International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

The Surge of Screen Time: Its Profound Effect on Paediatric Oral Hygiene

Richa Wadhawan[1], Rashmi Kumari[2], Divya Balani[3], Kamal Kant Vishvakarma[4], Pragya Singh Yadav[5], Divya Baghel[6]

1. Professor, Oral Medicine, Diagnosis & Radiology, PDM Dental College & Research Institute, Bahadurgarh, Haryana
2. Senior Lecturer, Paediatric And Preventive Dentistry, Awadh Dental College & Hospital, Jamshedpur, Jharkhand
3. Dental Surgeon, Dr. Rajesh Ramdasji Kambe Dental College, Akola. Maharashtra
4. Dental Surgeon, Vishvakarma Dental Clinic, Jalaun, Uttar Paradesh
5. Dental Surgeon, Institute Of Dental Education And Advance Studies, Gwalior, Madhya Pradesh
6. Dental Surgeon, Institute Of Dental Education And Advance Studies, Gwalior, Madhya Pradesh

Submitted: 10-09-2024 Accepted: 20-09-2024

ABSTRACT: The alarming increase in screen time among children presents significant health risks, especially concerning oral hygiene. As children spend more time on screens for entertainment, education, and social interaction, research reveals worrying trends: an increase in sugary snacks, decreased physical activity, and escalating dental issues. These behaviors not only contribute to cavities and misaligned teeth but also lead to dental anxiety and difficulties during dental visits. This review emphasizes the important link between excessive screen time and adverse oral health outcomes. It highlights the crucial role that parents, dentists, paediatric dentists, and other healthcare providers have in monitoring screen use and encouraging healthier habits. Embracing a balanced approach to media consumption can promote better oral hygiene practices and protect children's overall well-being. To address these challenges, it is vital to implement strategies that limit screen time while reinforcing positive dental behaviors. Focusing on active engagement rather than passive screen use, scheduling screen-free meals and activities, and encouraging open conversations about dental health can empower families to make informed decisions. As the complexities of the digital age evolve, it is crucial to address the hidden costs of increased screen time, ensuring a brighter, healthier future for children. Immediate action must be taken to safeguard their health and well-being.

Keywords: Screen time, Paediatric Oral health, Sugar consumption, Dental caries,Sedentary lifestyle, Behavioral issues, Health risks, Media consumption,Digital devices, Intervention strategies

I. INTRODUCTION:

The rise of advanced multimedia devices like smartphones, tablets, and gaming consoles has dramatically increased screen time among children. Today's electronic media includes various formats—televisions, desktop computers, laptops, e-readers, and consoles such as PlayStation, Xbox, and Nintendo—collectively contributing to this trend.[1] Television viewing often starts at a very young age, typically before children are exposed to these modern technologies (**Figure 1**).[2]

Figure 1:Addiction of children to television and mobile phones

Courtesy:https://ikuretechsoft.com/who-advice-on-screen-time-for-children-under-five/

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

The American Academy of Pediatrics (AAP) recommends limiting children's television consumption to no more than two hours per day.[3] Recent studies reveal a striking trend over 35% of teenagers now watch Television for three hours or more each day, and this pattern of escalating screen time is becoming increasingly common worldwide.[4]

Alarmingly, children are spending up to eight hours daily on social media alone, not counting their sleep, highlighting a pressing need to address the profound impact of excessive screen exposure on their health and development (**Figure 2**).[5]

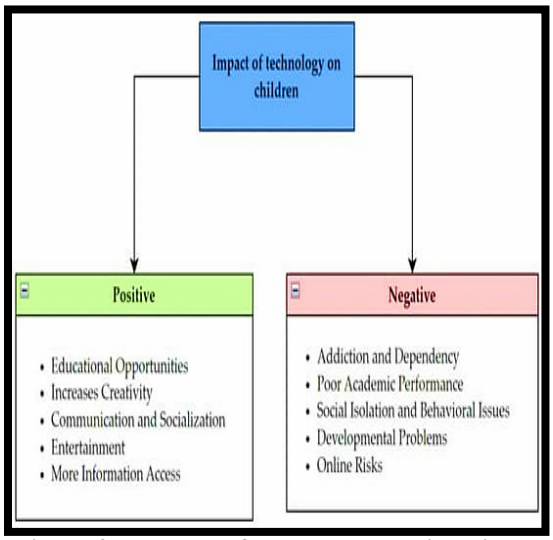


Figure 2: Impacts of technology use in children

Courtesy: Panjeti-Madan VN, Ranganathan P. Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. Multimodal Technologies and Interaction. 2023; 7(5):52.

This surge in screen time may stem from electronic devices becoming essential tools for parenting over the last decade, as they are some of the most accessible and user-friendly media available at home.[6] Notably, 78% of caregivers report no concerns regarding their children's increased use of electronic devices, and approximately 41% of parents provide tablets or smartphones during social gatherings to keep their children entertained.[7] In India, which has one of the youngest populations globally, many young adolescents are gaining access to various media forms at increasingly early ages, with preschoolers frequently engaged in electronic games or videos on tablets and smartphones.[8] Six out of ten children aged nine to seventeen spend over three hours daily on social media.[9] The AAP advises paediatricians' to counsel parents of children over the age of two to limit their total entertainment media usage to a maximum of two hours of quality programming each day (**Figure 3**).[10]

Figure 3: Parents taking initiatives to refrain children from gadgets

Courtesy: https://www.bbc.com/news/health-48021224

Despite the rising prevalence of screen devices in daily life, scientific research on their usage related to demographics and health remains limited.[11] The surge in screen time among children poses urgent challenges to oral health, with mounting evidence linking excessive media use to detrimental behaviors like poor dietary choices and inadequate oral hygiene (**Figure 4**).[12]

Figure 4: Impact of screen time on children's health

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

Courtesy: https://www.fix.com/blog/kids-and-screen-time/

Furthermore, this lifestyle fosters heightened dental anxiety, turning dental visits into distressing experiences rather than opportunities for care.[13] The sedentary habits associated with prolonged screen use don't just affect physical well-being—they also create a cascade of health concerns that can indirectly harm oral health. It's imperative for parents, caregivers, and healthcare providers to take a proactive stance in managing children's screen time.[14] The impact of excessive screen exposure can lead to dental anxiety and behavioral challenges, making it vital for parents to prioritize limits on screen time. However, this presents a daunting challenge, especially for those juggling work and family commitments. As screen time continues to escalate in paediatric populations, the implications for oral health grow increasingly critical.This review critically examines the multifaceted impact of increased screen time on children's oral health, highlighting how it influences behavioral changes and dietary habits.[15] It emphasizes the need for targeted interventions to enhance children's overall health in our digital world. Strategies are discussed to mitigate the negative effects of screen time, including establishing healthy routines, setting screen time limits, and promoting oral health education. Overall, the review underscores the importance of balancing technology use with healthy habits to ensure children thrive both online and offline.[16]

II. DISCUSSION:

Technology and media use among infants and toddlers is rapidly increasing.in recent decades, raising concerns among parents, educators, and health professionals. Children are utilising screens for a longer duration than ever before owing to the widespread availability of smartphones, tablets, and other digital devices. While technology offers educational benefits and entertainment, its effects on pediatric oral hygiene warrant closer scrutiny.[17] A child's average daily screen time increases greatly with age. Children aged 0 to 8 use screen media for an average of two and a half hours per day.[18] Wartella's national survey found that the relationship between media-centric parenting and children's screen time is directly proportional. Media-centric parenting is a parenting style in which electronic devices, such as smartphones, tablets, computers, and televisions, are used extensively throughout the child's day. Media-moderate parenting seeks to balance a child's use of technology with other activities by limiting screen time and monitoring the content they consume. Alternatively, media-light parenting reduces a child's exposure to electronic media. It establishes boundaries and rules for media use, encouraging outdoor play, reading, and creative play. Younger children's exposure to media can have negative effects on their health and development, including decreased focus, sleep, physical activity, language development, socio-emotional health, and behavioral issues. Screen time for children correlates with their development (**Figure 5, Table 1**).[19]

