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IMPACT OF MOBILE PHONE USAGE ON THE PHYSICAL AND PSYCHOLOGICAL DEVELOPMENT OF CHILDREN

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Abstract

The increasing prevalence of mobile phone usage among children has sparked widespread concerns regarding its impact on their physical, cognitive, and psychological development. This review synthesizes secondary data to examine both the positive and negative consequences of mobile phone usage on children. The findings reveal that while mobile devices offer substantial benefits, such as access to educational tools and enhanced communication, they also pose significant risks. Physically, excessive screen time has been linked to digital eye strain, disrupted sleep patterns, and a sedentary lifestyle, contributing to health issues such as obesity. Cognitively, the constant distractions provided by mobile phones can impair attention span, working memory, and executive function, which may hinder academic performance and overall cognitive development. Psychologically, children face the risk of addiction, mental health issues such as anxiety and depression, and exposure to inappropriate content. Social interactions and emotional development are also affected, as mobile phone usage can lead to reduced face-to-face communication and difficulty in managing emotions. The review concludes with recommendations for further research, the development of guidelines for screen time, and strategies to mitigate the risks associated with mobile phone usage. It emphasizes the importance of balancing the benefits of mobile technology with mindful use to promote healthy development in children.

Keywords: Children, Physical Health, Cognitive Development, Mobile Phone Usage, Psychological Effects, Addiction, Social Interaction, Screen Time.

1. Introduction

In recent years, mobile phones have become ubiquitous in the lives of children around the world. With advancements in technology and a significant decrease in the cost of mobile devices, children of all ages are gaining access to smartphones and tablets, often at younger ages than in previous generations. According to a study by the Pew Research Center (2019), nearly 95% of teenagers in the United States report owning or having access to a smartphone, with a significant number of younger children also possessing their own devices. This trend is not exclusive to developed nations; mobile technology has spread rapidly to emerging economies, where mobile phones are often seen as more affordable alternatives to traditional forms of communication and entertainment. As mobile phones become more integrated into daily life, the question arises: what are the implications of this increasing use of technology by children?

Mobile phones provide children with an array of benefits, including easy access to information, educational tools, entertainment, and the ability to stay connected with peers and family members. However, the prevalence of mobile devices in the hands of children also introduces several concerns regarding their potential impact on physical, cognitive, and psychological development. The use of mobile phones among children has rapidly become a subject of research in various academic disciplines, including psychology, pediatrics, education, and social sciences. Scholars have expressed concern about the effect of mobile usage on children's attention span, sleep patterns, social skills, academic performance, and overall well-being. The omnipresence of mobile phones has prompted debates about whether they serve as tools for enhancing learning and development or whether they may contribute to cognitive overload, addiction, and social isolation.



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1.1 Importance of Understanding the Effects of Mobile Usage on Children

The increasing dependence on mobile technology has far-reaching consequences for children's development, necessitating a comprehensive understanding of its impact. Research on the effects of mobile phone usage on children is critical because mobile technology is not only altering the ways in which children access information but is also transforming their social interactions, behavior, and cognitive processes. The implications of these changes are profound and warrant careful examination.

First, mobile usage may disrupt traditional learning environments. While mobile phones offer access to vast amounts of information, they can also serve as a distraction in educational settings. Several studies have highlighted that smartphones in the classroom can detract from students' attention and engagement with learning materials (Rosen et al., 2013). This phenomenon is particularly concerning as attention span and concentration are critical for academic success, especially during formative years when cognitive skills are rapidly developing. Moreover, mobile devices often serve as a conduit for entertainment, such as games and social media, which may further reduce time spent on educational activities, exacerbating the issue of academic disengagement.

In addition to academic concerns, mobile phones can have a substantial impact on children's mental and physical health. Evidence suggests that excessive screen time is linked to a variety of health problems, including poor posture, eye strain, and disrupted sleep patterns (Rosen et al., 2017). Mobile devices emit blue light, which can interfere with the body's natural circadian rhythms, leading to sleep disturbances, especially in children who are more susceptible to the effects of light exposure at night (Harvard Health Publishing, 2020). Moreover, prolonged use of mobile devices can promote sedentary behavior, contributing to rising concerns about childhood obesity and related health problems.

