

# Screen Time and Childhood Obesity: A Commentary on the Evidence Behind Current Guidelines

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Now more than ever, youth are being exposed to media at a young age. It can be expected that an average elementary school student is adept at using a tablet or a smartphone. However, this acquisition of technological prowess is not without its downsides. It has been well-established that the use of technology that requires one to be sedentary is associated with obesity in youth.<sup>1</sup> “Screen time,” a term that describes the number of sedentary hours spent in front of a screen, has been coined to quantify an individual’s usage of technology. Given the ubiquity of technology in modern life, it seems unreasonable to entirely eliminate screen time among youth. Nevertheless, the impact that screen time is having on obesity has become so apparent that national guidelines recommend a limit on the daily amount of screen time in youth.<sup>2,3</sup> This article identifies the pertinent literature supporting the role of limiting screen time in youth in reducing obesity, explores why and how screen time contributes to obesity, and lastly, highlights current guidelines that address this issue.

Evolutionarily, humans have been selected to live active lifestyles in the pursuit of food rather than remain sedentary in front of a screen.<sup>4</sup> As humans have seemingly become more sedentary in the 21st century, one wonders what role this behaviour is playing in the increasing rates of metabolic dysregulation and obesity worldwide.<sup>5</sup> A longitudinal study done at the University of North Carolina that followed 9155 15-year-olds to the age of 21 demonstrated an association between obesity and the amount of screen time.<sup>6</sup> The researchers surveyed the participants’ activity levels, screen time, and weight, and found that weekly hours of screen time independently predicted obesity in early adulthood. In the study, fewer hours of weekly screen time reduced the relative odds of incidence of obesity by over 40% among females and over 20% in males. The study also found that longitudinal physical activity patterns were not predictive of obesity in the cohort.<sup>6</sup> This suggests that with increased sedentary screen time, the effect of exercise on obesity may not be as protective as previously thought. This is particularly concerning for healthcare practitioners who prescribe exercise to patients. Knowing this, it may be more prudent to prescribe a maximum cap of daily screen time, and to encourage frequent breaks during screen time to limit continuous sedentary behaviour.

Given the powerful effect that sedentary screen time has on obesity, the question remains: what is the mechanism behind this relationship? Some suggest that eating while screen-viewing contributes to increased energy intake.<sup>7</sup> According to a review by Robinson et al., some of the effect that screen time has on obesity may be caused by the high-caloric foods that are consumed while watching television, media distracting children from their feelings of satiety, and media advertising sugary and processed foods to children.<sup>7</sup> In a study done in 2014, 2 to 11-year-olds and 12 to 17-year-olds, respectively, saw an average of 12.8 and 15.2 food and beverage advertisements on television alone daily.<sup>8</sup> Over 90% of the foods marketed through television and other

media platforms are highly processed and unhealthy, according to a report published by the Heart and Stroke Foundation (HSF) in 2017.<sup>9</sup> Importantly, many children are being marketed to through novel forms of media such as applications, websites, and social media. This change is especially disconcerting when one considers that these platforms may appear to younger children as entertainment and not advertising.<sup>9</sup> In response to this growing issue, the HSF has recommended a push for legislation to restrict marketing of food and beverages to children in Canada. The Child Health Protection Act, a bill that has been designed to prohibit the marketing of food and beverages towards children under the age of 13, was put forth in the senate in 2015.<sup>10</sup> In addition to this upcoming legislation, evidence-based guidelines have been created to limit screen time in the interim.

The Canadian Society for Exercise Physiology (CSEP) has released guidelines surrounding activity in a 24-hour day for 5 to 17-year-olds. These guidelines, otherwise known as “Sweat, Step, Sleep, and Sit,” suggest no more than two hours of screen time per day. In addition, the CSEP guidelines recommend 60 minutes of moderate to vigorous exercise daily, unstructured light exercise throughout the day, and 9-11 hours of uninterrupted sleep per night.<sup>2</sup> These guidelines are based on evidence collected from several systematic reviews.<sup>11,12</sup> In one of the systematic reviews, which compiled 235 studies and represented 1,657,064 unique participants, they found that children 5-17 years old who spent more time in front of a screen were more likely to have elevated body mass index (BMI) and higher cardiometabolic risk scores.<sup>12</sup> More specifically, in this meta-analysis, children who were less sedentary, more physically active, and who got more sleep had the most favourable cardiometabolic profile. Moving forward, replacing screen time with physical activity to optimize child health is a warranted recommendation.

The American Academy of Pediatrics (AAP) has also released their own guidelines about maximal dose of screen time in children. These guidelines recommend restriction on screen time for children between 2 and 5 years of age to no more than one hour per day.<sup>3</sup> The rationale for this restriction is to allow children more time to engage in healthier activities that are critical to their development, and to establish screen-viewing habits that are conducive to a lower risk of obesity later in life.<sup>3</sup> These same guidelines also suggest that screen time in children up to 18 months of age should be avoided altogether unless it is being used for video calling, because non-social screen time is hypothesized to be detrimental to neurodevelopment.<sup>3</sup>

Screen time has become commonplace in day-to-day life, however it appears that its normalcy has gone unchecked. In particular, youth are vulnerable to becoming obese due to the large amount of time they spend in front of screens, as well as the marketing of poorer food choices through various forms of media.<sup>9</sup> Organizations of healthcare practitioners are beginning to recognize and caution against too much screen time in youth, as evidenced by the CSEP and AAP guidelines. Considering the data summarized above and the harm that screen time presents, it will be vital for healthcare practitioners to be

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prepared to advocate for healthier ways of using technology. Physician advocacy groups and research studies must continue to monitor the impact of technology on youth in order to minimize its harms as our world enters an era of technological ubiquity.

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