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

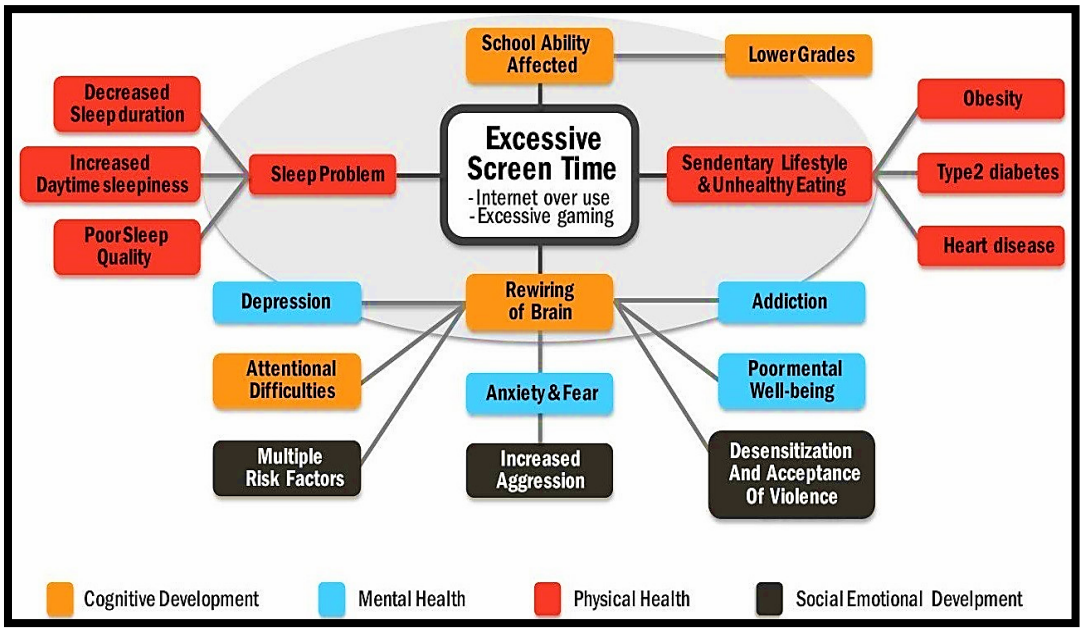


Figure 5: Impact of excessive screen time on children's development

Courtesy- https://samples.freshessays.com/effects-of-excessive-screen-time-on-children.html

Development Domain	Age (Years)	Impact	Technology Type	Study Outcome
Cognitive	1.25	Positive	Television, smart phones, tablets, and computers	Infants obtain new abilities and information
Cognitive, Physical	1–3	Positive	Smart phones, tablets	Young kids acquire skills to handle touch screen technologies
Cognitive, language	0.5–1.2	Negative	TV, video games	Affect cognitive and language development
Language	0.1–5.5	Negative	TV, mobile phones, DVD, and computers	Affect the child's language development
	0.5–2	Positive	Video Chats on mobile devices.	Enhancing communication skills.
Physical	2–6	Negative	Television	Obesity in preschool aged children due to inactive/sedentary activities.
	1–7	Negative	Television	Impacts the initiation and duration of sleep from early childhood to late childhood.
	0–2	Negative	TV, and other mobile devices.	Excessive screen time causes emotionaldysregulation problems.
	1.25–3	Negative	Mobiles, tablets,	Emotional and behavioral

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

Socio-emotional development			computers, and gaming tools.	problems.
	2–3	Negative	Television	Impacts emotional dysregulation and behavioral issues.

Table 1: Impact of media usage on development domains of children

Courtesy: Panjeti-Madan VN, Ranganathan P. Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. Multimodal Technologies and Interaction. 2023; 7(5):52.

One of the most immediate impacts of increased screen time is the disruption of daily routines which could often lead to the neglect of essential self-care practices, including oral hygiene. Engaging content from video games, social media, or streaming services can lead children to skip tooth brushing or overlook their dental care altogether.[20] When distracted, they may fail to recognize the significance of maintaining their oral health, resulting in increased plaque accumulation and a higher likelihood of dental caries and other oral health problems. Additionally, the media content children consume can influence their dietary choices. Many children encounter advertisements for sugary snacks and drinks during their screen time, affecting their cravings and eating habits. Paediatric patients glued to screens for extended periods are more likely to snack on sugary foods, which can lead to cavities and other dental issues (**Figure 6**).[21]

Figure 6: Snacking while screen time
Courtesy:
https://www.nichd.nih.gov/newsroom/news/083121-COVID-19-impact

The sedentary lifestyle associated with prolonged screen use exacerbates the issue further. Regular physical activity is crucial for overall health, including oral health, as it can enhance metabolism and potentially influence eating behaviors.[22] It has been documented in literature that overexposure to screens has been linked to increased consumption of sugary foods and beverages, which is considerably harmful to children's oral health. This dietary trend, combined with a lack of oral care, poses a significant risk to dental health. Additionally, children who spend too much time on screens tend to be less active, leading to weight gain and associated health issues.[23]

The established connection between obesity and oral health means that overweight children face a heightened risk of periodontal disease and other dental problems. Consequently, the impacts of increased screen time extend beyond dental neglect, intertwining with broader health concerns. Furthermore, the immersive nature of digital content can exacerbate anxiety, stress, and sleep disturbances, all of which further compromise oral health. The detrimental impact of bruxism, or teeth grinding, on dental health, can be attributed to anxiety and stress.[24] Poor mental health can create a cycle where neglecting oral care heightens stress and anxiety, further worsening dental issues (**Figure 7**).[25]

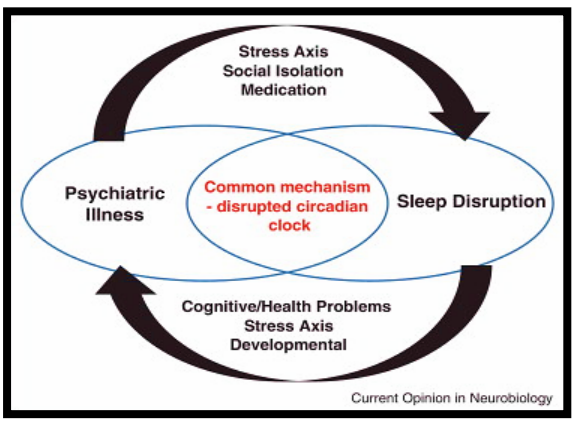


Figure 7: Poor mental health and disrupted circadaian clock

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

Courtesy: Jagannath A, Peirson SN, Foster RG. Sleep and circadian rhythm disruption in neuropsychiatric illness. Curr Opin Neurobiol. 2013; 23(5):888-94.

