

## EDITORIAL

## SCREEN TIME, EFFECTS ON COGNITIVE, PSYCHOLOGICAL AND PHYSICAL DEVELOPMENT OF CHILDREN

The social and cultural milieu of the societies all over the world are in a flux and have already seen a momentous change during last few decades. Though the process of change has been a permanent feature of the human evolution since the beginning of human society but the rate of change has leapfrogged at dizzying speed in last few decades. This has revolutionized the living patterns all over the world and the child rearing practices are no exception to this. The dilution of large joint families, lesser number of children, more involvement of mothers at work place and small family size are few of the factors contributing to this change. The advent of TV, internet and mobile has added another dimension to this. These screens have changed the human behavior and the infants and children are no exception. These screens with their addictive content provide care givers the ideal tool to engage children while they are busy either in their work or entertainment. But this behavior has deleterious effect on the child behavior and development.

There are multiple reasons why parent and caregivers allow the children to watch television and mobiles. Many parents think that the content on the screens is educational and good for mental development of children<sup>1</sup>. Other parents admitted to not limiting their children's screen time to avoid conflict and social isolation or to entertain or distract children<sup>2</sup>. One study of mothers confirmed that TV viewing by their children was useful in accomplishing household tasks, while another study found that parents commonly utilized mobile media to occupy their children when eating out<sup>3,4</sup>. The use of screen time as an entertainer also means that parents do not need to dedicate monetary resources that may not be available<sup>2</sup>.

Exposure to screens tends to start from very early infancy<sup>5</sup>. Significant awake time of children and infants is spent in front of the screens, in some cases even 8-10 hours<sup>6</sup>. In 2015, American Association of Pediatrics (AAP) in their newsletter suggested that guidelines for screen time allowed for children are outdated and need revision. However, it was discovered in a survey that more than 90% parents appear to ignore the AAP guidelines<sup>7</sup>.

Excessive screen time reduces physical activity significantly. Regular physical activity is associated with improved health outcomes in children<sup>8</sup>. World Health Organization (WHO) recommends at least 1

hour of moderate to vigorous physical activity daily. The National Health and Nutritional Examination Surveys (NHANES) study conducted in over 1000 children from USA aged 6-15 years showed that TV viewing time was inversely proportional to physical strength. The negative impact of TV viewing on physical development has been shown in children under 6 years of age. A prospective, longitudinal study that evaluated the relationship between TV watching at 29 months old and physical strength at 65 months of age in 1997 Canadian children reported that gross motor skills were reduced by high screen time<sup>9</sup>. Research indicates that higher levels of physical activity do not compensate for the negative effects of screen time<sup>10</sup>.

Obesity in children is becoming a pandemic. Increase in screen time has made it an important modifiable factor for childhood obesity. There is a huge amount of evidence supporting this observation. Results from a meta analysis of 14 cross sectional studies revealed a linear dose-response relationship between TV watching and obesity. A 13% incremental increase in obesity risk was reported for each hour per day of TV watching for both boys and girls<sup>11</sup>. The relationship between screen time and obesity was also evaluated by World Health Organization Childhood Obesity Surveillance Initiative. A cross sectional study of 10,000 children aged 6-9 from 5 European countries showed that excessive screen time is associated with more consumption of high sugar and high fat foods and decreased consumption of vegetables and fruits<sup>12</sup>. Commercial advertising also plays significant role in unhealthy dietary habits. A meta-analysis of 22 studies showed that commercial advertising of unhealthy food increases energy consumption in children<sup>13</sup>.

Cognitive development especially speech development is adversely affected by screen time even at very early ages. A Korean study conducted on children in the age bracket of 24-30 months showed that risk of language delay was proportional to time spent in front of screens. There was 2.7 fold higher risk of language delay in children with 3 hours of daily TV as compared with those with less than 1 hour while screen time of more than 3 hours increases the risk to more than 3 times<sup>14</sup>.

Another study showed that excessive screen time at 29 months of age manifested as decreased school readiness at 65 months of age<sup>9</sup>. Some studies suggest

that cognitive development in relation to media is highly content dependent and there be some benefits also in screen viewing. However, a comprehensive review found that the majority of positive cognitive development claims made by the manufacturers of media products aimed at children were unsubstantiated<sup>15</sup>.

