



Smart Phones and Sleeplessness-Unraveling the Connection between Mobile Use and Insomnia: A Systematic Review

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ABSTRACT

In recent years, mobile phone usage has surged dramatically, especially among adolescents and young adults. While mobile phones have revolutionized communication, they have also given rise to a new phenomenon: mobile phone addiction. This addiction has been linked to various psychological and physiological issues, with insomnia being one of the most prevalent. This review article explores the relationship between mobile phone addiction and insomnia, examining the underlying mechanisms, demographic trends, and potential interventions. By synthesizing recent scientific literature, this review aims to provide insights for clinicians, educators, and policymakers to address this growing concern.

INTRODUCTION

The rise of smartphones has transformed the way people interact with the world. With constant access to information, social media, and entertainment, mobile phones have become integral to daily life. However, excessive use of these devices has led to mobile phone addiction, a condition characterized by compulsive phone use that interferes with daily activities and well-being. Recent studies have increasingly focused on the psychological consequences of mobile phone addiction, particularly insomnia, defined as difficulty falling or staying asleep^{[1][2]}. This review article aims to explore the relationship between mobile phone addiction and insomnia, summarizing current research findings and offering recommendations for prevention and management^{[3][4]}.

UNDERSTANDING MOBILE PHONE ADDICTION

Definition and Symptoms

Mobile phone addiction, often referred to as “smartphone addiction,” encompasses a range of behaviors, including excessive phone use, inability to control usage, and neglect of daily responsibilities. Symptoms often include restlessness when not using the phone, withdrawal symptoms (e.g., anxiety, irritability), and a compulsive need to check notifications^[5].

Prevalence and Demographics

Research indicates that mobile phone addiction affects a broad demographic, though it is particularly pronounced among adolescents and young adults. Surveys have shown that nearly 50% of university students exhibit signs of addiction. Factors such as gender, socioeconomic status, and peer influence contribute to varied prevalence rates, with males generally showing higher levels of addiction^[6].

Psychological and Physiological Consequences

Mobile phone addiction has been linked to numerous psychological issues, including anxiety, depression, and stress. Physiologically, it can disrupt sleep patterns, impact cognitive function, and interfere with daily life. The interplay between psychological distress and mobile phone use requires a critical lens to understand the full impact of this addiction^[7].



THE INSOMNIA EPIDEMIC: AN OVERVIEW

Definitions of Insomnia

Insomnia is a common sleep disorder characterized by difficulties in falling asleep, staying asleep, or experiencing restorative sleep. It can be classified into transient, acute, or chronic insomnia, depending on the duration and underlying causes.

Prevalence of Insomnia

Globally, insomnia affects approximately one-third of adults at some point in their lives. Factors contributing to insomnia include stress, anxiety, poor sleep hygiene, and lifestyle choices. As mobile phone use continues to rise, its potential role as a significant risk factor for insomnia is becoming increasingly evident^{[8][9]}.

Causes of Insomnia

Several factors contribute to insomnia, including environmental influences, lifestyle habits, and psychological distress. One emerging area of research focuses on the impact of electronic devices, specifically mobile phones, on sleep quality.

The Link Between Mobile Phone Addiction and Insomnia

Mechanisms of Impact

Screen Time and Blue Light Exposure: Prolonged screen time, particularly before bedtime, can interfere with the circadian rhythm and disrupt melatonin production. Exposure to blue light emitted from screens delays sleep onset and reduces sleep quality^[10].

Psychological Factors: The constant notifications and social media engagement associated with mobile phone addiction can lead to heightened stress and anxiety, making it difficult to relax before sleep.

Increased Alertness: Engaging with stimulating content, such as games or social media interactions, can increase cognitive arousal, making it harder for individuals to unwind and prepare for sleep^[11].

Sleep Hygiene: Mobile phone addiction often correlates with poor sleep hygiene practices, such as irregular sleep schedules or the use of phones as a bedtime routine, further exacerbating insomnia.

Empirical Evidence

Numerous studies have supported the connection between mobile phone addiction and insomnia. A comprehensive meta-analysis revealed that individuals with higher levels of smartphone addiction reported significantly worse sleep quality. Other studies have shown that excessive nighttime screen time is directly related to increased sleep disturbances^[12].

