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REVIEW ARTICLE

Exploring the perception of parents on children's screentime: a systematic review and meta-synthesis of qualitative studies

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BACKGROUND: Screentime (ST) has been increasingly pervasive in young children. Evidence suggests positive and negative effects of ST on children's development. Parents play a crucial role in influencing their children's ST. There is limited research consolidating the parental perceptions related to children's ST. This review consolidates the evidence on the perception of parents on their children's ST.

METHODS: Six electronic databases (PubMed, Embase, CINAHL, PsycINFO, Scopus, and ProQuest) were searched from their inception to September 2022. Critical appraisal was conducted using the Critical Appraisal Skills Program (CASP) checklist. Data synthesis was performed using Sandelowski and Barroso's approach.

RESULTS: Twenty studies were included in this review, encapsulating the experiences of 1,311 parents. Three main themes with corresponding subthemes were identified: (1) Varied reasons behind ST; (2) Attitudes toward ST; and (3) Strategies and approaches to managing ST.

CONCLUSION: The findings highlighted the varied reasons parents promote ST. Parents reported their concerns and confusion about ST and shared some strategies and approaches for better ST. Future research is needed to develop and evaluate educational programs to ensure that parents understand the risks and benefits of ST and in turn, ensure the appropriate adoption of ST for their children.

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IMPACT:

- In the digital era, parents' attitudes towards screentime (ST) for their children are mixed. This review presents the dilemma parents face and their struggles with using optimal screen time for their children.
- This review provides up-to-date evidence on the parents' confusion and concerns about ST as well as strategies and approaches used by the parents for better ST.
- There is an urgent need for evidence-based educational programs to enhance parental knowledge about ST so that they can ensure appropriate ST among children.

CLINICAL TRIAL REGISTRATION: PROSPERO Registration No. CRD42022356083.

INTRODUCTION

Digital technology has advanced over the past two decades and has integrated itself into multiple facets of everyday life, providing a medium of communication and entertainment.[1] Screentime (ST) refers to the total time spent on viewing screens including television, smartphones, computer, and tablets.[2] The Coronavirus disease 2019 (COVID-19) pandemic has also accelerated exposure to prolonged ST.[1] Unsurprisingly, the proliferation of ST has been increasingly pervasive in young children.[3] Studies have shown that on average, children engaged with ST increased by 50 min during COVID-19, with the increase largely driven by entertainment purposes over educational uses.[4] The ubiquitous presence of screens among children mainly served as a platform for educational and entertainment purposes.[5] There is evidence suggesting the positive effects of ST, particularly with interactive ST, which can improve children's reading development,[6] and foster learning abilities.[7,8] Evidence has also suggested excessive ST being linked to detrimental developmental health effects,[9] involving language, cognitive, social, and physical developmental setbacks.[10] Hence, ST and its impact on children require further exploration.

Background

Early childhood assumes a fundamental part in children's development and health.[11] Children learn most from their environment by observing adults and human interactions.[12]

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Excess ST can markedly hinder a child's opportunity to experience and observe crucial everyday activities, which are essential for their overall development.[12] The World Health Organisation (WHO) has recommended children under one year old should have no ST, children under two years old should rarely be exposed to ST, and children under five years old should not surpass an hour of ST per day.[13] The American Academy of Pediatrics (AAP) also recommended infants and toddlers under 24 months should avoid ST entirely while children aged 2 to 5 years should restrict ST to an hour per day.[14] Despite these recommendations, there is still an upward trend in the time children spend on screens.[3] A study reported over 98% of Canadian children aged 0 to 8 years spent more than two hours daily on screen.[15] American children under two have been reported to have an average of half-hour ST daily.[16] The impact of ST on children's development and mental well-being has also been reported. A recent scoping review has highlighted that 38% of children are at risk of poor development, especially in acquiring speech and language skills.[17] Pre-school Canadian children with excessive ST were also found to be 6 times more likely to report clinically significant inattention problems and had a 7-fold increased risk of meeting criteria for attention deficit hyperactivity disorder (ADHD).[18]

As parents play a fundamental part in their children's upbringing and development,[19] recent studies identified parents being aware of the risks of ST, however, they were not clear on the optimal duration of ST and many parents resorted to ST to cope with increased stress and challenges, especially during COVID-19.[20,21] Despite strong parental reliance on ST for their children,[19] and available primary research evaluating the parental factors related to children's ST, there is a dearth of systematic reviews. Hence, there is an urgent need to consolidate and understand parents' perception of children's ST in the omnipresence of digital screens.

