anxiety etc. among physical symptoms-body-aches (32.19%), eye strain (36.51%), digital thumb (13.8%) was found to be frequent.

Another study conducted by “James and Drennan”⁹ on Australian students shows a higher usage rate of 1.5-5 hours a day. They also highlighted the financial costs, emotional stress damaged relationships and falling academic performance as adverse consequences of excessive use.

Grosbeck et al¹⁰ and Rosen et al¹¹ in their study found that the majority of students spend significant time on Facebook more for social uses (to stay in touch with friends and family, to share/tag photos, to engage in social activism, volunteering etc.) and less for academic purposes, even if they take part in discussions about their assignments, lectures, study notes or share information about research resources etc.

In their research titled “Smartphone addiction in University students and its implication for learning” Lee et al¹² found that the higher the addiction level is, the lower level of self-regulated learning the students have, as well as low level of flow when studying. Further

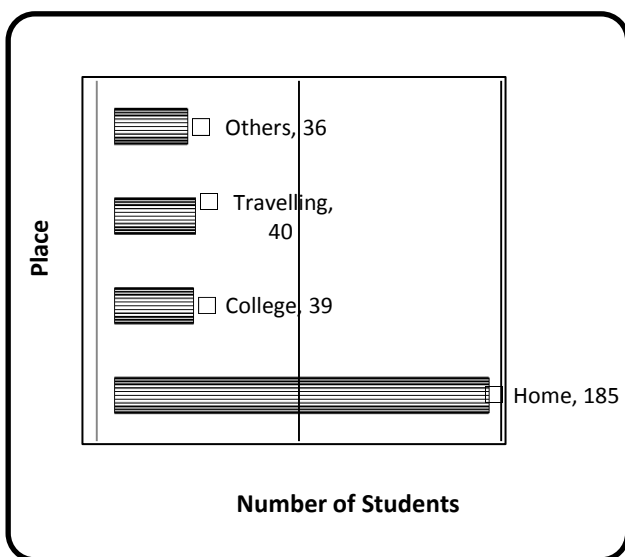


Figure 3: Most common place of using smartphone.

interview for smartphone addiction group was conducted, it has been found that the smartphone addict-learners are constantly interrupted by the other applications on the phones when they are studying, and does not have enough control over their smartphone learning plan and its process.

According to Salehan et al¹³ as the penetration of mobile phones in societies increases, there is a large growth in the use of mobile phones especially among the youth. This trend is followed by the fast growth in use of online social networking services (SNS). Extensive use of technology can lead to addiction. This study finds that the use of SNS mobile applications is a significant predictor of mobile addiction. The result also shows that the use of SNS mobile applications is affected by both SNS network size and SNS intensity of the user.^{14,15}

The relationship between Facebook use and grades was examined in a large sample by Junco¹⁶ and reveals that unlike previous research; his study used university records to collect GPA data. Time spent on Facebook was negatively related to overall GPA. Time on Facebook was also negatively related to time spent preparing for class. Some Facebook activities were positively and some negatively related to outcomes.

As per Park et al¹⁷ smartphone poisoning means connection to poisoning phenomena habitually using a smartphone without special purpose for and showing anxiety and restlessness without a smart phone.

An increasing reliance on cell-phones among young adults and college students may signal the evolution of cell-phone use from a habit to an addiction.¹⁸⁻²⁰ Although the concept of addiction has multiple definitions, traditionally it has been described as the repeated use of a substance despite the negative consequences suffered by the addicted individual.

A research done by Junco²¹ shows that females tend to see technologies like cell-phones and Internet as tools of communication- as a means to maintaining and nurturing relationships. Men, on the other hand, tend to see the internet and related technologies as sources of entertainment.

As per Chakraborty et al²² although various etiological theories could be used to explain which cell-phone activities are most likely to lead to addiction (e.g., Escape theory), learning theory seems particularly appropriate. Learning Theory emphasizes, among other things, the rewards gained from various cell-phone activities.

The regression analysis was used to analyze the data.²³ Extroversion, neuroticism and Openness to experiences are all positively correlated to FBA (Facebook Addiction). Also, there is negative relationship between FBA and academic performance.

Smartphone's addiction is a major impact on academic and social life. As per Sarwar et al²⁴ surveys show that Smartphone addiction is interfering with our night's sleep. According to the survey, 33% of mobile workers

admitted that they check their phones for email and message throughout the night. Nearly 50% of those surveyed said, they wouldn't even think of going to bed without have their Smartphone's tucked under their pillows.^{25,26}

In our study 32.67% students use smartphone less than 2 hours, 40% students use smartphone 2-4 hours, 23.33% students use smartphone 4-6 hours and only 4% students use smartphone >6 hours, similar study done in September 2014 at Baylor university, Texas,²⁷ found that average usage of smartphone was 8 hours.

In present study 52.67% students use smartphone for communication & social networking, similar study done at Baylor university, Texas, was found that people uses their smartphone mostly for texting (communication & social networking).

61.67% students use their smartphone at home; similar study done in March 2013 by edtech review on American students found that 77% of them use smartphone at home.

43.33% students think that they use smartphone more than expectation, a study done in 2014 at Alabama university found that every 1 in 5 students feels addicted to the smartphone.²⁸

39.33% students agree on that they often use smart phone while walking, a study done at university of Colorado²⁹ reveals that 83% students use smartphone while walking. 33% students use smart phone while having meal. 56% students feel uncomfortable without their smart phone, a study by Pew research centre in 2014 shows that 83% of 42.67% students feel dry eyes and headache because of smart phone, 70% students complaining the same in a report by Vision council US in 2013.³⁰

CONCLUSION

Overuse of smartphone will certainly affect students' academic performance and health. Convenience does not mean we should pay lots of attention on smartphone but try to find an appropriate way to make it as a useful tool. Therefore, we should keep in mind that use of smart phone can only be beneficial if used in certain limits.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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