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Electronic Overuse and Mental Health Crisis of Young Generation

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Abstract

There has been a surge in mental health crises among the younger generation in recent years, including anxiety and depression. Many studies have found a correlation between smartphone overuse and mental illness in this population. Objectives: To identify the reasons why electronic overuse contributes to the deterioration of mental health among the younger generation. Methods: Data were collected and compiled from sources such as Google Scholar and PubMed to gain a better understanding of the relationship between prolonged screen time and mental health issues. Results: Extensive screen time was found to contribute to imbalanced neurological function, impaired psychosocial development, and sleep deprivation, all of which result in a higher incidence of mental illness among young people. Discussion: Parents, schools, healthcare providers, and government agencies should work together to address this issue by promoting healthy daily routines, limiting screen time, improving sleep quality, and implementing both medical and legislative interventions. This collaborative approach is expected to help mitigate the mental health crisis for young generations and promote healthy mental well-being and social connectivity.

Keywords: Smartphone, Overuse, Anxiety, Depression, Mental health, Young generation, Intervention

1. Introduction

In 2022, a study published by the American Medical Association observed a drastic and rapid change in the health of young Americans: depression and anxiety symptoms grew by nearly 30% in just five year (Services, 2022). From 2013 to 2019, the Center for Disease Control and Prevention further gathered data from nine federally run surveillance systems, showing strong consensus: 1 in 5 teenagers in the US suffered from at least one episode of major depression (Figure 1), while almost 14 percent of teenagers aged 12 to 17 experienced symptoms of anxiety (Edwards, 2022). Since the pandemic, rates of mood disorders affecting adolescents have accelerated yet higher to 30-40%, according to some early evaluations (Kanya, 2024). Youth aged 15–24 are especially vulnerable, facing greater risks of toxic stress, suicidal thoughts, and apathy. Because the brain matures fully around age 25, these experiences can leave lasting imprints on its neurobiological wiring. (Gloom, 2015). Hence, there is a great need to find the causes underlying this ongoing epidemic and to propose potential solutions.

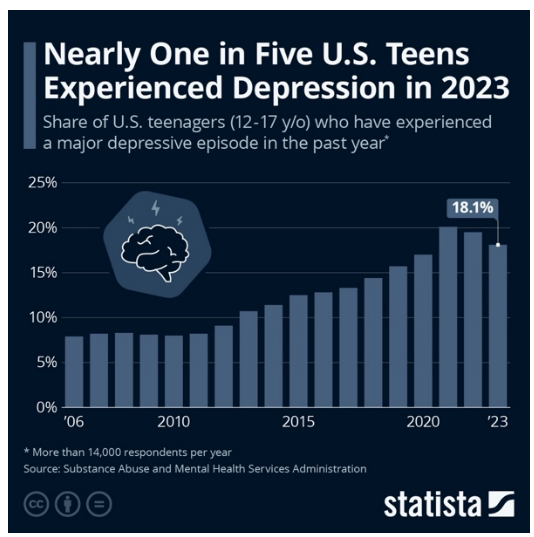

Figure 1. Increased trend of US teenagers (12-17 y/o) who have experienced a major depressive episode in the past year from 2006-2023, with nearly one in five U.S. teens experienced a major depressive episode in 2023, based on the Center for Disease Control and Prevention (CDC) report. (Fleck, 2024)

The Diagnostic and Statistical Manual of Mental Disorders (DSM) defines anxiety as a condition characterized by excessive worry and apprehensive expectations, occurring persistently for at least six months (Arnold, 2022). Symptoms of anxiety include nervousness, panic attacks, restlessness, fatigue, and impaired concentration (Reinfeld, n.d.). Clinical depression is an illness that consistently causes low mood and loss of interest in activities (Clinic, 2023). Common symptoms include feelings of sadness and emptiness, anger outbursts, and anhedonia, which is inability to feel pleasure from activities or experiences that a person normally enjoys, such as hobbies, socializing, or eating favorite foods (Clinic, 2023). If left untreated, depression and anxiety can lead to substance abuse, eating disorders, damaged relationships, and an increased risk of suicide (Group, 2022). Anxiety and depression are often comorbid illnesses. Prolonged anxiety can trigger depression; half of depressed patients also exhibit some form of anxiety (Wilmer et al., 2021). As a result, treating one disease will improve the other. Furthermore, anxiety and depression are both associated with excessive stress and the release of inflammation hormones (Haseltine et al., 2023). Understanding the neurobiological mechanism underlying the diseases is helpful to develop effective curative strategies.

