



# Smartphone Addiction Among Adolescents And Associated Psychological Health Outcomes: A Literature Review

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## Abstract

Use of smartphone in our lives increasing day by day and plays a significant role in people's lives, particularly among adolescents. Their smartphone addiction has become obsessive, resulting in a loss of attention in their physical, psychological, and social activities. Already available studies on smartphone addiction and psychological health effect in younger generation have thoroughly examined. The major goal is to determine the relationship between smartphone addiction and mental health problems (poor sleep, loneliness, stress, depression, anxiety) among adolescents in systematic manner. Methods: To find eligible studies, researcher conducted a systematic literature review through electronic database like "PubMed, Scopus, Google scholar, PsycInfo, Research Gate, Medline" by using the term "smartphone addiction, adolescents, negative effects, psychological health". Most of the researches were cross sectional and targeted to psychological health outcomes. Anxiety, loneliness, depression were revealed to be common mediators of mental health issues. Conclusion: Our data indicate that smartphone addiction and mental health have a positive relationship. There is a need for more public awareness campaigns concerning smartphone addiction and its effects on mental health. To justify the effects of smartphone addiction, more research, particularly randomized controlled trials, is required.

**Keywords:** Adolescents, Anxiety, Depression, Loneliness, Smartphone addiction.

## 1. Introduction

Smartphones have a crucial role in people's everyday lives. Smartphones are devices with a touch screen interface and an operating system capable of running all downloadable apps and performing nearly all computer operations [1]. With capabilities such as gaming, internet access, social networking, entertainment, multimedia, and navigation, adolescents devote more time and attention to their cellphones. As adolescents become so addictive to their cellphones they refuse to do their everyday tasks, lose concentration, poor academic performance and other daily activities. Smartphones are information-processing devices that process much more data than older phones. Addiction generally refers to compulsive behaviors that adversely affect physical and mental health. Most addictions make people feel that they have to do certain activities to feel good, and because of their occurrence, this becomes a poor habit. Students use their smartphones on a regular basis to access Instagram, Facebook, Twitter, Snapchat, YouTube, virtual games, and other social media platforms. Smartphone addiction in teens is characterized by excessive use of

cellphones to feel good and an unwillingness to stop, even if it means losing friendships, a bad influence on academics, and a decline in physical social activities [2].

Smartphone addiction is a type of behavioral addiction marked by an insatiable urge to check and scroll through electronic gadgets, which interferes with other important aspects of life. [3]. Smartphone addiction can be described as an addictive condition of non-substances, according to the American Psychiatric Association, although additional research is needed. Having a smartphone addiction has major consequences for an individual's feeling of well-being, thoughts and perceptions, behavior, and emotions. When a student becomes addicted to online/virtual world, they do not want to see their friends outside and are not interested in meeting people in person. They retreat within their shell and begin to isolate themselves. If they are having problems at school, with their friends, or with their family, they do not communicate with them and instead seek an escape by becoming absorbed in their smartphones, finding enjoyment, and isolating themselves from other concerns [4]. Friends and family communication becomes limited. They avoid social events, and even if they do, they will be engrossed in their smartphones. This prevents people from making actual human friends, solving real problems, communicating face to face, and participating in social activities. The most effective treatments for smartphone addiction are psychosocial ones. This research article aims to:

1. Examine reviews of the literature on adolescent smartphone addiction and its psychological effects.
2. Identify research gaps in the area of smartphone addiction and its relation with psychological discomfort in adolescents.
3. Provide some coping strategies.

### 3. Methodology of the study:

The electronic databases "PubMed, Scopus, Google scholar, PsycInfo, Research Gate, Medline" were used to conduct a systematic literature review using the search terms "Smartphone addiction," "psychological effects," "adolescents," and "students". The needed papers' abstracts were evaluated for appropriate literature reviews. After including all relevant studies, a total of 18 studies were published.