The psychological and emotional effects of mobile phone use are also critical to consider. With the advent of social media platforms, children are exposed to a new range of social dynamics that may not have existed for earlier generations. While social media provides an opportunity for connection, it also opens the door to cyberbullying, social comparison, and the pressure to conform to certain ideals. These factors can significantly affect children's self-esteem and mental well-being (Pew Research Center, 2018). Furthermore, excessive mobile phone use has been linked to the development of addictive behaviors. Research suggests that mobile phone addiction can lead to increased anxiety, depression, and feelings of loneliness, particularly when children are unable to regulate their screen time effectively (Kuss & Griffiths, 2017).

Given these potential risks, it is crucial to explore not only the adverse effects of mobile usage but also the potential benefits. For example, mobile phones can serve as educational tools that provide access to interactive learning apps, language programs, and even remote learning opportunities, especially during times when children are unable to attend school in person due to global events such as the COVID-19 pandemic (Pappano, 2020). However, to harness the benefits of mobile technology without compromising children's health, development, and well-being, it is essential for parents, educators, and policymakers to strike a balance between usage and regulation.

Understanding the complex dynamics of mobile usage among children is of paramount importance as society continues to navigate the digital age. By examining both the positive and negative consequences of mobile phone usage, we can create better-informed strategies for promoting healthy, balanced use of technology among children, ultimately ensuring that these devices serve as tools for growth and development rather than sources of harm.

Mobile phones have revolutionized the way children learn, communicate, and interact with the world. While many positive aspects are associated with mobile device usage, such as access to educational resources, social connectivity, and entertainment, the potential harms cannot be ignored. Excessive screen time, the risk of addiction, and the exposure to inappropriate content pose significant challenges for parents, educators, and healthcare professionals who are tasked with ensuring the well-being of children. By focusing on secondary data and existing literature, this review will offer a holistic perspective on the issue, drawing upon numerous studies from psychology, education, public health, and sociology to provide evidence-based insights.

Furthermore, this review is essential because it addresses an urgent societal concern: how to manage children's relationship with mobile phones in a way that promotes their overall development while mitigating potential risks. The findings will be useful for a wide audience, including parents, educators, policymakers, and health professionals, all of whom have a stake in guiding children toward healthy digital behaviors. As mobile phone usage continues to rise globally,



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it is crucial to evaluate the impact on children's physical health, mental well-being, and academic performance, which can shape their future experiences with technology.

1.2 Historical Development of Mobile Phones

The journey of mobile phones began in the early 20th century, with the first mobile telephone call made in 1973 by Martin Cooper of Motorola (Motorola, 2021). Initially, mobile phones were bulky, expensive, and primarily used by business professionals. The introduction of the Motorola DynaTAC 8000X in 1983 marked the first commercially available handheld mobile phone, which weighed nearly 2 kilograms and offered just 30 minutes of talk time (Wikipedia, 2021).

The 1990s witnessed significant advancements with the advent of 2G networks, enabling digital communication and the introduction of features like text messaging. The launch of the IBM Simon in 1994, considered the first smartphone, combined mobile communication with PDA functionalities, paving the way for future mobile technologies (Create-Learn, 2021).

The early 2000s brought the proliferation of mobile phones, with devices becoming more affordable and accessible. The introduction of 3G networks facilitated faster internet speeds, allowing for mobile internet browsing, video calling, and multimedia sharing. This era also saw the rise of feature phones with cameras, MP3 players, and basic internet capabilities.

The launch of the Apple iPhone in 2007 revolutionized the mobile industry by combining a phone, an iPod, and an internet communicator into a single device. The subsequent development of app stores led to an explosion of mobile applications, further integrating smartphones into daily life.