The review of the evidence strongly suggests that excessive screen time is adversely affecting not only the physical but also the social and cognitive development of the children. Most of the guidelines even from developed countries are antiquated and need reviewing. The third world countries like ours don't even have guidelines. It is the need of the hour to increase awareness among not only the health care providers but also the general public about the deleterious effects of the screen usage. Evidence based guidelines should be developed for all age groups about the recommended limits of screen time. The recommendations should also guide about the age appropriate content on the screens. These guidelines and recommendations may not be very productive in absence of a wide spread public awareness campaign to enlighten the parents.

## REFERENCES

- Zimmerman FJ, Christakis DA, Meltzoff AN. Television and DVD/video viewing in children younger than 2 years. *Arch Pediatr Adolesc Med* 2007; 161(5): 473-9.
- Evans CA, Jordan AB, Horner J. Only two hours? A qualitative study of the challenges parents perceive in restricting child television time. *J Fam Issues* 2011; 32(9): 1223-44.
- Thompson DA, Polk S, Cheah CS, Vandewater EA, Johnson SL, Chrismer MC, et al. Maternal beliefs and parenting practices regarding their preschool child's television viewing: An exploration in a sample of low income Mexican origin mothers. *Clin Pediatr (Phila)* 2015; 54(9): 862-70.
- Radesky JS, Kistin CJ, Zuckerman B, Nitzberg K, Gross J, Kaplan-Sanoff M, et al. Patterns of mobile device use by caregivers and children during meals in fast food restaurants. *Pediatr* 2014; 133(4): e843-9.
- Tomopoulos S, Dreyer BP, Berkule S, Fierman AH, Brockmeyer C. Infant media exposure and toddler development. *Arch Pediatr Adolesc Med* 2010; 164(12): 1105-11.
- Trinh L, Wong B, Faulkner GE. The independent and interactive associations of screen time and physical activity on mental health, school connectedness and academic achievement among a population based sample of youth. *J Can Acad Child Adolesc Psychiatr* 2015; 24(1): 17-24.
- Christakis DA. The effects of infant media usage: What do we know and what should we learn? *Acta Paediatr* 2009; 98(1): 8-16.
- Edelson LR, Mathias KC, Fulgoni VL, Karagounis LG. Screen based sedentary behavior and associations with functional strength in 6-15 year old children in the United States. *BMC Public Health* 2016; 16: 116.
- Pagani LS, Fitzpatrick C, Barnett TA. Early childhood television viewing and kindergarten entry readiness. *Pediatr Res* 2013; 74: 350-5.
- Saunders T, Chaput JP, Tremblay MS. Sedentary behaviour as an emerging risk factor for cardiometabolic diseases in children and youth. *Can J Diabetes* 2014; 38(1): 53-61.
- Zhang G, Wu L, Zhou L, Lu W, Mao C. Television watching and risk of childhood obesity: A meta analysis. *Eur J Public Health* 2016; 26(1): 13-8.
- Bornhorst C, Wijnhoven TM, Kunešová M, Yngve A, Rito A, Lissner L, et al. WHO European childhood obesity surveillance initiative: associations between sleep duration, screen time and food consumption frequencies. *BMC Public Health* 2015; 15: 442-52.
- Boylend EJ, Nolan S, Kelly B, Tudur-Smith C, Jones A, Halford JC, et al. Advertising as a cue to consume: A systematic review and meta analysis of the effects of acute exposure to unhealthy food and nonalcoholic beverage advertising on intake in children and adults. *Am J Clin Nutr* 2016; 103(2): 519-33.
- Byeon H, Hong S. Relationship between television viewing and language delay in toddlers: Evidence from a Korea national cross sectional survey. *PLoS One* 2015; 10(3): e0120663.
- Garrison M, Christakis D. A teacher in the living room: educational media for babies, toddlers, and preschoolers. Menlo Park, CA: Kaiser Family Foundation, 2005.

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