

## Assessment of Smartphone Addiction among College Students of Junagadh City, Gujarat

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### Abstract

**Background:** Problem of smartphone addiction is growing fast and it is more prevalent in young age. Smartphone addiction has many risk and effects on mental and physical health. Smartphone addiction affects social life, communication and difficulty in concentration. The present study was conducted to know prevalence of smartphone addiction and smartphone usage pattern among engineering college students.

**Methodology:** A cross sectional study was conducted in an engineering college of Junagadh city. Study includes 386 college students who were using smartphone and willing to participate in the study. Smartphone Addiction Scale - Short Version (SAS-SV) was used to assess smartphone addiction among students.

**Results:** 46.6% college students were addicted to smartphone as per SAS-SV scale. Non educational use of smartphone, smartphone unlock frequency in a day, smartphone usage just before sleep were found to be significantly different between normal and smartphone addicted students.

**Conclusion:** The level of smartphone addiction was high among engineering college students. Students should be counselled for limited and appropriate use of smartphone and harmful effects of excessive use of a smartphone.

**Keywords:** Smartphone, Addiction, College Students, Smartphone Addiction Scale - Short Version.

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### Introduction

Communication has played an important role in our society since a long time ago. Smartphone is one of the important

devices in today's era for the same. It is the new generations of cellular phones. It differs from routine phone in terms of

advanced features like internet access, online shopping, social networking, gaming and many more. Smartphones are being used for more than just a phone but rather a device that provides multiple functions including surfing the internet, educational purpose, email, navigation, social networking, and games. The price of smartphone has been declining dramatically leads to increase in number of smartphone users. Smartphone has many types of applications related to entertainment, education, communication, gaming etc. Thus, smartphones are not just a medium of communication only but it's a part of daily life. People spend more time on smartphone and ignoring other things. [1,2]

Smartphone is a double edged sword. The excessive use can cause sleep disturbance, relationship problems, reduce academic performance, blur vision and many more. Smartphone usage increasing in all sectors. College students are one of the largest consumer groups of smartphone. They use it as a device for education, social networking, online and offline gaming, online shopping, watching and making of videos, Listening to music and many more. Its use is vital to them. [3]

Over usage of smartphone can lead to nomophobia (an abbreviation of no mobile phobia); a fear of being detached from mobile phone connectivity. [4] As per Griffith technological addiction is a subset of behavioral addictions. [5] Behavioral addictions include alcohol addiction and non-substance related like internet addiction, gambling etc. Behavioural addictions have common features like drive to perform the act, failure to resist an impulse, similar neurobiology and reward pathway. [6] Problem of smartphone addiction is growing fast and it is more prevalent in young age. Smartphone addiction has many risk and effects on mental and physical health. Smartphone addiction affects social life, communication and difficulty in

concentration. [7] The present study was conducted to know prevalence of smartphone addiction among engineering college students.

### Materials and Methods

The present study was conducted among engineering college students of Junagadh city, Gujarat. All engineering students of the college were invited to participate in the study. 500 students were currently studying in the college. Out of 500 students, 386 students using smartphone and consented to participate in the study were included for the study. The students were assured about confidentiality of information and informed consent was taken for participation following a brief about the nature and potential value of the study. Despite the convenience sampling procedure employed, attempt was made to secure a sampling procedure as unbiased as possible.

The questionnaire was in English and Gujarati and also included basic demographic data like age, sex, residence status etc. Few questions were designed to assess smartphone usage. The Smartphone Addiction Scale - Short Version (SAS-SV) was used to assess smartphone addiction among students. The scale was first developed and validated by Kwon Lee et al. to evaluate smartphone addiction in teenagers. This is 10-item self-report instrument with 6 points Likert scale. SAS-SV address the following areas, daily life disturbance, withdrawal, cyberspace oriented relationship, overuse, and tolerance. It takes approximately 5-10 minutes to complete the questionnaire. It has good validity and reliability for the assessment of smartphone addiction. The coefficient for Cronbach alpha correlation obtained is 0.91 for Smartphone Addiction Short Version. It can be used to discern a potentially high-risk group for smartphone addiction, both in the educational field and community. The total score is from 10 to 60. The cut-off point for significant smartphone addiction for male is 31 and

female is 33 based on the recommendation by Kwon et al. [8]

All data were carefully cleaned and double-spot checked for accuracy. The data was then entered and analyzed using Microsoft Office Excel 2013. The chi square test and student's independent t test were applied to compare the groups.

