

EFFECT OF MOBILE ADDICTION ON ADOLESCENTS: A COMPREHENSIVE ANALYSIS

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Abstract

This study investigates the impact of mobile addiction on adolescent life, focusing on mental health, academic performance, and social interactions. A mixed-methods approach was used, involving surveys and in-depth interviews with 200 adolescents aged 12–18. The results showed a significant correlation between high mobile usages and decreased academic performance, as well as higher levels of anxiety and depression among adolescents with excessive mobile use. However, mobile usage was found to facilitate certain social interactions, especially in introverted adolescents. Moderating factors, such as parental supervision and involvement in extracurricular activities, were identified to mitigate the negative effects of mobile addiction. The present research underscores the complex and multifaceted nature of mobile addiction among adolescents. While it negatively impacts mental health and academic performance, it also contributes to social connectivity. The study emphasizes the need for balanced and mindful mobile use and the importance of external support systems, such as parental guidance and engagement in offline activities, in moderating the effects of mobile addiction. These findings provide a foundation for developing targeted interventions and policies to address mobile addiction in adolescents.

Introduction

Smart phones and other mobile gadgets have become so pervasive in today's digital world that they have a significant impact on many different aspects of everyday life. In particular, this is visible among adolescents, a generation that has demonstrated a significant increase in the use of mobile devices over the course of the past few years. Mobile phones have grown into primary centres for entertainment, social interaction, and information access as a result of the proliferation of smart phones, social media, and numerous online platforms. Therefore, mobile phones are no longer merely tools for communication; rather, they have become so much more than that. Concerns have been expressed about mobile addiction, which is a syndrome that is defined by excessive and compulsive use of mobile devices, frequently at the cost of other activities and obligations. This broad adoption has sparked concerns about mobile addiction. It is possible for an individual to get addicted to mobile devices, which can have a severe impact on many parts of their life, including their mental health, their relationships, and their academic or professional performance. A number of studies have demonstrated that excessive usage of mobile phones can result in symptoms of anxiety and sadness, as well as a reduction in professional productivity. It is essential for individuals, particularly adolescents; to cultivate good habits and discover a balance between the amounts of time they spend using mobile devices and the other elements of their lives that are equally important. Individuals can try to counteract mobile addiction by applying tactics such as setting time restrictions for device usage, creating designated

phone-free zones or times, and engaging in alternative activities that promote social connection and physical exercise. These are all examples of techniques that can be implemented. Furthermore, it may be useful to seek support from friends, family, or specialists in order to overcome excessive use of mobile phones. It is possible for individuals to improve their overall well-being and maintain a lifestyle that is both healthy and balanced if they take proactive actions toward limiting their usage of mobile devices that they have.

Statement of the Problem:

The rapid increase in mobile phone use has led to a growing problem of mobile addiction among adolescents. Excessive use of mobile phones adversely affects their physical health, mental well-being, academic performance, and social relationships. Despite its widespread impact, a clear and comprehensive understanding of these effects is limited. Therefore, the present study aims to analyze the effect of mobile addiction on adolescents in a concise and systematic manner.

Review Related Literature

Exploring smart phone utilization patterns, addiction, and associated factors in school-going adolescents: A mixed-method study Ladani, Hemangi M.1; Yogesh, M1; Trivedi, Nidhi S.1; Gandhi, Rohankumar B.1; Lakkad, Dhruv2 Journal of Family Medicine and Primary Care 14(1):p 334-340, January 2025. Adolescence is a critical period of physical, psychological, and social development. However, it is also a phase characterized by impulsivity, risk-taking, and reduced self-control. With rising smart phone penetration, adolescents today represent the first truly "digital native"

generation having grown up with mobile technology. On one hand, smart phones provide adolescents with means for learning, exploring identity, networking, and entertainment. On the other, excessive smart phone use has been linked to problems, such as sleep disturbance, academic issues, reduced physical activity, and strained family relationships. Growing evidence indicates that adolescents are vulnerable to developing addictive smart phone usage patterns as well as accompanying physical and mental health symptoms. In terms of factors associated with smart phone use, our study found urban residence, illiterate father's education, and illiterate and primary/secondary educated mother's education to be significant correlates. These socio demographic factors have been noted by earlier researchers too. SA was associated with urban locality, hands free kit used, higher parental education, and longer duration of use, perception of lack of harm, poor academic performance, and upper socioeconomic status. Previous studies have also highlighted greater duration and frequency of use, lack of parental control, and perceptions of harm to be associated with addiction risk.

