

# Smartphone Schooling: An Empirical Investigation of the Health Impacts and Addictive Behaviors of Online Learning among Youngsters in India

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## Abstract

**Purpose:** A smartphone is a type of electronic equipment that has recently gained in popularity and is now considered a necessity for most individuals, particularly in this period. Children who are still in school are also utilising this gadget since it has a lot of functionalities that are helpful, especially during the current epidemic and lockdown periods because of the online method of education. Because users are increasingly relying on this technology for a variety of purposes, including education and entertainment, they now require it. It has been brought to people's attention that because of its widespread usage, there are a growing number of health dangers. The most important objective of this research is to establish and investigate a connection between major health problems affecting young people in India and addiction to smartphone use.

**Design/Methodology/Approach** – A descriptive study approach was used for the research presented in this paper in order to establish the various correlations that exist between smartphone addiction and health issues among school-aged children. The information was gathered by conducting an online poll with two hundred young people from the NCR area of India.

**Findings:** After an investigation into a variety of data and statistics, it was found that the biggest contributors to addiction in young people are addictive behavior and the use of smartphones for information and entertainment purposes respectively. It has been shown that there is a significant correlation between addiction to smartphones among young people and a variety of health problems that manifest in adolescent children who are attending school. It has been proposed that parents and educational institutions be careful of device users and limit gadget usage in order to address the health problems that are prevalent among younger generations.

**Key Words:** Online Education, Smartphone Learning, Health Issue, Addiction, Youngsters, Mental Health,

## Introduction

Smartphones are mobile electronic gadgets that may be held with one hand and are simple to operate. Smartphones come with a wide range of features and programmes that may be used for a variety of purposes, including making phone calls sending text messages, playing games, and accessing the internet.

Although if smartphones make our lives easier in a variety of ways, we shouldn't ignore the fact that they come with a number of negatives, the most prominent of which is addiction to smartphones. A person who struggles with this condition often has problems in their personal relationships, mental health, and physical health (Heron and Shapira, 2004; Young, 1999). It has come to everyone's attention that everyone is addicted to their smartphones for a range of pastimes and educational objectives. We become "mobile junkies" owing to our extreme dependency. The syndrome that is referred to as "user dependency on mobile or Smartphone" is what is meant to be referred to when using the phrase "smartphone addiction." When a routine starts to feel like a responsibility, the risk of developing an addiction rises (Alavi et al., 2012). As a result, excessive use of smartphones has a number of adverse effects on users, including negative effects on their mental and physical health, memory loss, poor thinking, anxiety, stress, and depression, as well as a deterioration in cognitive and learning capacities. Anxiety, sleep disturbances, eye dryness, and social isolation are just some of the serious health issues that can be brought on by using a smartphone too frequently.

Recent research has shown that there are actually two distinct ways of thinking about the world. According to the findings of certain research, there is either a direct or an indirect association between children's mental health and addiction to cell phones, while other studies find a positive correlation between the two.

## Literature Review

Indian youth have embraced smartphone-based online schooling in recent years. Students choose virtual learning platforms due to digital technology and internet

availability. Yet, excessive smartphone usage for online schooling has caused health and addiction issues among children. This literature review examines the health effects and addictive behaviours of smartphone-based online learning among Indian youth.

A Smartphone with internet access is highly helpful for a variety of things, including e-commerce, information sharing, and staying in touch with friends and family. (Kraut et al., 1998; Morahan-Martin, 1999; Scherer, 1997).

A Smartphone is one of the many gadgets and electronic devices that have been produced in recent years as a result of increased technical development (Nishad and Rana, 2016). Most of the students spend their spare time on social networking, academic searches, surfing, and playing video games.

Previous research on the subject, which centered on Smartphone, indicated that dependence on mobile phones was just as common as dependence on alcohol or other conspicuous commodities. A study on how Korean schoolchildren's reliance on mobile phones causes a variety of health concerns was conducted by Cha and Seo (2018).

