Open Access

Article Type: Review Article

Volume 2 Issue 1 - 2024

SCIBASE Journals

SciBase Epidemiology and Public Health

Assessing the Impact of Smartphone Addiction and its Effects on Mental Health of Children under the Age of Five Years

Ajhar Hussain[1]*; Samreen[2]

[1]Aligarh Muslim University Aligarh, Uttar Pradesh, India.

[2]Shyam Lal College, University of Delhi, Delhi, India.

Corresponding Author: Ajhar Hussain

Aligarh Muslim University Aligarh, Uttar Pradesh, India.

Email: glyazhar@gmail.com

Article information

Received: Nov 13, 2023

Accepted: Feb 16, 2024

Published: Feb 23, 2024

SciBase Epidemiology and Public Health - scibasejournals.org

Citation: Hussain A, Samreen. Assessing the Impact of Smartphone Addiction and its Effects on Mental Health of Children under the Age of Five Years. SciBase Epidemiol Public Health. 2024; 2(1): 1019.

Abstract

In an increasingly digital world, smartphones have become an integral part of daily life, offering convenience and connectivity. However, their pervasive usage, especially among children under the age of 5, has raised concerns regarding its impact on mental health. This study aims to explore the implications of smartphone addiction on young children and its potential effects on their mental well-being. Through a comprehensive review of existing literature, this research examines the prevalence of smartphone usage among children under 5, the factors contributing to smartphone addiction in this age group, and the potential consequences for their cognitive, social, and emotional development. The study also delves into the mechanisms through which excessive smartphone use may lead to negative mental health outcomes such as increased anxiety, reduced attention span, and disrupted sleep patterns. Furthermore, this research investigates the role of parental influence and societal norms in shaping smartphone usage patterns among young children. By analysing relevant studies and theoretical frameworks, the study highlights the importance of establishing healthy digital habits early in a child's life and the need for effective strategies to mitigate the adverse effects of smartphone addiction.

Keywords: Mental health; Children; Smartphone; Anxiety; Society.

Introduction

In the contemporary digital landscape, smartphones have seamlessly woven themselves into the fabric of our lives, fundamentally transforming the ways in which we communicate, work, and engage with our surroundings [1]. However, as smartphones have become omnipresent, concerns have arisen, particularly regarding their influence on the youngest members of our society—children under the age of 5. This article embarks on an exploration of the intricate issue of smartphone addiction among young children and the potential repercussions it may cast upon their mental well-being [2]. The escalating prevalence of smartphones has facilitated their pervasive use even among the most tender demographics. Children under the age of 5 are introduced to these handheld devices through diverse channels, ranging from parental gadgets and educational applications to digital diversions. While these technological tools offer valuable opportunities for learning, they simultaneously blur the line between constructive usage and unchecked overindulgence [3]. With a focus on the nexus between smartphone addiction and mental health outcomes, this discourse delves into the multifaceted aspects of this phenomenon. Through a comprehensive analysis of its effects, we endeavour to shed light on the complex interplay between the digital realm and the cognitive and emotional development of our youngest generation [4]. The findings underscore the urgency of raising awareness among parents, caregivers, educators, and policymakers about the potential risks associated with excessive smartphone use among children under age 5. The study emphasizes the significance of fostering a balanced approach to technology integration, pro-

moting interactive and hands-on activities that support children's holistic development. By addressing this issue proactively, society can work towards safeguarding the mental well-being of the youngest members and ensuring a healthier digital environment for their growth. The study will delve into the growing concern of smartphone addiction, focusing on its consequences on young children, an age group that is increasingly exposed to digital devices. It will examine how early and excessive exposure to smartphones may affect cognitive, emotional, and social development during these crucial formative years. The research will assess the potential links between smartphone addiction and mental health issues such as anxiety, attention deficits, and impaired social skills in very young children. Additionally, the study will aim to identify contributing factors and patterns of smartphone usage within this demographic. Understanding these effects is vital for creating strategies and guidelines to mitigate the negative impacts of smartphone addiction on the mental well-being of young children, thus promoting a healthier digital environment for their growth and development.