The Impact of Smartphone Addiction on Adolescents' Quality of Life

A Systematic Review (2024) the findings of this review highlight the detrimental impact of smart phone addiction on adolescents' QoL, HRQoL, and well-being. These results emphasize the need for interventions aimed at promoting healthier smart phone use among students. Future research should focus on longitudinal studies to establish causality and further explore the mechanisms underlying the relationship between smart phone addiction and quality of life.

Effect of Smartphone Addiction on the Mental Health of Adolescents

A Literature Review (2023) the effect of smart phones on the mental health of adolescents is a topic of significant importance in today's digital age. While smart phones offer benefits such as increased social connectivity, access to resources, and self-expression, they also pose challenges, including potential negative effects such as excessive use, cyber bullying, social comparison, and decreased face-to-face interactions. To promote healthy smart phone use, it is essential to set limits, foster digital literacy, encourage offline activities, maintain open communication, and create tech-free zones. By understanding and addressing these factors, we can support the well-being of adolescents in the digital era and ensure a balanced and mindful relationship with smart phones. Further research is needed to stay updated and develop effective interventions.

The Relationship between Physical Activity and Mobile Phone Addiction among Adolescents and Young Adults:

Systematic Review and Meta-analysis of Observational Studies (2022). Mobile phone addiction (MPA) is defined as an addictive behaviour in which individuals show uncontrollable use of mobile phones that severely impairs

their physical, psychological, and social functions. Generally, MPA is considered a negative behaviour that is socially inappropriate, or even hazardous, in circumstances such as driving, walking, and unauthorized live streaming. It is also categorized as a behavioural addiction (i.e., a non-substance addiction) that can potentially cause physical, emotional, and financial harm. Previous epidemiological surveys of MPA in different countries and regions in the past 5 years have revealed a high rate of MPA among adolescents and young adults. Recent surveys have also found that the rate of MPA among Brazilian adolescents aged 15 to 18 years was approximately 70.3%. The rate of MPA among college students in Hainan province in China aged 18 to 26 years was 40.5%, the rate among Egyptian college students with average age of 18 to 21 years was 64.2%, and the rate among college students in a regional city in India with a mean age of 20.1 (SD 1.3) years was 39% to 44%. Anjali (2021) in her study found that mobile phone use has a significant impact on senior secondary school students' academic performance; age differences did not have a significant impact on senior secondary school students' academic performance; gender did not have a significant impact on senior secondary school students' academic performance; socioeconomic status did not have a significant impact on senior secondary school students' academic performance; and mobile phone use does not have a significant impact on senior secondary school students' academic performance. Mahendra, et al (2021) in their study found that one of the best technological presents of the 21st century, mobile phones are particularly popular among adolescents. Mobile phones today have an infinite supply of resources that can be used for a variety of purposes. Adolescents may exhibit behavioral changes and lower academic performance as a result of excessive use. The purpose of this study is to investigate the connection between adolescent educational achievement and mobile phone use and behavioural changes. Grewal (2020) has conducted a study and found that People of all ages, particularly young people, have developed a significant dependence on mobile phones for a variety of reasons as a result of mobile phone culture. Students who also use mobile devices for academic purposes now routinely incorporate it into their work. The purpose of this study was to determine how mobile phone use affected the health and academic performance of MBBS students. In the year 2020, Mukhdoomi found that due to the overreliance on technology in every aspect, smart phone addiction is growing like it was in youth. As a result, it is necessary to conduct thorough and consistent research to determine whether smart phone addiction is 59 beneficial to students or detrimental to their academic performance. Numerous future researchers have conducted research in this area on a variety of populations and discovered both positive and negative correlations between academic performance and smart phone addiction.

