
SMARTPHONE: FRIEND OR FOE? UNCOVERING THE DARK SIDE OF DIGITAL ADDICTION

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Abstract

Smartphones have become an integral part of modern society, offering a wide range of functions and various positive and negative consequences. Smartphone addiction is associated with adverse mental health outcomes, underscoring the need for further exploration of mental health problems caused by intense smartphone use. The research aims to analyze the prevalence of smartphone addiction and the factors underlying it; as well as the psychological and physiological mechanisms underlying this relationship. The research design uses an exploratory approach to analyze the phenomenon of smartphone addiction in depth, regarding individual lives. Data collection uses a literature review, while data analysis is carried out thematically, and credibility is tested by checking data sources. The research results show that the prevalence of smartphone addiction ranges between 10% - 60% of smartphone users in most of the population, and the percentage is higher for male participants than female participants. The research contributions and implications provide important insights into the phenomenon of smartphone addiction and creating a healthier relationship with technology, by highlighting the prevalence of smartphone addiction in various populations, as well as explaining the psychological and physiological mechanisms underlying the relationship through the interaction of the dopaminergic system, emotion regulation, and the development of the disorder mental health.

Keywords: Addiction, smartphones, mental health, exploratory research

Abstrak

Smartphone telah menjadi bagian integral dari masyarakat modern, yang menawarkan beragam fungsi dan terkait berbagai konsekuensi positif maupun negatif. Adiksi smartphone dikaitkan dengan dampak buruk kesehatan mental, menggarisbawahi perlunya eksplorasi lebih lanjut terhadap masalah kesehatan mental yang dihubungkan dengan intensitas penggunaan smartphone. Tujuan penelitian untuk menganalisis prevalensi adiksi smartphone, dan faktor-faktor yang mendasari; serta mekanisme psikologis dan fisiologis yang mendasari hubungan. Desain penelitian menggunakan pendekatan eksploratif untuk menganalisis fenomena adiksi smartphone secara mendalam, termasuk pengalaman, persepsi, dan dampaknya terhadap kehidupan mahasiswa. Pengumpulan data menggunakan tinjauan literatur, sementara analisis data dilakukan secara tematik, dengan melakukan pengecekan sumber data. Hasil penelitian menunjukkan prevalensi adiksi smartphone berkisar antara 10% - 60% dari pengguna smartphone di sebagian besar populasi, dan persentasi lebih tinggi pada partisipan laki-

laki dibandingkan perempuan. Kontribusi dan implikasi penelitian memberikan pemahaman penting tentang fenomena adiksi smartphone dan menciptakan hubungan yang lebih sehat dengan teknologi, dengan menyoroti prevalensi adiksi smartphone di berbagai populasi, serta penjelasan tentang mekanisme psikologis dan fisiologis yang mendasari hubungan melalui interaksi sistem dopaminergik, regulasi emosi, dan berkembangnya gangguan kesehatan mental.

Kata kunci: *Adiksi, smartphone, kesehatan mental, penelitian eksploratif*

INTRODUCTION

In modern society, smartphones are owned by a large proportion of the global population (Evcı, 2022). Smartphones have become an integral part of modern society, offering a variety of functions to improve access to information, communication, and entertainment (Weinstein & James, 2022). Previous research shows that smartphone users intensively adopt digital technologies quickly, and attribute both positive and negative consequences (Hassan & Pandey, 2021). For students, smartphones are recognized as essential for interactive learning, potentially facilitating the educational process (Harley, 2022), and creating opportunities to enrich the learning experience. On the other hand, excessive smartphone use, especially smartphone addiction, raises concerns about the negative impact on mental health and social interactions (Sultan, 2021). Research results show a correlation between smartphone addiction and common mental disorders in college students such as anxiety, depression, and stress (Servidio, 2023).

Research conducted by Li et al. (2020) links smartphone addiction to decreased academic performance, where excessive smartphone use takes up time that should be used for learning activities. Similarly, research conducted by Harkin & Kuss, (2021) linked smartphone addiction to poor sleep quality, fatigue, and shorter sleep duration, while smartphone addiction was shown to be a mediator of tension and moderate hedonic use, thus impacting overall psychological well-being (Erciş & Başar, 2020). Moreover, the phenomenon of smartphone use about mental health has also been demonstrated in various settings and populations. Findings from a study on the significant relationship between smartphone addiction and mental health problems in adolescents in West Sumatra province, Indonesia showed a high percentage of participants experiencing smartphone addiction and abnormal mental health such as neuroticism among medical students (Mutsvairo et al., 2023). Online chatting, and excessive use of smartphones for fun, communication, and stress relief can potentially lead to smartphone addiction in adolescents.