The surge of smartphone utilization among young children

The accessibility and user-friendly interfaces of smartphones have led to their escalated use, even among the most youthful segments of society. Children under the age of 5 encounter smartphones through diverse channels, encompassing their parents' devices, educational applications, and digital amusements. While these technological tools can furnish valuable learning prospects, the demarcation between beneficial usage and overindulgence often becomes blurred. The surge of smartphone utilization among young children has become a significant societal trend in recent years. As technology continues to advance at an unprecedented pace, smartphones have become increasingly accessible to even the youngest members of our population. With their intuitive interfaces and a plethora of engaging apps and games designed specifically for children, these devices often serve as digital babysitters or educational tools. While there are undoubtedly benefits to early exposure to technology, such as enhanced learning opportunities and convenient entertainment, there are also concerns regarding its impact on children's physical and mental development. Striking a balance between harnessing the advantages of smartphone use and ensuring healthy screen time limits is a challenge that parents and educators must address to support the holistic development of young minds in the digital age.

Understanding smartphone addiction: Smartphone addiction in young children can be characterized by immoderate and unregulated engagement with these gadgets. Understanding smartphone addiction is essential in today's digital age, where these devices have seamlessly integrated into every aspect of our lives. Smartphone addiction, often referred to as "nomophobia" (the fear of being without a mobile phone), is characterized by compulsive and excessive use of smartphones, leading to negative consequences on one's physical and mental well-being. It often involves behaviours like constantly checking notifications, social media, or gaming apps, even in situations where it is inappropriate or harmful, such as while driving or during important social interactions. This addiction can have significant repercussions, including reduced productivity, strained relationships, sleep disturbances, and heightened anxiety. Recognizing the signs of smartphone addiction and promoting digital mindfulness can help individuals regain control over their device usage and strike a healthier balance between the digital world and real-life experiences. Children who develop a dependency on smartphones frequently manifest signs of restlessness, irritability, and emotional distress when disengaged from their devices. This addiction can be perpetuated by the immediate gratification derived from games, videos, and interactive applications, eliciting the release of dopamine in the brain and thereby reinforcing the conduct [5]. In terms of physiological changes, adolescence is marked by a shift towards later bedtimes and a reduction in the duration of sleep as individuals grow older [6]. Sleep deficiencies are quite common during this period [7]. Recent research has indicated a potential link between the use of mobile devices among children and adolescents and the emergence of depressive symptoms [8-15], as well as feelings of anxiety [8,10,15,16] and behavioral issues [17]. It appears that specific patterns of smartphone-related behavior, referred to as 'problematic smartphone use,' may contribute to these associations with poor mental health outcomes [18].

Impacts on mental health

The impacts on mental health in the age of smartphones are profound and multifaceted. On one hand, these devices offer unprecedented access to information, communication, and support, which can be beneficial for mental well-being. They provide platforms for connecting with loved ones, accessing mental health resources, and even practicing mindfulness through various apps. However, the flip side reveals a concerning picture. Excessive smartphone use, particularly on social media platforms, can contribute to feelings of inadequacy, loneliness, and anxiety, as individuals often compare themselves to carefully curated online personas. Moreover, the constant stream of notifications and the addictive nature of apps can disrupt sleep patterns, leading to sleep deprivation, a known factor in mental health issues. Striking a balance between harnessing the benefits of smartphone technology and mitigating its potential negative impacts has become a critical aspect of promoting good mental health in the digital age. The consequences of smartphone addiction on the mental well-being of children below the age of 5 are a subject of burgeoning concern among researchers and healthcare practitioners. Several potential effects have been identified:

Impeded cognitive advancement: "Impeded Cognitive Advancement" is a condition in which a person's capacity to grow and improve their cognitive (mental) faculties is slowed down or impeded because of a variety of causes. The development of a person's intellectual ability, thought processes, problem-solving skills, and knowledge base are all included in cognitive advancement. Excessive use of smartphones might impede the cultivation of vital cognitive proficiencies in young children. Engaging in interactive and imaginative play is pivotal for their cognitive growth, and excessive screen time could disrupt the organic progression of these abilities. The ubiquity of smartphones has raised concerns about their potential to impede cognitive advancement, particularly in children and adolescents. The constant use of smartphones, with their endless stream of notifications, multitasking capabilities, and easily accessible entertainment, can lead to shortened attention spans and reduced ability to focus on tasks requiring deep cognitive engagement. Moreover, the quick-fix nature of information retrieval through smartphones can deter individuals from critical thinking and problem-solving. Overreliance on smartphones for tasks like navigation or mathematical calculations can hinder the development of spatial and numerical skills. To ensure healthy cognitive development, it's crucial to strike a balance

between smartphone usage and activities that promote sustained attention, critical thinking, and creative problem-solving.