Although there are studies investigating the impact of smartphone overuse on the mental health of the young generation, these studies often focus on a specific subgroup, such as children (ages 0–12), adolescents (ages 13–18), or young adults (ages 19–25). There is a lack of systematic reviews examining how prolonged electronic usage influences the mental health of young people across the entire age spectrum. To address the gap in the literature, this paper summarizes how extended screen time negatively affects the neurological function and psychosocial development of young people from infancy to young adulthood and proposes solutions to help alleviate this mental health crisis. The ultimate goal is to keep society informed and motivated to act collectively for the well-being of future generations.

2. Methods

The literature cited in this paper was primarily selected through Google Scholar and PubMed, using keywords such as smartphone, electronic, social media, anxiety, depression, mental health, young generation, and intervention. The inclusion criteria were recent publications or postings, preferably within the past 2–3 years. Studies published more than 20 years ago were excluded.

3. Results

Many studies have found correlation between smartphone overuse and mental illness. In the United States, 53% of children by age 11 own a smartphone (Figure 2); over 95% of teens aged 13 to 17 have access to a cell phone (Richter et al., 2022). The fact that the rise of mental illness among young people occurred in tandem with the rise in smartphone use suggests a causal relationship (Miller, 2021). In children, excessive mobile phone usage can result in low mood, boredom, tension, and anxiety (Sahu et al., 2019). Similarly, prolonged use of cell phones among adolescents has been found to be a significant predictor of depression and anxiety (Coyne et al., 2019). The National College Health Assessment conducted surveys on college campuses across the U.S. in 2022 and found a significant link between the presence of Facebook and a deterioration in mental health among college students (Walsh, 2022). Lockdowns enforced during Covid-19 exacerbated mobile phone additions among youngsters, with profound negative psychological and physiological effects, including anxiety, depression, social isolation and sleep deprivation (Vajpayee et al., 2023).

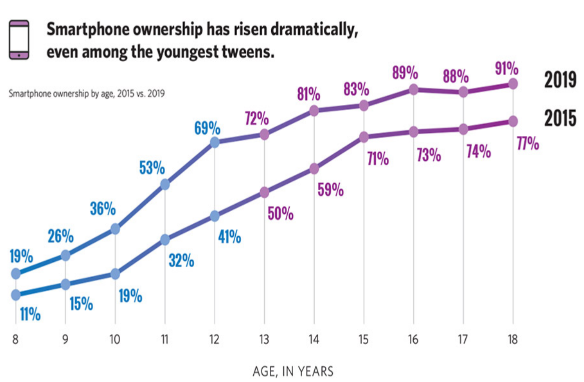

Figure 2. Change in smartphone ownership for children aged 8-18, 2015 vs. 2019 (Modified from Common Sense Media, 2019)

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3.1 Imbalanced Neurological Function

Studies have found that there is a neurochemical similarity between the brain mechanisms involved in digital addiction and other types of addictions, such as drug use or gambling (Hartogsohn & Vudka, 2023). Social media such as Facebook, Snapchat, and Instagram leverage the same neural circuitry activated by slot machines and cocaine via short-term, dopamine-driven feedback loops. Dopamine is a "happy" hormone eliciting feelings of pleasure and satisfaction. A neurotransmitter produced by the dopaminergic system in the brain, dopamine plays a central role in addiction because it is heavily involved in the brain's reward system and can facilitate cravings for certain substances or activities to achieve a 'high' experience. Many cell phone users become addicted to social media in pursuit of social validation, and their dopamine pathways are disrupted (Haynes, 2018). A team of British researchers have made a similar discovery based on the functional magnetic resonance imaging studies on the brains of 10-19 years old young people diagnosed with internet addiction. The brain imaging reveals disrupted dopamine function similar to those suffering from drug-use and gambling addiction (Morrison, 2024). Since dysfunction of the dopaminergic system has been shown to play a role in the development of depression and anxiety, smartphone addiction can be considered a contributor to the occurrence of these mood disorders (Belujon & Grace, 2017; Zarrindast & Khakpai, 2015).