The impact of smartphone use on mental health has been explored in various aspects of this relationship. Challenges such as reduced study time and low compliance were identified as affecting the validity of the findings (Greenfield, 2021). Smartphone addiction is associated with poor mental health outcomes, underscoring the need for further exploration of mental health issues associated with the intensity of smartphone use (Della Vedova et al., 2022). Considering the above, this study aims to

comprehensively analyze: (1) the prevalence of smartphone addiction, and its underlying factors; (2) the psychological and physiological mechanisms underlying the relationship between smartphone use and mental health. It is hoped that this article can make a positive contribution to college students in particular in understanding the phenomenon of smartphone addiction and creating a healthier relationship with technology.

METHOD

This research design in terms of its type is classified as qualitative research with an exploratory approach. The explorative approach in this study aims to analyze the phenomenon of smartphone addiction in depth, including experiences, perceptions, and its impact on student life (Winarni, 2021). Data collection used a literature review, which examined research and theories on smartphone addiction and mental health to build a conceptual framework. Data analysis was conducted thematically, identifying and analyzing themes that emerged from the data collected to understand the patterns and meanings contained in the data. The credibility test was conducted by checking data sources to ensure the accuracy of the information.

RESULTS AND DISCUSSION

A review of the literature shows that the prevalence of smartphone addiction ranges from 10% - 60% of smartphone users in most populations. The study conducted by Sands dkk., (2020) provides an important understanding of the prevalence of smartphone addiction among medical students at 29.8%. In addition, the results of the study also showed a slightly higher percentage of male participants than female participants, indicating that there are gender differences in the prevalence of smartphone addiction demographically. Volungis dkk., (2020) in a study on the prevalence and factors associated with smartphone addiction among Malaysian adolescents showed a high prevalence of smartphone addiction among adolescents of around 37.1% due to emotional problems, academic achievement, and family relationships. While Adorjan & Ricciardelli, (2021) study in Saudi Arabia on the relationship between smartphone addiction and musculoskeletal complaints of the hand and wrist, found that frequent use of smartphones to communicate or access the internet leads to addiction, which potentially increases the risk of musculoskeletal problems in the hand, wrist, and thumb. Meneses' (2024) findings on the prevalence of smartphone addiction among nursing students, reported a prevalence of the relationship between smartphone addiction and symptoms of depression, anxiety, and stress levels of 62.6%.

Research by Yam dkk., (2023) on the prevalence of smartphone addiction and its relationship with symptoms of depression, anxiety, and attention deficit and hyperactivity disorder (GPPH) in South Korean adolescents showed that 7.5% of the study participants were categorized into the addiction group based on the smartphone addiction scale (SAS) score. This study highlights the potential neurobiological factors underlying smartphone addiction behavior. Similar findings by Weiss, (2020) regarding the neurobiological mechanisms underlying dopamine traits and illicit drug abuse. The findings of this study

explain that chronic drug exposure leads to specific neural dysregulation, and compulsive drug-seeking behavior that aligns with the dopamine system and addiction in the context of smartphone use and mental health. These findings provide an understanding that excessive smartphone use can trigger the release of dopamine in the brain system, thus reinforcing compulsive behavior similar to drug addiction.

In Indonesia, research conducted by Rast dkk., (2021) regarding smartphone addiction among junior high school students, found that nearly 30% of the population met the criteria for smartphone addiction. This study also validated the Indonesian version of the Smartphone Addiction Scale Short Version (SAS-SV), showing acceptable validation and reliability results. Similar findings were shown by Faber dkk., (2022) regarding the high prevalence of smartphone addiction among adolescents in West Sumatra, Indonesia. Scarcelli, (2022) study explored the relationship between smartphone addiction, psychological distress, and neuroticism among medical students. This study investigated the factors underlying smartphone addiction, specifically related to psychological distress and neuroticism in problematic smartphone use. This study provides important insights into the individual factors that contribute to the development of smartphone addiction. Similarly, Luqman dkk., (2021) examined psychological characteristics and personality traits that contribute to problematic smartphone use among adolescents, such as impulsive behavior, low self-control, need for constant stimulation, and personality traits such as neuroticism and extraversion that are associated with smartphone addiction in South Korean adolescents. About 26.61% of adolescents are at high risk of smartphone addiction.