Compromised social skills: Early childhood constitutes a pivotal phase for the fostering of social skills and emotional acumen. Excessive reliance on smartphones could obstruct face-to-face interactions, leading to challenges in interpreting non-verbal cues, expressing emotions, and nurturing meaningful relationships. The prevalence of smartphones has raised concerns about compromised social skills, as these devices increasingly dominate our interpersonal interactions. Excessive smartphone use can lead to reduced face-to-face communication, inhibiting the development of vital social skills such as active listening, empathy, and the ability to interpret nonverbal cues. In social settings, individuals may find themselves glued to their screens, missing out on meaningful connections and genuine human interactions. Additionally, the virtual world of social media can sometimes distort real-world social dynamics, leading to a disconnect between online personas and authentic personalities. Striking a balance between digital and in-person interactions, practicing digital mindfulness, and setting boundaries for smartphone use can help mitigate the adverse effects on social skills and foster healthier, more meaningful relationships in the digital age.

Sleep interruptions: The emission of blue light from smartphone screens can obstruct the secretion of melatonin, a hormone instrumental in regulating sleep. Prolonged exposure to screens, particularly before bedtime, might culminate in sleep disturbances, thereby adversely affecting a child's disposition, attention span, and overall state of well-being. Sleep interruptions have become increasingly common in the era of smartphones. These devices, often kept close at hand even during bedtime, can disrupt our sleep patterns in multiple ways. The notification chimes, vibrating alerts, and the blue light emitted from screens can all interfere with the body's natural circadian rhythms, making it difficult to fall asleep and stay asleep. Moreover, the temptation to check messages or scroll through social media during the night can lead to fragmented sleep, reducing the overall quality of rest. Chronic sleep interruptions are associated with various health issues, including fatigue, reduced cognitive performance, and an increased risk of mood disorders. To protect our sleep hygiene, it is essential to establish smartphone-free zones and routines before bedtime, allowing for restful and undisturbed sleep.

Elevated vulnerability to anxiety and depression: Though ongoing research continues to investigate this association, certain studies propose a correlation between excessive screen time during early childhood and an escalated susceptibility to anxiety and depression in later life. The absence of in-person interactions and perpetual exposure to meticulously curated online content could contribute to sensations of inadequacy and social isolation. The increased reliance on smartphones has been linked to elevated vulnerability to anxiety and depression, particularly among young adults and adolescents. The constant exposure to social media, with its carefully curated images and highlight reels, can fuel feelings of inadequacy and social comparison, contributing to increased levels of anxiety. Additionally, excessive screen time, especially before bedtime, can disrupt sleep patterns, which in turn can exacerbate symptoms of both anxiety and depression. The addictive nature of smartphone apps, such as social media and gaming, may also lead to compulsive and isolating behaviors, further deteriorating mental health. To combat these vulnerabilities, it's crucial to promote digital mindfulness, limit screen time, and encourage meaningful, offline social interactions and activities that support mental well-being.

Attentional and behavioural challenges: The excessive use of smartphones might contribute to difficulties pertaining to attention and impulsive behaviour in young children. The brisk tempo of digital content could condition children to anticipate unceasing stimulation, rendering it arduous for them to concentrate on tasks necessitating sustained attention. The widespread use of smartphones has brought attentional and behavioural challenges to the forefront, especially among children and adolescents. These devices, with their constant barrage of notifications and easily accessible entertainment, can undermine individuals' ability to sustain attention on tasks, leading to reduced productivity and difficulties in learning. Furthermore, the addictive nature of smartphone apps and games can foster impulsive behaviours and a diminished capacity for delayed gratification, which can translate into real-world challenges, such as poor impulse control and decreased patience. To address these issues, it is imperative to promote digital literacy and teach individuals, particularly young ones, healthy habits regarding smartphone usage to mitigate the attentional and behavioural challenges that can arise in the digital age.

Scope of the research: Assessing the impact of smartphone addiction on the mental health of children under the age of five years is a topic of significant scope and importance in the field of child development and psychology. Here are some aspects that highlight the scope of this research topic.

