

# Analyzing the Influence of Cell Phone Addiction Leading to Intellectual Developmental Disorders in Children: A Critical Review

Sharat V Kondaguli<sup>1</sup>, Prabha Agnibhoj<sup>1</sup>, Shruti Rana<sup>2</sup>, Samir K Choudhari<sup>3</sup>

<sup>1</sup>Faculty, Bhopal Nursing College, BMHRC-ICMR, Ministry of Health and Family Welfare, Government of India,

<sup>2</sup>PG- Student, College of Nursing, AIIMS-New Delhi,

<sup>3</sup>PhD Scholar, Clinical Instructor, Krishna Institute of Nursing Sciences, Karad, Maharashtra

Corresponding Author: Sharat V Kondaguli

DOI: <https://doi.org/10.52403/ijhsr.20250913>

## ABSTRACT

The widespread use of smart phones among children has raised growing concerns about its impact on cognitive development. This critical review explores the potential link between cell phone addictions and the onset or exacerbation of intellectual developmental disorders (IDDs) in children. Drawing on recent studies, it examines the mechanisms of smart phone overuse, its interference with attention, memory, social skills, and executive function, and how these disruptions may affect brain development during critical early years. While genetic and perinatal factors remain primary causes of IDDs, evidence suggests that excessive smart phone use may serve as a significant environmental risk factor. The review highlights the urgent need for preventive strategies and further research into how digital overexposure may influence intellectual growth in children.

**Keywords:** Cell Phone Addiction, Smart Phone Overuse, Intellectual Developmental Disorder, Cognitive Development, Screen Time, Attention Deficit, Digital Media, Brain Development.

## INTRODUCTION

The digital revolution has ushered in an era where smart phones are an ever-present companion in daily life, even for children. While these devices offer unprecedented access to information and entertainment, concerns have mounted about the potential harms of excessive use, particularly in young, developing minds. Among the most pressing questions is whether cell phone addiction in childhood can contribute to intellectual developmental disorders (IDDs). This critical review analyzes the emerging evidence, examining the mechanisms of cell

phone addiction, the nature and causes of IDDs, and the potential links between these phenomena. The central thesis is that there is increasing evidence that cell phone addiction may be a significant environmental factor negatively impacting intellectual and cognitive development in children, with possible implications for the onset or exacerbation of intellectual developmental disorders.

### Cell phone Addiction in Children

Cell phone addiction sometimes referred to as “smart phone addiction” or “problematic

mobile phone use,” is characterized by compulsive, excessive, and poorly controlled use of mobile devices, often to the detriment of daily functioning. Children and adolescents are particularly vulnerable, as their self-regulation skills and executive functioning are still developing. Symptoms of cell phone addiction include preoccupation with the device, inability to cut down usage, withdrawal-like symptoms when separated, and interference with sleep, academic, and social life. Recent studies have noted a dramatic rise in screen time among children, with many showing signs of dependency that encroach on healthy routines and development (1, 2).

Excessive device use has been linked to a host of behavioral problems, including irritability, anxiety, and attention deficits. Parents and clinicians alike have observed that the constant stimulation and distraction of smart phones can crowd out essential developmental experiences such as face-to-face socialization, creative play, and sustained concentration (3). As these habits become entrenched, the risk of more severe consequences rises.

### **Intellectual Developmental Disorder: Causes and Risk Factors**

Intellectual developmental disorder (IDD) is defined as a significant limitation in intellectual functioning and adaptive behaviors, manifesting before the age of 18. Causes are multi factorial, with genetic, chromosomal, and environmental factors all playing a role. Well-established causes include Down syndrome, Fragile X syndrome, and fetal alcohol syndrome, but environmental contributors such as malnutrition, perinatal complications, lead exposure, and brain injuries are also significant (4,5). The key risk periods for environmental factors are prenatal, perinatal, and early childhood, when the brain is at its most plastic and vulnerable.