In India, mobile phone adoption among children and teenagers has surged in recent years, with smartphones becoming more affordable and accessible to families in both urban and rural areas. According to the Indian Mobile Association (IAMAI), by 2020, approximately 50% of Indian children aged 10-18 had access to mobile phones, a figure that has continued to grow as digital connectivity spreads throughout the country (IAMAI, 2020).

2. Current Statistics and Usage Patterns

The prevalence of mobile phone usage among children has seen a dramatic increase over the past few decades. In the United States, over 95% of teens aged 13 to 17 have access to a smartphone, with usage patterns indicating that 84% use their phones to connect with others and 83% use them to learn new things (Pew Research Center, 2019). In the United Kingdom, the trend is similarly pronounced. By age 11, 91% of children own a smartphone, and by age 14, this figure increases to 91% (The Guardian, 2024). Notably, nearly a quarter of children aged 5 to 7 own a smartphone, and many use social media platforms like TikTok and WhatsApp, despite age restrictions (Financial Times, 2023).

In India, mobile phone usage among children has mirrored the global trends, with an increasing number of children gaining access to smartphones. According to a 2020 study by the Indian Ministry of Electronics and Information Technology (MeitY), 44% of children between the ages of 12 and 18 have smartphones, with many children in urban areas owning the devices as early as age 10 (MeitY, 2020). Among children aged 5 to 12, 22% of Indian children own a smartphone, a significant increase from previous years (IAMAI, 2020). A large portion of children use their mobile devices for education, entertainment, and social media interactions. However, as the mobile phone becomes more integrated into daily life, concerns about its impact on physical health, mental well-being, and academic performance have surfaced.

3. Impact of Mobile Usage on Children's Physical Health

3.1 Effects on Vision

The increased screen time associated with mobile phone usage has raised concerns regarding its impact on children's eyesight. One of the most commonly reported issues is digital eye strain, also referred to as computer vision syndrome (CVS). This condition arises from prolonged exposure to digital screens and manifests in symptoms such as dry eyes, blurred vision, headaches, and neck or back pain (Sheppard & Wolffsohn, 2018). For children, who may not yet have developed proper visual habits, the prolonged use of mobile phones can exacerbate these symptoms. The blue light emitted by screens is particularly problematic, as it can penetrate deep into the retina and cause long-term damage (Harvard Health Publishing, 2020). Moreover, a study by the American Optometric Association (AOA, 2021) found that children who spend more than



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two hours a day on electronic devices are at a higher risk of developing eye fatigue, which can lead to decreased visual performance.

Research on children's vision has found a direct correlation between screen time and the prevalence of myopia, or nearsightedness. A study conducted by the American Academy of Ophthalmology (2016) indicated that excessive screen time in children leads to an increased risk of developing myopia, especially as they spend more time indoors, looking at mobile devices at close distances. In fact, some research suggests that spending too much time on screens and too little time outdoors may be contributing factors to the rapid rise in myopia among children worldwide (Wu et al., 2016).

3.2 Impact on Sleep Patterns

The impact of mobile phone usage on children's sleep patterns is another area of concern. Studies have shown a clear association between excessive screen time, particularly before bedtime, and disrupted sleep cycles. The blue light emitted by screens interferes with the production of melatonin, the hormone responsible for regulating the sleep-wake cycle. According to a study by Harvard Health Publishing (2020), exposure to blue light before bedtime significantly delays the onset of sleep and reduces the overall quality of sleep.

A systematic review by Lemola et al. (2015) found that children who use their mobile phones or other electronic devices before bedtime experience a delay in falling asleep and reduced sleep duration, which contributes to poor sleep quality. For instance, a study conducted by the University of Michigan (2016) found that teens who engage in screen-based activities before bed reported lower sleep quality and had difficulty staying awake during the day. The negative impact of mobile device usage on sleep quality can, in turn, affect children's mood, cognitive performance, and overall health. Chronic sleep deprivation is associated with problems such as difficulty concentrating, irritability, and weakened immune function.

