

EXCESS SCREEN TIME - IMPACT ON CHILDHOOD DEVELOPMENT AND MANAGEMENT: A REVIEW

Karki Utkarsh,^{1*} Sravanti Lakshmi ²¹ Consultant Child and Adolescent Psychiatrist, Child and Adolescent Psychiatry Unit, Kanti Children's Hospital, Kathmandu, Nepal² Consultant Child and Adolescent Psychiatrist, Abhaya Hospital, Bengaluru, Karnataka, India**Date of Submission** : May 5, 2021**Date of Revision** : Jun 29, 2021**Date of Acceptance** : Jun 30, 2021**Date of Publication** : July 19, 2021***Correspondence to:**

Dr. Utkarsh Karki, MD, DM
 Consultant Child and Adolescent Psychiatrist,
 Child and Adolescent Psychiatry Unit, Kanti Children's
 Hospital, Kathmandu, Nepal
 Email: karkiutkarsh@gmail.com, Cell: 9851130394

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**ABSTRACT**

In recent years, children are immersed in both traditional and new forms of digital media around the globe. Screen time is now embedded in the daily lives of young children beginning from infancy. Pre-schoolers exposed to screen and interactive media may benefit in many ways but excessive and inappropriate screen exposure could potentially lead to several health and developmental risks. Excess screen time in early childhood has found to negatively impact cognitive, language, literacy and socio-emotional development. Despite challenges of screen media parenting practices and those posed by lockdown (work from home, online schooling) during COVID-19 pandemic, parents hold the key to navigate these challenges by serving as role models to ensure positive developmental outcomes in their children.

Keywords: children; development; pre-schoolers; screen time

INTRODUCTION

Today's children are "digital natives" born in an era of evolving technology where screen time is part of their daily lives. Screen time is defined as "the time spent in sedentary behaviours such as viewing television, playing games, and using computer and smartphones."¹Pre-schoolers are exposed to a variety of screens (predominantly TV and other easily accessible and transportable devices) at home and in child care. According to the American Academy of Paediatrics (AAP) guidelines, the recommended screen time for children above the age of 2 years is less than one hour per day.^{1,2} The World Health Organization (WHO) guideline recommends no screen exposure to children less than 2 years old and not more than 1 hour of screen time for children of 2–4 years of age.³

There is a growing concern regarding excess screen exposure and its association with mental health and adverse impact on child development.⁴In recent times there has been a significant rise in use of digital media

among children. Multiple factors account for this increase such as growing market of digital devices, easy accessibility, and increase use of screen media by families and society.¹ Lockdown, restrictions and online schooling due to the COVID 19 pandemic appears to have exacerbated this issue.

Excess screen time in childhood may lead to multiple adverse health (physical, mental and psychosocial) consequences. Sedentary lifestyle associated with excess screen use is associated with obesity, headache, back pain, ocular problems and disturbed sleep.⁴ A meta-analysis found a negative association between children's screen-media-use behaviours and physical activity.⁵ There is also a significant association between screen time and low psychological well-being.^{6,7} In addition, the sensitive and critical periods of brain development before six years of age is very crucial and is also a period of enormous brain plasticity, when experience influences the social, cognitive, speech and emotional development.⁹

Considering the rising trend in use of screens and its negative impact in child development that is evident from existing literature and experience of authors working in child psychiatry clinics, this review is the first from Nepal to highlight the seriousness of this matter. This review is unique as it focuses only on the impact of excess screen on early child development, challenges posed by lockdown that is very context specific and ways to navigate this issue.

Impact on development

While involvement of preschool-aged children in screen-based activities may have both pros and cons, the general consensus among health authorities is that excessive screen time has an adverse impact on childhood development.⁴We discuss the merits and demerits of excess screen time in the context of child development. It can lead to various adverse outcomes ranging from speech delay, communication (verbal/non-verbal) difficulties to autism-like presentation especially in preschool children owing to under-stimulation.⁸

a) Cognitive development

For children younger than 2 years, their understanding of content on 2-dimensional screens is limited. Infants can imitate and recall actions performed by a person on a screen or imitate sign language but cannot learn new knowledge at less than 30 months of age without a real-life adult helping them learn.⁸At this age, toddlers continue to have difficulty applying what they see on video to real situations or 3-dimensional life. Children perform poorly after a video than a live demonstration has also been demonstrated by experiments on 2-year-olds suggesting a video deficit effect.⁹