A core feature of IDD is impaired cognitive functioning, including deficits in reasoning, problem-solving, and learning from experience (6). This raises concerns that

environmental exposures during these sensitive periods — including excessive engagement with digital devices — could interfere with typical brain development, potentially leading to or exacerbating intellectual disabilities.

### **The Link: Effects of Excessive Cell phone Use on Cognitive and Intellectual Development**

Emerging research suggests that excessive cell phone use can negatively affect cognitive development in children. Several studies have documented associations between high screen time and impaired attention, reduced executive functioning, poorer memory, and diminished academic performance (7,8). Children with greater smart phone exposure have been found to have shorter attention spans and lower academic scores, often preferring entertainment content over educational engagement.

These cognitive consequences may be rooted in the way digital devices disrupt the neural circuits responsible for sustained attention, self-regulation, and social cognition. For example, background screen time has been shown to interfere with language usage, executive functioning, and emotional regulation (9,10). Socially, children who spend more time on devices may miss out on crucial real-world interactions, further impairing their communication and adaptive skills (11).

While most IDD's have identifiable genetic or perinatal causes, the possibility that environmental factors like cell phone addiction could contribute to or worsen intellectual impairment is gaining attention. Excessive smart phone use is associated with impulsivity, impaired cognitive function, and difficulties in emotion regulation—all features that overlap with the challenges faced by children with IDD (12). The cumulative effect of chronic distraction, sleep disruption, and social isolation could, in theory, tip vulnerable children into clinically significant cognitive impairment.

## DISCUSSION AND IMPLICATIONS

Although the direct causation between cell phone addiction and IDD remains an area for further research, the evidence is clear that excessive smart phone use can impair the very skills essential for healthy intellectual development. For children already at risk due to genetic or perinatal factors, cell phone addiction may act as a compounding environmental stressor. For others, the habitual use of digital devices in place of face-to-face interaction, creative play, and academic engagement could undermine cognitive growth and adaptive functioning, possibly leading to long-term developmental delays. Compassionate care plays pivotal role in resolving this issue (13).

Given these findings, there is an urgent need for parents, educators, and policymakers to set healthy boundaries around cell phone use in early childhood and adolescence (14). Interventions that encourage unplugged socialization, physical activity, and diverse learning opportunities are essential to support optimal cognitive and intellectual development. Diversional healing activities like Therapeutic gardening and Mental Imagery can be effective in cell phone de-addiction. (15, 17).

## CONCLUSION

Cell phone addiction is a growing concern in the digital age, particularly for children whose brains are still developing. The evidence reviewed here suggests that excessive and compulsive mobile device use can impair cognitive functions essential to intellectual development, and may contribute to the risk or severity of intellectual developmental disorders. While more research is needed to clarify the direct causal pathways, the current data warrant caution and proactive intervention. The thesis that cell phone addiction is an environmental factor with the potential to negatively impact intellectual development in children stands supported by a growing body of systematic evidence. In the era of artificial intelligence nursing care can be

made more specific in dealing with such challenging issues (16).