However, systematic reviews consolidating the perceptions of parents on their children's ST are limited. Notably, only two reviews and a report concerning ST and children were retrieved. A qualitative meta-synthesis by Minges, Owen, Salmon, et al. [22] explored the experience of parents, youth, and educational professionals on reducing ST among youth, aged 11 to 18 years old, and did not focus on parental perspectives. A literature review by Taylor[23] only focused on the effects of ST on the development of adolescents, excluding parental perspectives on ST among children aged 0 to 12 years old. A brief report by Remadevi and Kunnath[24] mainly focused on the qualitative perspectives of the authors to address toddlers' ST, excluding parental perspectives. There remained disagreements among experts about an optimal ST to guide the parents on the appropriate ST among children, confusing the parents.[24,25] To date and to the best of the authors' knowledge, there is no qualitative systematic review that addresses the parents' perception of ST in children aged 0 to 12 years, which is a crucial developmental age for children.[26] Especially when there is still great confusion over the ST concept among the parents of young children,[25] this systematic review aimed to fill the gaps in the literature, by consolidating available qualitative studies on the parents' perception of children's ST.

METHODS

Study design

This qualitative systematic review followed the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines[27] (See Supplementary File S1) and analysis was conducted using Sandelowski and Barroso's[28] meta-synthesis approach. This approach was deemed most appropriate as this review aimed to consolidate evidence from studies with qualitative and mixed-methods study designs.[29] The protocol was registered on the PROSPERO database (CRD42022356083).

Search strategy

A search strategy was conducted on six electronic databases (PubMed, Embase, CINAHL, PsycINFO, Scopus, and ProQuest) with the assistance of an academic librarian. These searches were dated from the inception through September 2022 and were limited to the English language. Keywords and Medical Subject Headings (MeSH) terms focused on the following main concepts: ("screen-time" OR " screen use" OR "digital screen") AND ("children" OR "preschooler" OR "pediatric") AND "parent" AND ("perception" OR "experience"). Specific keywords and MeSH terms were combined using Booleans and truncation symbols according to the syntax guidelines of the respective databases. Grey literature including MedNar was explored to ensure the comprehensiveness of this meta-synthesis. Hand-searching of the bibliographies of relevant systematic reviews and included studies were performed to identify potential additional studies missing from the electronic search. The complete search strategy is presented in Supplementary File S2.

Eligibility criteria

The selection for eligible studies was established according to the SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, and Research type) framework (See Supplementary File S3). The selection criteria for this systematic review included (i) ST in children, aged 0 to 12 years old, which is a crucial development age;[26] (ii) examining the perception of parents with their children's ST; (iii) adopting a qualitative or mixed-method study design where qualitative data can be explicitly extracted. The studies were excluded if they focused on (1) adolescents, aged 13 and above; (2) children's perception of ST; (3) quantitative, reviews, editorials, discussion papers, and reports.

Search outcomes

A total of 8594 studies from the six databases and 170 studies from MedNar were retrieved. The bibliographical software EndNote X20 was used to manage all the relevant studies. A total of 3643 duplicates were found and removed. Two reviewers independently screened the titles and abstracts of the remaining 5121 studies against the eligibility criteria, of which 5065 studies were excluded due to varied reasons including incorrect population, outcome, study design, or no full text available. Any disagreements were resolved through discussion with a third author. Thereafter, full-text versions of the remaining 56 relevant studies were screened and reviewed independently by the two reviewers. Finally, 20 studies were included in this review. The PRISMA flow chart is presented in Fig. 1.

