The impact of screen time on children’s well-being development: a scoping review

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ABSTRACT

In the era of digitalisation, working parents today rely more than ever on electronic gadgets as digital babysitters and device-led playtime to entertain their children. The study suggests that parents and their interactions with the home environment may contribute to shaping children’s screen time. However, many struggle to keep up with the immense variety of mobile applications easily downloaded online. Thus, long screen time exposure inhibits children’s ability to engage actively in physical activities as well as affects children’s well-being development. This scoping review aims to identify parental perceptions of children’s exposure to screens for a long period of time and how screen time affects children’s well-being. Five databases, including Scopus, Web of Science (WOS), Bielefeld Academic Search Engine (BASE), Education Resources Information Center (ERIC), and ScienceDirect, were used in this research. In the initial identification stage, 218 articles were identified from the mentioned databases above. However, there were only 81 articles found to be assessed for eligibility. A total of 34 articles are eligible for analysis and reference after the exclusion and inclusion process for data collection. The findings show that the increased exposure to screens raised concerns about potential negative effects on children’s emotions and behaviour.

Keywords: Addiction, Digital Parenting, Mental health, Parental control, Sedentary behaviour

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1. INTRODUCTION

Screen time refers to the time spent on screen-based behaviours that can be performed while being sedentary or physically active [1], [2]. In recent years, there has been a notable surge in the availability of digital technologies, and screen time is how a user interacts with screens during a specific time frame. The amount of screen time has increased, while the amount of time spent on traditional TV watching has declined [3]. Hence, technology use patterns are changing from very different uses like TV viewing to more diverse uses of screens throughout the day. Although radio or television only supports a few activities, digital devices such as smartphones or tablets now provide an increasingly diverse range of activities, from radio and television to gaming, reading, and social media browsing [4]. The widespread emphasis on ‘screen time’ as a gauge of digital technology utilization can be attributed to the growing challenge of distinguishing between...
various screen-based activities. Such emphasis renders ‘screen time’ valuable when expressing apprehensions regarding our increasingly digitised world. The current review will examine digital technology usage effects through the lens of screen time.

Emerging information and communication technologies (ICTs) provide end-users with many opportunities to make their lives easier. However, these technologies carry a variety of risks and threats, along with the new opportunities they offer. These risks and threats influence users of various ICT technologies in various ways. Children among these groups are the most vulnerable to risks and threats faced in online environments. Thus, children need support, and guidance is essential in ICT technology use. However, it is seen that different support methods are suggested in the literature [5], [6]. On the other hand, it is also clear that parents are responsible for keeping their children away from the risks they face or raising their awareness about what they should do in online environments [7]. Therefore, it can be said that parenting in the digital age requires parents to ensure the safety of children in online environments, along with the responsibility of organising and controlling their online activities [8].

Even though children are said to benefit from having the luxury of digital technology at their fingertips, children are increasingly exposed to devices that can access the internet, such as computers, smartphones, and tablets, beginning too early in life [9]. Many educational software programmes, apps, teaching videos, and devices are widely available to help sharpen specific learning skills and have become the reality of modern childhood. This access to digital technology, specifically “screen time,” is not limited to school but is now widely available in homes. In addition, for many parents, raising a child in today’s modern world of overabundance is becoming more and more challenging, leaving parents dependent on digital technology to help keep their children engaged throughout the day. Therefore, parenting in the digital age requires parents to ensure the safety of children in online environments, along with the responsibility of organising and controlling their online activities [8].

2. METHOD

This scoping review complied with the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines. The current scoping review was conducted following the methodological framework established by Arksey and O’Malley [10], which comprises five key steps: i) identifying research questions; ii) identifying relevant studies; iii) selecting relevant studies; iv) charting the data; v) collating, summarising and reporting the results.

