



Problematic Smartphone Use as a Public Health Concern: Awareness and Intervention Strategies

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Abstract

Problematic smartphone use is an emerging phenomenon due to the excessive use of smartphone in an unproductive or even in harmful ways. This phenomenon is associated with a range of adverse psychological, physical, social, cognitive, and academic consequences. This paper examines the risks factor of PSU and its effect on individual health. It highlights that PSU's impact extends beyond mere distraction, leading to a cascade of cognitive erosion that profoundly hinders day-to-day life. Furthermore, this study proposes awareness, educational interventions, fostering mindful technology use, enhancing digital literacy, and cultivating the healthy habits of smartphone use and overall well-being in a digitally saturated world.

Keywords: Problematic Smartphone Use (PSU), Public Health, Digital Literacy, Mental Health, Behavioral Intervention

Introduction

In recent years, smartphones have become an integral part of every individual globally. Although smartphones offer various benefits such as advanced social networking and productivity enhancements, a growing literature indicates that many individuals tend to have excessive use which interfere their day-to-day life (Elhai, Dvorak, Levine, & Hall, 2017). Excessive use of smartphone leads to *problematic smartphone use (PSU)*. The term *problematic smartphone use* was first proposed by Bianchi and Phillips in the year (2005). Problematic smartphone use is generally defined as a behavioural dependency by core features of addiction, loss of control, increased tolerance and internal conflict (Billieux, Maurage, Lopez-Fernandez, Kuss, & Griffith, 2015).

The term “smartphone addiction” is often used in everyday language; however, researchers prefer the expression “problematic smartphone use” to describe patterns of behaviour that do not fully meet the formal criteria of addiction (Panova & Carbonell, 2018). Problematic smartphone use is typically reflected in an excessive preoccupation with mobile communication, spending large amounts of time or money on mobile devices, and using phones in situations that require complete attention, such as while driving (“Problematic smartphone use”, 2024).

Even though a growing number of studies have drawn attention to these patterns, problematic smartphone use has not yet been officially recognized as a separate diagnosis in major classification systems such as the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) or the International Classification of Diseases (ICD-11) (“Problematic smartphone use”, 2024). Notably, the ICD-11 does include “gaming disorder,” which refers to

persistent or repetitive gaming behaviour that leads to significant impairment (“Digital media use and mental health”, 2023).

This gap between the common use of the term “smartphone addiction” and the lack of formal clinical recognition for problematic smartphone use presents an important challenge. The absence of clear and universally accepted diagnostic criteria makes it difficult to standardize research and apply consistent clinical practices. As a result, there is a limited availability of widely accepted, evidence-based treatment strategies for addressing problematic smartphone use. In educational settings, this lack of clarity can make it harder to design and implement effective interventions, sometimes leading to an underestimation or misunderstanding of the issue among students. It also poses challenges for developing well-structured support systems for those affected.

This paper is structure to examine the challenges faced with problematic smartphone use. It will explore the health effects from the excessive use of smartphone. The core of this analysis will involve the awareness strategies for problematic smartphone use and also intervention to mitigating the adverse effect of PSU.

Risk factor with problematic smartphone use

Problematic smartphone use arises from a complex interplay of psychological, social, technological and demographic factors:

1. **Psychological:** PSU arises from a higher impulsivity, sensation-seeking, inattention, or low self-control over smartphone (Harris et al. 2020). Emotional factors like anxiety, depression, and low self-esteem also correlate with PSU symptoms (Elhai, Dvorak, Levine, & Hall, 2017; Thomée, Harenstam, & Hagberg, 2011). Adolescents with social anxiety or loneliness are often seen to have excessive use smartphone for comfort or avoidance (Franchina, Abeele, van Rooij, Coco, & De Marez, 2018).
2. **Social:** When peer and family is observed to have excessive use of smartphone, the high screen time of an individual is normalized. Lack of offline support or fear of missing out (FoMO) leads to impulsive checking of social apps. A heavy reliance on online communication can decrease face-to-face interactions, adversely affecting normal social development and interpersonal relationships (Meshi, Cotten, & Bender, 2020).
3. **Technological:** With the digital advancement smartphones are design to encourage frequent engagement. Whether it's scrolling through social media, playing games, or engaging in other internet-related activities, people are constantly hooked to the screen owing connected due to the availability of high-speed internet at affordable rate (Bal & Akarca, 2022). The availability of multiple devices also contributes to PSU.
4. **Demographic:** Urban youth often have a higher risk of PSU due to constant connectivity, but rural youth with increasing easy access can also be affected. Socioeconomic status influences risk too like higher income of the youth may have more devices and internet access and it excessive usage.