Alhan S et al observed an interlinked relationship between screen usage and sleep disturbances.[26] Mascheroni G et al found that children with higher screen time and less sleep exhibited more behavioral problems.[27] Rohan R et al indicated that increased screen use among children and adolescents correlates with a higher risk of being overweight or obese.[28] Furthermore, research shows that children who spend excessive time on screens report poorer psychological well-being compared to their peers who engage less with screens.[29] Children consuming screen media for more than two hours daily are more likely to exhibit symptoms of depressive disorders, self-harm, and suicidal thoughts (**Figure 8**), even after accounting for demographic factors.[30]

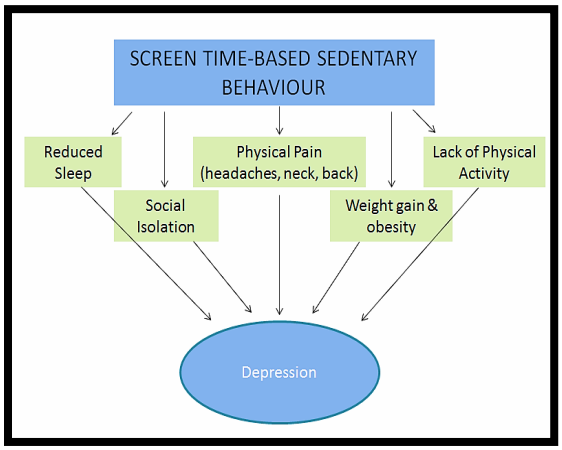


Figure 8: Association between screen time sedentary behavior and depression
Courtesy: https://theosteopathicclinic.com.au/is-your-screen-time-becoming-to-much/

Stronger correlations have been found between the use of digital media—such as social media, messaging, gaming, and web videos—and anxiety disorders than with general screen time.[31] The sedentary lifestyle associated with increased screen time has raised alarms among parents, healthcare providers, educators, and researchers.[32] Numerous studies highlight the adverse effects of children's engagement in non-educational social media activities, linking it to poor dietary choices, cognitive difficulties, aggression, and disrupted sleep patterns.[33] Excessive screen time during childhood is also associated with behavioral problems, increased irritability, heightened anxiety, reduced physical fitness, and lower self-esteem.[34] Research indicates a significant correlation between electronic media use and anxiety or behavioral challenges in younger children, particularly those aged 3 to 6.[35] Social media significantly influences children's self-image and behavior, often promoting unrealistic standards of beauty and health. This influence can cause anxiety about appearance, leading to compulsive behaviors that prioritize social engagement over personal care, including oral hygiene. Parents may notice that children become more focused on their online identities than on essential self-care routines.[36] To counter these negative effects, it is vital for parents, educators, and healthcare professionals to work together in fostering healthy habits around screen time and oral hygiene. Establishing clear limits on daily screen use is crucial.[37] The AAP recommends consistent restrictions on recreational screen time, encouraging children to participate in a variety of activities that support their physical, social, and cognitive development. Parents can model healthy behaviors by demonstrating their own commitment to oral hygiene and reducing their screen time during family interactions.[38] Utilizing technology in these educational efforts, such as interactive apps focused on dental hygiene, can appeal to children already drawn to screens.[39] The increase in screen time presents both challenges and opportunities regarding paediatric oral hygiene. While digital distractions can lead to neglect of dental care and unhealthy dietary choices, proactive measures can help mitigate these risks.[40] By setting clear boundaries on screen time, implementing structured routines, and promoting educational initiatives, caregivers can cultivate a culture of health that prioritizes both physical and oral well-being.[41] Excessive screen time can significantly hinder children's development, resulting in decreased imagination and creativity.[42] Additionally, prolonged screen use disrupts sleep patterns, causing restlessness and fatigue. This fixation on digital devices can heighten feelings of anxiety and aggression, affecting their ability to concentrate and engage with their environment.[43] Research has shown that excessive screen time is linked to cognitive delays in young children, interfering with vital activities for brain development, such as physical play, social interaction, and hands-on learning experiences.[44] This disruption can impact attention span, problem-solving skills, and language development.[45]

A sedentary lifestyle often results from extended screen time, leading to physical health problems like obesity, poor posture, and vision issues.[46] Encouraging outdoor activities and

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

physical play can help counteract the negative effects of excessive screen use on overall health. There is increasing evidence connecting excessive screen time to mental health challenges such as anxiety, depression, and behavioral issues. High exposure to violent or distressing content can negatively affect children's emotional well-being and psychological development.[47] It is crucial for parents to monitor and limit screen time to mitigate the risk of mental health problems and promote positive coping strategies.[48] Moreover, children with severe anxiety and behavioral management issues during dental visits have been found to have higher exposure to social media and digital content.[49] The quality and quantity of media exposure can evoke strong emotional responses, influencing children's psychological behavior (**Figure 9**).[50]

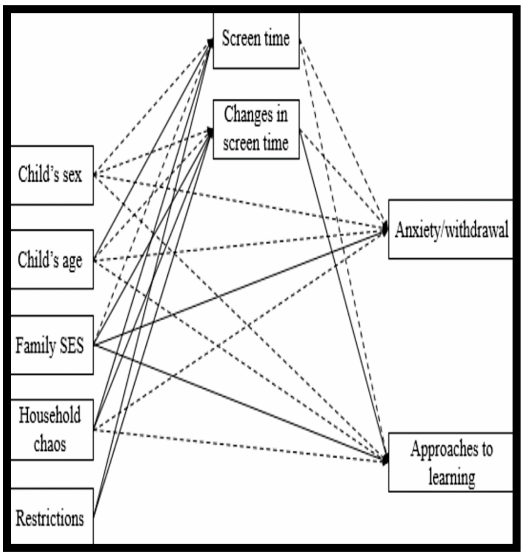


Figure 9: Anxiety and media consumption

Courtesy: Ouyang X, Zhang X, Zhang Q, et al. Preschool children's screen time during the COVID-19 pandemic: associations with family characteristics and children's anxiety/withdrawal and approaches to learning. Curr Psychol. 2024; 43:18659-73.

Content that glorifies violence can lead to aggression, behavioral abnormalities, and anxiety disorders, which can further contribute to dental anxiety and behavior management challenges.

Evidence suggests that screen time may increase the risk of negative psychological effects, including depression, as it replaces opportunities for outdoor activities, sleep, social interactions, and learning experiences that promote healthy development.[51] The fast-paced audiovisual stimuli from screens can impair self-control and elevate excitement levels, potentially leading to apathy and aggression.[52] Research shows that children who spend two or more hours a day on screens, or three hours daily, are more likely to experience behavioral problems and demonstrate less effective vocabulary acquisition than those who use screens for less than an hour a day. These findings underscore the importance of monitoring and regulating screen time for young children to mitigate potential adverse effects on their development and behavior.[53]

Solutions and Recommendations: Screens have become a standard fixture in households and are increasingly integrated into educational systems; particularly following the widespread reliance on online interactions during the COVID-19 pandemic.[54] Incessant exposure to technology can have detrimental effects on young children, including delayed language development, poor social skills, and behavioral issues. Additionally, it might result to being obese, insufficient sleep, and addiction. Enhancing children's developmental domains is crucial for supporting them in their growing years to be successful, happy, and healthy adults.[55] Children need the resources and assistance of their parents, teachers, and other caregivers in order to grow in all facets of their lives. Thus, parents should strive to strike a balance between using technology as a tool for learning and entertainment along with focusing on other forms of education and playtime for their children (**Figure 10**).[56] It is critical to monitor children's electronic usage and ensure that they consume content that is suitable for their age with caution (**Figure 11**). Therefore, AAP and WHO recommended screen time for children according to their ages while the Centers for Disease Control and Prevention (CDC) and other organizations recommend effective strategies, such as removing televisions from bedrooms and implementing parental controls, to minimize exposure (**Table 2**).[57] Parents should guide their children's television viewing to maximize its educational benefits. They may need to be encouraged to steer their children toward educational programming and/or limit overall viewing time if initial television exposure proves detrimental.[58]