3.2 Impaired Psychosocial Development

While research on the correlation between internet and cell phone usage and normative development has yet to emerge, attributing the accelerated rates of anxiety and depression to internet and cell phone usage becomes more understandable when reviewing cognitive-behavioral literature. Normally, individuals go through eight stages of psychosocial protective development before they reach late adulthood (Chung, 2018). In line with analogies to addiction pathways in young individuals, recent studies indicate that smartphone overuse negatively affects nearly every stage of development, including infancy, toddlerhood, childhood, adolescence, and young adulthood.

An experimental study revealed that maternal mobile phone use induces stressful context for the infant during mother-child interactions (Rozenblatt-Perkal et al., 2022). Many parents use cell phones to keep toddlers occupied so they can enjoy uninterrupted personal time. Too much screen time for the young children has been shown to link to higher incidences of anxiety, depression, attention deficit disorder, and other behavioral problems (Grandidier, 2022).

Adolescence is a crucial developmental stage during which the brain is particularly vulnerable to forming both adaptive and maladaptive patterns (Morrison, 2024). A recent study from Cambridge University on 84,000 subjects concluded that social media had a strong impact on mental health with the worst consequences affecting adolescents (Thompson, 2022). Psychologist Gary Goldfield highlights the increased reliance on external validation among those undergoing puberty, stating that social media and constant exposure to unrealistic beauty standards can negatively impact body image and lower self-esteem (Goldfield, 2024). Teenagers have a greater desire to share posts and comments with others online, neglecting face-to-face communication with family and friends (Itch, 2023). They feel an increased need for independence and peer recognition, traditionally achieved through in-person socialization. However, in the digital era, social media interactions have become an easier substitute, which negatively affects teenagers' communication and social skills, increasing the loneliness associated with depression and anxiety and leading to an alarming rise in cyberbullying, as reported by Pew Research Center (Newton, 2023; Thompson, 2022). Nearly half of U.S. teens have been bullied or harassed online, which can trigger negative psychosocial consequences (Vogels, 2022).

Sleep deprivation resulting from smartphone overuse is another contributor to mental health deterioration among adolescents. Olson and colleagues found that 62% of enrolled adolescents in their study took phones to bed; 37% texted even after "lights out"; and 1 in 12 adolescents were woken by a text in the middle of the night at least once (Fuller et al., 2017). Teens need adequate sleep to support their brain development as well as physical growth spurts (Sterni & Crocetti, 2024). Lack of sleep in adolescents has been associated with reduced productivity, depression, low energy, and poor school performance (Smaldone et al., 2007). There exists a bidirectional relationship between sleep and mental health, and sleep deprivation can trigger mental health illnesses such as depression and anxiety (Goldin, 2022).

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The news on mental health for young adults is even worse. According to a survey conducted by Harvard's Graduate School of Education, young adults aged 18 to 25 in the United States experience anxiety and depression twice as frequently as teenagers. About 30% of survey respondents cited social media as a driver of anxiety and depression (Lewis, 2023). Another investigation on college students identified that harmful use of cell phones can aggravate psychological disorders such as anxiety, stress and depression (Hashemi et al., 2022). Additionally, young adults facing stressors such as financial difficulties, loneliness, pressure to achieve, and a lack of direction may use smartphones to escape from harsh reality and negative emotions, seeking social recognition and emotional compensation in the virtual world (Montag et al., 2021). This unhealthy coping mechanism exacerbates mental illness and hinders young adults from establishing a fulfilling life after college.

4 Discussion

Although the issue of deteriorating mental health over the whole spectrum of young population as a result of screen over usage is a huge problem, there are many approaches we can take to mitigate this issue.

4.1 Limiting Screen Time & Improving Sleep Outcomes

There are solutions that apply to adult users which can also be implemented to solve the epidemic in young generation. Lauren Urban, a psychotherapist, states that disabling notifications, limiting screen time, and scheduling internet usage are all excellent means to restrict the time used up on social media, gaming apps, and general internet surfing (Urban & Boylls, 2024). Disabling notifications helps to stop alerts or messages, resulting in fewer distractions, less stress and longer attention span (Anand, 2024). With more time off screens, children and young adults have opportunities to enhance interpersonal relationships and experience less symptoms associated with anxiety and depression. Finally, scheduling internet usage can leave more time for non-digital, normative activities essential for adaptive growth. For babies and toddlers, parents should forgo screen time in favor of nurturing bonds with their children and reinforcing positive feedback loops associated with playtime and social interactions. For late middle schoolers approaching adolescence seeking greater autonomy, parents may want to involve the children in choosing the length of a screen time limit (Mason, 2022). Finally, young adults have the free will to either indulge in or limit their internet usage, but parents can encourage them to seek support by joining communities that share the same goal of reducing screen time (Aubrey, 2023).

