



PREVALENCE AND UNDERLYING FACTORS OF SMART PHONE ADDICTION AMONG THE SCHOOL CHILDREN IN SELECTED SCHOOLS OF GUWAHATI, ASSAM

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Abstract

Introduction: Smart phone addiction among school going children has become a growing concern in recent years. Their excessive and uncontrolled use can lead to addiction and negative consequences. Smartphone addiction has a significant risks and consequences on physical and mental health. Research shows that excessive smartphone use may damage the interpersonal skills in children and adolescent. **Objectives:** 1) to assess the prevalence of smart phone addiction among the school children in selected schools of Guwahati, Assam, 2) to identify the underlying factors of smart phone addiction among the school children in selected schools of Guwahati, Assam, 3) to find out the association between prevalence with underlying factors of smart phone addiction. 4) to find out the association between prevalence with the selected demographic variables. **Materials And Method:** A descriptive study was conducted in Bonda: anchalik high school, Narengi, Guwahati, Assam. Conceptual framework of the study is based on 'health belief model'. 380 nos of school childrens were selected by using Probability simple random sampling technique. The tools used were demographic Performa, 6-point Likert scale i.e., smartphone addiction scale for short version, and self-structure questionnaire for underlying factors of smartphone addiction. **Result:** The statistical findings of the present study revealed that the overall frequency and percentage distribution of prevalence of smartphone addiction among school children was 44.7% (170) having no addiction and 55.3% (210) having problematic smartphone addiction. None of Demographic variables were statistically associated with prevalence of smartphone addiction except qualification and occupation of the father where p value was < 0.038 and <0.017 respectively. **Conclusion:** Based on the findings, the researcher concluded that there is an association between prevalence of smartphone addiction and demographic variables whereas there is no association between prevalence of smartphone addiction with underlying factors.

Key words: - Smartphone, addiction, prevalence, school children, SAS-SV, underlying factors.

Introduction

Smartphone addiction is a disease characterized by obsessive, compulsive, and excessive use of mobile phones. It is typically measured by counting the number of times a person accesses their device or the total amount of time they spend online in a certain time frame.^[1] From an early age, children are exposed to smartphones, which poses a risk to their safety. As they get older, they use it to follow social media, play games, talk with pals, and listen to music. We refer to the signal that cellphones produce as electromagnetic radiation. Radio waves from cell phones enter the brains directly when they are in close proximity to the ears.^[2] An addiction that has just lately emerged is chronic phone use. The disorder is not formally recognized by the American Psychiatric Association. Still, a large number of researchers and medical experts worldwide recognize it as a behavioral addiction. Numerous studies have shown that, similar to gambling, prolonged, obsessive smartphone use can change and negatively affect a person.^[3] Since the late 2000s, smartphone use has increased. Global smartphone users accounted for 41.5% of the total population in 2019. In Asian nations like China, where 700 million smartphone applications were filed in 2018, smartphone misuse is a serious concern due to cornucopian mechanical advancement. Misuse of digital media causes eye issues, especially in young people. By 2023, nearly 71% of Indians had a smartphone, a percentage that the United States had already attained in 2019. In 2022, Vivo and Xiaomi were the top three smartphone vendors in India, with Samsung in second place.^[4] According to calculations, by 2050, 4.8 billion people, or 49.8% of the world's population, who use digital media excessively would suffer from myopia.^[5] In the past, kids were less likely than adults to own a smartphone, but as smartphones have become more widely available, teens have soared

to 72% of smartphone owners, despite the dangers of excessive screen time.^{6} Concerns over the history of the school-age child smartphone addiction study are shared by educators and parents. It's a growing issue that may affect children's social and intellectual development. The advancement of smartphones has led to an increase in the number of kids becoming addicted to them, causing them to become disengaged from their studies, feel more alone, and engage in less physical exercise. Several studies have been conducted to assess the seriousness of this problem and provide strategies for helping children kick their habit. Therefore, in order to understand the phenomenon, the aim of this study is to look into the causes of smartphone addiction in school-age children. The other goal of this research is to identify strategies for reducing the incidence of smartphone addiction in this population.