### 4. Analysis

S. no.	Name of the Author, year, country name	Age	Methodology /sample size	Findings	Implication	Limitations
1.	Meena, M. et. al. (2021) /China	16-40 years	The data was evaluated statistically and cross-sectionally on 240 undergraduate, graduate, and postgraduate students.	The findings revealed a substantial link between loneliness and smartphone addiction, as well as a modest link between shyness and social anxiety.	This study was used by colleges, universities, and the government to better understand smartphone addiction in students and their behavioral patterns in order to develop effective anti-addiction methods.	Study includes students from china only [6].
2.	Buabbas	12-18	A total of 1,993	Addiction to	To raise	Because the

	AJ, et al., 2021/ Kuwait	years	pupils from secondary and high secondary schools made up the study's sample. Smartphone Addiction Scale was used.	smart device usage was found to have a positive relationship with stress, anxiety, and depression.	awareness among students and their parents, as well as health professionals, about the dangers of excessive smartphone usage, and to develop effective programs and policies to promote children's well-being and healthy living.	study did not include all ages or other socio demographic information, the findings cannot be applied to all school-aged children.[7]
3.	Demirci K, et al. (2015)/ Turkey	19-24 years	With 319 Adolescents, the Pittsburgh Sleep Quality Index scale, smartphone addiction scale, Beck Depression Inventory and Beck Anxiety Inventory were used [8].	Overuse of a smartphone can contribute to sadness or anxiety, as well as sleep issues.	University students who were being monitored for smartphone addiction had high levels of depression and anxiety.	Only cross-sectional technique is not enough to examine causal relations. As a result, longitudinal investigations are required. In addition, a sample of people from various age groups and educational backgrounds would be beneficial [9]
4.	Alhassan, A. A. (2008)/ Middle East	18-35 years	935 participants were included to assess their level of addiction through the Beck Depression Inventory and Smartphone Addiction Scale.	A positive relation was found between Smartphone addiction and depression.	It is recommended for young adults. Use of mobile phones with care and prudence.	Age range was limited to 18-35 years. Children and adolescents should be included [10]
5.	Gao Y, Li A, 2016/ China	13-18 years	The study had 127 users and 30 days of data. Interaction Anxiety Scale and Loneliness Scale were employed in the	Smart phone addiction, social anxiety, and loneliness all have a favorable association.	If social anxiety and loneliness are recognized early on, the usage of smart phones from beginning to end can provide beneficial options	The application can be used on a larger sample of people who use more than one smart device and are interested in learning about

			study.		for those who do not have access to social communication in their daily lives.	other smart phone habit characteristics [11]
6.	Alaa Aziz Alhazmi et al. 2018/ Saudi	17-25 years	203 students were included in cross-sectional study. Smartphone addiction scale was used.	The amount of hours spent on the phone and the use of a smartphone have been linked. Smartphones were discovered to be very common.	The students who took part in the study exhibited significant levels of smartphone addiction, which was linked to the length of time they used it on a daily basis.	Because of the tiny sample size, it is impossible to generalize the findings. More long-term research on the need for excessive smartphone use should be conducted [12].
7.	Alkın, S., Bardakcı, S., & İlhan, T. (2020)/ Turkey	15-18 years	The Social Self-Efficacy Scale, Perceptions of Parents Scale, Loneliness Scale-Short Form, and Smartphone Addiction Scale-Short Version were employed.	Addiction of smart phone has a favorable relationship with loneliness, but a negative relationship with parental opinion and time spent with friends.	Excessive time spent on a smartphone causes a breakdown in contact with family members. Parents can set "phone-free hours" and spend quality time with their children.	The gathered information was limited to a specific province and so cannot be applied to other areas [13].
8.	Fiscer Grote/2019/ Turkey, South Korea, Spain, Italy, UK, China	1-10 years (children) and 11-21 years (adolescents)	Problematic smartphone use and their risk factors in children and adolescents (Review article). The study's inclusion criteria were met by 38 studies.	Problematic smartphone use is associated with strict childrearing and childcare, a lack of willpower, and low self-esteem, whereas academic motivation and school achievement are lowered	School children, adolescents and family members should be aware about smartphone addiction and its negative impact.	The causation of the described relation for the variables in question is not statistically consistent across all trials. The majority of the studies in this article were cross-sectional and relied on correlational research. [14].
9.	Nazir S. Hawi & Maya Samaha /2017/	17-27 years	Smartphone Addiction Scale –Short Version, Beck Anxiety Inventory were	The study found that undergraduate students with smartphone	This research can be utilised to execute and create various parenting and	Study was limit to university students and sample size was too small [15]