Prevalence and patterns of smartphone usage

Investigating the extent to which very young children are exposed to smartphones and understanding the patterns of smartphone usage in this age group. This includes factors such as the age at which children start using smartphones and the frequency and duration of their usage. The prevalence and patterns of smartphone usage have undergone a remarkable transformation in recent years. With the widespread availability of smartphones and the growing reliance on digital technology, it's become increasingly common to find individuals of all ages, including young children, engaging with these devices. The prevalence of smartphone usage has surged, and it's not uncommon for even very young children to have access to these devices. Patterns of usage vary widely, with individuals using smartphones for communication, entertainment, education, and more. Understanding the prevalence and patterns of smartphone usage is crucial for researchers, educators, and policymakers as it forms the foundation for addressing issues such as smartphone addiction, digital literacy, and the impact of screen time on physical and mental health across different age groups and demographics.

Smartphone addiction assessment: Developing or adapting assessment tools and criteria to determine if smartphone addiction exists among children under five. This involves defining what constitutes addiction in this specific demographic. Smartphone addiction assessment is a critical component of understanding the complex relationship between humans and their digital devices. It involves the development and application of various tools and criteria to evaluate the extent of smartphone addiction in individuals. Assessments typically consider factors like excessive screen time, compulsive usage, neglect of real-world activities, and withdrawal symptoms when separated from the device. By quantifying smartphone addiction, re-

searchers and healthcare professionals can identify at-risk individuals, measure the prevalence of this issue, and tailor interventions to mitigate its effects. Accurate smartphone addiction assessment is essential in addressing the adverse consequences of excessive screen time, such as mental health issues, sleep disturbances, and impaired cognitive function, particularly in vulnerable populations like children and adolescents.

Mental health indicators: Exploring a wide range of mental health indicators, including anxiety, depression, attention deficits, and cognitive development, to understand how smartphone addiction may affect these aspects of a child's well-being. Mental health indicators are critical metrics that provide insights into an individual's psychological well-being. These indicators encompass a wide range of emotional, cognitive, and behavioral factors that reflect the state of one's mental health. Common mental health indicators include mood and affect, levels of anxiety and depression, attention and concentration abilities, sleep patterns, and social interactions. These indicators are essential in assessing an individual's mental health status, identifying potential issues, and guiding appropriate interventions and treatment. In the context of studying the impact of smartphone addiction on young children, understanding and monitoring these mental health indicators is crucial to ascertain how excessive screen time and digital dependency may affect their emotional and cognitive development during their formative years.

Parental perspectives: Incorporating parental insights and perceptions into the study to understand how parents perceive smartphone usage and its impact on their children's mental health. Parental perspectives are invaluable in understanding and addressing the impact of smartphone addiction on children's mental health. Parents play a central role in shaping their child's digital experiences and are often the primary caregivers and decision-makers regarding screen time limits and content access. Their insights provide crucial context into how smartphone usage unfolds in a child's daily life, including the age at which children start using smartphones, the reasons for their usage, and any observed changes in behavior or well-being. Parental perspectives also shed light on the challenges parents face in managing their child's digital habits and offer valuable input on potential interventions and strategies. By incorporating parental viewpoints into research and policymaking, a more holistic understanding of the complex interplay between smartphone addiction and children's mental health can be achieved, ultimately leading to more informed and effective initiatives to support healthy digital use among young children.

Longitudinal studies: Conducting longitudinal studies to track the development of children's mental health over time in relation to their smartphone usage. This can provide insights into the long-term effects of early smartphone exposure. Longitudinal studies are essential for gaining deeper insights into the long-term effects of smartphone addiction on children's mental health. By tracking individuals over an extended period, often spanning years or even decades, researchers can observe developmental trajectories, identify trends, and understand how smartphone addiction may impact children as they grow. Longitudinal studies in this context would provide a comprehensive understanding of the relationship between early smartphone exposure and mental health outcomes, potentially uncovering patterns that may not be evident in short-term studies. Such research can help answer critical questions about whether smartphone addiction in early childhood contributes to persistent mental health issues, or if there are windows of opportunity for intervention to mitigate long-term effects. Overall, longitudinal studies offer a valuable perspective on the evolving dynamics of smartphone use and its consequences on children's mental well-being.