Research by Liu & Ma, (2020) explored the relationship between perceived stress and smartphone addiction in medical students, focusing on the mediator role of negative emotions, and the moderator role of psychological capital. The findings showed that perceived stress (negative emotions) was positively correlated with smartphone addiction, while psychological capital was negatively correlated with smartphone addiction. It is concluded that addictive behavior disorder can be characterized by compulsive and excessive smartphone use that leads to preoccupation with smartphone activities, loss of control over its use, and continued interaction with the smartphone despite knowing the significant negative consequences on daily functions such as social interaction, and study time. Furthermore, the psychological and physiological mechanisms underlying the relationship between smartphone use and mental health among university students show that psychological and physiological mechanisms are interrelated and influence each other. Smartphone addiction (psychological), such as difficulty in controlling the use of smartphone devices, interferes with learning and socializing activities which in turn triggers the emergence of stress and anxiety.

The fear of missing out on important information on social media for individuals with smartphone addiction triggers them to constantly check their smartphones, which can disrupt the production of sleep hormones, which in turn triggers mood swings, difficulty concentrating, and decreased performance. Thus the disruption of (physiological) sleep

patterns, in turn, will exacerbate symptoms of depression and anxiety, as well as feelings of inferiority to compare themselves to others through other people's seemingly perfect posts, which can increase the production of stress hormones, such as cortisol. Chronic stress levels further impair the immune system, increase the risk of physical illness, and ultimately impair mental health (Chen, 2022).

Furthermore, the COVID-19 pandemic further complicates mental health challenges among university students, where perceived restrictions are positively correlated with problematic smartphone use and mental health issues (Buyukbayraktar, 2020). In addition, social media use as a factor that increases psychological vulnerability leads to depression among college students (Demetis, 2020). Marriott & Pitardi, (2024) examined the prevalence and factors associated with smartphone addiction among medical students at King Abdulaziz University in Jeddah. The study found a statistically significant association between daily smartphone use and addiction ($p < 0.02$). This study highlights the impact of excessive smartphone addiction use on addictive behavior and suggests a potential link between smartphone addiction and maladaptive emotion regulation strategies. Understanding the relationship between smartphone addiction use, addiction, and mental health impacts provides an important understanding of the underlying psychological and physiological mechanisms in the context of emotion regulation and stress disorders.

Kara & Yildiz, (2022) on “Social implications of smartphone addiction in children showed the importance of support networks and social engagement, in reducing addictive behavior. The findings suggest that social network variables, such as formal organization membership, relationship quality with parents, and peer support play an important role in reducing smartphone addiction among children. This study shows that smartphone addiction is negatively related to social engagement, with social disconnection and loneliness as consequences of smartphone addiction. By emphasizing the importance of offline social networks and social engagement in reducing addictive behaviors, this study provides important insights into the psychological and physiological mechanisms underlying the impact of smartphone use on mental health.

Considering the above, this comprehensive literature review on smartphone addiction and mental health provides several important contributions and implications for future research. First, this article highlights the significant prevalence of smartphone addiction across various populations. Second, it elucidates the complex psychological and physiological mechanisms underlying the relationship between smartphone use and mental health outcomes, highlighting the interactions between the dopaminergic system, emotion regulation, and the development of mental health disorders.

CONCLUSION

Smartphone addiction is a widespread problem that has a significant impact on mental health, especially among adolescents and college students. Smartphone addiction has a high prevalence in various populations, including college students, adolescents, and the

general population. Excessive smartphone use is significantly correlated with various mental health problems. Complex psychological mechanisms, such as sensation seeking, self-control difficulties, and emotion regulation problems, as well as physiological changes in the brain reinforce addictive behaviors. Some of the risk factors associated with smartphone addiction include emotional problems, low academic performance, less harmonious family relationships, stress, and impulsivity-prone personality. On the other hand, individual involvement in positive social networks, such as family and friend support, maybe a protective factor against smartphone addiction. The implications of the study suggest the need for further research to understand the mechanism of smartphone addiction more deeply, as well as the development of more specific and effective interventions.

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