	Lebanon		used On 381 students	addiction had higher anxiety levels than those who were not hooked, and that those with high anxiety had more problems with their family relationships.	child education practises.	
10.	Son H et al, (2021)/ Korea	10 to 19 years	A regression model was used to evaluate cross-sectional data. There were 2758 males and 2419 females among the teens. Scores on the smartphone addiction diagnostic scale, as well as parent-related criteria, are used [19].	To prevent problematic smartphone use in both male and female teenagers, parental-related factors were explored. [16]	These findings could be used by public health experts in parental education and family intervention to prevent youngsters from engaging in hazardous smartphone usage.	Because of the cross-sectional design, it was unable to determine causal relationships. It had to be analyzed with data from 2014 in order to incorporate the variables related to parents. [17, 18].
11.	Hye-Jin Kim 2017/ South Korea	21-25 years	Accident experience was evaluated based on self-reported data. There are 608 people in the sample.	Total accidents, falling/slipping, and bumps/collisions were all linked to smartphone addiction.	Safety signs were put in Korea as part of a pilot initiative to alert the public about the dangers of smartphone-related mishaps. Teachers, educators, and government planners should raise awareness of the dangers of smartphone addiction.	Causality cannot be deduced from a cross-sectional study design. The research was limited to age group and a straightforward comparison of the various sorts of smartphone content [20].
12.	Mi Jung Rho, 2019/ South Korea	19-39 years	The Short Version of the Dickman Impulsivity Inventory, Patient Health Questionnaire-9, Self-Control Scale, and	Problematic smartphone use was linked to mental health issues: Self-control (66%) is the most important trait, followed	They advised that these forms of problematic smartphone usage may be used to establish a service for managing and avoiding such behaviors in	The repositioning errors were not measured using time variables, and the sample size was too small [21].



			Generalized Anxiety Disorder scales were used. The total number of people in the sample was 3732.	by anxiety (25%), despair (7%), and dysfunctional impulsivity (4%). (3%)	adults.	
13.	Dalia El-Sayed, 2020/ Saudi Arabia	18-22 years	With a sample of 1513 people, two scales were used: Beck Depression Inventory and Anxiety Scale.	Over use of smartphone and, call duration both were positively associated with smartphone addiction. Anxiety and depression were also present.	The awareness programs should be organized on negative effects of cellphone addiction among university students with the help of health education and counseling campaigns.	Self-reporting questionnaire with the potential for reporting bias. Study was a cross-sectional only, only one country was included so the findings cannot be generalized [22].
14.	Ayse Gokce 2021/ Turkey	18-23 years	Eating Attitudes Test; Liebowitz Social Anxiety Scale. A total of 319 university students were included in the study.	Anxiety and smoking were found to have a high association with overall scores on the Mobile Phone addiction.	Young students should become involved in social groups and use their free time developing meaningful relationships..	Results may not be generalizable to all populations because this is a distinct cultural population. [23]
15.	Du et al. (2010)/ USA	12-17 years	45 studies were included in this review based study.	Empirical methodology and interpretation	We need to look into possible practical solutions to lessen these consequences, such as coping skills and awareness campaigns.	There is hardly any long-term study on the long-term implications of heavy smartphone usage. We don't know when is the best time for a child to begin using a smartphone because most studies only cover "smartphone usage." [24]
16.	Hsien-Yuan Lane	20.22 years	The number of people in the sample was 422.	Psychological discomfort and poor sleep	The findings point to a plausible	Because the data was limited by self-report

	2021/ Taiwan		Sleep Quality Index (Pittsburgh), Tri-Dimensional Personality Questionnaire, Beck Depression, anxiety Inventories were used.	quality were highly associated with smartphone addiction.	neurochemical mechanism linking personality factors to gender differences and smartphone addiction, which adds to the frameworks and theoretical breakthroughs in this field. presenting implications for smartphone addiction prevention and intervention among university students.	assessments, the validity of the findings may be dependent on the accuracy of the participants' reports. The number of participants in each gender group was unequal, which may restrict the generalizability of the findings [25].
17.	Anna Maria, 2021/ Switzerland	18-35 years	The sample size was 240 people. Social Anxiety Scale, and self-developed questions on daily duration of smartphone use.	Problematic Smartphone Use was found to be strongly and positively connected to social anxiety.	Raise awareness and develop intervention programs to overcome addiction of smartphone.	Because the data was obtained in a cross-sectional method, it was unable to draw any conclusions about causal effects that were evaluated. A long-term examination would demonstrate the concepts' long-term viability and bidirectional impacts [26].
18.	S HariPriya, 2019/ India	20-24 years	With a sample of 113 people, two scales were used: "Pittsburgh Sleep Quality Index and International Physical Activity Questionnaire".	Less physical activity, Poor sleep quality	Affected adolescents must be educated and warned properly about the negative effects of problematic cellphone use. Reduce sedentary behaviours, such as smartphone use, to less than two hours each day to boost physical activity and health.	Less sleep quality and physical activity were assessed using self-reported subjective measures. The participants were college students studying health sciences; therefore they may not be representative of

						the general community [27].
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## Smartphone Addiction and associated psychological effects