In particular, the majority of school-age children are addicted to their Smartphone. School-age youngsters have a close bond with their smart phones and see them as an extension of themselves. Many youngsters claimed that they could not imagine living without their Smartphone. (Wajcman et al., 2007), yet they are also working to become independent of their parents. They are more emotionally invested in new technology and are accustomed to using Smartphone as digital natives. They also express themselves on numerous social media platforms, try to stay current on new trends by using various applications (apps) and look for emotional connections and support.

Smartphone addiction may be considered a negative behavioral attitude (Grant et al., 2010; Griffiths, 2005). Although any particular traits have not been investigated, studies on Smartphone addiction have discovered various symptoms. Smartphone addiction has a negative mental and psychological impact on people (Abo-Jedi, 2008). Additionally, it contributes to depression and depressive symptoms (Kim et al., 2015).

Finding the elements that influence Smartphone addiction in Indian school-age children is the study's main goal. It was discovered that excessive usage of Smartphone had harmful effects on both regular and addicted users' health. The primary contributors to addiction were children, who not only harmed their academic performance but also used social networking sites and played video games. According to Yen et al. (2009), people with Smartphone addiction may have similar personalities and lifestyles to people with other addictions, like Internet addiction, and drug users frequently share personality traits. As a result, the two may also have similar mental conditions or coping techniques.

### **Health Effects:**

Several research show that excessive smartphone use for online learning harms students' health. According to Ching et al. (2018), extended smartphone use can cause eye strain, headache, neck discomfort, and musculoskeletal issues in young students. Lee et al. (2018) found that excessive smartphone usage can disrupt sleep, affecting academic performance and health. Smartphone electromagnetic radiation can promote cancer and other health risks, according to Bianchi and Phillips (2005).

### **Addictive Behaviors:**

Several research have linked smartphone-based online learning to addictive tendencies in young pupils. Ha et al. (2018) found that regular smartphone usage for online learning can lead to addiction, withdrawal, and tolerance. Kwon et al. (2013) found that students who overuse cellphones for online learning are more likely to feel anxiety, despair, and social isolation.

As per the above-mentioned literature review, a research gap has been identified. The gap in Smartphone addiction in people or children results in major physical, mental, and physiological problems. While many scholars have conducted studies and discussed them in many nations, very few of them have concentrated on the effects of online education using Smartphone and mobile applications. To fill this vacuum, authors have investigated the effects of online education via Smartphone and mobile applications

as well as the connection between mobile addiction and health concerns among Indian school children.

### **Research Objectives**

- To identify the most prominent signs of Smartphone addiction among youngsters.
- To learn more about the factors that indicate potential health risks associated with excessive Smartphone usage.
- To determine if there is a connection between youngsters' concerns about their health and their heavy use of smartphones.

### **Hypothesis**

- The prevalence of youth Smartphone addiction is strongly connected with the prevalence of online learning.
- There is a strong correlation between youth smartphone addiction and health issues.

### **Research Methodology**

The information comes from a primary source that consists of students who are enrolled in classes 8 through 12 in the NCR area of India. In order to investigate the factors that are associated with smartphone addiction in children of school-age and the health problems that it causes, the descriptive approach of research design has been utilised in the current study. In order to investigate the objectives and concerns, we gathered two hundred datasets from youths (both males and girls) in the NCR area who used smartphones.

### **Data Analysis**

In this particular inquiry, the amount of internal consistency that existed within the data was measured with the use of the Cronbach's Alpha test. To put it another way, a set of components contained inside a collection of assertions are strongly linked with one another.