Purpose of the Study

This research endeavour is being carried out with the purpose of delivering an all-encompassing investigation of the consequences that mobile addiction has on adolescents. The purpose of this study is to gain a more in-depth understanding of how the excessive use of mobile devices can have an impact on the health and development of young people. The implications of this study are far-reaching, and they offer insights that could inform parents, educators, and policymakers in the process of developing strategies to mitigate the negative effects of mobile addiction while simultaneously harnessing the positive aspects of mobile technology for educational and developmental purposes. In addition, the purpose of this research is to make a contribution to the academic debate on the topic of electronic addiction and its influence on young people, which is a topic that is becoming increasingly important in this age of digital technology. The results of this study indicate the urgent need for comprehensive interventions and guidelines to advocate for the use of mobile devices in a healthy manner among young people. The stakeholders can work together to build a balanced approach that leverages the educational potential of mobile technology while protecting the well-being of children and adolescents if they have a thorough awareness of the possible hazards and benefits connected with mobile technology. In addition, additional research in this area can assist in enhancing our comprehension of the long-term effects that excessive use of mobile devices might have on the cognitive, social, and emotional development of young people. Additionally, it is vital to address the problem of addiction to mobile devices in order to prevent the potential adverse effects on mental health and academic performance. In order to reduce the negative consequences of excessive use of mobile devices, it is possible to use techniques such as setting time restrictions, increasing physical activity, and encouraging face-to-face interactions. Because of the prevalence of digital technology, it is of the utmost importance for parents, teachers, and policymakers to work together in order to formulate comprehensive recommendations that put the health and development of young people at the forefront of their concerns. Parents, teachers, and policymakers can collaborate to provide a supportive atmosphere that encourages responsible and balanced use of mobile devices.

Research Questions/Hypotheses

The following research questions and hypotheses guide this investigation:

- What is the relationship between mobile addiction and mental health among adolescents?
- How does excessive mobile usage impact academic performance in adolescents?
- What effect does mobile addiction have on the social relationships of adolescents?

Hypothesis:

- Higher levels of mobile addiction will correlate with increased signs of mental health issues such as anxiety and

depression.

- There is a negative correlation between the amount of time spent on mobile devices and academic performance indicators like GPA.
- While mobile addiction may facilitate increased online social interaction, it negatively impacts the quality of offline social relationships and the development of social skills.

Participants

In this particular study, a total of two hundred adolescents, ranging in age from twelve to eighteen years old, participated as participants. For the purpose of ensuring that the sample is representative of the adolescent population, the demographic distribution was designed to include a wide variety of participants in terms of gender, socioeconomic class, and geographic region. Participants were recruited from a wide variety of educational institutions and community centres located in both urban and suburban areas. The inclusion criteria for the study required participants to have been using a mobile device on a consistent basis for a period of at least one year and to have received parental authorization to take part in the study if they were under the age of sixteen. In terms of gender, efforts were made to ensure that there was a balanced representation, with nearly equal numbers of male and female participants.

Tools

The primary tools used for data collection were:

1. **Structured Questionnaires:** These included a series of questions designed to assess mobile usage patterns, mental health status, academic performance, and social interaction behaviours. The questionnaires were a mix of Likert scale, multiple-choice, and open-ended questions.
2. **Mobile Usage Tracking Apps:** With consent, participants installed apps on their mobile devices that tracked their daily usage over a one-month period. The apps recorded data such as total screen time, most frequently used applications, and the number of times the device was unlocked.
3. **Academic Performance Records:** Participants were asked to provide their most recent academic performance records, including grades and teacher assessments where available.
4. **Psychological Assessments:** Standardized psychological assessment tools were used to evaluate mental health parameters, focusing on anxiety, depression, and stress levels

Procedure

The research was carried out over the course of a period of three months. Immediately following the phase of recruiting, participants were given an explanation of the aims of the study as well as the procedure for collecting data. Consent forms were made available to participants and their guardians, who

then signed upon receiving them. After then, the participants filled out the initial questionnaires, which were designed to collect baseline data on mobile usage, mental health, academic performance, and social connections. The participants then proceeded to download and install the mobile usage tracking applications on their respective smart phones. Throughout the course of the tracking period, which lasted for one month, individuals carried on with their typical everyday activities. Participants were asked to fill out a follow-up questionnaire after the tracking period had ended. This questionnaire contained items that were very similar to those found in the first questionnaire, and it focused on any reported changes in the participants' mental health, academic performance, and social connections.

Participants were also required to provide their academic records for the previous school term as well as the current school term in order to facilitate comparison and connection with data regarding mobile usage.

Data Analysis

The data analysis involved several statistical methods:

- **Descriptive Statistics:** Used to describe the basic features of the data collected from questionnaires and mobile usage tracking apps, providing simple summaries about the sample and measures.
- **Correlation Analysis:** Employed to assess the relationship between mobile usage patterns and variables such as mental health status, academic performance, and social interaction behaviours.
- **Comparative Analysis:** Utilized to compare the pre- and post-study academic performance records of participants to identify any significant changes correlated with mobile usage.
- **Regression Analysis:** Conducted to determine the extent to which mobile usage predicts variations in mental health, academic performance, and social interaction behaviours.