Mobile phone addiction can affect melatonin secretion by following ways:

Blue Light Exposure: The blue light emitted by mobile screens decrease the release of melatonin. It reduces the body's ability to signal the transition to sleep, as blue light relates daylight, tricking the brain into believing it's still morning.

Delayed Sleep Onset: Prolonged screen usage can delay the onset of melatonin release, which pushes back the body's internal clock. This can result in difficulty falling asleep, decreased sleep duration, and poorer sleep quality.

Disruption of Circadian Rhythm: Continuous exposure to screens at night can destabilize the circadian rhythm, the natural biological clock that relates sleep and wakefulness. This disruption can lead to chronic sleep disturbances.

Increased Cortisol Levels: Mobile phone addiction often leads to overstimulation, which can increase stress and cortisol levels. High cortisol levels further inhibit melatonin production, exacerbating sleep problems.

Mental Engagement: Beyond blue light, the mental engagement caused by activities such as gaming, scrolling through social media, or texting can delay the natural secretion of melatonin by keeping the brain active and alert^{[13][14]}.



Demographic Variations

Research indicates that adolescents and young adults are particularly vulnerable to the effects of mobile phone addiction on sleep. Gender differences also appear; studies show that females may be more susceptible to sleep disturbances due to social media engagement, while males may experience issues related to gaming.

Interventions and Recommendations

Individual Level Strategies

Sleep Hygiene Education: Educating individuals about good sleep practices can help mitigate the impact of mobile phone use on sleep. This includes establishing a regular sleep schedule, creating a bedtime routine, and limiting screen time before sleep.

Digital Detox: Encouraging periodic breaks from mobile devices, particularly during the evening or overnight, can help individuals reset their habits and improve sleep quality.

Mindfulness and Relaxation Techniques: Incorporating mindfulness practices, such as meditation or deep breathing exercises, can assist individuals in reducing anxiety and preparing for sleep without the aid of digital devices^[15].

Family and Community Approaches

Family Engagement: Encouraging families to discuss mobile phone use and its effects on sleep can promote healthier habits among young members. Setting family guidelines for device usage during evening hours could foster a supportive environment.

School-Based Programs: Educational institutions can implement programs aimed at increasing awareness of mobile phone addiction and its consequences. Workshops and seminars can provide students with strategies to manage their mobile use effectively^{[16][17]}.

Policy Recommendations

Public Health Campaigns: Governments and health organizations should initiate public health campaigns to raise awareness about the risks of mobile phone addiction, particularly concerning sleep health.

Regulation of Screen Time: Policymakers may consider guidelines for screen time, especially in educational settings, to promote healthier usage patterns among students^[18].

Research Funding: Increased funding for research into the health impacts of mobile phone usage can drive the development of effective interventions and inform public health policies^{[19][20]}.

DISCUSSION

The intersection of mobile phone addiction and insomnia represents a significant public health concern. As mobile phone use continues to grow, understanding and addressing its psychological and physiological impacts has never been more critical. The existing literature presents compelling evidence of the negative ramifications of excessive mobile phone use on sleep quality. However, the nuances involved in this relationship, including demographic variations and individual differences, warrant further exploration.

Limitations of Current Research

Although substantial evidence exists linking mobile phone addiction and insomnia, limitations in research methods and studies must be acknowledged. Many studies rely on self-reported data, which can introduce bias and limit the generalizability of results. Longitudinal studies and controlled trials are necessary to establish causation more firmly and identify the directionality of the relationship.

Areas for Future Research

Longitudinal and Experimental Studies: Future research should focus on longitudinal designs to track changes in mobile phone usage and sleep quality over time. Experimental studies could help identify causative factors by manipulating screen time and measuring the resulting effects on sleep.



Intervention Efficacy: More research is needed to evaluate the effectiveness of various interventions aimed at reducing mobile phone addiction and its impact on sleep. Identifying what strategies work best for different populations will help tailor interventions for maximum efficacy.

Exploring Biological Mechanisms: Investigating biological mechanisms underlying the relationship between mobile phone use and sleep disturbances will provide deeper insights into this phenomenon and potentially lead to more targeted interventions.