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

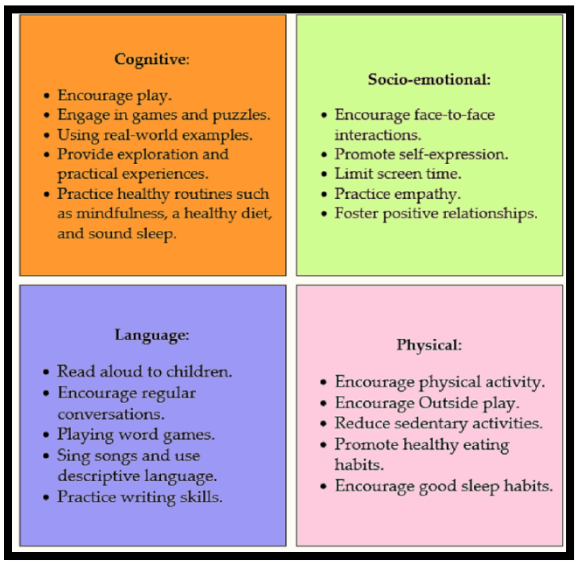


Figure 10: Encourage children in educational activities

Courtesy: Panjeti-Madan VN, Ranganathan P. Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. Multimodal Technologies and Interaction. 2023; 7(5):52.

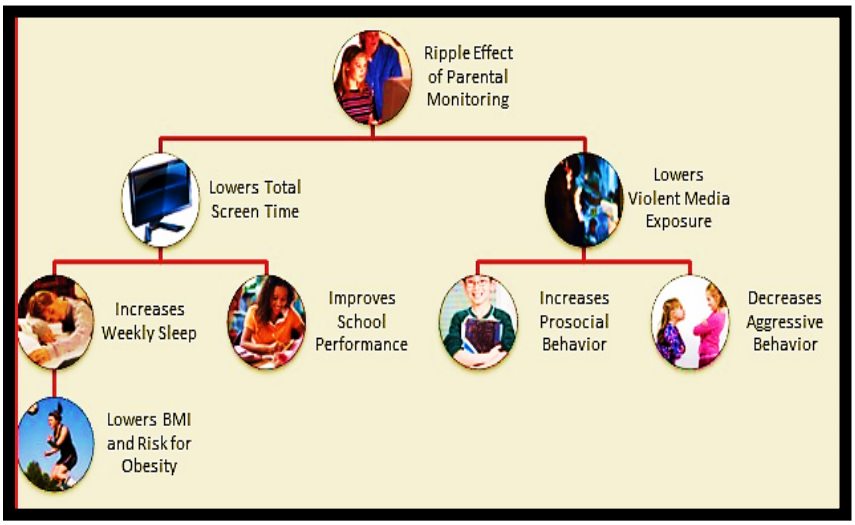


Figure 11: Effect of decreased screen time and media exposure

Courtesy: https://integratedlistening.com.au/blog/2014/04/15/limiting-childrens-screen-time-ripple-effect/

	Age of child	Recommendations
AAP	<18 months	No screen media except video chats
	18–24 months	High-quality programming content and co-viewing with a parent
	2–5 years	One hour per day and high-quality programming content
	6 years and above	Limited media screen time and limitations on viewing different media types

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

	Infants under 1 year	0 min
WHO	1–2 years	No more than 60 min
	3–4 years	No more than 60 min
	3-7 years	< 1 hour
CDC	7-12 years	1 hour
	12-15 years	1.5 hour
	16 years and above	2 hours

Table 2– Recommendations for reducing screen time for children

Hawkey E. Media use in childhood: evidence-based recommendations for caregivers. Washington, DC: American Psychological Association; 2019.

The AAP introduced the concept of a "healthy media diet," promoting moderation in screen time and a daily allocation of more educational and less harmful content, tailored to the viewer's age (**Figure 12**).[59] Research conducted reveal connections between children's health and sleep quality and their diet. literature reveals that, children who spend more time in front of screens eat more high-calorie, low-nutrient foods and fewer fruits and vegetables. A healthy, well-balanced diet can improve general health and wellbeing, which could decrease the desire for prolonged use of screens (**Figure 13**).[60] Encourage children to consume a variety of fruits and vegetables, which contain vitamins, minerals, and antioxidants. In addition to lowering the risk of obesity and other health issues, these nutrients can support brain function and potentially reduce screen time.[61] Lean protein foods like chicken, fish, beans, and tofu are essential for children's growth and development, helping them feel full and satisfied. Consuming nuts, seeds, avocados, and oily fish can improve brain function and reduce inflammation, potentially reducing the desire for excessive screen time. Fiber-rich foods like whole grain bread, brown rice, and muesli can help regulate blood sugar levels, reduce cravings for unhealthy snacks, and promote calm, relaxation and enhance sleep quality. Magnesium-rich foods including leafy green vegetables, nuts, seeds, and whole grains can enhance relaxation and sleep quality in children. Dairy products like milk, cheese, and yoghurt are high in calcium and can be incorporated into the diet to promote healthy bones and teeth, as well as improved sleep. Turkey, chicken, eggs, cheese, and nuts are high in tryptophan and can be included in a diet to improve sleep.[62] Encourage children to drink plenty of water throughout the day to keep them hydrated and alert. Dehydration can cause fatigue and decreased concentration, increasing the desire for screen time. To limit screen time and improve children's overall well-being and health, it's critical to support physical activity, social interaction, and other healthy lifestyle practices in addition to healthy eating habits. An ideal sleep recommendation for children as suggested by American Academy of sleep medicine is shown in **Table 3**.[63]

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

Age Group	Age	Recommended Sleep (Hours/Day)
Infants	Younger than 12 months	12 to 16 h
Toddlers	1 to 3 years	11 to 14 h
Preschoolers	3 to 5 years	10 to 13 h
Children	6 to 12 years	9 to 12 h
Teenagers	13 to 18 years	8 to 10 h

Table 3- American Academy of Sleep Medicine recommended total amount of sleep for different age groups of children

Courtesy: Paruthi S, Brooks LJ, D'Ambrosio C, Hall WA, Kotagal S, Lloyd RM, Malow BA, Maski K, Nichols C, Quan SF, et al. Recommended amount of sleep for pediatric populations: A consensus statement of the American Academy of Sleep Medicine. J Clin Sleep Med. 2016; 12:785-786.