Materials And Methods

Evaluative research approach was adopted to assess the prevalence and underlying factors of smartphone addiction. Descriptive survey research design was carried out to find out the prevalence and underlying factors of smartphone addiction among school children. In this study the total number of the sample size was 380 students from Bonda: Anchalik High School. 10% of the total sample was used for pilot study from Shankardev Vidya Niketan, Narengi. In this study the prevalence formula is used for calculating the sample size is as follows:

$$n = Z^2 p(1-p) / d^2$$

Where n is the sample size, Z is the statistic corresponding to level of confidence, p is expected prevalence (that can be obtained from same studies or a pilot study conducted by the researchers), and d is precision (corresponding to effect size).⁷ The value of Z is 1.96 (at 95% confidence level), d value of is 0.05 (at 95% confidence level), in this study expected value of p is 0.4193 (as Global expected prevalence of smartphone addiction is 41.93%).

Probability simple random sampling technique (Lottery method) was used. In this sampling technique, each member fulfilling the inclusive criteria was having equal chance of being selected as a subject. All the samples were selected randomly from the admission register, among which 121 children were from class VIII, 130 were from class IX and 129 were from class X respectively.

There are 3 different tools were used for collecting information. Structured interview schedule was used for collecting demographic data of school children. The Smartphone Addiction Scale (SAS) was used to find out the prevalence of smartphone addiction. The SAS-SV contains 10 items, each scores on a Likert scale of 1 (*strongly disagree*) to 6 (*strongly agree*). The sum of these items gives an overall SAS-SV score (range: 10–60) with higher score indicating Problematic Smartphone Use.^{8,9,10}

A self-structured questionnaire which consists of 20 numbers of multiple choice questions was administered among school children to identify the underlying causes of smartphone addiction. All tools were translated in Assamese language and validated from the experts. The ethical approval was obtained from Ethical Committee Assam down town University, Guwahati. Administrative permission was obtained from Dean, Faculty of Nursing, Assam down town University, Guwahati. Formal permission was obtained from the concerned authority of selected schools. Written consent was taken from the parents of the sample. Verbal consent was taken from the samples and confidentiality was maintained.

Based on the objectives and hypotheses, the obtained data was analyzed by using both descriptive statistics and inferential statistics. Prevalence of smartphone addiction was calculated as “No Addiction” and “Problematic Smartphone Addiction”. “No Addiction” is considered in $<$ Median (32.50) and “Problematic Smartphone Addiction” in \geq Median (32.50).¹¹ Anova model test (Eta squared test) applied to find out the association between prevalence with underlying factors. And Chi – square (χ^2) test was used the association between prevalence with the selected demographic variables among the school children.

Results And Discussion

Prevalence of smart phone addiction among the school children in selected schools of Guwahati, Assam.

The statistical findings of the present study revealed that the overall frequency and percentage distribution of prevalence of smartphone addiction among school children revealed that 170(44.7%) having no addiction and 210(55.3%) having problematic smartphone addiction (Table-1). A study conducted by Arti, Gusian R., and Gautam A. on the prevalence of Cell Phone Addiction among Adolescents with specific demographic variables collaborated the findings. According to the results, the majority of adolescents—65%—are at a high risk of developing a smartphone addiction, while 26% already have a mild addiction and the remaining 9% have a severe addiction.^{12} Another study by Liu H, Zhou Z, Huang L, Zhou E, Yu L, Zhang M. (2022) reveals that 96 (51.34%) students were having high smart phone use, out of which 68 (54.40%) are boys and 28 (45.16%) are girls while 91 (48.66%) students having low smart phone use, out of which 57 (45.60%) are boys and 34 (54.84%) are girls.¹³ In contrast, a study revealed the prevalence of smartphone addiction was 24.65% with high risk of addiction being 7.53% and 17.12% among males and females & mean age of the students was 18.50 (± 0.80) years.¹⁴

Table 1: Frequency and percentage distribution of smartphone addiction level n= 380

Addiction level	Category	Frequency (f)	Percentage (%)
No addiction	< Median (32.50)	170	44.7
Problematic smartphone addiction	≥ Median (32.50)	210	55.3

Table 1 depicts the frequency and percentage distribution of smartphone addiction level among the school children of Guwahati, Assam. Results revealed that 170(44.7%) are having no addiction and 210(55.3%) are having problematic smartphone addiction.