Health Outcomes

Excessive smartphone use experts' profound negative effects on both psychological and physical health of an individual.

Excessive smartphone use is often linked with increased levels of anxiety, stress, and depression. Constant checking of notifications and social media can create a sense of pressure, comparison, and fear of missing out, which disturbs emotional balance (Han, Geng, Jou, Gao, & Yang, 2017; Wang, et al., 2018). Adolescents with PSU often have poorer social relationships and self-esteem. A 2024 WHO report noted that problematic social media use (a key PSU factor) is associated with “*lower mental and social well-being*”, and can contribute to depression and anxiety (Demirci, Akgonul, & Akpınar, 2015). Physical health problems are also common among individual with PSU.

Excessive and prolonged use of smartphones can result in eye strain, headache, poor posture, and neck and hands pain.

1. **Depression:** PSU is significantly correlated with depressive symptoms (Elhai, Dvorak, Levine, & Hall, 2017; Thomée, Harenstam, & Hagberg, 2011), particularly among adolescents. These symptoms carry serious implications, potentially leading to substance abuse, academic failure (Eok, Lee, & Park, 2022; Sapci, Elhai, Amialchuk, & Montag, 2021), and even suicidal ideation (Yang, Xi, Xiaoli, & Yamin, 2020) .
2. **Social Isolation:** A heavy reliance on online communication can diminish face-to-face interactions, adversely affecting normal social development and interpersonal relationships (Meshi, Cotten, & Bender, 2020). This can result in a lack of social support and may exacerbate other compulsive behaviours (Horwood & Anglim, 2019). PSU can also strain existing interpersonal relationships, manifesting as "phubbing"—the act of ignoring individuals physically present in favour of one's phone (Tomczyk, Fedeli, Stosic, Lizde, & Martins, 2021; Geng, Lei, Ouyang, Nie, & Wang, 2021).
3. **Low Self-Esteem and Anxiety:** Problematic smartphone use is linked to reduced self-esteem (Li, Liu, & Dong, 2019), a diminished sense of self-confidence, and a negative self-image, often driven by the "fear of missing out" (FoMO) (Franchina, Abeele, van Rooij, Coco, & De Marez, 2018). Anxiety (Balta, Emirtekin, Kircaburun, & Griffiths, 2020) is further intensified by the constant influx of notifications and the compulsive urge to check devices (Horwood & Anglim, 2019). Studies indicate that insecure attachment styles, particularly "ambivalent-closed," are associated with PSU.
4. **Sleep Disturbances:** Night-time exposure to smartphone screens is a common cause of disrupted sleep cycles (Thomée, Harenstam, & Hagberg, 2011; Yang, Xi, Xiaoli, & Yamin, 2020), leading to irritability and fatigue, which in turn negatively impacts mental health (Fabio, Stracuzzi, & Faro, 2022). It not only effect the mental health it also deteriorate the physical health too.
5. **Academic Performance:** A significant negative correlation exists between smartphone engagement and academic achievement. Problematic smartphone use is linked to increased procrastination (Hidalgo-Fuentes, 2022) and subsequently lower grades (Gerosa, Gui, & Buchi, 2022). Conversely, students who refrain from phone use during class tend to exhibit higher attention levels and achieve better test scores. Notably, studies on smartphone bans have even reported increases in standardized test scores among students.
6. **Accidents and Injuries:** Distraction while using smartphone has serious safety consequences. Using smartphone while driving dramatically increases accident risk. Additionally, texting or gaming while crossing the road or bicycling leads to fall or collision (Demirci, Akgonul, & Akpinar, 2015).

Awareness Strategies

1. **Education Campaigns:** Campaign should be organized on healthy smartphone use habits. For example, Ministry of Health or NGOs can run campaigns about "digital detox", or poster campaigns in schools and colleges. Information drives highlighting phone-use harm for e.g. "*screen breaks!*" incentives aim to change norms.
2. **School-based Programs:** The school syllabus should integrate digital wellness into curriculum. Digital literacy education in schools can help in involving classes on balanced media use, critical thinking about social media, and coping skills for online stress. Schools can also organize workshops on PSU to raise awareness.
3. **Family & Community Dialogue:** Encourage parents to talk with children about screen habits. Pediatricians can advise families during visits. Community groups can disseminate information and support behavior change workshops like self help groups in rural India.