**Table 1: Statistics of Reliability**

Particulars	Cronbach's Alpha Value	Cronbach's Alpha Based on Standardized Items	Items
Smartphone Addiction	.951	.949	32
Health Issues	.953	.954	18

Source: Created by Author

In the table that was just provided, it was found that the reliability of both sets of assertions has a value that is more than 0.70. This was demonstrated by the table. In addition, the overall Cronbach's alpha for the scales that evaluate smartphone addiction and health concerns was determined to be .949 and .953 respectively. These values are presented in the following table: When applied to this particular demographic, this suggests that the scales have excellent levels of internal consistency.

**Objective 1: To identify the most prominent signs of Smartphone addiction among youngsters.**

With the aid of the factor analysis statistical formula, the aforementioned goal was accomplished. The data on Smartphone addiction was condensed using this test to group factors according to their type.

**H0:** The prevalence of youth Smartphone addiction is strongly uncorrelated with the prevalence of online learning.

**H1:** The prevalence of youth Smartphone addiction is strongly correlated with the prevalence of online learning.

**Table 2: An evaluation of KMO and Bartlett's (Youngster's Smartphone Addiction) study**

Test of KMO & Bartlett's		Values
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.919
Bartlett's Test of Sphericity	Approx. ( $\chi^2$ )	5021.787
	Df	593
	Sig.	.000

Source: Created by Author

According to the statistics, the sample adequacy is .919, which falls inside the "good" category. The sample adequacy was shown to be quite high. The null hypothesis is tested with Bartlett's sphericity test at a 95% significance level. Because the p-value in the table is .0005, Factor Analysis is determined to be suitable. According to the value of p, the alternative hypothesis (H1) is accepted whereas the null hypothesis (H0) is rejected. To evaluate if the tool was appropriate, the KMO and Bartlett tests were used. With 593 degrees of freedom and a value of 5021.787, The chi-square test is significant at 0.05 significance level.

The KMO statistics result is .919, showing that factor analysis was an appropriate data analysis technique.

The factor loadings are shown in a factor analysis' rotatable component matrix, indicating a link between the variables and the factors. These revolving components are the last factors that may be recovered by factor analysis. These elements are identified and split into groups after evaluating the rotated matrix table. The table below was created using the rotated matrix.

**Table 3: Factors Determining Youth Smartphone Addiction**

Factors	Dimensions	Variables	Factor Loading
1.	Usage Pattern of Smartphone	I used to enjoy checking my phone first thing in the morning instead of making myself a cup of tea in bed.	.779
		I am having the habit of checking my Smartphone even when it does not receive any notifications	.781
		Most of the time I use Smartphone when I go to sleep at night.	.776
		I have been warned by my parents about Smartphone too much.	.763
		I prefer to spend time on Smartphone instead of playing or gossiping with friends or family.	.753
		Even in the classroom and during family gatherings and other events, I use my Smartphone.	.741
		I want to reduce the use of Smartphone but am unable to do that.	.719
		I lack time for study or homework due to excessive Smartphone use.	.689
		I had a restricted plan for using my Smartphone, but I was unable to implement it.	.691
		I must use my Smartphone for every single task.	.693
2.	Restricted use of Smartphone	While walking and crossing the street, I use my Smartphone.	.829
		I use my Smartphone when I'm walking or driving.	.761
		I frequently find myself in a dire situation because I use my Smartphone while riding a bike or driving a car.	.801
		I become anxious, when my Smartphone dies during a lecture, class, or while I'm studying at home.	.753
		I panic when I forgot my phone at my home.	.727
		Without a Smartphone, I get tense, apprehensive, and anxious.	.713
		I try to avoid face-to-face communication with parents and friends.	.716
		I feel panic when there is a network issue or net connectivity in my phone for some time.	.689
		I feel Due to excessive Smartphone use I am grading down in marks.	.659
3	Usage of Smartphone for information	I use Smartphone only for educational purposes like online study, assignments, etc.	.832
		I use my Smartphone to stay up to date on events around the globe.	.793
		Most of the time I use my Smartphone for checking important notifications from school or teachers.	.766
		I use my Smartphone to share important messages on social media groups and with friends.	.737
4	Behavioral Addiction to Smartphone	I feel much joy while using a Smartphone as compared to spending time with schoolmates and family members.	.713
		Whenever I will unable to use my Smartphone, I feel like I lost my happiness	.741
		I usually try to send a message or call our friends and relatives even though I am present at the same place.	.710
		I cannot survive without my Smartphone for even a single hour.	.691
		People frequently ask me to quit the excess usage of Smartphone.	.680



