

A Study on Screen Time and its Association with Language Development in 1 – 5 Years Age Group**Mohan Amgothu¹, Vura U V Naga Jyothi², Dasari Mounika³, Karunakar Gare⁴, K Vasudev⁵**¹Associate Professor, Department of Pediatrics, Kakatiya Medical College, Hanamkonda, Telangana.²Associate Professor, Department of Pediatrics, Kakatiya Medical College, Hanamkonda, Telangana.³Assistant Professor, Department of Pediatrics, Kakatiya Medical College, Hanamkonda, Telangana.⁴Associate Professor, Department of Pediatrics, Government Medical College, Mahabubabad, Telangana.⁵Professor & HOD, Department of Pediatrics, Kakatiya Medical College, Hanamkonda, Telangana.

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Abstract**Introduction:** Screen time (ST) is increasingly common in children's lives, impacting language development. Research shows direct parent-child interactions are crucial for language acquisition, with excessive ST hindering this process. While educational screen content can help, personal interaction is essential. A study investigated ST in 1-5 year-olds to understand these effects.**Methods:** This hospital-based observational study included 1-5-year-old children with access to digital devices from the pediatric OPD. Using a questionnaire and the Receptive-Expressive Emergent Language Scale (REELS), it assessed ST and language skills to analyze the impact of digital exposure on early childhood language development.**Results:** The study included 318 children (61.3% boys, 58.5% rural). Higher ST correlated significantly with language delays: 3.11 hours/day led to receptive language delay, while 1.58 hours did not. Similarly, 2.94 hours/day resulted in expressive language delay, unlike 1.48 hours. Statistical analysis confirmed these associations ($P < 0.05$).**Conclusions:** Higher ST in young children is significantly associated with both receptive and expressive language delays. Limiting screen exposure and encouraging interactive, language-rich activities are crucial for fostering healthy language development in early childhood. Timely intervention is essential for mitigating these negative impacts.**Keywords:** Screen Time, Language Delay, Early Childhood, Digital Exposure, Intervention.

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Introduction

Screen time (ST), the duration of time spent using electronic media such as televisions, smartphones, tablets, and computers, has become increasingly prevalent in children's lives. The impact of ST on young children's language development and vocabulary growth is a significant concern. Research indicates that the time parents spend engaging in direct conversations with their children is crucial for language acquisition. [1] Human-human interactions are proven to strongly influence a child's linguistic development, with substantial implications for their future. Language delays by the age of five can be a significant risk factor for social and emotional difficulties in adulthood. [2]

In this digital era, understanding the effects of screen exposure on child development is essential. Excessive screen time can detract from vital face-

to-face interactions, potentially hindering language development. [3] Conversely, interactive and educational screen content, when used appropriately, can have beneficial effects. However, these benefits do not outweigh the critical need for personal interaction.

Parents and health professionals must be vigilant about ST, promoting a balanced approach that prioritizes direct communication and interaction during critical developmental periods. Timely intervention can mitigate negative impacts, supporting healthier language and social-emotional development. [4, 5] As screens become more embedded in daily life, informed strategies are essential to safeguard and nurture children's developmental trajectories. With this a study was conducted to find the ST in 1 – 5 years age group.

Materials and Methods

It was a hospital based observational study, conducted in the department of Pediatrics, Kakatiya Medical College, Hanumakonda. Study was conducted between February 2021 to November 2022. Study protocol was approved by the Institutional Ethics committee. An informed consent was taken from the parents.

The study included children aged 1 to 5 years of both genders who attended the pediatric OPD. Additionally, these children had access to digital devices, ensuring that their ST and exposure to electronic media could be adequately assessed. Children were excluded if their parent/guardian did not consent or if they had disabilities, developmental delays, seizure disorders, autism spectrum disorders, or perinatal asphyxia.

A preset questionnaire was then administered to assess the amount of time children spent using digital devices. Additionally, demographic characteristics of the study population were collected to provide context for the findings. The children's language skills were evaluated using the Receptive-Expressive Emergent Language Scale (REELS), which measures both receptive and expressive language abilities. [6] The study aimed to observe the association between the data collected from the questionnaire and the results of the REELS screening. This comprehensive approach allowed for a detailed analysis of how digital screen exposure might impact language development in young children. By correlating ST with language skill attainment, the study sought to provide insights into the potential effects of digital media use on early childhood development, thereby informing interventions by health professionals and guiding parental practices.

Statistical Analysis: The data was analyzed using SPSS version 20. The data was presented in mean and percentages. The mean difference between the continuous data was analysed using t-test, for follow-up data paired t-test and for categorical data Chi-square test was used to determine the significance between the parameters observed in this study.

Results

Total 318 children were included, 61.3% (195) were boys and 58.5% (186) were rural population. A significant correlation was found between higher ST and language delays in young children. Participants with an average ST of 3.11 hours exhibited a notable receptive language delay, whereas those with an average ST of 1.58 hours showed no such delay. Similarly, expressive language delay was significantly higher in participants with an average ST of 2.94 hours compared to those with 1.48 hours of ST, who

displayed no expressive language delay. Statistical analysis confirmed that higher ST was associated with a greater likelihood of both receptive and expressive language delays ($P < 0.05$).

Discussion

Several studies have identified a significant association between higher ST and receptive language delays in young children. Lin et al. [7] conducted a cross-sectional study which found that children with more than three hours of daily ST were more likely to experience delays in understanding language compared to those with less screen exposure. The mean ST for children exhibiting receptive language delays was 3.11 hours per day, compared to 1.58 hours per day for children without such delays. Chonchaiya et al. [8] also reported similar findings, indicating that increased ST, particularly before age two, was associated with poorer performance in receptive language assessments at later ages. These studies suggest that early and excessive screen exposure may interfere with critical periods of brain development that are essential for language acquisition.

Expressive language development, which involves the ability to produce language, has also been negatively impacted by high ST. Madigan et al. [9] observed that children who spent more than two hours daily on screens had a higher likelihood of expressive language delays. The mean ST for children with expressive language delays in this study was 2.94 hours per day, whereas those without delays averaged 1.48 hours per day. A longitudinal study by Hutton et al. [10] further supported these findings, demonstrating that increased ST was associated with reduced microstructural integrity of brain white matter tracts that are critical for language and literacy skills. This suggests that not only behavioral but also neuroanatomical changes may underlie the observed language delays.

The underlying mechanisms by which ST impacts language development are multifaceted. Tamana et al. [11] hypothesized that screens may displace time spent in interactive activities that promote language, such as reading or conversation. Furthermore, Radesky et al. [12] noted that screens often reduce the quality of parent-child interactions, which are crucial for language learning. To mitigate these effects, the American Academy of Pediatrics (AAP) recommends no ST for children under 18 months, except for video chatting, and limited ST for older children, with an emphasis on high-quality programming and co-viewing with caregivers to enhance learning. [13]

Excessive ST is significantly associated with receptive and expressive language delays in young children. Studies consistently show that higher

screen exposure, averaging over 2 hours daily, correlates with poorer language development compared to limited screen use. These findings underscore the importance of limiting ST and promoting interactive, language-rich activities. However, limitations include potential biases in self-reported data, varying definitions of ST across studies, and the need for more longitudinal research to confirm causality and long-term impacts. Future studies should address these limitations and explore effective interventions to support optimal child development in the digital era.

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