Underlying factors of smart phone addiction among the school children in selected schools of Guwahati, Assam.

The present study shows that underlying factors like use of Google 270(71.1%), using parents mobile 260(68.4%), sometimes parental use of mobile phone 170(44.7%), Timing of smart phone use 150(39.5%), Due to online classes 210(55.3%), Numbers of mobile phone 140(36.8%), Night time mobile phone use 200(52.6%), Use of internet 160(42.1%), Message 250(65.8%), Monthly data Plan 290(76.3%), Internet plan 1GB or 2 GB/ Day 120(31.6%), Phone use to change mode 220(57.9%), internet use in mobile longer than intended for sometimes 160(42.1%), experience reducing mobile phone use 170(44.7%), keep mobile phone everywhere 180(47.4%), sense of self powerful 140(36.8%), first time used for call a friend 170(44.7%), feel nothing when disturbed by others while using mobile phone 190(50.0%), never spent time with mobile for games 220(57.9%), more than 1 hour spent without smartphone 170(44.7%). Ghosh A, Shirin SS, Deb Nath C, Talukder (2022) Prevalence and Triggering Factors Associated with Mobile Phone Addiction among University Students in Bangladesh provides support for the current study. The findings indicate that 42.2% of current university students and 45.7% of individuals under the age of 25 have a cell phone addiction. One of the main causes of mobile phone addiction among university students was their excessive use of social media and their inability to sleep as a result of late-night internet gadget use. Individuals under 25 years old who were enrolled in undergraduate programs were more likely to develop a mobile phone addiction.¹⁵

Association between prevalence of smartphone addiction with underlying factors of smartphone addiction.

This study depicts the association between prevalence with underlying factors among the school children in selected schools of Guwahati, Assam. The association is calculated by using of Anova model test. Results show there is no association between prevalence with underlying factors $p < 0.05$ (Table 2). Chattopadhyay S. carried out the study that provided evidence for this one. Effect of remote learning on pupils' addiction to smartphones: In November 2021, a quick study was conducted to look for patterns and determine the subjects' psychological health and susceptibility to smartphone addiction. Over the course of one week, from September 13 to September 19, 2021, students in Classes III, IV, V, VI, VII, VIII, IX, X, XI, and XII were randomly selected through an online Google form and given twelve unconventionally designed questionnaires with four multiple-choice alternatives for each type of question. A total of 414 students from these ten classes replied, and the findings showed that higher class students are more likely to use smartphones during online class breaks.¹⁶ Although no significant factors found in present study, many previous studies revealed the significant relationship between prevalence of smartphone addiction with underlying factors i.e. loneliness and aggressive behavior,¹⁷ poor sleep quality and day sleep,¹⁸ time spending for use of smartphone,¹⁹ parental addiction²⁰ etc.

Table 2: Association between prevalence of smart phone addiction with underlying factors among the school children

Sl no.	FACTORS	MEAN	SD	p value	F (Eta)
1.	You need smart phone because a. All my friends they have b. I want to play games and watch movies c. To keep myself updated with Google	32.55 33.11 33.22	±9.907 ±10.38 ± 9.56	0.955	0.046
2.	You get mobile phone to use from a. Parents b. Friends c. Own mobile d. Siblings	33.35 34.12 32.37 29.9	± 9.46 ± 9.37 ±10.60 ±12.78	0.560	0.687
3.	In free time how long your father and mother use mobile phone? a. Whole day b. All free time c. 3 to 4 hours d. Sometimes	33.83 32.11 32.58 33.98	±10.60 ± 8.99 ±11.20 ± 9.57	0.401	0.983