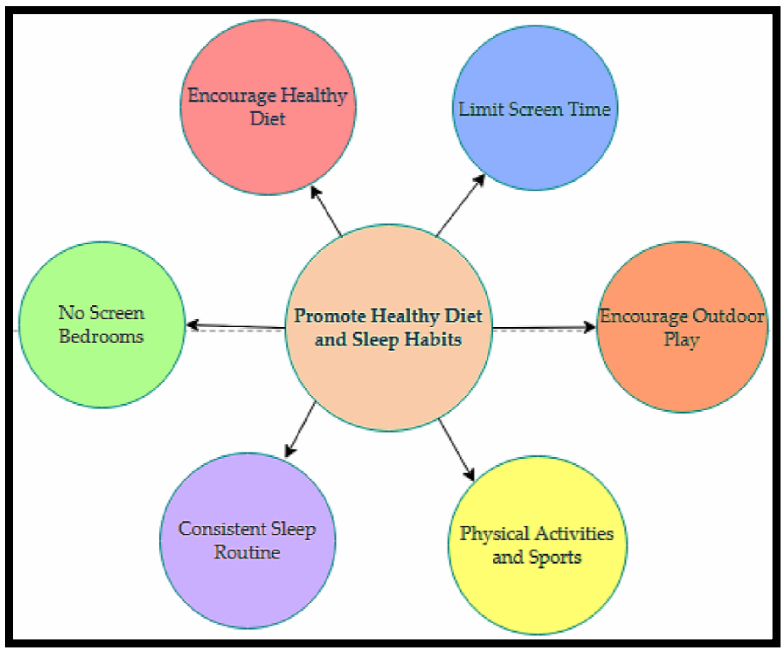


Figure 12: Recommendations for parents to promote healthy diet and sleep habits in children.

Courtesy: Panjeti-Madan VN, Ranganathan P. Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. Multimodal Technologies and Interaction. 2023; 7(5):52.

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

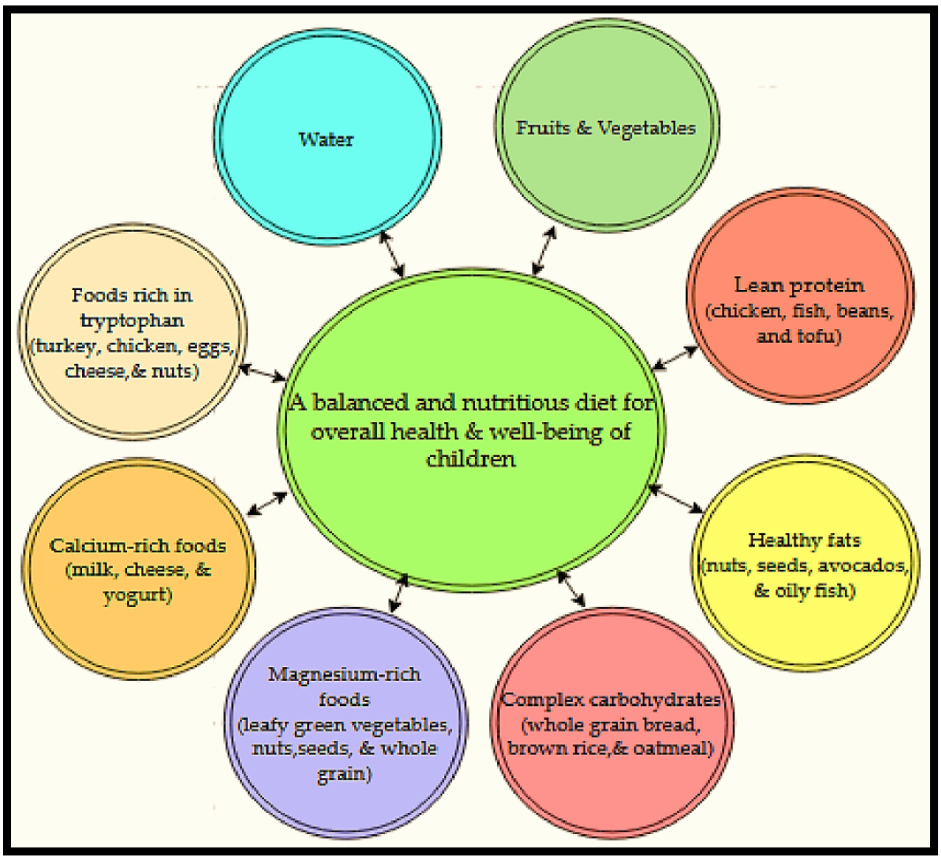


Figure 13: Food recommendations to promote a healthy diet and overall health in children

Courtesy: Panjeti-Madan VN, Ranganathan P. Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. Multimodal Technologies and Interaction. 2023; 7(5):52.

A survey in India found that most parents believe the minimum age for creating a social media account should be raised from 13 to 15 years.[64] Additionally, lawmakers should ensure that social media platforms are regulated by legislation that includes safeguards to prevent account creation by minors under 15, with or without parental consent. Children on social networking sites face risks such as harmful viral trends, online predators, identity theft, privacy breaches, cyberbullying, and blackmail.[65] Reports of attempted account theft are higher among Indian children compared to their peers in other countries.[66] Parents also express concern that their children may unintentionally disclose private information to strangers.[67]A significant worry regarding controlled media access is the prevalence of online gaming addiction, which can promote violence and negatively affect development.[68] **Figure 14** shows how parents and other adults can prevent the risks of excessive screen time and cybersecurity issues, protect children's health, and ensure that kids use technology responsibly by adhering to these safety guidelines.[69]

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

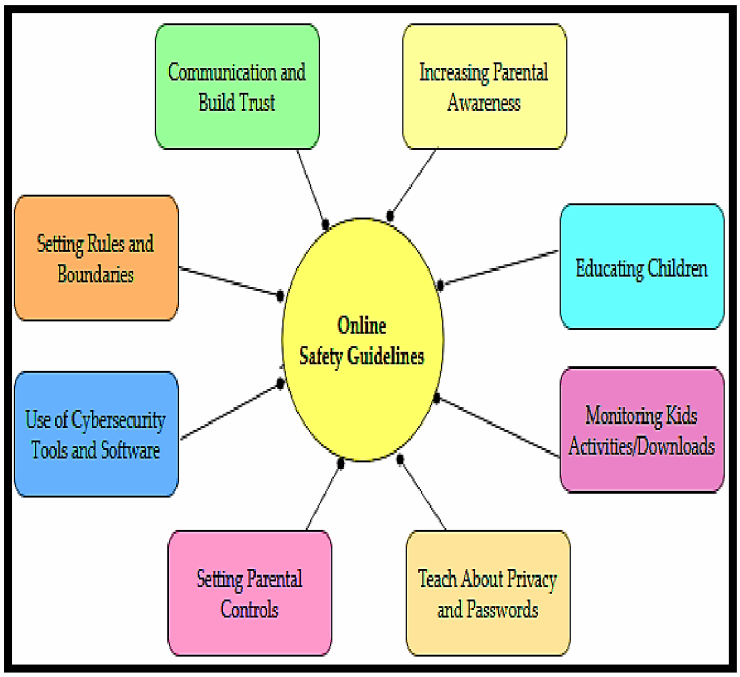


Figure 14: Online safety guidelines for children

Courtesy: Panjeti-Madan VN, Ranganathan P. Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. Multimodal Technologies and Interaction. 2023; 7(5):52.

The COVID-19 pandemic resulted in school closures, lockdowns, and social distancing measures, significantly increasing screen time among children of various ages.[70] During lockdowns, the reliance on technology for educational, social, and recreational purposes intensified. Approximately 90% of children were distanced from their schools, making technology essential for engagement and access to educational materials and play.[71] Following the initial shutdown in Germany, research by Schmidt et al. in 2020 indicated decreased physical activity and increased recreational screen time among children aged 4 to 17.[72] Similarly, Medrano et al. in 2020 found that COVID-19 confinement reduced physical activity and increased sedentary behaviors among Spanish children.[73] Even prior to the pandemic, over 80% of children were sedentary, with more than 60% exceeding recommended screen time limits.[74] These findings enhance our understanding of children's dental anxiety and behavior, supporting the development of effective counseling strategies that consider current screen use.[75]

Parental Control Approaches for Minimising Their Child's Screen Time-

- Choose appropriate media content for the child to view.
- Encourage co-viewing and content discussions with the child.
- Teach children viewing skills, including interpreting program content and observing details.
- Limit a child's media usage, including time, content, and type.
- Refrain from using media as a coping method.
- Encourage digital detox and non-screen activities.
- Make children's bedrooms free of TVs and other electronic devices.
- A break should be taken every 20 minutes to look at something 20 feet away for 20 seconds, in accordance with the 20-20-20 rule. This will reduce digital visual strain and protect the eyes from a variety of vision disorders.
- Parents should set reasonable screen time limits for themselves.
- To promote children's overall health and development, parents should balance screen time with outdoor play, skill development, sleep, social interaction, studies, and physical activity.