Despite significant endeavours to mitigate children’s screen time, the outcomes have fallen short of expectations. As a result, the research inquiry that underpins this scoping review, serving as the guiding principle for this study, is articulated as: “What empirical knowledge can be extracted from the current literature concerning the impact of screen time on children’s well-being development?” The central research questions, as outlined in Table 1, have been structured in accordance with the research objectives set within the Population-Concept-Context (PCC) framework. The search strategy was crafted to encompass a broad range of relevant studies. This involved the utilisation of pertinent keywords associated with the influence of non-formal education on children’s learning, as detailed in Table 2.

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<th>Research questions</th>
<th>Specific objectives</th>
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<td>How are past studies on the effects of children’s screen time distributed?</td>
<td>To explore the temporal and the setting of past studies pertaining to the effects of children’s screen time.</td>
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<td>What research design was used by past studies on the effects of children’s screen time?</td>
<td>To determine the research method used in past studies.</td>
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<td>What are the research aims of past studies on children’s screen time?</td>
<td>To analyse the research purpose of past studies on children’s screen time.</td>
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<td>What are the effects of children’s screen time were found in past studies?</td>
<td>To investigate the effects of children’s screen time researched in past studies.</td>
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<td>What are the findings of past studies on the effects of children’s screen time?</td>
<td>To report the results of past studies on the effects of children’s screen time.</td>
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The criteria for including studies were selected based on four inclusion criteria: i) articles were published from 2019 to 2023; ii) articles must be related to children; iii) articles must be written in the English language; and iv) full text available. It is important to note that protocols for scoping reviews are not eligible for publication in PROSPERO; however, the findings were reported following PRISMA guidelines [11]. Two research team members independently evaluated the titles and abstracts of all articles using predefined inclusion and exclusion criteria. The research team identified the characteristics of the articles to be extracted for summarisation and analysis. This was accomplished using a Microsoft Excel-based data...
charting form with a representative sample of the reviewed studies. The finalised data charting template was structured to capture the following elements from each study: author(s), publication year, country of origin, research aims, research design, key components of the study, and research findings. The research team summarised and presented the results obtained from the charting process as outlined in Figure 1. Subsequently, they categorised the findings by assigning codes and keywords to condense and focus the data on relevant themes. These codes and keywords were then reviewed to confirm their relevance to the study and were grouped into pre-established categories.

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<th>Table 2. Search string</th>
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<td><strong>Search directory</strong></td>
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<td>ScienceDirect</td>
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Figure 1. PRISMA flow chart

3. RESULTS AND DISCUSSION

The search identified 218 articles through five selected databases: Scopus, Web of Science (WOS), Bielefeld Academic Search Engine (BASE), Education Resources Information Center (ERIC), and ScienceDirect. As depicted in Figure 1, 76 titles were extracted from the Scopus database, while 55 were
determined from the WOS database. A total of 23 titles were downloaded from BASE, and 15 titles were found in ERIC databases, respectively. A total of 49 titles were found in the ScienceDirect database during the identification stage. Of the 218 articles, 18 duplicated titles were excluded, leaving 200 to be screened for eligibility. Subsequently, 119 titles were excluded based on their titles and abstracts during the screening process. Thus, 81 titles were assessed for eligibility by data extraction. Of these, 47 titles were eliminated as they did not meet the inclusion criteria. Therefore, 34 titles were identified and deemed suitable for inclusion in this review.

3.1. Distribution of past studies

The studies presented in this review were published between 2019 and 2023. In 2019, the number of studies on children’s screen time was relatively limited, with n=3 [12]–[14]. The number of studies increased in 2020 with n=4 [15]–[18], indicating growing concern about the effects of screen time children’s health and development. In 2021, the number of studies significantly increased to n=9 [19]–[27]. The number of studies remained consistent in 2022 with n=9 [28]–[36], and in 2023 with n=9 studies [37]–[45] respectively. The increase in the number of studies from 2019 to 2023 indicates that research on children’s screen time continued to be a priority.