4. **Workplace Wellness:** Training programs can educate employees on managing notifications and preventing burnout from constant connectivity. Human resources policies might include guidelines for after-hours email or phone usage. Employers can also promote “digital detox” breaks in their workplace such as not using smartphone during meeting hours.
5. **Peer Education & Youth Engagement:** Interactive workshop should be organized where students self-assess screen time for digital wellness. Counseling club in colleges should be included for youths which can also help for digital wellness.

Intervention Strategies

Some of the effective interventions on individual, community, and policy levels are being discussed below:

1. **Individual level:** Adolescents should receive Cognitive Behavioural Therapy (CBT) based intervention for significant reducing in PSU severity. CBT includes goals like screen time limit, stress management and other activities. They should also get mindfulness training which can reduce impulsive checking of smartphone and improve attention of adolescents. It is recommended for anxiety associated with PSU. Every individual should use self-monitoring apps and tools to track their own phone limit use and screen time. These apps will help to reduce excessive smartphone usage.
2. **Community level:** School should include some programs that can teach coping skills for the youth. Teacher should be trained to observe and spot sign of PSU among the children for early intervention. Trained teachers can refer students to counseling and lead class discussions on balanced tech use. Schools along with health centers can organize session for parents on managing children’s device use such as setting time limits for smartphone usage and give examples of such cases of PSU and its consequences.
Policy level: Policymakers can issue recommendation on screen time for children adolescents. Government should enforce age restriction of social media use as few countries are already on it. It should also enforced gaming time limits for the children using smartphones. Government and NGO’s should campaign and can raise general awareness of risks and promote healthy habits of it.

Conclusion

Problematic smartphone use (PSU) represents a significant behavioural pattern characterized by excessive and maladaptive engagement with mobile devices. While not formally codified as a diagnosis in major classification manuals like the DSM-5 or ICD-11, compelling evidence underscores its profound adverse impacts across psychological (depression (Elhai, Dvorak, Levine, & Hall, 2017), anxiety (Yang, Xi, Xiaoli, & Yamin, 2020), low self-esteem (Wang & Lei, 2019), sleep disturbances (Wacks & Weinstein, 2021)), social isolation (Meshi & Ellithorpe, 2021), phubbing (Niu, Yao, Wu, Tian, Xu, & Sun, 2020)), cognitive (reduced attention (Wacks & Weinstein, 2021), cognitive overload (Krumsvik, 2025), and academic domains (lower achievement) (Sapci, Elhai, Amialchuk, & Montag, 2021), reduced critical thinking and creativity (Arrivillaga, Rey, & Extremera, 2022; Li, Li, Wang, & Hu, 2023)). The absence of formal diagnostic criteria creates challenges for standardized research and consistent clinical approaches, contributing to a lack of widely accepted treatment recommendations.

Therefore, problematic smartphone use (PSU) emerges as a complex and multifaceted behavioural concern with far-reaching implications across psychological, social, cognitive, and academic domains. Despite the absence of formal recognition within major diagnostic frameworks, the growing body of empirical evidence clearly indicates that PSU can significantly impair overall well-being and daily functioning. The lack of standardized diagnostic criteria not only complicates research efforts but also limits the development of consistent prevention and intervention strategies.

Limitation and Future Research Directions

Future research should address these limitations and expand upon the current findings:

1. **Longitudinal Studies:** There is a need for longitudinal studies to track the long-term cognitive and academic effects of PSU.
2. **Technology Solutions:** With AI and new apps emerging, future research should explore tech-based interventions: for example, chatbots for self-control coaching, or smart apps that detect over use patterns and intervene. Evaluating these innovations in controlled trials is crucial.
3. **Comparative Pedagogical Studies:** Comparative studies are needed to assess the effectiveness of different pedagogical approaches (e.g., strict phone bans versus purposeful, and healthy phone habits) on student cognitive outcomes.
4. **Digital Literacy Framework Development:** Research should focus on the development of comprehensive digital literacy frameworks that specifically address the unique challenges posed by problematic smartphone use across diverse age groups and educational contexts.

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