

## Screen Time in Indian Children by 15-18 Months of Age

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**Objective:** To determine the prevalence and practices of exposure to screen-based media in children by 15-18 months of age. **Methods:** This observational descriptive study was conducted from March to August, 2019. Mothers of 370 healthy developmentally normal children (15–18 months of age) were enrolled during their visit to immunization clinic of a medical college affiliated hospital. Parental response to a semi-structured questionnaire was recorded to assess the initiation, frequency and duration of screen exposure, and related parental perceptions. **Results:** 369 (99.7%) children were exposed to screen-based media till 18 months of age, starting from median (IQR) age of 10 (8, 12) months. Smartphone and television were being viewed by 354 (96%) and 328 (89%) children, respectively. Screen time was >1 hour/day in 328 (88.7%) and >2 hours/day in 209 (56.5%) children (median (IQR): 120 (80, 180) minutes/d). Most (72%) parents were not concerned with their child's screen time. **Conclusions:** Almost all young children seem to be exposed to screen-based media by 18 months of age in the urban setting. Extensive use of screen-based media by young children calls for formulation of guidelines on toddlers' screen use and their dissemination to parents.

**Keywords:** Computers, Smart phone, Television, Toddler, Video game

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Screen exposure includes both traditional (like watching television) and new digital or social media (using smart phones/tablets, use of videos and computers for recreational activities, video and computer gaming, social media, mobile phone applications, internet use *etc.*) [1]. The prevalence of screen exposure in children less than 2 years of age range from 31-44% in China and Korea [2,3], and varies from 10-75% in other countries [4-6]. American Academy of Pediatrics (AAP) suggests avoidance of any type of screen-based media other than video-chatting for children less than 18 months [1]. Screen exposure leads to impaired quality of life of children and may have adverse outcomes markedly during early phase of development [7]. Increased screen exposure has been linked to language delay, depreciated motor skill development and delayed cognitive development [8,9].

Exposure of young children to screen-based media is a global concern, but the gravity of this situation has not been studied adequately in young children in the Indian setting. We conducted this study to determine the prevalence and practices of exposure to screen-based media in children 15-18 months of age and parental perceptions of the same.

### METHODS

This descriptive study was conducted from March to

August, 2019 in the Department of Pediatrics at a public hospital in Delhi, after obtaining approval from the institutional ethics committee. Sample size was based on an Australian study that showed 40% prevalence of smartphone use before 24 months of age [6]. Taking alpha error of 5%, absolute precision of 5%, and confidence level 95%, we planned to enroll 370 parent-child pairs.

Apparently developmentally normal healthy children between 15-18 months of age, born at term, were enrolled from the immunization clinic of our hospital. Children with severe acute malnutrition, sensory/motor impairment, acute or chronic illness, and those with restricted mobility were excluded. Enrolled mothers were administered a semi-structured questionnaire on one-to-one basis, after obtaining informed consent. Baseline information was obtained about the sociodemographic characteristics of the family. Screen-based media included (i) smartphone, (ii) television (TV) and (iii) other devices (desktops, laptops, tablet, video consoles, and portable video game device). Respondents were asked about household ownership of these devices, and number of family members owning smartphone devices. Mothers provided information on approximate age of initiation of screen viewing. Parents were also asked about what they used to offer to their child most commonly when they demanded attention/consolation. Frequency of use of screen-based media (minutes/day, and days/week) were also recorded

separately for each device. Screen time of last 24 hours was asked separately and recorded. Questions were also asked regarding the use of screen by the family. Frequency of screen viewing at dinner, for entertainment and academic activities (days/week), of the main caretaker was asked. Family accessibility to outside screen-based gadgets outside the home for gaming and entertainment was asked.

Parental perceptions of their child's screen time were also recorded. The responses for their concern on themselves or their child having excessive screen time were graded on a 5-point Likert scale. Parental awareness of any recommendations on screen viewing was also enquired. Their opinion on screen viewing and its impact on child health was also asked. They were asked for the various reasons of giving/showing screen-based devices to the children, and whether they restricted screen time for their children.

## RESULTS

We interviewed 370 mothers-baby pairs (61% boys) with median (IQR) age 17 (16,18) months. Primary caretaker of toddlers in most families (99%) was mother; and only 8 (2.2%) kids were being sent to day care center. More than 90% mothers were homemakers (93%), and most (90.5%) families belonged to middle socioeconomic strata.

Most households had one television, and in 224 (68%) families television was placed in the room where child was sleeping. Of 361 families having smartphone, both parents owned separate smartphone in half of them (180, 49.9%). The use of other screen-based devices, including computer/desktop/laptop was low in this population and their access to outside screen-based gadgets for gaming and entertainment was negligible (**Table I**).

All except one toddler (369, 99.7%) had been exposed to screen-based media till 18 months of age, starting from as early as 2 months of age (median (IQR) age at first exposure: 10 (8, 12) months) (**Table II**). Overall, 48 (14.6%), and 39 (11%) toddlers were exposed to TV and smartphone, respectively, before 6 months of age. Presently, 328 (88.7%) were viewing screen for >1 hour/day, and 209 (56.5%) for >2 hours/day. Median (IQR) duration of screen exposure was 120 (80, 180) minutes/day. TV viewing and smartphone screen viewing contributed to median (IQR) of 60 (60, 120) and 45 (35, 90) minutes/day, respectively. Most screen viewing for toddlers was supervised by parents (275, 74.3%). In most families (214, 65.2%), dinner time was associated with screen viewing.