Some studies suggest improvement in visual attention skills on playing action-based and increase in prosocial behaviours in playing prosocial video games.^{10,11} The potential cognitive benefits are believed to originate from high-quality media contents that use strategies known to support language development, including the labelling of objects, characters speaking directly to the child and allowing opportunities for the child to respond. In addition, co-viewing of a suitable media content with an adult could benefit cognitive development.⁵ With co-viewing an opportunity is created for parent-child interaction and also allows an adult to supplement the media content. Leo Vygotsky's concept supports the notion mentioned above that children's learning takes place within the "zone of proximal development"- a range of tasks too difficult for the child to do alone but possible with the help of adults and more skilled peers.⁹ Even the most customized education apps and games do not have this complex capacity.

b) Language development and literacy

Several studies have shown associations of excessive screen time in early childhood with language delay.^{12,13}As described earlier, children younger than two- to three-years cannot learn new words only from videos. Hence, the importance of co viewing and usage of same words in everyday interactions cannot be overemphasized.⁸ Digital books and interactive educational media teach children language and literacy skills but parents then tend to use fewer dialogic reading strategies, such as asking open ended questions, commenting on the story, labelling and instead comment on the digital device e.g. tap that, push this, switch to right.¹⁴ One- to three-year-old heavy viewers tend to have attention, memory, and reading difficulties in the early school years.⁹In essence, the harm from excess screen exposure outweighs the benefits. Therefore, digital media and learning cannot be a substitute for shared parent-child experiences, interaction and learning.

c) Social-Emotional Development

Excessive screen time has an impact on socio-emotional functioning but there may be some confounding factors.⁴A study in Thai infants showed that excess TV exposure from 6 to 18 months of age was associated with emotional reactivity, aggression and externalisation behaviours.¹⁵From our experience in clinical settings, very often children between 2 to 4 years are brought with concerns of speech delay and poor social interaction. This autism like presentation has been observed in many children in the background of excess screen exposure, lack of parental engagement and under stimulation.

Play and human interaction is the key to a child's socio-emotional development. It provides an opportunity for affective engagement and sharing of experiences between parents and children. This allows parents to respond contingently on the child's behaviour, thought and attitude by following the child's lead and thus builds social reciprocity.⁸ Excess screen time has shown to distract from parent-child interaction and child play eventually leading to negative impact on socio-emotional development.^{16,17}

Challenges of screen media parenting practices

Screen media parenting practices constitute a "set of goal-directed parental behaviours or interactions with their child that influence the latter's screen media use"¹⁸ with regard to the three dimensions recommended by the American Academy of Paediatrics guidelines viz. amount, content and context.² Immediate family members form an important influence on their children's screen time. They tend to use screens as a reward or punishment. Some use it to engage their children or keep them quiet. These conventional methods can make screen use more desirable for children and hence lead to overuse in the

long run.¹⁹ A study on screen exposure in pre-schoolers in India found that parent related reasons for screen exposure were more common than child related reasons and the common reasons for screen exposure were a) to do household chores b) severity of child's ADHD c) to manage tantrums d) due to poor knowledge attitude and practices e) sibling care f) working primary care giver g) meal times h) recreational, break times i) educational and j) reinforcement.²⁰

Parents play a central role in regulating children's screen use. However, they often find it challenging to adhere to the recommended guidelines when it comes to restraining their children's screen use. The common challenges are outlined below.

1. Parents' mediation practices: Parents differ widely in their mediation practices that may range from crafting a digital media space at home to providing handsets to their children so they get time for themselves.²¹ Various factors such as lack of time to engage with children, work responsibilities or other stressors may affect parental mediation practices that in turn determines a child's digital media use.
2. Unhealthy e-discipline: As mentioned earlier, parents may use screen devices as tools to discipline children. Some parents find screen-use as an easy way to calm children down²² or for example – get them to eat by using screen as a distraction. These practices are prone to have undesirable effects due to excess screen time.¹⁹
3. Misconception that screens are healthy: Studies suggest that some parents involve their children in screen-based activities with a belief that they aid in their development. A survey found that 29% of the 1000 parents interviewed allowed their children younger than 2 years to watch television (TV) because it is 'good for their brains'.¹²
4. Family structure and screen time: While there is notion that children from non-traditional families have excess screen exposure, overall studies exploring the association between family structure and screen time in children have reported inconsistent results.²³ There is a need to study family structure as a sociocultural determinant in low-middle income nations.
5. Effects of the pandemic: The ongoing COVID-19 pandemic has exaggerated excessive screen use among children. During these times of the pandemic, lockdown may be forced or self-imposed. Parents are deprived of their regular coping mechanisms such as meeting family/friends, traveling and so on.²⁴ In addition, the closure of schools/day-care has led to disruption of their social support system. As a result, they may spend excess time in front of screens, on

social media or engage with children by playing video games.²⁵

In addition, homes have become workplaces as the culture of work-from-home/online work culture has taken over in most parts of the world. This makes it even more difficult for them to keep themselves away from screens and model appropriate behaviour. Some families may be facing financial crisis due to suspended work and many others may be dealing with other psychosocial problems.²⁶ The COVID pandemic has certainly affected daily lives of families making it stressful for parents to strike a work-life balance.^{24,27}