In a detailed 2014 report, the American Academy of Pediatrics called the problem of tired teens a health crisis (Richter, 2015). More than 87% of high school students in the U.S. get far less than the recommended hours of sleep (Richter, 2015). Avoiding mobile devices at night is imperative to good sleep, since blue light associated with electronic devices disrupts circadian rhythms and the secretion of the sleep chemical melatonin (Staff, 2025). While melatonin supplements can replicate the release of melatonin in the pineal gland (Clinic, 2022), they cannot safely be used by children younger than five years old (Pacheco & Vyas, 2024). Meanwhile, sleep medicines prescribed to individuals over eighteen, such as eszopiclone and zaleplon, can have addictive side effects and are therefore not suitable for long term use (Clinic, 2022). To counteract the negative consequences of sleep deprivation, parents can set screen-free routines, such as reading for younger members of the family or analyzing podcasts for older children. For high-school students who must rely on blue light technology to complete homework, parents might provide protective glasses and recommend a shortened downtime to create sleep-inductive patterns.

4.2 Medical Professional Assistance & Legislative Intervention

An effective way of managing cell phone addiction is to replace phone usage with healthy coping alternatives. Parents are encouraged to seek professional help if they run out of solutions. For younger children, play therapy would suit them best (Bolina, 2024). Meanwhile, adolescents would benefit more from cognitive behavioral approaches (Daino, 2023), a type of treatment helping the patient combat maladaptive thoughts or behaviors. Furthermore, if these therapies do not work, exposure therapy is recommended for all age groups. This method focuses on exposing the patient to an anxiety source and context to alleviate negative responses. Other intervention regimes such as mindful

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technique, psychotherapy, and group therapy are all valuable choices to fight against smartphone addiction and its associated anxiety and depression (Bhatt, 2024; Recovery, 2024). Overall, these strategies can help individuals recognize problematic habits, enhance self-control, and develop techniques to overcome intrusive thoughts.

Other potential allies include school administrators and government authorities, who have begun to reckon with the detrimental effects of smartphone addiction on the mental and physical well-being of the young generation. By 2020, 77% of K-12 schools implemented policies prohibiting nonacademic uses of cellphones during school hours (Heubeck, 2024). Some colleges also ban cell phones on campus during academic hours (Recinto, 2013). In addition, Federal lawmakers have established legislation to promote a safe online experience for young people. United States senators introduced a bill named "The Kids Online Safety Acts of 2022" aiming to protect children from the harmful effects of social media (Guevara, 2022). The bill has five major elements entailing the responsibilities of parents and media companies to ensure safe internet usage by youngsters. These provisions include requiring social media companies to provide strong privacy settings while also allowing users to disable addictive features. Furthermore, the bill gives parents tools to track and limit their children's app use, while obligating companies to protect minors from harm. In addition, independent third parties would review potential risks to minors, and companies would be required to share children's data with researchers.

4.3 Future Directions

Combating excessive electronic use among young people is a difficult battle due to the easy accessibility, widespread popularity, and convenience these devices offer in navigating modern life. Fortunately, society has begun to recognize the negative effects of these devices on the mental health of young people and has started working collectively to address this crisis. In addition to the conventional strategies mentioned above, an emerging approach involves leveraging artificial intelligence (AI) to limit screen time, send usage information to guardians, and enable early detection and management of mental health problems, which is anticipated to provide robust support in this battle.

5 Conclusion

In conclusion, we can address the epidemic of depression and anxiety among young people by correctly identifying a major cause: electronic overuse, which leads to a host of secondary factors, such as lack of sleep. By considering the developmental age of each patient and applying adaptive treatment methods accordingly, parents, educators, and legislators can implement solutions that limit screen time, promote self-awareness and self-discipline in young individuals, and ensure the safe use of the internet through legal measures. The rapidly evolving AI agents could potentially provide alternative mechanisms to monitor and manage electronic usage, as well as deliver necessary medical, psychological, social, or legal support to those in need. Nevertheless, managing electronic overuse is a challenging task due to its addictive nature. The involved parties need to set realistic goals on an individual basis and adjust corrective measures in a timely manner to achieve maximum effectiveness in maintaining the mental health of the young generation.

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