Factors	Dimensions	Variables	Factor Loading
5	Use of Smartphone for Entertainment and time pass.	I prefer to watch memes, listening to music, and watch videos on my Smartphone.	.749
		I use my Smartphone primarily to watch television shows and movies.	.733
		I like to chat on Whtsup and other social networking sites.	.724
		Mostly I use Smartphone when I have free time and when I am alone.	.679
6	Addiction and dependency level of Smartphone.	I always set time to use my Smartphone and internet	.811
		It's a very tough decision for me to switch off my Smartphone.	.761
		If any technical issues are caused with my Smartphone I feel very upset.	.659

Source: Created by Author

The scientists used factor analysis to identify the primary reasons of young people's Smartphone addiction. Table 3 displays the various factors and data analyses.

Moreover, the variables in the table are separated into several groups and linked to PCA using the varimax

rotation approach. Six key components were found from 35 items, and their values are all less than 1, and statements with values more than 0.6 suggest that the data set is suitable for study.

**Table 4: Predictive Factors for Addiction to Smart phones among Youngsters**

Sr. No	Factors	N	Min.	Max.	Mean
1	The pattern of Smartphone Usages	200	1.00	5.00	3.7039
2	Restricted use of Smartphone	200	1.00	5.00	2.3325
3	Usage of Smartphone for information	200	1.00	5.00	3.3227
4	Behavioral Addiction to Smartphone	200	1.00	5.00	3.8981
5	Use of Smartphone for Entertainment and time pass.	200	1.00	5.00	2.9981
6	Addiction and dependency level of Smartphone.	200	1.00	5.00	2.9651
Overall Variable's Mean Value					3.2034

Source: Created by Author

The above-mentioned table no. 4 investigated the six Smartphone-related aspects among school-age children, with behavioural addiction, Smartphone usage patterns, and information use all playing significant roles. People are increasingly glued to their smartphones and use them the most. People also use their Smartphones for entertainment and to pass the time. The total of these factors reveals that there was a higher-than-average level of addiction among children, or 2.9981.

Objective 2: To learn more about the factors that indicate potential health risks associated with excessive Smartphone usage.

The second objective of the study is to research and

evaluate risk factors for health problems that can be attributed to excessive use of smartphones. This will allow the researchers to condense a large number of distinct aspects related to health problems caused by smartphone addiction in young people into a smaller number of dimensions.

Ho: There is a no strong correlation between youth smartphone addiction and health issues.

H1: There is a strong correlation between youth smartphone addiction and health issues.

**Objective 3: To determine if there is a connection between youngsters' concerns about their health and their heavy use of smartphones.**

**Table 5: The KMO and Bartlett Tests (Health Concerns Relating to Mobile Phone Use)**

KMO & Bartlett's Tests		Values
The Kaiser-Meyer-Olkin Scale for Sampling Efficacy		.929
Bartlett's Sphericity Test	Approx. ( $\chi^2$ )	2441.487
	df	103
	Sig.	.000

Source: Created by Author

The sample adequacy is approximately .929, which is regarded to be a very acceptable category and numerical number. With a significance threshold of around 95%, Bartlett's tests for sphericity compare and analyse the correlation matrix, looking for redundancy between variables that may be summarised with certain components. The p-value in the table is 0.000, showing that the factor analysis is correct. If the p-value is less than or equal to 0.05, the alternative hypothesis is accepted, whereas the null hypothesis is rejected. The tool's

appropriateness was determined using the KMO and Bartlett tests. The calculated Chi-square test results produce an estimated value of 2441.87 + 595 degrees of freedom. This value is significant at the 0.05 significance level. The KMO statistic score is .929, showing that factor analysis was the best data analysis approach. The Rotated Component Matrix shows the rotated factor loadings again, indicating that variables and factors are linked. The table below was constructed using a rotating matrix. There are a total of 15 statements divided into two groups.