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

- Parents should be educated on the potential negative effects of excessive media and screen use.[76]

Role of paediatricians:

- Encourage parents to enquire about family media usage time, child media use behaviours, and media consumption locations.
- Assisting families in creating a Family Media Use Plan through websites like www.healthychildren.org/MediaUsePlan.
- Educating parents on their children's early brain development and the significance of cognitive, language, and socio-emotional skill development
- Advising parents to discourage their children from using media screens except for video chats under the age of 18 months, and to not allow their children to use media independently.
- Encourage parents to choose high-quality program content for their children.
- Recommending no screen time during meals or before bedtime.[77]

Role of families

- Digital media use is not advised for children younger than 24 month
- Assist children in understanding and learning from their viewing experiences
- Turn off televisions and other digital devices when they are not in use.
- Avoid calming a child through social media.
- Keep track of your child's media use and habits.
- Enable "do not disturb" mode during playtime, mealtimes, and bedtime.[78]

Table 4 lists some suggestions for teachers, parents, the community, and children to reduce children's screen time. Dentists, particularly paediatric dentists, have a crucial role in addressing the challenges posed by increased screen time. They can educate children and parents about its negative impacts on oral health, such as poor dietary choices and inadequate hygiene. During dental check-ups, integrating discussions about screen time allows for tailored advice on limits, healthy eating, and proper brushing techniques.[79]Establishing structured routines that promote balanced media consumption, along with regular dental visits and education on effective oral hygiene, can significantly foster healthier habits. By advocating for a comprehensive approach to screen time, paediatric dentists can protect children's oral health while enabling them to enjoy the educational and social benefits of technology.[80]

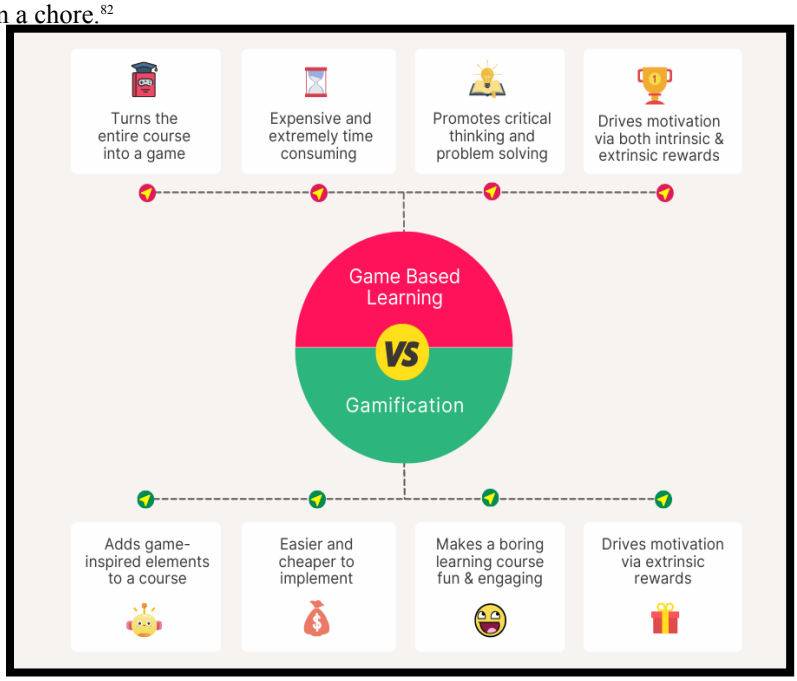
International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

Teachers	Parents	Community	Kids
Encourage outdoor physical activity	Enforce screen time limits	Plan active community events	Take frequent activity breaks
Plan interactive, screen-free activities	Offer alternative activities	Provide non-screen programs.	Limit daily screen time
Limit screen use in class	Encourage physical activity	Educate kids to reduce screen time.	Choose non-screen activities
Provide non-screen resources	Model healthy screen habits	Partner with schools.	Avoid screens before bed.
Assign screen-free homework	Use parental controls.	Organize parental awareness programs	Set and track goals

Table 4- Alternatives to reduce screen time

Courtesy: Panjeti-Madan VN, Ranganathan P. Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. Multimodal Technologies and Interaction. 2023; 7(5):52.

Creating a structured daily routine can help children prioritize oral health amidst screen-related distractions. Incorporating brushing and flossing into established routines—such as before bed or after meals—can make oral hygiene a non-negotiable part of their day. [81] Visual aids like charts or checklists can motivate children to take responsibility for their dental care. Gamifying the process with rewards (**Figure 15**) can make brushing feel more engaging, turning it into a fun activity rather than a chore.[82]



International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 157-173 www.ijdmsrjournal.com
ISSN: 2582-6018

Figure 15: Gamifying the process with rewards
Courtesy:https://blog.xoxoday.com/gift/gamified-learning/

Educational initiatives targeting both parents and children can further enhance awareness about the importance of oral hygiene and the risks linked to excessive screen time. Schools and community organizations can play a key role in promoting oral health education, helping children understand the connection between their digital habits and overall well-being (**Figure 16**).[83]

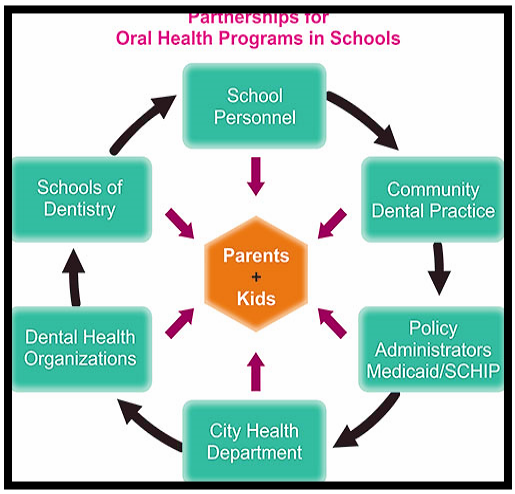


Figure 16: Schools and community organizations can play a key role in promoting oral health education
Courtesy:https://www.jaypeedigital.com/book/9789350252161/chapter/ch21

Dentists can also advocate for physical activity as a counterbalance to screen use, create welcoming environments in their practices to reduce anxiety, and recommend educational apps that promote oral hygiene.[73]Collaborating with parents is vital; by empowering families with resources and modeling healthy habits, dentists can help cultivate a culture of health that balances technology use with essential oral care, ultimately leading to better health outcomes for children.[84]Fostering awareness and developing tailored interventions will empower healthcare providers to ensure that children's oral health receives the attention it deserves alongside their engagement with technology. The path forward demands proactive measures and a commitment to navigating the intricate relationship between screen time and oral health outcomes. Together, we can foster a healthier future for our children, ensuring their smiles shine brightly in a digital age.[85]

Conclusion: The rise in screen time for children has serious effects on their oral health. Spending too much time on screens is often linked to poor dental care and a sedentary lifestyle. It's important for parents and caregivers to keep an eye on how much time children spend on devices and to encourage healthy habits. This includes regular dental check-ups, good oral hygiene practices such as brushing and flossing routines, and eating balanced meals. By being mindful of screen use, dentists and pediatric dentists can help reduce the negative impacts on kids' oral health and support their overall well-being.