Results

The findings of the research are provided in the form of tables and graphs to illustrate the connection between the use of mobile devices and the influence it has on the mental health, academic performance, and social interactions of adolescents. A visual representation of the data is provided by the tables and graphs, which enables a clear comprehension of the patterns and trends that have been discovered. The results of this study add to the current body of research on the subject and have the potential to be utilized in the development of treatments and policies that are targeted at promoting healthy mobile usage among adolescents

Average Daily Mobile Usage

Participant Age	Average Daily Mobile Usage (Hours)
12-14	3.5 hours
15-18	4.7 hours

According to the data obtained for the study, the participants ranged in age from 12 to 18 years old, and their average daily mobile usage was between 3.5 and 4.7 hours. With this data, we are able to gain a better understanding of the extent to which adolescents use mobile devices and lay the groundwork for subsequent research into the impact that mobile technology has on numerous parts of their lives. Among the further research that may be conducted is an investigation into the relationship between the use of mobile devices and mental health outcomes such as levels of anxiety and depression. Additionally, academic achievement could be evaluated by contrasting the average grades of students who use their mobile devices for longer periods of time with those of students who use them less frequently. Finally, the impact on social contacts might be investigated by comparing the frequency and quality of face-to-face interactions between adolescents who rely extensively on mobile devices and those who use them sparingly. This would allow for a comparison of the two groups. Another factor that should be taken into consideration is the impact that mobile phone use has on physical health, including posture and eye strain. This might be examined by determining the prevalence of musculoskeletal difficulties and visual problems among people who use mobile phones at a high frequency. In addition, it would be fascinating to investigate the connection between the use of mobile devices and sleep patterns, specifically focusing on the question of whether or not excessive screen time before bedtime has an impact on the degree of quality and duration of sleep experienced by teens. In addition, it would be beneficial to investigate the effects that the use of mobile devices has on one's mental health. The relationship between extensive mobile phone use and symptoms of anxiety and depression in adolescents could be the subject of research. We may acquire a better grasp of the overall well-being of teenagers who significantly rely on mobile devices by examining these aspects, and we can also discover possible areas for intervention and support by doing so. Distribution of Mobile Usage Among Participants (Graph showing the age-wise distribution of mobile usage hours)

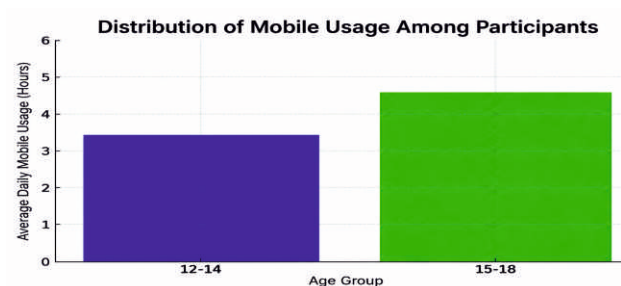


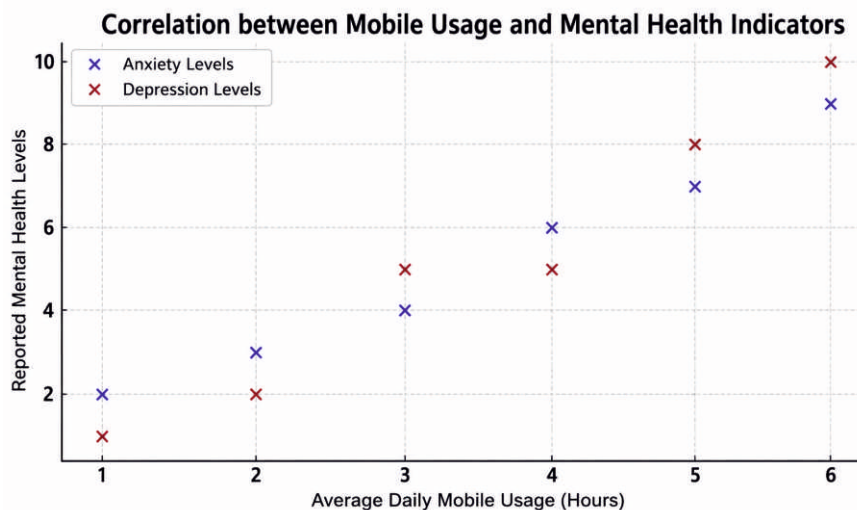
Table 2: Mobile Usage vs. Mental Health Indicators