4.	How many hours you used to use your phone? a. 1 hour b. 3 hours c. 5 hours d. Whenever required	33.05 34.02 29.20 33.69	± 8.91 ± 9.70 ± 8.80 ±10.93	0.112	2.012
5.	How many hours you are having online classes? a. 1 hour b. 2 hours c. 3 hours d. More than 3 hours	32.90 34.51 30.77 33.15	± 9.18 ±10.34 ±10.02 ±11.26	0.199	1.560
6.	How many mobile phones do you have? a. 1 b. 2 c. More than 2 d. I don't have any phone	33.19 35.36 32.88 32.79	± 9.43 ± 9.94 ± 9.78 ±10.07	0.620	0.592
7.	Mostly you use smart phone in the a. Morning b. Afternoon c. Night d. Any time	30.50 33.86 33.44 31.95	± 8.38 ± 9.07 ±10.14 ± 9.91	0.378	1.032
8.	Mostly which type of application do you use? a. Internet b. Messenger c. Entertainment d. Others	33.50 30.98 33.87 33.21	±9.57 ± 9.59 ± 9.69 ±10.12	0.382	1.024
9.	How many messages you used to send per day? a. Less than 200 b. 200 c. 300 d. More than 300	33.24 33.15 35.00 32.68	±10.17 ± 8.24 ± 4.16 ± 9.70	0.906	0.186
10.	How often you go over your monthly data plan with your mobile phone? a. Daily b. Weekly c. Monthly d. Never	33.03 33.30 33.24 32.60	±10.26 ±10.45 ± 9.35 ±12.00	0.984	0.054
11.	How much GB/MB internet you need per day? a. Less than 1 GB b. 1 GB c. 2 GB d. More than 2 GB	34.10 31.85 34.61 32.61	±10.35 ±10.35 ± 8.62 ± 9.93	0.138	1.845
12.	Have you ever used phone to change your mood? a. Frequently b. Sometimes c. Rarely d. None	30.95 33.03 33.93 34.5	± 10.2 ± 9.66 ± 9.26 ±10.63	0.334	1.138
13.	Do you find that you stay connected to the internet with your mobile device longer than intended? a. Frequently b. Sometimes c. Rarely d. None	31.37 34.12 34.11 32.31	± 8.60 ± 9.49 ±10.54 ±10.57	0.143	1.819

14.	Tell about your experience when you try to reduce your mobile phone use? a. As if I am losing one of my friends. b. I cannot concentrate in other works c. I feel nothing. d. I can do my task nicely.	31.45 34.73 32.29 33.57	± 8.16 ± 8.85 ± 9.69 ±10.79	0.215	1.496
15.	When you are at home, you carry your mobile phone to ____ a. Bathroom b. Kitchen c. Everywhere d. Only in my room	33.63 32.45 33.02 33.33	± 9.31 ±12.10 ± 9.83 ± 9.49	0.968	0.086
16.	How does mobile phone affect your sense of self? a. Isolated b. Engaged c. Powerful d. Self sufficient	33.18 32.18 33.91 33.18	±10.72 ± 9.76 ± 9.56 ± 9.50	0.586	0.646
17.	First time you use smartphone while - Enjoying internet Book cab Call a friend	33.59 33.55 32.64	± 9.97 ± 8.83 ± 9.89	0.429	0.651
18.	How do you feel when someone bothers you while using smart phone? a. Shouting to that person b. Beating c. Nothing d. Listen to that person	32.26 34.55 33.71 32.51	± 9.60 ±11.48 ± 9.54 ±10.02	0.548	0.708
19.	How many hours you used to spend for playing games on your mobile device in your free time? a. 1 hour b. More than 1 hour c. I don't play d. No limit	33.33 33.93 33.61 31.27	± 9.86 ±10.13 ± 9.73 ± 9.55	0.348	1.103
20.	How long you stay without smartphone? a. Less than 1 hour b. 1 hour c. More than 1 hour d. Never	34.26 33.0 32.94 32.96	±10.88 ± 9.51 ± 8.98 ±10.34	0.824	0.303

*p < 0.05 level of significant

*s-significant

Association between prevalence of smartphone addiction with the selected demographic variables.