Quality appraisal

The Critical Appraisal Skills Program (CASP) ten-item checklist was used to appraise the included studies.[30] Two reviewers independently evaluated the appropriateness and clarity of the study objectives, methodology, reflexivity, rigor, and ethical issues. Each item was given a score of "Yes", "Can't tell" or "No". Any discrepancies were resolved through discussion with the third author. This quality appraisal was to improve the rigor of the meta-synthesis, thus all studies were included regardless of their appraisal scores. These quality ratings are available in Supplementary File S4.

Data extraction

Data extraction was conducted independently by two reviewers. Information was extracted based on the following study characteristics: study author(s), country, year, study aim(s), study design, population characteristics, and results. Results were extracted from the direct quotations of parents' perceptions or experiences (primary constructs) and primary authors' interpretations (secondary constructs) about children's ST.

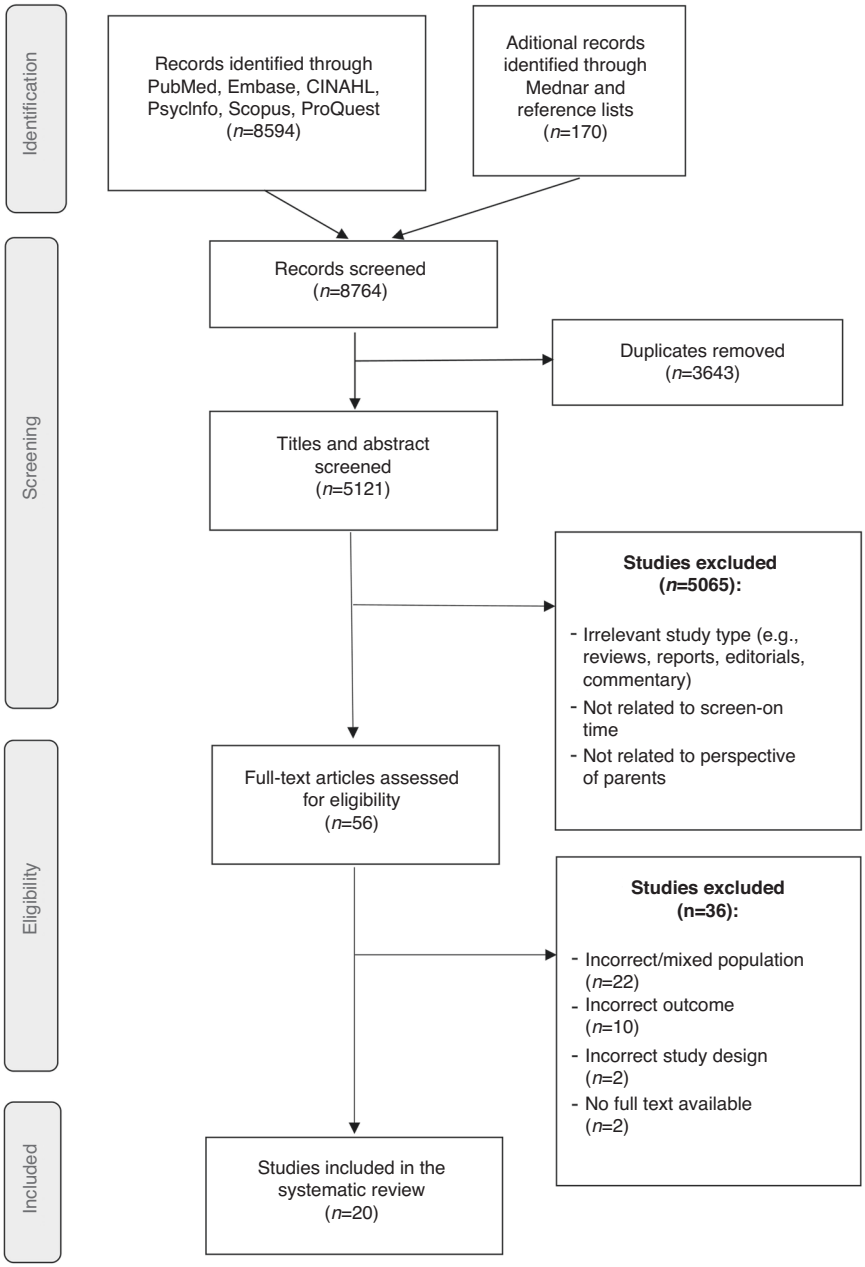

Fig. 1 PRISMA Flow Chart. Flow chart of the study selection process for the systematic review and meta-analysis following the guidelines from the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA).

Data synthesis