Assessment of parental concern regarding screen

**Table I Household Availability of Electronic Gadgets With Screen (N=370)**

Number of gadgets	Television	Smartphone	Others*
None	40 (10.8)	9 (2.4)	327 (88.4)
1	255 (68.9)	139 (37.6)	43 (11.6)
2	60 (16.3)	103 (27.9)	0
>2	15 (4.1)	119 (32.2)	0

Values in n (%); \*computer/laptop/tablet/video game etc.

exposure showed 266 (72%) parents responding as 'not concerned', 71 (19%) 'a little concerned', and 19 (5%) 'quite a bit concerned'. Only 10 (2.7%) were 'very much' concerned with excess screen time of their child. Only 73 (20%) parents were 'very much' concerned and another 15 (4%) were 'quite a bit' concerned for their own screen time, while 153 (41.4%) were 'not at all' concerned. Except two parents, none had any knowledge of recommendations on screen time in infants. More than half of the parents (196, 53%) opined screen activities were beneficial for the toddler as it helps in stimulating learning behavior and helps parents manage their chores while the child plays, 116 (31%) felt it has no benefits, and 57 (15.5%) were not aware of any benefits. When asked to report any harmful effects of screen exposure, 257 (69%) parents considered screen exposure causes harm mainly in form of effect on vision and tendency of child to be involved in play rather than academic activities. The most common reason to handover screen-based device to toddlers was to engage them in play activities while the caretaker was busy and/or to console the child (366, 95%).

## DISCUSSION

We found that exposure to screen was almost universal in this group of urban Indian children by the age of 15-18 months, starting as early as 2 months. Television and smartphone were the main screen-based media devices with nearly 90% viewing the screen for more than an hour a day.

**Table II Characteristics of Screen Exposure in Children Aged 15-18 Months (N=370)**

Screen exposure in children	Television	Smartphone	Others*
Exposed to screen	328 (88.6)	354 (95.7)	8 (2.2)
Age (mo) at first screen exposure, median (IQR)	10 (8-12)	12 (8-12)	12 (8.5-14)
Daily screen exposure	302 (81.6)	312 (84.3)	-
Screen time >1 h/d <sup>#</sup>	266 (71.9)	175 (47.3)	-

Values in no. (%) or as stated; \*Computer/laptop/tablet/video game etc; <sup>#</sup>No. of children with screen time >1 h/d was 328.

### WHAT THIS STUDY ADDS?

- Exposure to screen-based media is almost universal in urban Indian toddlers 15-18 months of age, starting as early as by 2 months of age.
- Majority of the parents were not concerned about the screen time of their children.

These findings corroborate those reported in studies from high-income countries like Australia, where 40% of children below 18 months of age had a screen time greater than 2 hours daily [6]. In a study from UK, 75% of children younger than 1 year had screen exposure, which increased rapidly at 1 year of age to >1 hour/day at 14 months and >2 hour/day by 30 months [5]. In India, an earlier study reported screen time in preschoolers (2 to 6 years) to be mean (SD) of 2.7 (1.7) hours, with average (SD) daily TV screen time of 1.6 (1.1) hours [10]. Similar to our findings, television and smartphone were major contributors to screen time in this study [10].

Among low socioeconomic strata population of Europe, around 50% toddlers had screen time of 0.5 hour and 1.5 hour in <11 months and 12-23 months, respectively [4]. The proportion of toddlers meeting the AAP recommendations ranged from 2.3% to 83% and average screentime ranged from 36.6 to 330.9 min/day in a US population [11]. Two-thirds (68%) of Canadian children <3 years were reported to use screen media [12]; whereas, another review estimated only 25% adherence to AAP guidelines by toddlers in Canada [13]. A study from Japan reported 29.4% children at 18 months, and 24.5% at 30 months are engaged in TV viewing for >4 hours/day [14]. In a study from China, average TV viewing was reported to be 67.4 minutes/day in those younger than two years, and >2 hours/day in children older than 2 years [8]. A Korean study reported that children at 2 years of age spend 1.2 hours/day viewing TV, and about 44.1% children spend 1-2 hours [3].

Digital boom in India has led to the availability of portable smartphone devices in large number of households. This socio-environmental *milieu* has changed the type of screen exposure in toddlers, as 96% were exposed to smartphones as compared to 86% to traditional media. Mobile touch screen devices can be easily used by infants as they require lower fine motor coordination. These devices are now most favored tools for providing source of entertainment and educational applications, replacing traditional toys to a great extent.

Limitations of this study include descriptive nature and recall-based data collection, which did not allow us to analyze factors responsible for increased screen viewing.

Published literature has implicated maternal education, occupation, number of siblings, and day care attendance affecting the screen time [15]. Further, we did not collect information on the content being viewed, and analyze possible adverse influence it might have had on young children.

There is an urgent need to guide parents regarding the screen exposure practices of their children. In view of high proportion of young children having screen exposure for substantial duration, guidelines specific to Indian context need to be framed and disseminated.

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*Contributors:* PG: conceptualized the study; PG, DS, PM: devised the methodology and wrote the protocol; PM: collected data and reviewed the literature. PG, PM: analyzed the data. Final manuscript was edited by PG and DS. All authors have approved the final manuscript.

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