Intervention strategies: Investigating potential interventions and strategies to mitigate the negative impacts of smartphone addiction on young children's mental health. This might involve developing guidelines for parents, educators, and healthcare professionals. Intervention strategies play a pivotal role in addressing the challenges posed by smartphone addiction and its impact on the mental health of children under the age of five. These strategies encompass a range of approaches aimed at mitigating the negative consequences of excessive smartphone use. They may include parental education programs to raise awareness about responsible digital parenting, guidelines for setting appropriate screen time limits, and strategies for fostering a healthy balance between digital and real-world activities. Additionally, interventions may involve the development of educational apps and content designed to engage children in meaningful, age-appropriate digital experiences. Evaluating and implementing effective intervention strategies is crucial for safeguarding the mental health and overall well-being of young children in an increasingly digitized world, ensuring they have the tools and support needed to navigate the challenges of smartphone addiction.

Cultural and societal variations: Recognizing that the impact of smartphone addiction may vary across different cultures and societies due to varying norms and values regarding screen time for young children. Cultural and societal variations significantly influence the prevalence and impact of smartphone addiction on children's mental health. Different cultures have distinct norms and values regarding screen time and digital device usage for young children. Societal factors such as access to technology, socioeconomic status, and parental attitudes also play a crucial role. In some cultures, early exposure to smartphones may be encouraged for educational purposes, while in others, it may be discouraged due to concerns about its impact on child development. Understanding these variations is essential when assessing the impact of smartphone addiction, as what may be considered problematic in one cultural context might be perceived differently elsewhere. Researchers and policymakers need to take cultural and societal factors into account to develop effective interventions and guidelines that respect these variations while prioritizing the mental health and well-being of children under the age of five.

Ethical considerations: Addressing ethical considerations related to studying children, including informed consent and ensuring that the research is conducted in an ethically responsible manner. Ethical considerations are paramount when conducting research on the impact of smartphone addiction on the mental health of children less than five years of age. Researchers must adhere to stringent ethical standards to ensure the well-being and protection of the young participants involved in the study. Informed consent, for instance, becomes a complex issue when dealing with such a vulnerable demographic, requiring parental consent and age-appropriate assent where possible. Ensuring that the research process minimizes any potential harm to the children and their families is essential. Additionally, safeguarding the privacy and confidentiality of participants' data, while disseminating research findings responsibly and ethically, is crucial. Striking a balance between the pursuit of knowledge

and the ethical responsibilities towards children involved in the study is a fundamental aspect of research in this sensitive area.

Policy implications: Exploring the potential policy implications of the research findings, which could influence guidelines and regulations regarding smartphone use among young children. The study of smartphone addiction's impact on the mental health of children under the age of five has significant policy implications. As the findings emerge, policymakers and regulatory bodies have the responsibility to translate research outcomes into actionable policies and guidelines. These policies may encompass recommendations for appropriate screen time limits for young children, the development of age-specific digital literacy programs, and strategies for promoting responsible digital parenting. Policymakers should also consider the role of schools and educational institutions in fostering healthy digital habits. Moreover, they must stay attuned to evolving technological trends and adapt policies accordingly to address emerging challenges. By shaping informed policies, governments can contribute to creating a digital environment that supports the healthy development of young children while safeguarding their mental health in an increasingly digitalized world.

Educational outreach: Developing educational materials and outreach programs to raise awareness among parents and caregivers about the potential risks of smartphone addiction and how to foster healthy digital habits in young children. Educational outreach initiatives are instrumental in raising awareness and disseminating information about the potential risks of smartphone addiction among children under five. These programs serve as a vital bridge between research findings and practical implementation, targeting parents, caregivers, educators, and healthcare professionals. Educational outreach efforts can provide resources and guidance on fostering responsible digital habits, setting appropriate screen time limits, and recognizing signs of smartphone addiction in young children. By equipping adults with the knowledge and tools to navigate the digital landscape responsibly, educational outreach programs empower them to create a supportive and balanced digital environment that promotes the mental well-being and healthy development of young children. Such initiatives are essential in addressing the challenges posed by smartphone addiction in today's technology-driven society.