## Results

Total 386 engineering students participated in the present study. Out of 386, majority

259 (67.1%) belonged to 18-20 age group, followed by 67 (17.4%) in 15-17 years, 57 (14.8%) in 21-23 years. Mean age was 19 years. 273 (70.7%) participants were male and 113 (29.3%) were female. 143 (37%) students were from rural area whereas 243 (63%) students were from urban area. Out of 386, 208 (53.9%) were residing at home; whereas 151 (39.1%) were residing at hostel at the time study [Table 1].

**Table 1: Socio Demographic Characteristics of college students**

Socio Demographic Parameter	Both (n=386)
<b>Age</b>	
15-17	67 (17.4%)
18-20	259 (67.1%)
21-23	57 (14.8%)
>23	3 (0.7%)
Mean age (in years)	19
<b>Gender</b>	
Male	273 (70.7%)
Female	113 (29.3%)
<b>Residence</b>	
Rural	143 (37%)
Urban	243 (63%)
<b>Living Arrangement</b>	
Home	208 (53.9%)
Hostel	151 (39.1%)
Rent	23 (5.9%)
Paying Guest	4 (1.1%)

The cut-off point for significant smartphone addiction for male is 31 and female is 33. Based on it out of 386, 206 (53.5%) were non addicted (normal) students and 180 (46.6%) were smartphone addicted students. Majority 136 (35.2%) students were using smartphone for non-educational purpose for duration of 0 – 60 minutes on a routine day with mean duration of 130.3 minutes. Mean duration of daily smartphone usage for non-educational purpose among normal students was 112.5 minutes whereas among addicted students it was 150.7 minutes and the difference between the groups was statistically significant ( $t=4.14$ ,

$p=0.00$ ). Majority 273 (70.7%) students were using smartphone for educational purpose for duration of 0 – 60 minutes on a routine day with mean of 74.1 minutes. Mean duration of daily smartphone usage for educational purpose among normal students was 82.8 minutes whereas among addicted students it was 64.2 minutes and the difference between the two groups was statistically significant ( $t=2.69$ ,  $p=0.01$ ). Mean total duration of daily smartphone usage among students is 204.4 minutes. Out of 206 normal students, 61 (29.6%) students were using smartphone for 61 to 120 minutes on a daily basis. Whereas out of 180 addicted students, 46 (25.6%)

students were using smartphone for 121 to 180 minutes. However there was not statistically significant difference for mean daily duration of smartphone usage between normal and addicted students ( $t=1.67$ ,  $p=0.09$ ). Out of 386 students, 163 (42.2%) were using smartphone since 24

to 47 months with a mean of 40.4 months. Among normal students mean duration of usage was 38.6 months whereas among addicted students it was 42.4 months however difference between the two groups was not statistically significant ( $t=1.39$ ,  $p=0.16$ ) [Table 2].

**Table 2: Smartphone usage duration among college students**

	Normal Students (n=206)	Addicted Students (n=180)	Total (n=386)
<b>Duration of Smartphone use for non-educational purpose on a typical day</b>			
0 – 60 min	88 (42.7%)	48 (26.7%)	136 (35.2%)
61 to 120 min	57 (27.7%)	50 (27.8%)	107 (27.7%)
121 to 180 min	39 (18.9%)	39 (21.7%)	78 (20.2%)
181 to 240 min	14 (6.8%)	18 (10%)	32 (8.3%)
241 to 300 min	6 (3%)	13 (7.2%)	19 (5%)
>300 min	2 (1%)	12 (6.7%)	14 (3.6%)
Mean	112.5 min	150.7 min	130.3 min
$t=4.14$ , $df=384$ , $p=0.00$			
<b>Duration of Smartphone use for educational purpose on a typical day</b>			
0 – 60 min	134 (65%)	139 (77.2%)	273 (70.7%)
61 to 120 min	42 (20.4%)	24 (13.3%)	66 (17.1%)
121 to 180 min	15 (7.3%)	9 (5%)	24 (6.2%)
181 to 240 min	6 (2.9%)	6 (3.3%)	12 (3.1%)
241 to 300 min	2 (1%)	2 (1.1%)	4 (1%)
>300 min	7 (3.4%)	0 (0%)	7 (1.8%)
Mean	82.8 min	64.2 min	74.1 min
$t=2.69$ , $df=384$ , $p=0.01$			
<b>Total duration of Smartphone use on a typical day</b>			
0 – 60 min	12 (5.8%)	9 (5%)	21 (5.4%)
61 to 120 min	61 (29.6%)	38 (21.1%)	99 (25.7%)
121 to 180 min	43 (20.9%)	46 (25.6%)	89 (23.1%)
181 to 240 min	36 (17.5%)	34 (18.9%)	70 (18.1%)
241 to 300 min	28 (13.6%)	20 (11.1%)	48 (12.4%)
>300 min	26 (12.6%)	33 (18.3%)	59 (15.3%)
Mean	195.2 min	214.9 min	204.4 min
$t$ test= $1.67$ , $df=384$ , $p=0.09$			
<b>Duration of Smartphone usage</b>			
0 to 11 months	11 (5.3%)	8 (4.4%)	19 (4.9%)
12 to 23 months	27 (13.1%)	25 (13.9%)	52 (13.8%)
24 to 47 months	95 (46.1%)	68 (37.8%)	163 (42.2%)
48 to 71 months	51 (24.8%)	56 (31.1%)	107 (27.7%)
72 to 95 months	12 (5.8%)	16 (8.9%)	28 (7.3%)
>95 months	10 (4.9%)	7 (3.9%)	17 (4.4%)
Mean	38.6 months	42.4 months	40.4 months
$t$ test= $1.39$ , $df=384$ , $p=0.16$			