Parent-mediated intervention to navigate the challenges

Overexposure to screen early in childhood increases the likelihood of overuse in later life²⁸ leading to circadian rhythm disturbances and behavioural problems²⁹ and impacting educational attainment and quality of life.³⁰ Therefore, there is a need to regulate screen use to an optimal level to ensure healthy development of children in this digital age. Studies suggest that parent-assisted behavioural change is the most effective means of reducing children's screen time.³¹ The various strategies that can help parents to strike a balance between screen use and real-life human interactions is discussed here:

1. Structure the routine: Structuring a child's day will help in setting clear expectations and establishing a healthy family routine. This will involve:
 - Setting aside time for engaging with children.
 - Setting aside time for using screen: Set clear boundaries around – amount, content and time of the day screen is used.¹ The AAP recommends having a Family Media Use plan to regulate screen use of all family members (AAP, Family Media Plan).
 - Setting screen-free time and zones: Avoiding screen use during mealtimes (mealtime can be exclusive family time) and one-hour before bedtime (as it interferes with the quality of sleep. Creating screen-free zones such as the play area and in bedrooms.³²
2. Watch and play with digital media together i.e. co viewing.⁸
3. Help the child apply any knowledge gained from apps or TV programs to the rest of their life.⁸
4. Check out which apps the child is downloading and uninstall those that are violent or inappropriate.⁸
5. Provide adequate opportunities for creative play: Children can be encouraged to involve in creative art-based activities that promote imaginative play – such as drawing, craftwork, playing with play dough or blocks, and storytelling.³³

6. Model right behaviour: Children are programmed to follow adults' behaviour. When a parent constantly looks at mobile while child is trying to speak with him/her or is distracted by the incoming messages or emails while engaging with the child in play, he/she teach the child that screens take a priority.³²

It is important to establish these practices when children are young and before problem behaviours develop as it is easier to do so in early childhood.³⁴ In families with maladaptive patterns of functioning or children with problem behaviours, it is important to estimate the extent of the problem based on its severity and interference with functioning. Such families are advised to meet a CAMHP (Child and Adolescent Mental Health Professional) for a detailed assessment to formulate an individualized plan with a graded approach to manage the situation.

Lockdown-specific strategies

It is an unnatural situation to be locked within the confines of the home for prolonged periods. It can have adverse impact on children and their development. While digital media is ensuring continuity in education by facilitating online classes and connecting children with friends and families during the pandemic, there are reports suggesting exaggeration of overexposure to screens.^{30,35} Therefore, this calls for unique strategies to curtail its disproportionately excessive use.

1. Creating more ways to help children channelize their curiosity and energy: Involving them in household chores and exercise that are appropriate to their development in a child-friendly manner and under supervision. Creating makeshift arrangements for increasing indoor play activities and substituting outdoor play and or coming up with new games using available resources to actively engage with them.
2. Inculcate new hobbies: The time spent indoors can be best utilized to help children identify their areas of interest and pursue the same. However, there is a need to go at child's pace and not to overwhelm the child. It is okay, if no new hobby is introduced as long as child is physically healthy, sleeping enough, happy, connecting well socially and engaging in constructive play.
3. Titrating the activities to meet developmental needs of children: Identify each child's developmental needs across all domains viz. motor, cognitive, language and socioemotional and ensure they are met regularly through various activities planned.
4. Self-care: Parents need to take time out for themselves (relaxing or engaging in doing things they like) to be able to care for children adequately.

These strategies are more likely to work out if one has

a flexible approach and when children are involved in negotiation of rules, planning of activities and given a lead.

CONCLUSION

Excess screen time in early childhood leads to deleterious effect on overall development. Therefore, well-designed, interactive, age-appropriate quality programs with specific educational goals when co-viewed and discussed with a contingently-responsive parent or a caregiver may foster early literacy skills, cognitive development, and imaginative play. However, pre-schoolers acquire skills best from live, direct and dynamic interactions with real people and objects in real time and space. Therefore, parents and caregivers must strive to restrict screen-based activities and support face-to-face interactive play and physical activity in pre-schoolers to promote healthy development in this digital era and more importantly during times of lockdown. There is a need for controlled trials and revision of the norms to suit the current situation.

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