Conclusion

While smartphones and digital technologies undoubtedly furnish valuable prospects for education and amusement for young children, it is imperative to strike a balance between their utilization and holistic development. Parents, caregivers, and educators play a pivotal role in steering children's screen time and fostering alternative activities that stimulate cognitive, social, and emotional growth. By remaining cognizant of the potential perils of smartphone addiction and its ramifications on mental well-being, we can ensure that young children navigate the digital realm in a manner conducive to their comprehensive development. In conclusion, the impact of smartphone addiction on children under the age of 5 is a multifaceted issue with far-reaching implications for mental health. This study contributes to the existing body of knowledge by shedding light on the potential consequences of early smartphone exposure and emphasizing the need for collective efforts to promote responsible and a mind-full technology use among young children.

References

1. American Academy of Pediatrics. Media and Young Minds. Pediatrics. 2016; 138(5): 20162591.
2. Radesky JS, Christakis DA, Hill DA, Mendelsohn AL, & Committee on Public Education. Media and Young Minds. Pediatrics. 2016;,138(5): 20162591.
3. Madigan S, Browne D, Racine N, Mori C, & Tough S. Association between Screen Time and Children's Performance on a Developmental Screening Test. JAMA Pediatrics. 2019; 173(3): 244-250.
4. Uhls YT, Michikyan M, Morris J, Garcia D, Small GW, Zgourou E, & Greenfield PM. Five days at outdoor education camp without screens improves preteen skills with nonverbal emotion cues. Computers in Human Behavior. 2014; 39: 387-392.
5. Nikkelen SWC, Valkenburg PM, Huizinga M, & Bushman BJ. Media use and ADHD-related behaviours in children and adolescents: A meta-analysis. Developmental Psychology. 2014; 50(9): 2228-2241.
6. Sadeh A, Dahl RE, Shahar G, Rosenblat-Stein S Sleep and the transition to adolescence: a longitudinal study. Sleep. 2009; 32: 1602-1609.
7. Gradisar M, Wolfson AR, Harvey AG, Hale L, Rosenberg R, Czeisler CA. The sleep and technology use of Americans: findings from the national sleep foundation's 2011 sleep in America poll. J Clin Sleep Med. 2013; 9(12): 1291-1299.
8. Liu S, Wing YK, Hao Y, Li W, Zhang J, Zhang B. The associations of long-time mobile phone use with sleep disturbances and mental distress in technical college students: a prospective cohort study. 2018; 42: 213.
9. Bickham DS, Hswen Y, Rich M. Media use and depression: exposure, household rules, and symptoms among young adolescents in the USA. Int J Public Health. 2015; 60: 147-155.
10. Ikeda K, Nakamura K. Association between mobile phone use and depressed mood in Japanese adolescents: a cross-sectional study. Environ Health Prev Med. 2014; 19: 187.
11. Tamura H, Nishida T, Tsuji A, Sakakibara H. Association between excessive use of mobile phone and insomnia and depression among Japanese adolescents. Int J Environ Res Public Health. 2017; 14(7): 701. https://doi.org/10.3390/ijerph14070701.
12. Nishida T, Tamura H, Sakakibara H. The association of smartphone use and depression in Japanese adolescents. Psychiatry Res. 2019; 273: 523-527.
13. Koivusilta LK, Lintonen TP, Rimpelä AH Orientations in adolescent use of information and communication technology: a digital divide by sociodemographic background, educational career, and health. Scand J Public Health. 2007; 35: 95-103.
14. Redmayne M, Smith E, Abramson MJ. The relationship between adolescents' well-being and their wireless phone use: a cross-sectional study. Environ Health. 2013; 12: 90.
15. Calpbinici P, Arslan FT. Virtual behaviors affecting adolescent mental health: the usage of internet and mobile phone and cyberbullying. J Child Adolesc Psychiatr Nurs. 2019; 32(3): 139-148.
16. Mortazavi SMJ, Atefi M, Kholghi F. The pattern of mobile phone use and prevalence of self-reported symptoms in elementary and junior high school students in Shiraz. Iran Iranian J Med Sci. 2011; 36: 96-103.
17. Thomas S, Heinrich S, von Kries R, Radon K. Exposure to radio-frequency electromagnetic fields and behavioral problems in

Bavarian children and adolescents. Eur J Epidemiol. 2010; 25: 1350-141. https://doi.org/10.1007/s10654-009-9408-x.

18. Sohn S, Rees P, Wildridge B, Kalk NJ, Carter B. Prevalence of problematic smartphone usage and associated mental health outcomes amongst children and young people: a systematic review, meta-analysis and grade of the evidence. BMC Psychiatry. 2019; 19: 10-10.