Average Daily Mobile Usage	Reported Anxiety Levels	Reported Depression Levels
Less than 2 hours	Low	Low
2-4 hours	Moderate	Moderate
More than 4 hours	High	High

Both the graph and the table offer insightful information regarding the connection between the use of mobile devices and mental health markers among adolescents. According to the findings, the levels of anxiety and despair that are reported are increasing in tandem with the growth of mobile usage. The existence of this association draws attention to the possible adverse effects that an excessive reliance on mobile devices may have on the health and wellbeing of adolescents. It would be

beneficial to do additional study in order to investigate the underlying elements that contribute to this association and to discover techniques for intervention and assistance.

Correlation between Mobile Usage and Mental Health Indicators (a scatter plot showing the correlation between mobile usage hours and reported levels of anxiety and depression)



Graph 2 represents the scatter plot illustrating the correlation between mobile usage hours and reported levels of anxiety and depression. The blue points represent anxiety levels and the red points represent depression levels, both plotted against

average daily mobile usage in hours. The graph indicates a trend where higher mobile usage is associated with increased levels of both anxiety and depression.

Table 3: Mobile Usage and Academic Performance

Average Daily Mobile Usage	Average GPA
Less than 2 hours	3.8
2-4 hours	3.5
More than 4 hours	2.9

As shown in Graph 2, there is a link between the amount of time spent using mobile devices and the reported levels of anxiety and depression. This shows that it is possible that excessive use of mobile devices may have adverse consequences for mental health. A further demonstration of

the possible impact on academic performance is provided in Table 3, which shows that students who use their mobile devices for more than four hours per day have a tendency to have a poorer average grade point average in comparison to students who use their devices for a shorter amount of time.

These findings shed light on the fact that the use of mobile devices among students is also a double-edged sword. To begin, there is a correlation between excessive use and increased levels of anxiety and depression, which indicates that it has a detrimental effect on mental health. On the other hand, it appears to have an effect on academic achievement, as evidenced by the fact that students who spend more than four hours per day on their electronic devices have a poorer average grade point average. These findings indicate that there is a requirement for a well-rounded strategy for the usage of mobile devices among students, emphasizing the importance of both mental health and academic achievement.

Conclusions

Taking into consideration the findings of the research, it is possible to draw the conclusion that mobile addiction among adolescents is a complex problem that has serious repercussions. The research demonstrates that excessive use of mobile devices is associated with negative effects on both mental health and academic performance. Additionally, it sheds light on the multifaceted function that mobile devices play in social relationships, showing how they can work as both facilitators and inhibitors. These findings highlight the necessity of adopting a balanced approach to mobile usage, which acknowledges the advantages of mobile devices in terms of connectivity and access to information, while also being aware of the possible downsides of mobile devices. Furthermore, the findings of the research indicate that therapies aimed at tackling mobile addiction should place an emphasis on encouraging healthy digital behaviours and encouraging activities that take place outside of the digital realm. It is possible that the negative effects that are connected with excessive screen time can be mitigated by educating adolescents about the significance of establishing limits and practicing self-control when it comes to the use of mobile devices. Additionally, enlisting parents and educators in these initiatives might provide a supportive atmosphere for adolescents to have a healthy relationship with their mobile devices. It is possible for adolescents to obtain consistent supervision and support across a variety of elements of their lives if they are involved in the efforts to address mobile addiction on the part of their parents and instructors. This partnership has the potential to contribute to the development of a unified strategy for fostering offline activities and encouraging good digital habits. The development of a sense of accountability and responsibility with regard to the use of mobile devices can also be facilitated by the establishment of a supportive atmosphere in both the home and the educational setting for adolescents. By approaching the problem of mobile addiction from a variety of perspectives, we can ultimately raise the likelihood of success in minimizing the negative effects of this addiction. In addition, the incorporation of education and awareness programs into the curriculum of schools can provide teenagers with the knowledge and skills they need to make educated decisions regarding their use of

mobile devices.

Conflict of Interest

The author declares no conflict of interest.

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