The distribution of studies by continent shows that Asia has the highest number of studies, with n=14, indicating a significant focus on this topic. Europe follows this with n=12 studies and North American continents with n=7, respectively. In addition, Oceania has a relatively smaller number of studies with n=1 on children’s screen time. The United States has the highest number of studies with n=7 [18], [20], [33], [38], [40], [42], [43]. India follows this with n=5 studies [15], [17], [29], [36], [41]. There are n=3 studies found in Pakistan [24], [26], [28] suggesting a growing awareness of the importance of understanding children’s screen time in the country. Four countries – Germany [19], [22], Malaysia [30], [44], Ireland [21], [34] and United Kingdom [12], [27] – share a similar number of studies with n=2. Meanwhile, ten countries, namely Sri Lanka [31], France [32], Saudi Arabia [23], China [37], Australia [9], Portugal [35], Poland [13], Italy [25], Norway [14], Iran [45] and a combination of multiple European countries [16] recorded with one study each.

3.2. Research design used in past studies

Based on the accumulated 34 studies, n=20 was quantitative, followed by n=8, which was qualitative, used in studying children’s screen time. Meanwhile, n=6 studies used a mixed-method research design. This review indicates that the survey is the highest research approach used for collecting data on screen time behaviours with n=15 [12], [16]–[19], [22], [23], [25], [27], [30], [32], [34], [38], [40], [44]. In addition, the cross-sectional study indicates n=8 studies [28], [29], [31], [23], [35], [24], [41], [26] and interviews with n=5 studies [20], [12], [23], [43], [45] respectively. Meanwhile, n=3 studies [14], [21], [37], were found to apply the longitudinal study and n=2 studies used the descriptive study [17], [36] respectively. Other research approaches used were focus group discussions [15], Path Analysis [13] and self-reported observations [42] with one study each.

3.3. The research aim of past studies

Four categories of aims were conducted on parents’ perception of children’s screen time. Studies aimed to look into the impact of screen time on children’s emotional well-being indicate n=5 studies [14], [21], [25], [43], [45]. In addition, n=12 studies [12], [13], [15], [16], [20], [29], [27], [30], [33], [38], [41], [44], aimed to look into how screen time significantly affects children’s physical well-being. Meanwhile, a total of n=9 studies [18], [19], [31], [32], [34], [35], [37], [39], [40], look into the effects of screen time on children’s social well-being. Research aimed to study the relationship between screen time and children’s psychological well-being indicates n=8 studies [17], [22], [23], [24], [26], [28], [42], [36].

3.4. Main aspects of the study

The review has identified three main aspects pertaining to the impact of screen time on children’s well-being and development. There were n=10 studies [28], [19], [21], [37], [35], [24], [42], [14], [26], [36], [45] investigate how children’s screen time affects their overall well-being development. On the other hand, there were n=11 studies [15], [20], [29], [30], [12], [23], [38], [16], [13], [41], [44], [27] focuses on how screen time influences children’s behaviour. Meanwhile, n=11 studies [18], [17], [22], [25], [31]–34], [39], [40], [43], were conducted to explore the role of parents and caregivers in regulating and managing children’s screen time.
3.4.1. Effects on children’s well-being development

Mobile devices were primarily used in children aged 3 to 4 years old. This electronic device was unrelated to gender, ethnicity, or parental education. Activities of children actively using mobile devices can influence cognitive, social, and emotional development. Furthermore, it influences children’s time management and social interactions in educational settings and the home environment [46]. Using mobile devices can hinder a child’s ability to interact socially with family and friends, interfering with the child’s emotional and social development and behaviour [47]. Using gadgets is one factor that can inhibit children’s emotional development because their emotions are less stimulated. The emotional development of children is not constant, as it emerges through their interactions with the surrounding environment [48]. Children who dedicate their time to electronic media activities, such as watching television, utilising electronic devices, and engaging with the internet, tend to exhibit a higher incidence of speech delays. Consequently, this reduced interaction time diminished communication with friends and family through cell phones or similar devices [49]. Komaini [50] explains that children’s motor skills can be improved through play activities because active children tend to have better motor skills than inactive children.