Data synthesis was conducted using Sandelowski and Barroso's two-step approach:[31] (1) qualitative meta-summary and (2) qualitative meta-synthesis. The meta-summary step combined the findings of each included study by following the steps: (i) extraction of relevant statement findings within the individual included studies using primary and secondary constructs; (ii) grouping these findings as 'codes' where they share topical similarities to determine whether findings affirm, extend, or refute one another; and (iii) abstraction of findings to identify additional patterns or redundancies for a more concise summary of findings. The second step adopted a thematic synthesis approach, which includes organizing summarized findings into descriptive themes and developing 'analytical' themes by comparing themes across the included studies. These analytical themes were subsequently re-examined according to the aim of this systematic review and minor changes were made after discussions with the review team. Two reviewers independently conducted the entire coding process. Any disagreements were resolved through discussion with the third author.

RESULTS

Characteristics of the included studies

The characteristics of the 20 eligible studies are presented in Table 1 and the detailed characteristics are presented in Supplementary File S5. All 20 included studies were published between 2005 and 2021. These studies were conducted in the United Kingdom ($n = 6$), the United States ($n = 4$), Australia ($n = 3$), and one study each from Belgium, Canada, Iran, New Zealand, South Africa, Sweden, and Switzerland. Nineteen studies were qualitative and one mixed-method design. This review

Table 1. Characteristics of included studies ($n = 20$).