The demographic variables, educational qualification of father ($\chi^2 - 10.13, p = 0.038$) and occupation of the father ($\chi^2 - 10.22, p = 0.017$) statistically significant association with prevalence of smartphone addiction $p < 0.05$ level (Table 3). The result is supported by a study conducted by Alageel AA et al. which reported that there is no significant association between prevalence of smartphone addiction with the selected demographic variables.⁽²¹⁾ Another cross-sectional study conducted by **Abed SN, Abd RK, Salim ID, Jamal NAR** also found non-significant association between prevalence of smartphone addiction with the selected demographic variables except age and sex.²²

Table 3: Association between prevalence smart phone addiction with the selected demographic variables among the school children

Sl.No.	Demographic variables	Addiction level		Chi sq (χ^2)	df	p-value
		No addiction (<median)	Problematic smartphone use (\geq median)			
1.	Age a. 13-14 years b. 14-15 years c. 15-16 years	51 59 60	69 71 70	0.371	2	0.831
2.	Gender a. Male b. Female	131 39	165 45	0.125	1	0.724
3.	Standard a. VIII b. IX c. X	51 59 60	70 71 69	0.541	2	0.773
4.	Family Type a. Nuclear b. Joint family c. Extended	85 45 40	108 51 51	0.238	2	0.888
5.	Religion a. Hindu b. Islam	150 20	189 21	0.304	1	0.581
6.	Siblings a. None b. 1 c. 2 d. 3 or more	95 59 14 2	125 75 9 1	3.247	3	0.355
7.	Educational qualification of Father a. Primary education b. Secondary education c. Higher Secondary d. Graduate & Above e. No Formal Education	5 96 51 18 -	6 125 39 39 1	10.13	4	0.038*
8.	Educational qualification of Mother a. Primary education b. Secondary education c. Higher Secondary d. Graduate & Above e. No Formal Education	8 36 117 7 2	6 60 141 3 -	7.996	4	0.092
9.	Occupation of Father a. Government employee b. Unemployed c. Self-employee d. Private employee	29 24 65 52	14 36 90 70	10.22	3	0.017*
10.	Occupation of Mother a. Government employee b. Unemployed c. Self-employee d. Private employee	2 137 22 9	5 169 23 13	1.184	3	0.757
11.	Residence a. Urban b. Rural	136 34	160 50	0.792	1	0.374
12.	Family Income					

a.	Rs. > 1,23,322	3	0			
b.	Rs.61,663 – 1,23,321	5 12	3 20			
c.	Rs.46,129 – 61,662	62	66	11.73	6	0.068
d.	Rs.30,831 – 46,128	47	76			
e.	Rs.18,497 – 30,830	33	42			
f.	Rs.6,175 – 18,496	8	3			
g.	Rs. < 6174					

*p<0.05 level of Significance

*s-significant

CONCLUSION: Smart phone addiction among school going children has become a growing concern in recent years. With the rapid advancement of technology and the widespread availability of smart phones, children are increasingly exposed to these devices at an early age. While smart phones undoubtedly offer numerous benefits and opportunities for learning, communication, and entertainment, their excessive and uncontrolled use can lead to addiction and negative consequences. The present study was conducted to find out the prevalence of smartphone addiction and underlying factors of smartphone addiction among school children in a selected higher secondary school of Bonda, Guwahati, Assam. The findings of the study revealed that there was significant association between prevalence of smartphone addiction and some of the demographic variables and there was no significant association between prevalence and underlying factors of smartphone addiction.

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