3.4.2. Impact on children’s behaviour

A growing body of evidence demonstrates that higher levels of screen time are associated with negative emotional and behavioural problems in children and adolescents [51]–[53]. It is widely known that children are in a critical period of growth and development, especially in the first few years of their lives, with considerable plasticity [54]. Given that most infants are now exposed to the screen early in life, exploring their impact on the development of children is essential. Most studies have focused on the relationship between school-age children and adolescents’ screen time and their social and emotional well-being. A small but growing number of studies have found associations between screen time and emotional and behavioural problems in infants and young children.

3.4.3. Importance of digital parenting

Digital technologies today form one of the key components of children’s lives. Digital devices have quickly become cultural tools within the home, school, and community [55]. As the availability of digital technologies has increased in our daily lives, the onset age of digital technology use has become lower [56], [3], [57]. Young children regularly use digital technologies within the classroom and at home [58], making investigating young children’s digital technology a fundamental interest in today’s educational research [59]. Although parents view tablet computers as educationally valuable tools which are positive for children, they also have concerns regarding their potential overuse and the negative consequences of their use at home [60]. While some parents believe that digital technology usage among children may diminish their willingness to participate in non-technology-type activities, attempts have been made to alleviate such concerns.

Expanding the concept of parenting in the digital age will be helpful in this context. Parental indifference is described as a parental characteristic that prevents digital parenting interventions. This situation can happen in various ways. Parents being unaware of their children’s online activities or the existing technologies they use, working parents lack time to deal with their children, or lack of basic technology literacy [61] can be included as examples. A strong parent-child relationship is also believed to prevent Internet gaming addiction significantly [62]. However, less parental control has been stated to cause higher aggression behaviours. Yaman et al. [63] determined that the parents’ education levels and internet usage experiences do not significantly affect digital parenting levels. In addition, a study also indicated that parents who allow children to spend more than three daily hours on digital activities were associated with significant declines in children’s socioemotional well-being [21].

3.5. The findings of past studies

Based on this scoping review conducted, the 34 studies reviewed provide a comprehensive view of how screen time affects various aspects of children’s lives. The first findings were related to high Screen Time (ST) affecting children’s social and emotional well-being in n=5 studies [19], [21], [14], [18], [45]. There were also n=5 studies [22], [23], [28], [36], [43], that found that high Screen Time resulted in children’s poor behaviour. In addition, a study [12] found that high screen time affects children’s eating habits while n=3 studies [41], [42], [27] indicated that high Screen Time is associated with children’s health respectively. Findings showed that n=4 studies [20], [29], [30], [38] indicate that high Screen Time affects children’s physical activity. Meanwhile, results on family socioeconomic status were found to be associated with children’s Screen Time with n=2 studies [24], [26] while n=3 studies [31], [35], [17] indicate location setting affects children’s Screen Time respectively. The highest number of studies focused on the role of parenting styles and parenting control in children’s screen time with n=11 studies [15], [32], [33], [37], [39], [34], [16], [40], [13], [25], [44].
4. CONCLUSION

During the pandemic back in 2019, the issue of screen time took on heightened significance as individuals, especially children, found themselves spending more time indoors and relying on screens for various activities. School closures have unprecedentedly altered children’s as well as their families’ daily lives. Continuously, some parents reported that their children’s emotions and behaviour were affected as they frequently throw tantrums and bedtime is disrupted. The reported findings illustrated that the increase in screen time among children has decreased their interaction with their friends, family members and other individuals, supporting many aspects of their social and emotional development. The increased reliance on screens raised concerns about potential negative effects, including digital eye strain, sedentary behaviour, and mental health challenges. Thus, the role of parents and caregivers in regulating and managing children’s screen time is deemed important. Parental control of screen use is essential for developing effective strategies to promote healthy screen time habits and overall child well-being.

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