Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 21s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

The Silent Influence: Screen Time, Mobile Phones, and Pediatric Brain Development

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Cite this paper as: Dr. Aakash S. Menon, Dr. Karthika Jayasimhan, Dr Ganesh Kumar, (2025). The Silent Influence: Screen Time, Mobile Phones, and Pediatric Brain Development. *Journal of Neonatal Surgery*, 14 (21s), 768-769.

Dear Editor,

In today's rapidly advancing digital era, children are exposed to mobile phones and screens at increasingly younger ages. While technology offers certain educational benefits, there is mounting concern over how excessive and unregulated screen time may be affecting critical aspects of children's brain development, intelligence quotient (IQ), and developmental quotient (DQ).

Children's brains are uniquely sensitive during early development, with neuroplasticity at its peak. Recent studies highlight the tangible effects that high screen exposure can have on structural and functional brain development. Hutton et al. (2020) utilized neuroimaging to demonstrate that greater screen time in preschool-aged children was significantly associated with lower microstructural integrity in white matter tracts, which are crucial for language, literacy, and cognitive self-regulation. Such findings underscore the biological impact of media overexposure during critical periods of growth.

From a cognitive development perspective, Madigan et al. (2019) reported that higher screen time at two and three years of age predicted poorer outcomes on standardized developmental screening tests, reflecting a negative impact on DQ. These findings suggest that early and excessive media use can interfere with the foundational cognitive skills that underpin future learning and academic performance.

Moreover, Christakis et al. (2018) reviewed evidence from both human and animal studies, proposing that passive media exposure may disrupt attention systems, delay language acquisition, and impair executive function, all of which are key determinants of a child's IQ development. The "displacement hypothesis" further posits that screen time reduces opportunities for essential developmental activities such as interactive play, reading, and real-world exploration—activities that are irreplaceable for fostering intellectual and emotional growth.

Recent perspectives also emphasize not just the quantity, but the quality of screen exposure. Radesky and Christakis (2020) cautioned that without active parental mediation, screen media often promotes passive consumption rather than critical engagement, further impacting cognitive development trajectories.

Additionally, longitudinal findings by McNeill et al. (2019) showed that high-frequency use of electronic applications and.

media programs in preschoolers was associated with lower performance in cognitive and psychosocial domains over time. These effects, if unchecked, could potentially alter children's developmental pathways in profound ways.

The evidence urges us, as pediatric healthcare providers, to advocate for balanced digital habits. Parents should be encouraged to prioritize unstructured play, face-to-face interaction, and sufficient sleep over screen-based activities. Importantly, when screen media is used, it should be high-quality, interactive, and supervised.

In conclusion, while technology will inevitably play a role in children's lives, it is essential that we guide its use wisely. Early interventions, public awareness, and robust research are critical to safeguarding pediatric brain development in this digital age. Protecting children's cognitive and developmental health is not an option—it is an urgent responsibility.

Thank you for bringing attention to this important conversation

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