Financial support and sponsorship Nil
Conflicts of interest There are no conflicts of interest

REFERENCES:

[1]. Zimmerman FJ, Christakis DA. Children's television viewing and cognitive outcomes-a longitudinal analysis of national data. Arch Pediatr Adolesc Med. 2005; 159(7):619–25.
[2]. Ramirez ER, Norman GJ, Rosenberg DE, Kerr J, Saelens BE, Durant N. Adolescent screen time and rules to limit screen time in the home. J Adolesc Health. 2011; 48(4):379–85.
[3]. Alaki SM, Al-Raddadi RA, Sabbagh HJ. Children's electronic screen time exposure and its relationship to dental anxiety and behavior. J Taibah Univ Med Sci. 2023; 18(4):778–86.
[4]. Carson V, Hunter S, Kuzik N, Gray CE, Poitras VJ, Chaput JP, et al. Systematic review of sedentary behaviour and health indicators in school-aged children and youth: an update. Appl PhysiolNutrMetab. 2016; 41 (6 Suppl 3):S240-65.
[5]. Jamali Z, Vatandoost M, Erfanparast L, Aminabadi NA, Shirazi S. The relationship between children's media habits and their anxiety and behaviour during dental treatment. Acta Odontol Scand. 2018; 76(3):161–8.
[6]. Mobarek NH, Khalil AM, Talaat DM. Exposure to Electronic Screensand Children's Anxiety and Behavior During Dental Treatment. J Dent Child (Chic). 2019; 86(3):139–44.
[7]. Eirich R, Mcarthur BA, Anhorn C, Mcguinness C, Christakis DA, Madigan S. Association of Screen Time with

Internalizing and Externalizing Behavior Problems in Children 12 Years or
[8]. Younger: A Systematic Review and Meta-analysis. JAMA Psychiatry. 2022; 79(5):393–405.
[9]. Mcarthur BA, Tough S, Madigan S. Screen time and developmentaland behavioral outcomes for preschool children. Pediatr Res. 2022; 91(6):1616–21.
[10]. Hinkley T, Carson V, Hesketh KD, et al. The role of parental involvement in children's screen time: A systematic review. J Sci Med Sport. 2018; 21(2): 148-154.
[11]. Domingues-Montanari S. A literature review of the evidence for the impact of screen viewing on the developing brain. Children. 2017; 4(4): 24.
[12]. Pagani LS, Fitzpatrick C, Barnett TA, et al. The influence of family and neighborhood characteristics on children's screen time. Health Place. 2017; 44: 102-109.
[13]. Vandenbosch L, Peter J. The relationship between adolescents' exposure to social media and body image: A review of the literature. Adolesc Health Med Ther. 2016; 7: 87-97.
[14]. Lissak G. Adverse physiological and psychological effects of screen time on children and adolescents: A systematic review. Surg Neurol Int. 2018; 9: 1-9.
[15]. Plowman L, Stevenson O. Embedding technologies in early years education: A qualitative study. Technol Educ. 2012; 24(4): 1-22.
[16]. Hinkley T, Carson V, Hesketh KD, et al. Health-related behaviors and environmental factors associated with overweight in children. BMC Public Health. 2018; 18(1): 1163.
[17]. Stiglic N, Viner RM. Effects of screen time on children and adolescents: A systematic review. BMJ Open. 2019; 9(1): e023191.
[18]. Panjeti-Madan VN, Ranganathan P. Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. Multimodal Technologies and Interaction. 2023; 7(5):52.
[19]. Wartella E, Rideout V, Lauricella A, Connell S. Revised parenting in the age of digital technology: A national survey. Evanston, IL: Center on Media and Human Development, School of Communication, Northwestern University; 2014.
[20]. Hesketh KD, Barnett L, Hinkley T, et al. The role of parents in children's screen time: A systematic review. Health Educ Behav. 2016; 43(4): 427-439.
[21]. Primack BA, Shensa A, Sidani JE, et al. Social Media Use and Perceived Social Isolation Among Young Adults in the U.S. Am J Prev Med. 2017; 53(1): 1-8.
[22]. Radesky JS, Schaller A, Eisenberg S, et al. Parents' perceptions of child technology use: The role of technology in parenting practices. Child AdolescPsychiatr Clin N Am. 2019; 28(3): 435-452.
[23]. Tandon PS, Zhou C, Loy S, et al. Physical activity, screen time, and sleep in children: The role of parental influence. J Pediatr. 2019; 205: 105-110.
[24]. Hinkley T, McCann J, Teychenne M, et al. Are we getting the message? Parental perceptions of children's physical activity and screen time. Child Care Health Dev. 2016; 42(5): 714-722.
[25]. Lee J, Kim J, Kim S, et al. Relationship between screen time and obesity in children: A systematic review and meta-analysis. Obes Rev. 2021; 22(2): e13038.
[26]. Alhassan S, Kraschnewski JL, Alcaraz JE, et al. The role of parents in children's physical activity: A review of the literature. J Phys Act Health. 2018; 15(8): 642-655.
[27]. Mascheroni G, Ólafsson K. Are the kids all right? The role of parents in children's digital media use. Digital Economy. 2017; 16(1): 12-19.
[28]. Rohan R, Rohan A. Digital media and mental health: The role of parental supervision. J Child Health Care. 2019; 23(2): 223-233.
[29]. Nikkelen S, Valkenburg PM, Vossen HGM, et al. The relationship between adolescents' online self-presentation and their psychological well-being: A systematic review. CyberpsycholBehav Soc Netw. 2019; 22(5): 315-322.
[30]. Rosen LD, Lim AF, Carrier LM, et al. An empirical examination of the