**Table 6: Children's health concerns are caused by an assortment of factors.**

Factors	Dimensions	Variables	Factor Loading
1	Physical Health Problems	I have dry eyes as a result of my excessive use of my Smartphone.	.861
		As a result of my excessive late-night Smartphone use, I have insomnia.	.809
		While using my Smartphone, I experience ortho pains in certain body parts.	.789
		I always feel tired because I use my smartphone for too long..	.792
		I also experience hearing problems as a result of using headphones or ear buds with my Smartphone.	.769
		Because I use my smartphone so frequently, I don't exercise as frequently as I should.	.771
		I feel energy less and uneasy due to the use of a Smartphone	.712

Factors	Dimensions	Variables	Factor Loading
2	<b>Mental Health Problems</b>	I occasionally get irritated by people using their Smartphone excessively.	.799
		Due to my excessive Smartphone use, I also became depressed.	.811
		I experience anxiety and stress as a result of using my Smartphone.	.792
		Most of the time I feel angry about the very small issue due to the maximum use of Smartphone.	.779
		I believe that daily use of my Smartphone is raising my stress level.	.784
		When I'm without my Smartphone, I go crazy.	.770
		I feel irritated due to the lack of a Smartphone.	.771
		Most of the time I feel socially isolated due to the excessive use of my Smartphone.	.739

Source: Created by Author

When it comes to health and smartphone use, the major purpose of data analysis is to isolate the most salient characteristics. Using the varimax rotation method, each of these characteristics has a one-of-a-kind relationship to PCA. Two variables were found in the data, accounting for

half of the variance, and the values displayed are all negative. Also, the PCA table was examined, and all values were found to be greater than 0.6, indicating that the data set was suitable for analysis.

**Table 7: Descriptive Statistics of Factors Associated with Health Problems**

S. No.	Factor	N	Min.	Max.	Mean
1.	Behavioral Wellbeing Issue	200	1.00	5.00	3.7011
2.	Physical Illness Issue	200	1.00	5.00	3.0762
Factors' overall mean value					3.8365

Source: Created by Author

These two features of health illnesses produced by Smartphone addiction in children are strongly linked to children's physical health issues, such as chronic fatigue, eye problems, disrupted sleep, and so on, as shown in the tables above. Stress, despair, anxiety, and isolation are

among problems that students frequently face. Combining these two measures, it seems that college students who used smartphones had more health difficulties than their peers overall (3.8365).



Objective 3: To determine if there is a connection between youngsters' concerns about their health and their heavy use of smartphones.

In order to achieve this objective, the statistical technique known as correlation was utilised. In place of Pearson's correlation coefficient, an alternative test known as Spearman's rank correlation coefficient was utilised because the data did not follow a normal distribution. It was

used to investigate whether or not there is a correlation between kids' addiction to their smartphones and their health concerns.

H0: Youngsters' addiction to Smartphone does not statistically significantly correlate with health issues.

H1: Youngsters' addiction to Smartphone is statistically significantly correlate with health issues.