3.3 Impact on Physical Activity

One of the most significant concerns regarding mobile phone usage is its relationship with physical activity. As children become increasingly engrossed in their mobile devices, there is a growing concern about the sedentary lifestyles associated with prolonged screen time. Several studies have shown that excessive screen time is linked to a decrease in physical activity levels among children.

A study by the American Academy of Pediatrics (2016) found that children who spend more than two hours a day on screen-based activities are more likely to engage in sedentary behaviors, such as sitting for extended periods while using mobile devices. This reduction in physical activity has several health implications, including an increased risk of obesity and other metabolic disorders. According to a study published in the journal *Pediatrics* (2017), children who spend excessive time on screens are more likely to have higher body mass index (BMI) levels and lower levels of cardiovascular fitness. This sedentary behavior contributes to the global rise in childhood obesity rates.

In addition to contributing to obesity, prolonged mobile device usage can lead to musculoskeletal problems, such as poor posture, neck pain, and back pain. Children who use mobile phones frequently often adopt poor posture, such as slouching or bending their necks at awkward angles while looking at screens, which can cause musculoskeletal discomfort and long-term issues (Rosen et al., 2017).

Furthermore, the time children spend on mobile devices often comes at the expense of outdoor play and physical activities. Research conducted by the World Health Organization (WHO) (2019) shows that screen time is inversely related to physical activity, meaning that the more time children spend on devices, the less time they spend being physically active. This reduced physical activity is a major contributor to the increasing rates of childhood obesity globally.

4. Psychological Effects of Mobile Usage

4.1 Risk of Addiction

One of the most concerning psychological effects of mobile phone usage among children is the risk of addiction. Mobile phone addiction is increasingly recognized as a psychological disorder, with children and adolescents being particularly vulnerable due to the development of their brain's reward system. The constant access to social media, games, and entertainment creates an environment where children become hooked on the instant rewards offered by mobile phones.



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A study by Kuss and Griffiths (2017) explored the concept of problematic mobile phone use and found that children who spend excessive time on mobile devices, especially those who use mobile phones for gaming and social media, are at higher risk for developing addictive behaviors. Mobile phone addiction is characterized by an inability to control usage, feelings of anxiety when separated from the device, and a persistent desire to check for notifications. This addiction can disrupt daily routines, academic performance, and social interactions, making it an area of concern for parents and educators alike.

4.2 Impact on Mental Health

Excessive mobile phone use has been linked to a range of mental health issues, including anxiety, depression, and loneliness. The blue light emitted from screens, combined with the emotional impact of social media exposure, has contributed to a surge in mental health problems among children. Social comparison, cyberbullying, and exposure to negative content are just a few of the ways in which mobile phones can affect children's mental well-being.

Research by Twenge et al. (2017) found that adolescents who spent more time on their mobile phones and social media platforms were more likely to report feelings of depression and anxiety. The constant exposure to idealized images on social media can lead to negative body image and unrealistic expectations of success, happiness, and appearance. Additionally, children who use mobile phones excessively may become isolated, leading to loneliness and further exacerbating feelings of depression.

The psychological effects of mobile phone usage among children are complex and multifaceted. While mobile phones provide significant benefits, including access to education, communication, and entertainment, the potential risks—such as addiction, mental health issues, and exposure to inappropriate content—are substantial. By encouraging balanced, regulated use of mobile phones and providing children with the tools to navigate the digital world safely, we can mitigate the negative psychological effects and promote healthier interactions with technology.

