Self-Reported - Problematic Smartphone Usage: A Cross Sectional Study

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ABSTRACT

Introduction: The number of smartphone users in India is showing a rapidly increasing trend in the last few years. The expected user base is nearly one in three by 2021 in India. The evidence on compulsive smartphone use is growing making it an addiction along with raising concerns on other mental health issues. The current study aimed to find out the extent of problematic smart phone usage and various variables associated with smartphone addiction in the study population.

Material and methods: A cross-sectional study was conducted on 186 participants. Responses were recorded online through a questionnaire on SAS-SV and analyzed by descriptive statistics.

Results: Study showed 24.2% (45 participants) of study population have smartphone addiction. Male gender, early exposure to smartphone, low income, and residence in a city predicted problematic smart phone usage.

Conclusion: People across ages, residence, occupation, and social strata are involved with smart phone with one in four being problematic smart phone users.

Keywords: Problematic Smart Phone Use; Smart Phone Addiction

INTRODUCTION

Mobile phones were invented primarily as advancement over traditional landline phones as Go phones. Advent of technology and integration of internet facilities have made these go phones as smart phones. Apart from its usage as a primary tool of communication and as a minicomputer, many leisure activities like online gaming, social networking, shopping, movies and music thrust smart phone usage¹. The number of smartphone users in India is showing, a rapidly increasing trend especially in young, urban populations, with nearly one in three mobile phone users expected to be smart phone users by 2021².

Though evidence on compulsive smartphone use is increasing, smartphone use disorder has not been included in ICD10 or DSM5³. Reasons for the same could be lack of a consensus definition, a clear pattern of symptoms, and a diagnostic category. Various terms like problematic smart phone use, smartphone use disorder or smartphone addiction (SA) have been used to describe the problematic-smart phone use without bringing them under one umbrella⁴,⁵,⁶. Various theories have been proposed to explain smartphone addiction. Billieux et al., associates proposed three pathways to mobile phone use. Foremost, the Excessive Reassurance Pathway where the subjects present high anxiety, low self-esteem experience and a need for reassurance. The second is the Impulsive Pathway, corresponding to low self-control that can result in an antisocial pattern of smart phone use and/or risky mobile phone use behavior. Third, Extraversion Pathway, i.e., when the addictive outcomes are expressed in subjects who have the constant need to socialize with others.⁷ Elhai et al. have proposed that mood changes resulting from smartphone use act as positive reinforcement in seeking excessive reassurance or the unwillingness to miss relevant information, corresponding to negative reinforcement in the smart phone use habituation process.⁸,⁹

The factors associated with addictive behavior are age ranging from 18 to 25 years, female sex, medium and high family income, accessibility to mobile phones, certain personality traits (impulsivity, sensation seeking, low self-directedness, low will power, high neuroticism, low agreeableness, low conscientiousness, extroversion) and other comorbidities like mental disorders and substance abuse disorders.⁴,⁶

Excessive smartphone use may damage the interpersonal skills in adolescents.¹⁰ Kim et al; found that there is a positive correlation between depression, aggression, and impulsion associated with smartphone addiction.¹¹ Excessive smartphone use may lead to depression, anxiety and sleep disturbances.¹²,¹³ Smartphone addiction affects social life, communication, and difficulty in concentration.¹⁴

Though there were previous studies on smart phone addiction, most of them were conducted on adolescents and university students with less studies on general population. Current study includes subjects from all groups thus giving insights into the patterns of usage in the population. The aim of the current study is to find out the extent of problematic smart phone usage and various variables associated with smartphone addiction in the study population

MATERIAL AND METHODS

The current study was a cross-sectional study conducted

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online through a questionnaire using social media. Institutional ethics committee approval was taken. A survey form was created online and sent to the subjects with a disclaimer to participate voluntarily. The recorded data was analyzed by SPSS software. Participants of the study were online volunteers from the general population. A questionnaire was designed to capture socio-demographic data and smartphone usage pattern.

**Tools**

Subjects were presented with a semi-structured questionnaire on socio-demographic data, pattern of smartphone use and Smartphone Addiction Scale short version SAS-SV. Smartphone Addiction Scale short version SAS-SV, is the short version of the scale developed by Kwon et al; with internal consistency and concurrent validity. 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 has good validity and reliability for the assessment of smartphone addiction. It takes approximately 5-10 minutes to complete the questionnaire. As suggested by Kwon et al, for males a cut-off value of 31 and for females cut-off value of 33 was taken.