### 5. Research Gap

With the foregoing review of research, an attempt was made to comprehend the relationship between smartphone addiction and adolescent psychological well-being. The majority of the evidence points to a positive link between smartphone device use and psychological health, which leads to increased stress, anxiety, and sadness. Studies from a psychological standpoint show a link between problematic smartphone use and poor mental health, as well as how it influences behavior. Smartphone addiction and loneliness have a strong link in some research, but social anxiety has a weak link. High smartphone usage has been linked to psychological suffering and mental health. Adolescents and adults struggled with depression, social anxiety, sleep disorders, stress, and loneliness. Several research were undertaken to better understand smartphone usage while taking loneliness, sleep issues, stress, social anxiety, and depression into consideration. The current literature review focuses on research that look at problematic smartphone use as a separate entity. Intense smartphone use has been linked to mental health, behavioral, and psychological disorders. The degree of interference of smartphone use with anxiety and sleeping functions adds to deterioration of mental health, as well as increased levels of psychological tension and physiological arousal, which can have a negative effect and contribute to stress and ill health. The adolescent is preoccupied with his or her smartphone and is having problems with his or her relationship, schoolwork, and other outdoor activities. The influence on social interactions, anxiety, stress, sleep habits, reliance, and addiction concerns have all been discovered in the studies of the review. The extent to which mobile use interferes with our daily life adds to a decline in both physical and mental health. Poor relationship was found among family members due to spending the most of their time on smartphones. Parents can designate some "phone-free hours" during which they can spend meaningful time with their children. Therapeutic interventions and coping methods will be used to assist the students. Emotional, psychological, and social assistance were all required. Because technology and internet connectivity are significant components of our lives' worth and well-being, their obsessive use will result in a less sustainable and connected society and civilization.

### 6. Limitations:

The limitations have been emphasized in the studies described above. Because the majority of the studies used a small sample size, the results cannot be applied to a large number of people. Longitudinal studies are required to determine the need for excessive Smartphone use. Longitudinal research is also lacking, which contributes to the problem. Future researchers should be able to overcome these limitations in terms of perspectives; future research should include a broader range of participants and samples; however, high-



quality studies with objectively determined measurements, longitudinal design, and a defined population to draw conclusions about the relationship of association and mechanism should be conducted. It will be necessary to undertake experimental and longitudinal investigations in order to demonstrate causal relationships. Furthermore, other samples that might be included in the study include adolescents from different age groups who do not attend educational institutions and are prone to smartphone addiction.

## 7. Coping Strategies

1. For adolescents with mild to moderate levels of smartphone addiction, early evaluation, intervention, and therapy should be prioritized.
2. It is important that parents spend quality time with their children and pay attention to their emotions in parent-adolescent dialogues.
3. Recognize the situations that prompt you to pick up your phone.
4. Recognize the differences between in-person and online interactions.
5. Switch to a healthier activity instead of using your smartphone.
6. Don't sleep with your phone or tablet.
7. Encourage them to read, listen to music, and develop new skills and hobbies as healthy methods to unwind.
8. Modify the phone's settings:
  - Disable notifications.
  - Make the screen black and white.
  - Remove any programs that cause you to be distracted from your home screen.
  - Make your passcode longer.
  - Set your phone to airplane mode.
  - Turn on the do not disturb mode.

## 8. Conclusion

Several articles have been published in recent years that look at the role of smartphone addiction and its consequences for teenagers and young adults, but there are still significant gaps. The researcher draws on decades of empirical evidence to show a link between smartphone addiction and negative health consequences in teenagers and young adults. Surprisingly, studies conducted in many parts of the world reveals the same results that smartphone addiction has similar health consequences. Findings of this study are strengthened by the consistency across studies, emphasizing the link between Smartphone Addiction and health effects. One of the detrimental outcomes of Smartphone Addiction has been identified as disturb sleeping pattern, which is similar to our findings [3,18,20]. Depression and anxiety might be seen as a result of excessive smartphone use [2,4,9,14,15]. According to the findings, teachers, health educators, and policymakers should make the necessary steps to educate young people about consequences of smartphone addiction.

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