Out of 386 students, 140 (36.3%) students were unlocking smartphone for 21 – 50 times on daily basis with a mean unlocking

frequency of 39.2 times in a day. Mean daily smartphone unlock frequency among normal students was 35.6 times whereas

among addicted students it was 43.4 times and the difference between the two groups was statistically significant ( $t=1.98$ ,  $p=0.049$ ). In the morning, 72 (18.7%) students were using smartphone within a minute of wake up. Only 27(7%) were using smartphone after 60 minutes of wake up. Mean time between wake up and smartphone usage was 27.8 minutes among normal students and 26 minutes

among addicted students and mean difference was not statistically significant ( $t=0.34$ ,  $p=0.74$ ). 301 (78%) students were using smartphone just before sleep. Among normal students 146 (70.9%) and among addicted students 155 (86.1%) were using smartphone just before sleep and the difference between the groups was significant ( $\chi^2=12.99$ ,  $p=0.00$ ) [Table 3].

**Table 3: Smartphone usage habit among college students**

	Normal Students (n=206)	Addicted Students (n=180)	Total (n=386)
<b>Smartphone daily unlocking frequency</b>			
<5	6 (2.9%)	5 (2.8%)	11 (2.9%)
5-10	50 (24.3%)	21 (11.7%)	71 (18.4%)
11 -20	50 (24.3%)	37 (20.6%)	87 (22.5%)
21 - 50	61 (29.6%)	79 (43.9%)	140 (36.3%)
51 - 100	28 (13.6%)	31 (17.2%)	59 (15.3%)
>100	11 (5.3%)	7 (3.9%)	18 (4.7%)
Mean	35.6	43.4	39.2
t test=1.98, df=384, p=0.049			
<b>Time until first smartphone use in the morning</b>			
Within 1 min	45 (21.8%)	27 (15%)	72 (18.7%)
Within 1 – 5 min	36 (17.5%)	34 (18.9%)	70 (18.1%)
Within 6 – 10 min	33 (16%)	38 (21.1%)	71 (18.4%)
Within 11 – 30 min	56 (27.2%)	51 (28.3%)	107 (27.7%)
Within 31 – 60 min	21 (10.2%)	18 (10%)	39 (10.1%)
>60 min	15 (7.3%)	12 (6.7%)	27 (7%)
Mean	27.8 min	26 min	27 min
t test=0.34, df=384, p=0.74			
<b>Usage of smartphone just before sleep</b>			
Yes	146 (70.9%)	155 (86.1%)	301 (78%)
No	60 (29.1%)	25 (13.9%)	85 (22%)
$\chi^2=12.99$ , df=1, p=0.00			

Common purposes to use smartphone other than calling and messaging were educational (72.5%), listening to music (69.2%), watching videos (66.3%), social networking (65%) and gaming (44.6%) among college students. 75.7% normal and 68.9% addicted students were using smartphone for educational purpose and the difference was not statistically significant ( $\chi^2=2.26$ ,  $p=0.13$ ). 67.5% normal students and 71.1% addicted students were using smartphone for listening to music and the difference

between the two groups was not statistically significant ( $\chi^2=0.6$ ,  $p=0.44$ ). 63% normal students and 70% addicted students were using smartphone for watching videos however the difference between the two groups was not statistically significant ( $\chi^2=2.04$ ,  $p=0.15$ ). 61.2% normal students and 69.4% addicted students were using smartphone for social media but the difference between the two groups was not statistically significant ( $\chi^2=2.9$ ,  $p=0.09$ ). 40.8% normal students and 48.9% addicted students were

using smartphone for playing games however difference between the two

groups was not statistically significant ( $\chi^2=2.56$ ,  $p=0.11$ ) [Table 4].

