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POPCORN SYNDROME: NEUROCOGNITIVE CONSEQUENCES OF DIGITAL OVERSTIMULATION IN CHILDREN – A SCOPING REVIEW

Durga Devi S[1], Dr. P. V. Hari Hara Subramanyan[2].
[1]PG Student, Meenakshi College of Physiotherapy, Meenakshi Academy of Higher Education and Research, Meenakshi College of Physiotherapy, Chennai.
[2]HOD Department of Paediatric Physiotherapy, Meenakshi College of Physiotherapy, Meenakshi Academy of Higher Education and Research.

Background: The rapid proliferation of digital technology has dramatically increased daily screen exposure among children and adolescents. Continuous interaction with high-velocity digital media—characterized by social networking algorithms, short-form video streaming, and immersive mobile gaming—may fundamentally alter attention regulation and neurocognitive development. "Popcorn Brain" syndrome describes a pervasive mental state where the brain becomes conditioned to constant, high-intensity digital stimulation, resulting in fragmented attention spans and a diminished capacity for sustained focus on non-digital tasks.

Purpose: This review aims to explore the neurocognitive effects of excessive digital stimulation in children and adolescents.

Methods & Materials:A literature search was conducted using electronic databases including PubMed, Scopus, and Google Scholar. Peer-reviewed articles, systematic reviews, and observational studies focusing on screen exposure, cognitive functioning, and behavioral outcomes in pediatric populations were reviewed and synthesized.

Results: Findings indicate that prolonged exposure to hyper-stimulating digital environments may trigger neuroplastic changes, specifically altering dopamine-mediated reward pathways and compromising sustained attention. Functional imaging suggests modifications in the prefrontal cortex and anterior cingulate cortex, areas critical for executive function. Children exhibiting high screen dependency frequently demonstrate reduced concentration, impaired working memory, increased impulsivity, and chronic sleep disturbances, which collectively contribute to a quantifiable decline in academic performance.

Conclusion: Popcorn Brain syndrome represents a significant, emerging neurocognitive concern linked to modern digital consumption patterns. The findings underscore the urgent need for early clinical awareness and the implementation of preventive interventions. Prioritizing balanced digital diets, alongside the promotion of offline physical and cognitive activities, remains an essential strategy for fostering healthy neurodevelopment in the digital age.

Keywords: Popcorn Brain Syndrome, Digital Overstimulation, Screen Time, Cognitive Development, Paediatrics.