CONCLUSION

The growing prevalence of mobile phone addiction and its association with insomnia presents a pressing public health concern. Current research indicates a strong link between excessive mobile phone use and poor sleep quality, particularly among young adults and adolescents. It is imperative that stakeholders, including clinicians, educators, and policymakers, collaborate to develop strategies and interventions aimed at addressing this issue. Future research should continue to examine the multifaceted relationship between mobile phone addiction and insomnia, focusing on causation, effective interventions, and the exploration of underlying mechanisms. By fostering a comprehensive understanding of this relationship, we can work towards promoting healthier mobile.

REFERENCES

1. Li J, Yang H. Unveiling the grip of mobile phone addiction: an in-depth review. *Frontiers in Psychiatry*. 2024 Oct 2;15.
2. Crowhurst S, Hosseinzadeh H. Risk Factors of Smartphone Addiction: A Systematic Review of Longitudinal Studies. *Public health challenges*. 2024 Jun 1;3(2).
3. Zhang J, Deng Y, Zheng S, Wan C. The mediating effect of rumination and fear of missing out between mobile phone addiction and sleep quality among college students. *Scientific Reports*. 2024 Nov 9;14(1).
4. Cheng J, Peng C, Rong F, Wang Y, Tan Y, Yu Y. Mobile phone addiction and suicide behaviors among Chinese adolescents: The mediation of poor sleep quality. *Journal of behavioral addictions*. 2024 Jan 15;
5. Parveen D, Akhtar S. Mobile Phone Addiction and Mental Health: An In-Depth Study. 2024;12.
6. Yao Y. A Review Study of Mobile Phone Addiction and Sleep Quality and Anxiety in College Students. *Lecture Notes in Education Psychology and Public Media*. 2023 Dec 7;29(1):186–91.
7. Yang L, Guo C, Li G, Gan Kai-peng, Luo J. Mobile phone addiction and mental health: the roles of sleep quality and perceived social support. *Frontiers in Psychology*. 2023 Sep 22;14.
8. Zhang J, Zhang X, Zhang K, Lu X, Yuan G, Yang H, et al. An updated of meta-analysis on the relationship between mobile phone addiction and sleep disorder. *Journal of Affective Disorders*. 2022 Feb
9. Bottaro A. Do You Have Phone Addiction? Signs and Symptoms to Look Out For. *Verywell Health*. 2022.
10. CNN SL. Smartphone addiction ruins sleep, study says, but you can fight back. *CNN*. 2021.
11. Rafique N, Al-Asoom LI, Al-Sunni A, Saudagar FN, Almulhim LA, Alkaltham GK. Effects of Mobile Use on Subjective Sleep Quality. *Nature and Science of Sleep*. 2020 Jun 23;Volume 12(2020):357–64.
12. Tamura H, Nishida T, Tsuji A, Sakakibara H. Association between Excessive Use of Mobile Phone and Insomnia and Depression among Japanese Adolescents. *International Journal of Environmental Research and Public Health*. 2017 Jun 29;14(7):701.
13. Khan MN, Nock R, Gooneratne NS. Mobile Devices and Insomnia: Understanding Risks and Benefits. *Current sleep medicine reports*. 2015 Dec 1;1(4):226–31.
14. Gong L, Liu Q. Mobile Phone Addiction and Sleep Quality: The Mediating Role of Anxiety and the Moderating Role of Emotion Regulation. *Behavioral Sciences*. 2023 Mar 1;13(3):250.
15. Panova T, Carbonell X. Is smartphone addiction really an addiction? *Journal of Behavioral Addictions*. 2018 Jun;7(2):252–9.
16. De-Sola Gutiérrez J, Rodríguez de Fonseca F, Rubio G. Cell-Phone Addiction: A Review. *Frontiers in Psychiatry*. 2016 Oct 24;7(175).
17. Davey S, Davey A. Assessment of Smartphone Addiction in Indian Adolescents: A Mixed Method Study by Systematic-review and Meta-analysis Approach. *International Journal of Preventive Medicine*. 2014 Dec 1;5(12):1500–11.
18. Criteria For Identification of Smartphone Addiction. *Psychiatry Advisor*. 2017.
19. Kabadayi F. Smartphone addiction, depression, distress, eustress, loneliness, and sleep deprivation in adolescents: a latent profile and network analysis approach. *BMC psychology*. 2024;12(1):608.
20. Can Cell Phone Use Cause Insomnia? | *Healthnews*. Healthnews. 2024.



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