**Table 4: Common uses of smartphone on a typical day**

	Normal Students (n=206)	Addicted Students (n=180)	Total (n=386)	$\chi^2$ Value	p Value
Educational	156 (75.7%)	124 (68.9%)	280(72.5%)	2.26	0.13
Listening to Music	139 (67.5%)	128 (71.1%)	267(69.2%)	0.6	0.44
Watching Video	130 (63%)	126 (70%)	256(66.3%)	2.04	0.15
Social media	126 (61.2%)	125 (69.4%)	251(65%)	2.9	0.09
Gaming	84 (40.8%)	88 (48.9%)	172(44.6%)	2.56	0.11

## Discussion

In the past decade use of smartphone has been increased dramatically. More and more people using smartphone daily. Smartphone addiction is newer addiction and affecting young generation. With this respect, the present study was directed on prevalence of smartphone addiction among college students and usage pattern of smartphone among college students. Mean age of study population was 19 years. In a study by Sosyal BD it was found that smartphone addiction was common in students around 20 years of age. [7] As per the cutoff values for SAS-SV given by Kwon et al; for males more than 31 and females more than 33, smartphone addiction was present in 46.6% students. In a similar study by Awasthi S et al smartphone addiction prevalence was 43.8% among medical college students. [9] A study in Lebanon reported that 44.6% university students had smartphone addiction. [10] In an Indian meta-analysis on assessment of smartphone addiction by Davey S et al; smartphone addiction was 39- 44%. [11] However in a study by Jain P et al smartphone addiction was low (24.7%) among college students compared to present study. [12]

In the present study significant difference was found between mean daily usage of smartphone for educational purpose (82.8 min vs. 64.2 min) and non-educational purpose (112.5 min vs. 150.7 min) between normal students and smartphone addicted students. However for total daily

duration of smartphone usage difference between normal and addicted students was not significant (195.2 min vs. 214.9 min). Mean of daily usage duration was 204.4 min. In a study by Ammati R et al. daily smartphone usage time was 46% for 4 – 6 hours followed by 32% for 1 – 3 hours. [13] In the present study majority 42.2% were using smartphone since 48 – 71 months similar to the study by Jain P et al. where 37.7% students were using smartphone since 4 – 6 years. [12] In a study by Haug at al. duration of smartphone use was significantly associated with smartphone addiction. [14]

It was found that mean frequency of unlocking smartphone was 39.2 in total students whereas 43.4 times among addicted and 35.6 times among normal students and the difference was statistically significant. Whereas in a study by Jain P et al. 35.6% students were unlocking smartphone for 11 – 20 times a day followed by 28.8% students were unlocking smartphone for 6 – 10 times a day. [12] The time until first smartphone use in the morning was within 1 min among 18.7% students and most common was within 11 – 30 minutes among 27.7% students. In a study by Jain P et al. 34.9% students were using smartphone within 5 minutes after wake up. [12] Haug at el. In his study demonstrated that time until first use in the morning was significantly associated with smartphone addiction. [14] Usage of smartphone just before sleep was higher (78%) among students.

Common uses of smartphone other than calling and messaging were educational purpose, listening to music, Watching videos, Social networking and gaming. In a study among young adults in India by Murugan S at el. common uses of smartphone other than calling and messaging were social networking (92.2%), for taking selfie (80.1%), listening to music (71.9%), watching videos and movies (58.5%) and gaming (53.3%). [15,16]

### Conclusion

The present study shows higher prevalence of smartphone addiction among engineering college students. Smartphone addiction is growing important health problem around the world particularly in countries where youth population is high. Smartphone addiction causes a significant effect on physical and psychological health. Students should be counseled for limited and appropriate use of smartphone and harmful effects of excessive use of a smartphone. There is need to create and implement programme at college level to minimize smartphone addiction and to promote healthy smartphone usage. Further experimental studies to determine the effects of various possible methods to overcome smartphone addiction among younger generation are recommended.

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