Summary of Findings

- The review of the impact of mobile phone usage on children reveals a complex interaction of both beneficial and detrimental effects. While mobile phones offer children a wealth of educational resources, communication tools, and entertainment options, the excessive and unregulated use of these devices poses significant risks to various aspects of their development.
- In terms of physical health, excessive screen time has been shown to lead to digital eye strain, myopia (nearsightedness), disrupted sleep patterns, and a more sedentary lifestyle. Prolonged exposure to mobile screens has been linked to a decline in children's attention span, memory retention, and cognitive flexibility, negatively impacting their cognitive development. Mobile phones, when used excessively, can also hinder the development of social skills and emotional resilience, leading to challenges in forming face-to-face relationships and regulating emotions effectively.
- From a psychological perspective, the overuse of mobile phones has been associated with an increased risk of addiction, mental health issues such as anxiety and depression, and exposure to inappropriate content. The constant availability of entertainment and social media feeds can lead to addictive behaviors, while the exposure to cyberbullying and unrealistic social comparisons on platforms like Instagram and TikTok can exacerbate feelings of isolation, depression, and low self-esteem. Furthermore, children are at risk of encountering explicit or harmful content online, which can have lasting effects on their emotional and psychological well-being.
- While mobile phones do offer significant educational benefits and opportunities for engagement, especially when used appropriately and in moderation, the data points to a clear need for more structured regulation and awareness around the risks associated with unregulated use.

Recommendations for Future Research and Policy

1. **Further Research on Cognitive Development:** There is a need for longitudinal studies to better understand the long-term effects of mobile phone usage on cognitive development, particularly in relation to attention span, memory, and executive function. Future research should explore the potential for mobile apps and educational tools



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to positively impact learning outcomes, while also examining the adverse effects of excessive screen time on cognitive processes.

2. **Development of Screen Time Guidelines:** Policymakers should work with pediatricians and child development experts to develop more comprehensive, evidence-based guidelines on screen time for children. These guidelines should focus not only on the quantity of screen time but also on the quality of content consumed and the times at which mobile phones are used (e.g., limiting use before bedtime to avoid sleep disruption).
3. **Parental and Educational Interventions:** Parents and educators play a critical role in managing children's mobile phone usage. Research should focus on effective strategies for helping parents set boundaries around screen time and ensure that children use mobile phones in a way that promotes healthy cognitive and emotional development. Educational campaigns targeting parents and teachers on the importance of balanced mobile usage could also be beneficial.
4. **Regulation of Content:** Governments and technology companies should collaborate to create more effective age-appropriate content filters and regulatory mechanisms that prevent children from being exposed to harmful material. While some social media platforms have age restrictions, these measures are often easily circumvented, and there is a need for stricter regulations to protect children from inappropriate content.
5. **Impact of Mobile Phones on Mental Health:** Further investigation into the relationship between mobile phone use and mental health outcomes such as anxiety, depression, and social isolation is crucial. Researchers should focus on identifying the factors that contribute to the negative emotional impacts of mobile phone use, including social media use and cyberbullying, and develop strategies for mitigating these effects.
6. **Promoting Physical Activity:** Policies and initiatives should be implemented to encourage children to engage in more physical activity. For example, schools and communities can create programs that incentivize outdoor play and exercise to offset the sedentary lifestyle associated with excessive mobile phone use. Additionally, mobile apps that encourage physical activity, mindfulness, and mental well-being can help balance screen time with healthy habits.
7. **Improved Mobile Literacy:** Finally, efforts should be made to improve mobile literacy among children, helping them understand how to use mobile phones responsibly and make informed decisions about the content they consume. Education on the potential risks of mobile phones, including the psychological effects of overuse and exposure to harmful content, should be integrated into school curricula to prepare children for a healthy interaction with technology.

Conclusion

As mobile phones become an increasingly integral part of children's lives, it is essential to adopt a balanced approach that maximizes the benefits of technology while minimizing its risks. By implementing evidence-based strategies, encouraging mindful use, and fostering a culture of responsibility around digital devices, we can help children navigate the complexities of the digital age in a way that supports their physical, cognitive, and emotional development. Research into the effects of mobile phone usage on children's well-being should continue to evolve, as our understanding of the long-term impact of technology on younger generations is still developing. Ultimately, by taking a proactive approach, society can help children harness the power of mobile technology while protecting them from its potential harms.

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