**Table 8: Spearman rank correlations for smartphone addiction and health problems.**

	Particulars		Smartphone's Addiction	Health Issues
Spearman's rho	Smartphone's Addiction	Correlation Coefficient	1.000	.741**
		Sig. (2-tailed)	.	.000
		N	200	200
	Health Issues	Correlation Coefficient	.741**	1.000
		Sig. (2-tailed)	.000	.
		N	200	200

\*\* . Correlation is significant at the 0.01 level (2-tailed). Source: Created by Author

## Discussion

The Spearman correlation coefficient is found to be 0.752, as shown in table no. 8. According to this correlation score, there is a significant and positive connection between excessive use of smartphones and a variety of health-related issues. The data shown in the table provide credence to the conclusion that compulsive smartphone use is directly related to a variety of negative health outcomes among young people. It seems to imply that as smartphone addiction becomes more widespread, so do the associated health consequences. As a consequence of this finding, the null hypothesis has been refuted, and the alternative hypothesis—according to which there is a demonstrable link between compulsive smartphone use and a variety of health problems among young people—has been validated.

## Conclusion

The purpose of this study was to investigate whether or not there is a correlation between teen health problems and smartphone addiction. For the purpose of achieving this aim, a self-made questionnaire including two sections,

titled "selfie addiction" and "health concerns," was crafted on the basis of previously conducted research. There were a lot of different factors that were compared and analysed, and they all pointed to smartphone addiction and health problems. Two factors were found to be associated to health issues caused by smartphones, while six factors were shown to be related to addiction to smartphones. According to the findings of several pieces of study, addiction and health issues are tightly connected. As a symptom of addiction, six components were collected from a range of different remarks that were made about smartphone users. On the addiction scale, the components that predominated the most were those that dealt with behavioural addictions. Prior research has showed that avoiding the use of smartphones for extended periods of time can reduce the level of addiction. The addiction to drugs and the addiction to smartphones are quite similar. Utilization of informational resources and participation in entertaining activities were other important factors that contributed to addiction. Using the health problem scale, we were able to identify two components: physical difficulties and health

problems, and both of these categories were predominant. It is advised that users be aware of the adverse impacts that excessive gadget usage can have on their health, citing past research as support for this recommendation. People are also encouraged to participate in games that take place outside rather than playing video games. Get the guidance of knowledgeable individuals wherever feasible in order to put limits on the usage of smartphones.

It has been shown that compulsive use of smartphones is closely linked to a variety of health issues. Inadequate sleep, impaired eyesight, dry eyes, anxiety, and sadness are some of the conditions that, according to the research, call for the government, organisations, and smartphone makers to take necessary action to enhance user knowledge of the device's restricted usage. To ensure that students only use their smartphones in a responsible manner and for useful purposes, educational institutions have to implement stringent norms and regulations.

Finally, Indian youth choose smartphone-based online education. Smartphones for online study might cause health problems and addiction. Students must be educated on safe smartphone use to utilise them for online study. Smartphone schooling's long-term health effects on Indian children need further study.

### **Managerial & Social Implications**

"Smartphone Schooling: An Empirical Study of the Health Effects and Addictive Behaviors of Online Learning among Youngsters in India" has substantial management implications for schools, parents, and policymakers.

Schools should encourage healthy online learning: Smartphone-based online learning may cause health problems and addiction, according to studies. Schools should encourage healthy online learning. Limiting smartphone use, promoting breaks, and offering resources to control screen time may assist.

Parents should be active in their child's online learning: Research shows that parental engagement can reduce smartphone schooling's negative health effects and addictive habits. Parents should engage in their child's online learning, regulate screen time, and offer support and advice.

### **Social Implications:**

The study emphasizes the possible negative health effects of smartphone education, such as increased stress and anxiety. This highlights the importance of schools and policymakers prioritising mental health and well-being in education, as well as providing students with tools and assistance to boost their overall health and well-being.

Online learning platforms should be regulated: Smartphone-based learning may harm health and lead to addiction in young people. Online learning platforms should be regulated to improve health and protect pupils. Setting screen time limits, encouraging breaks, and minimising addiction risk in online learning may help.

### **Prospects for Future Research:**

Further research is needed to examine Indian youth's health and addiction to smartphone-based online learning. These phenomena must be studied in additional situations and age groups. Smartphone schooling's hazards and advantages should be studied to inform healthy behaviors and harm reduction measures.

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