**RESULTS**

A total of 186 subjects participated in the study. Socio-demographic data and pattern of smartphone usage of the population is tabulated under Tables 1 & 2. The mean score on SAS-SV was 24.15 with a standard deviation (SD) of 8.44. Based on the cut-off score on SAS of >33 in females and >31 in males, 45 subjects (24.2%) had smartphone addiction and 141 (75.8%) had no smartphone addiction. The two groups were compared with respect to various variables and the data is presented in Tables 3 and 4. The two groups differ significantly with respect to gender, age at first smartphone use and self-evaluation of smartphone addiction (p<0.05). Income and residence predicted smartphone addiction at p<0.1

**DISCUSSION**

This is a comprehensive study on smartphone addiction in India. This study includes population across ages 16 to 60 contrary to specific population based studies in the past. 24.5%, nearly a quarter of the study population matches the addiction criteria. In a literature review by Perez et al; the prevalence of Smartphone addiction ranged from 0-38%. Systematic review by Davey et al, estimated the smartphone addiction magnitude in India ranging from 39% to 44%. In our study males were more addicted than females (P<0.0001). Several studies identified female gender as a risk factor. Some studies had male preponderance. Further research is needed for a better understanding of the inconsistency in the prevalence of smartphone addiction in males and females. Self-evaluation of smartphone addiction was significant (p<0.00001), hinting towards the knowledge of being addicted. Thus people who use smartphone excessively know that they are addicted but cannot restrain themselves.

| Age in years | 16-20 | 21-30 | 31-40 | 41-50 | 51-60 | >61 |
|-------------|-------|-------|-------|-------|-------|-----|
|             | 46(24.73) | 89(47.84) | 45(24.19) | 2(1.07) | 3(1.61) | 1(0.53) |

**Gender**

- Males: 119(63.97)  
- Females: 67(36.03)

**Highest educational qualification**

- Intermediate: 28(15.05)  
- Graduation: 84(45.16)  
- Postgraduation: 7439.78

**Occupation**

- Working: 98(52.68)  
- Unemployed/home maker/retired: 22(11.82)  
- Student: 66(35.48)

**Income in Rs**

- <10000: 9(4.83)  
- 10000-20000: 11(5.91)  
- 20000-50000: 36(19.35)  
- 50000-75000: 27(14.51)  
- 75000-100000: 14(7.52)  
- >100000: 12(6.46)  
- Nil: 77(41.39)

**Stay**

- Alone: 16(8.6)  
- With family: 111(59.67)  
- With friends: 31(16.66)

**Residence**

- Metro: 42(22.58)  
- City: 108(58.06)  
- Town: 26(13.97)  
- Village: 10(5.37)

**Table-1: Socio-demographic data of the sample**
indicating compulsion. Age at first smartphone use is also an important risk factor for addiction (p<0.05), thereby earlier the exposure more is the risk similar to other addictions. Sahin et al. found that exposure to smartphone at an age <13 years poses high risk for problematic use. This amounts to a great importance, as toddlers are getting exposed to smart phones increasingly. Screen time of children has significantly increased compared

### Table-2: Pattern of smart phone usage in the population

| Predominant Purpose of smart phone | Education | Entertainment | Social networking | Phone calls | Web surfing |
|-----------------------------------|-----------|---------------|-------------------|-------------|-------------|
| Daytime use in hours              |           |               |                   |             |             |
| 0-1                               | 12(6.45)  | 61(32.79)     | 64(34.40)         | 21(11.29)   | 28(15.05)   |
| 1-3                               |           | 65(34.94)     | 53(28.49)         |             | 54(29.03)   |
| 3-5                               |           |               |                   |             |             |
| >5                                |           |               |                   |             |             |
| Weekend usage in hours            |           |               |                   |             |             |
| 0-1                               | 12(6.45)  | 61(32.79)     | 64(34.40)         | 21(11.29)   | 28(15.05)   |
| 1-3                               |           | 65(34.94)     | 53(28.49)         |             | 54(29.03)   |
| 3-5                               |           |               |                   |             |             |
| >5                                |           |               |                   |             |             |
| Age of first smartphone           | <10       | 11(5.91)      | 14(7.52)          |             |             |
|                                   | 10-15     | 14(7.52)      | 14(7.52)          |             |             |
|                                   | 15-20     | 81(53.84)     | 54(29.03)         |             |             |
|                                   | 21-25     | 54(29.03)     | 17(9.13)          |             |             |
|                                   | 25-30     | 17(9.13)      | 4(2.15)           |             |             |
|                                   | 31-40     | 4(2.15)       | 5(2.68)           |             |             |
|                                   | >40       | 5(2.68)       |                   |             |             |
| Price of current phone in rupees  | <10000    | 33(17.74)     | 78(41.93)         |             |             |
|                                   | 10000-20000 | 26(13.97) | 17(9.1)          |             |             |
|                                   | 20000-30000 | 17(9.1)       | 32(17.20)         |             |             |
|                                   | 30000-40000 |             |                   |             |             |
|                                   | >40000    | 32(17.20)     |                   |             |             |
| Self-evaluation of smart phone addiction | Not addicted | 104(55.91) | 43(23.11)        |             |
|                                   | Addicted  | 43(23.11)     | 39(20.96)         |             |