### *Declaration by Authors*

**Ethical Approval:** Not Necessary

**Acknowledgement:** None

**Source of Funding:** None

**Conflict of Interest:** The authors declare no conflict of interest.

## REFERENCES

1. Hopkins Medicine. Addiction to Electronic Devices [Internet]. Available from: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/behavior-disorders/addiction-to-electronic-devices>
2. May Recreation. Cell Phone Addiction and Young Kids. Available from: <https://info.mayrecreation.com/blog/cell-phone-addiction-and-young-kids>
3. Nicklaus Children's Hospital. Why are Kids so Addicted to Screens? . Available from: <https://www.nicklauschildrens.org/campaigns/safesound/blog/why-are-kids-so-addicted-to-screens>
4. Cleveland Clinic. Intellectual Disability (ID) [Internet]. Available from: <https://my.clevelandclinic.org/health/diseases/25015-intellectual-disability-id>
5. Centers for Disease Control and Prevention (CDC). Developmental Disability Basics [Internet]. Available from: <https://www.cdc.gov/child-development/about/developmental-disability-basics.html>
6. Millcreek Behavioral Health. Intellectual Disability Symptoms, Signs & Causes [Internet]. Available from: <https://www.millcreekbehavioralhealth.com/development-disorders/intellectual-disability/symptoms-signs-causes/>
7. Frontiers in Psychology. The effects of smart phone addiction on cognitive function and physical activity in middle-school children [Internet]. Available from: <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2023.1182749/full>
8. Research Gate. The Effect of Excessive Smartphone Use on Child Cognitive Development and Academic Achievement: A Mixed Method Analysis [Internet]. Available from: <https://www.researchgate.net/publication/38>

- 3410660\_The\_Effect\_of\_Excessive\_Smartphone\_Use\_on\_Child\_Cognitive\_Development\_and\_Academic\_Achievement\_A\_Mixed\_Method\_Analysis\_Corresponding\_Author
9. Muppalla SK, Vuppalapati S, Reddy Pulliahgaru A, Sreenivasulu H. Effects of Excessive Screen Time on Child Development: An Updated Review and Strategies for Management. *Cureus*. 2023 Jun 18;15(6): e40608. doi: 10.7759/cureus.40608. PMID: 37476119; PMCID: PMC10353947.
  10. Harvard Medical School. Screen Time and the Brain [Internet]. Available from: <https://hms.harvard.edu/news-events/publications-archive/brain/screen-time-brain>
  11. Conway Medical Center. Smart phones and Children: Are These Hazardous to Their Health? [Internet]. Available from: <https://www.conwaymedicalcenter.com/news/topic/smartphones-and-children-are-these-hazardous-to-their-health/>
  12. *Frontiers in Psychiatry*. Excessive smart phone use and its association with cognitive-emotion regulation, impulsivity, impaired cognitive function [Internet]. Available from: <https://www.frontiersin.org/journals/psychiatry/articles/10.3389/fpsy.2021.669042/full>
  13. Kondaguli SV, Rana S, Balagar N. Compassionate nursing care: A refined approach to facilitate healing—An expository perspective review. *Int. J. Health Sci. Res.* 2023; 13:68-78.
  14. Kondaguli, Sharat V, Living with a Mentally Retarded Child: Challenges and Coping Strategies for Parents – A Review (April 15, 2018). *International Journal of Research and Analytical Reviews (IJRAR)* May 2018, Volume 5, Issue 2, Available at SSRN: <https://ssrn.com/abstract=4546214>.
  15. Sharat V Kondaguli, Abin Varghese, Alka Rai, Alka Navalkar. Gardening as a therapeutic tool for healing mental health issues among terminally ill patients: an opinion review. *Int J Health Sci Res.* 2023; 13(12):124-131. DOI: <https://doi.org/10.52403/ijhsr.20231215>.
  16. Kondaguli, Sharat. (2023). Revolutionizing Healthcare: the transformative Role of Artificial Intelligence in the Nursing Profession -an opinion Review. *International Journal of Enhanced Research in Medicines & Dental Care.* 10. 33-38.
  17. Kondaguli SV. Mental Imagery: An Advanced Technique for Addressing Mental Health Concerns—A Comprehensive Review. *International Journal of Novel Research and Development* ISSN. 2023 Jun:2456-4184.

How to cite this article: Sharat V Kondaguli, Prabha Agnibhoj, Shruti Rana, Samir K Choudhari. Analyzing the influence of cell phone addiction leading to intellectual developmental disorders in children: a critical review. *Int J Health Sci Res.* 2025; 15(9):102-105. DOI: [10.52403/ijhsr.20250913](https://doi.org/10.52403/ijhsr.20250913)

\*\*\*\*\*