educational impact of cell phone usage in the classroom. Educ Psychol. 2019; 54(2): 92-101.
[31]. Kearney PM, McCarthy D. The relationship between electronic media exposure and children's cognitive development: A systematic review. Child Dev. 2021; 92(4): e844-e861.
[32]. American Academy of Pediatrics. Media and young minds. Pediatrics. 2016; 138(5): e20163212.
[33]. Chassiakos YR, Radesky J, Group M. Children and adolescents and digital media: A scientific statement from the American Academy of Pediatrics. Pediatrics. 2016; 138(5): e20162593.
[34]. Calvert SL. Children as consumers: Advertising and marketing. Future Child. 2019; 29(2): 125-148.
[35]. Hinkley T, Teychenne M, Salmon J, et al. The role of the home environment in the physical activity of children: A systematic review. Health Place. 2015; 34: 16-25.
[36]. Gage H, Kacel E, Al Yaqoobi A, et al. The impact of social media on mental health: A literature review. J Soc Work Pract. 2018; 32(1): 85-98.
[37]. van den Eijnden R, Spijkerman R, Vermulst AA, et al. Adolescents' online communication and social media use: The relationship with their emotional well-being. CyberpsycholBehav Soc Netw. 2018; 21(1): 33-39.
[38]. Frohlich D, Mertens R, Müller J. The impact of digital media on children's well-being: A literature review. J Child AdolescPsychiatrNurs. 2020; 33(2): 85-92.
[39]. Rideout V. The Common Sense Census: Media use by kids age zero to eight. San Francisco: Common Sense Media; 2017.
[40]. Twenge JM, Joiner TE. U.S. rates of depression and suicide are rising among teens and young adults. 2018; 7(2): 134-140.
[41]. Przybylski AK, Weinstein N. Digital screen time limits and young children's psychological well-being: Evidence from a population-based study. Child Dev. 2019; 90(1): e56-e66.
[42]. Chou W-YS, Gaysynsky A, Vanderpool R. The role of social media in health promotion: A systematic review. Health Promot Pract. 2019; 20(2): 167-175.
[43]. Hodge S, D'Souza K. The impact of technology on children's cognitive development: A review of the literature. Early Child Dev Care. 2020; 190(8): 1196-1212.
[44]. Veríssimo L, Leite I. Screen time and sleep in children: A systematic review. J Sleep Res. 2020; 29(1): e12933.
[45]. Maras D, Flaherty M, Dempsey S. Screen time and children's psychological well-being: A systematic review. Psychol Bull. 2021; 147(8): 694-726.
[46]. Beauchamp MR, McKenzie K. Physical activity and health in children: A systematic review. Sports Med. 2019; 49(3): 431-452.
[47]. Domingues-Montanari S. Screen watching, cognitive development, and behavioral problems in children: A review of the literature. Front Psychol. 2017; 8: 829.
[48]. Anderson M, Jiang J. Teens, social media & technology 2018. Pew Research Center; 2018.
[49]. Domingues-Montanari S. Can kids take it? A review of the effects of digital media on children. Child Dev. 2019; 90(1):e43-e56.
[50]. Hinkley T, Carson V, et al. The relationship between screen time and sleep in children: A systematic review. Sleep Health. 2020; 6(5):574-581.
[51]. Garmendia ML, et al. Adolescent screen time and behavioral issues: A cross-sectional study. J Adolesc. 2020; 82:175-180.
[52]. Kral TVE, et al. Longitudinal associations of screen time and sleep duration with weight status in children. Obesity. 2021; 29(8):1315-1323.
[53]. Cumming T, et al. Screen time and obesity risk in preschool-aged children: A systematic review. J Nutr Educ Behav. 2022; 54(1):13-22.
[54]. Bessell A, et al. The role of screen time in child health: A cross-sectional study. J Child Health Care. 2023; 27(1):32-45.
[55]. Hesketh KD, et al. Associations between parental screen time and child screen time. BMC Public Health. 2022; 22(1):209.

[56]. Roberts DF, et al. The impact of media use on children: A longitudinal study. J Child Media. 2019; 13(1):26-41.
[57]. Hinkley T, et al. Influence of screen time on children's physical activity: A systematic review. Health Psychol Rev. 2020; 14(2):186-204.
[58]. Wethington E, et al. Parenting in the digital age: Impacts on child development. Child Dev Perspect. 2021; 15(1):5-11.
[59]. Bickham DS, et al. Media use and mental health: A review of the literature. Pediatrics. 2021; 147(1):e2020015050.
[60]. Santos F, et al. The effect of mobile devices on children's sleep: A systematic review. J Sleep Res. 2021; 30(2):e13258.
[61]. Neuman SB, et al. The relationship between digital media and early literacy development: A review of the evidence. Child Dev. 2020; 91(4):e874-e889.
[62]. Wang F, et al. Social media and mental health in children and adolescents: A systematic review. J Adolesc Health. 2022; 71(3):331-342.
[63]. Ribbens J, et al. Children's digital media use: The role of parental mediation. Media Commun. 2020; 8(3):305-317.
[64]. Tandon PS, et al. Screen time and behavior problems in preschool-aged children: A longitudinal study. J Pediatr. 2020; 220:23-29.
[65]. Memon A, et al. The effect of screen time on sleep quality in adolescents: A meta-analysis. Sleep Med Rev. 2023; 63:101633.
[66]. O'Connor TM, et al. Digital media and children's health: Emerging issues and recommendations. Pediatrics. 2023; 151(2):e2022056887.
[67]. D'Ambrosio M, et al. Screen time exposure and behavioral outcomes in children: A longitudinal analysis. J Dev Behav Pediatr. 2021; 42(5):329-335.
[68]. Garde E, et al. The impact of online gaming on children's social skills: A review. J Child Psychol Psychiatry. 2023; 64(5):533-546.
[69]. Panjeti-Madan VN, Ranganathan P. Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. Multimodal Technologies and Interaction. 2023; 7(5):52.
[70]. Littlewood K, et al. The effects of screen time on children's social development: A systematic review. J Child Adolesc Psychiatr Nurs. 2022; 35(4):197-208.
[71]. Çaliskan EF. Parental Views Regarding Distance Learning of Primary School Children and Screen Time during the COVID-19 Pandemic Process. Int. J. Acad. Res. Progress. Educ. Dev. 2022, 18:180–192.
[72]. Twenge JM, et al. Trends in U.S. adolescents' media use, 1976–2016: A longitudinal study. Journal of Adolescent Health. 2018; 62(6): 701-707.
[73]. Hesketh KD, et al. Screen time and behavior problems in preschool-aged children: A longitudinal study. J Pediatr. 2020; 220: 23-29.
[74]. Bickham DS, et al. The impact of media use on children's social skills: A systematic review. Child Development Perspectives. 2021; 15(3): 175-180.
[75]. Chan C, et al. Technology use and well-being in children and adolescents: A meta-analysis. Psychol Bull. 2023; 149(1):72-94.
[76]. Schoeppe S, Rebar AL, Short CE, Alley S, Lippevelde WV, Vandelanotte C. How is adults' screen time behaviour influencing their views on screen time restrictions for children? A cross-sectional study. BMC Public Health. 2016; 16:201.
[77]. Strasburger VC, Fuld, GL, Mulligan DA, Altmann TR, Brown A, Christakis DA., Clarke-Pearson K, Dreyer BP, Falik HL, Nelson KG, et al. Media Education. Pediatrics 2010, 126: 1012–1017.
[78]. Brian Chou O. Deconstructing the 20-20-20 Rule for digital eye strain. Optom. Times 2018; 10:21–23.
[79]. Gupta P, Shah D, Bedi N, Galagali P, Dalwai S, Agrawal S, John JJ, Mahajan V, Meena, P, Mittal HG, et al. Indian Academy of Pediatrics Guidelines on Screen Time and Digital Wellness in Infants, Children and Adolescents. Indian Pediatr. 2022, 59:235–244.

[80]. Livingstone S, et al. Internet safety: A critical review of the evidence. Children & Society. 2020; 34(4): 311-325.
[81]. Wang F, et al. Digital media and children's health: A systematic review of the literature. Child Health Care. 2020; 49(3): 295-310.
[82]. Domingues-Montanari S. The impact of screen time on children's mental health: A comprehensive review. Child Psychiatry Hum Dev. 2021; 52(4): 519-526.
[83]. Rosen LD, et al. Media multitasking and academic performance: A study of adolescents. Computers & Education. 2016; 92-93: 13-20.
[84]. Nikkelen S, et al. The effects of digital media on children's attention and concentration: A review. Advances in Health Sciences Education. 2020; 25(4): 843-859.
[85]. Hinkley T, et al. The influence of electronic media on children's sleep: A systematic review. Sleep Medicine Reviews. 2022; 60: 101589.
[86]. Valkenburg PM, Peter J. The effects of Internet communication on adolescent well-being: A meta-analysis. Cyberpsychology & Behavior. 2011; 14(4): 371-377.