### Table-3: Comparison of two groups with respect to socio demographic variables

|                    | Addiction | No addiction | P         |
|--------------------|-----------|--------------|-----------|
| Age in years       | 16-20     | 31           | 15        | 0.17      |
|                    | 21-30     | 66           | 23        |           |
|                    | 31-40     | 39           | 6         |           |
|                    | >41       | 5            | 1         |           |
| Gender             | Males     | 54           | 32        | 0.0001    |
|                    | Females   | 87           | 13        |           |
| Highest educational qualification | Intermediate | 23 | 5 | 0.56 |
|                    | Graduation | 61           | 23        |           |
|                    | Post graduation | 57 | 17 |           |
| Occupation         | Working   | 76           | 21        | 0.69      |
|                    | Unemployed/home maker/retired | 16 | 6 | |
|                    | Student   | 49           | 18        |           |
| Income in Rs       | <20000    | 10           | 10        | 0.08      |
|                    | 20000-50000 | 29       | 7         |           |
|                    | 50000-75000 | 22       | 6         |           |
|                    | >75000    | 21           | 5         |           |
|                    | Nil       | 59           | 17        |           |
| Stay               | Alone     | 16           | 5         | 0.73      |
|                    | With family | 101         | 30        |           |
|                    | With friends | 24       | 10        |           |
| Residence          | Metro     | 38           | 4         | 0.076     |
|                    | City      | 76           | 32        |           |
|                    | Town      | 19           | 7         |           |
|                    | Village   | 8            | 2         |           |

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| Predominant Purpose of smart phone | Addiction | No addiction | P |
|-----------------------------------|-----------|--------------|---|
| Education                         | 12        | 0            | 0.27 |
| Entertainment                     | 43        | 18           |   |
| Social networking                 | 48        | 16           |   |
| Phone calls                       | 17        | 4            |   |
| Web surfing                       | 21        | 7            |   |

| Weekday use in hours              | Addiction | No addiction | P |
|-----------------------------------|-----------|--------------|---|
| 0-1                               | 13        | 1            | 0.14 |
| 1-3                               | 53        | 12           |   |
| 3-5                               | 38        | 15           |   |
| >5                                | 37        | 17           |   |

| Weekend usage in hours            | Addiction | No addiction | P |
|-----------------------------------|-----------|--------------|---|
| 0-1                               | 12        | 1            | 0.22 |
| 1-3                               | 34        | 7            |   |
| 3-5                               | 45        | 16           |   |
| >5                                | 50        | 21           |   |

| Age of 1st smartphone             | Addiction | No addiction | P |
|-----------------------------------|-----------|--------------|---|
| <15                               | 14        | 11           | 0.05 |
| 15-20                             | 63        | 18           |   |
| 21-25                             | 41        | 13           |   |
| >25                               | 23        | 3            |   |

| Price of current phone in rupees  | Addiction | No addiction | P |
|-----------------------------------|-----------|--------------|---|
| <10000                            | 24        | 9            | 0.87 |
| 10000-20000                       | 59        | 19           |   |
| 20000-30000                       | 19        | 7            |   |
| 30000-40000                       | 12        | 5            |   |
| >40000                            | 27        | 5            |   |

| Self-evaluation of smart phone addiction | Addiction | No addiction | P |
|------------------------------------------|-----------|--------------|---|
| Not addicted                             | 92        | 12           | 0.0001 |
| Addicted                                 | 18        | 25           |   |
| Don’t know                               | 31        | 8            |   |

Table-4: Comparison of two groups with respect to smart phone usage

An interesting observation evolved during the study. Urban population has easier access to high speed internet making them more vulnerable to problematic smart phone use. But people in metros are less addicted compared to all. The order of addiction goes in this format cities>towns>villages>metros, this probably can be explained by the busy lifestyle in metros, and advent of high speed internets in remotest of the places through digitalization.

People in low income group are more addicted compared to other groups (p<0.08) consistent with study by Sahin et al.23 Other studies show addiction in high income groups.24 This observation can be due to availability of smart phones and internet services even at lower prices. Entertainment is at hands distance at a lower price making them prey to addiction.

Limitations
1. Cross sectional study
2. Online survey format
3. Early ages (toddler) who are at high risk can’t be included
4. Limited sample

CONCLUSION

No statistically significant difference was found with respect to educational status, occupation, social status, purpose of usage, day of the week, or price of current smart phone. Price of smartphone did not predict addiction as most of them have basic features of internet, social networking and gaming. Education had no relation to smart phone addiction as most of the functions on smart phone can be done with minimum educational background. People across ages, residence, occupation, social strata are involved with smart phone as now phones are not just only for communication rather an important means of entertainment too.

Future studies including parents/guardians into study as proxy for their children to assess the prevalence of addiction would show more insights into the newer age adolescent behavioural problems.

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