Study (year), country	Aim	Methodology	Results
Bentley et al. [32] United Kingdom	To explore mothers' views of their preschool children's screen viewing behaviour (including mobile devices) and investigate how preschool children use different screen-viewing devices.	Study design: Qualitative Study Methods: Semi-structured interviews; thematic analysis Parent sample size: 26 mothers Child Ages: 2–5	Four Themes 1. How different devices were used 2. Reasons for screen-viewing 3. Mothers' attitudes towards screen-viewing 4. Influences of screen-viewing
Clarke et al. [33] United Kingdom	To explore the impact of the first United Kingdom (UK) Coronavirus 2019 (COVID-19) lockdown on preschool children's eating, activity, and sleep behaviours	Study design: Qualitative Stud Methods: Semi-structured interviews; Thematic analysis Parent sample size: 20 Child Ages: 3–5	Five themes 1. Food and Eating 2. Physical Activity 3. Sedentary Behaviours 4. Sleep 5. Longer term impacts
De Decker et al. [34] Belgium	To explore multi-cultural and multi-geographic parental perceptions of preschool children's screen time in a multi-country focus group study design	Study design: Qualitative Research Methods: Semi-structured interviews; Focus groups interviews; Content analysis Parent sample size: 122 Child Ages: 4–6	Three themes 1. Parents' perceptions towards the amount of television viewing 2. Parents' perceptions about computer use 3. Parents' perceptions about active games
Eyler et al. [37] USA	To explore how parents perceive their children's physical activity and screen time during COVID-19 stay-at-home orders.	Study design: Qualitative Exploration Methods: In-depth interviews; thematic analysis Parent sample size: 16 Child Age: 5–12	Two themes 1) Physical Activity 2) Screen Time
Francis et al. [46] Switzerland	To investigate parent and pre-adolescent perceptions of screen use and the source of conflict surrounding digital media	Study design: Qualitative Exploration Methods: In-depth interviews; thematic analysis Parent sample size: 91 Child Age: 10–13	Five main themes and their subthemes 1) Screen Time 2) Effect of Screen Use 3) Reasons for Screen Use 4) Rules 5) Balance
Golden et al. [47] USA	To better understand parental decision-making when permitting their infants to engage with, meaning to view and use, smartphones in their first year of life.	Study design: Qualitative Descriptive Research Methods: Semi-structured interview; thematic analysis Parent sample size: 12 Child Age: 1–11 months	Three themes Theme 1: Smartphones and technology are deeply embedded in the participants' lives Theme 2: Theme 3: Parents are influenced by many external factors but ultimately want to do what is right for their child
He, et at. [38] Canada	To explore parents' perceptions of their preschoolers' health-related behaviors	Study design: Qualitative Study Methods: Semi-structured focus groups; thematic analysis Parent sample size: 71 Child Age: 2.5–5	Four themes 1. Parents' perceived values about screen viewing 2. Parents' attitude toward screen viewing 3. Barriers to appropriate screen-viewing behaviors 4. Participants' insights on encouraging appropriate screen-viewing behaviors
Henström et al. [48] Sweden	To investigate Swedish parents' experiences regarding feeding of solid foods, screen time, and physical activity in healthy infants	Study design: Qualitative Research Methods: Semi-structured Interviews; Thematic analysis Parent sample size: 20 Child Age: 2–12 months	Seven themes Theme 1: Feeling Excited to Enter a New Phase Theme 2: Parents' Responsibility of Doing It "Right" Can be Stressful Theme 3: Motivated to Learn during Specific Time Windows Theme 4: Information to Trust Theme 5: The Importance of Social Support from Peers Theme 6: Experiences of Support Received from Child Healthcare Theme 7: INFANT for a Swedish Context

Table 1. continued

Study (year), country	Aim	Methodology	Results
Hesketh et al. [39] Australia	To understand the views and expectations new parents have about children's physical activity and screen time, prior to their infants becoming mobile, and to compare these views with those of parents of preschool children, whose children have already begun establishing physical activity and screen time habits.	Study design: Qualitative Research Methods: Focus groups; thematic analysis Parent sample size: 97 Child Age: <12 months – 5 years	Three themes 1. Expectations and Intentions 2. Strategies for limiting screen time 3. Barriers to limiting screen time
Hinkley & McCann,[21] Australia	To explore mothers' and fathers' perceptions of the risks and benefits of screen time and active play during early childhood	Study design: Qualitative Study Methods: Semi-structured interviews; analysis not specified Parent sample size: 467 Child Age: 2–5	Five themes 1) Parental perceptions of the risks and benefits of active play 2) Parental perceptions of the risks and benefits of screen time 3) Awareness and acceptability of guidelines 4) Behaviour changes strategies 5) Differences between mothers and fathers
Jago et al. [40] United Kingdom	To examine the strategies used by parents of children aged 5–6 years to manage screen viewing, identify key factors that might affect the implementation of these strategies and develop suggestions for future intervention content.	Study design: Qualitative Research Methods: Semi-structured interviews; Content analysis using inductive and deductive approach Parent sample size: 53 Child Age: 5–6	Seven themes 1) Screen viewing as reward and punishment 2) Limit setting in relation to daily events 3) Context-specific limit setting and when limits are relaxed 4) Offering alternatives 5) Consistency between parents 6) Negotiation and compromise 7) Child self-regulation
Jago et al. [50] United Kingdom	To use in-depth qualitative methods to explore parents' responses to changes in children's physical activity and screen-time between Year 1 and Year 4 of primary school. To identify how parents adapt their parenting around their child's sedentary behaviour in the context of rapidly changing screen-based technology.	Study design: Qualitative Study Methods: Semi-structured telephone interviews; thematic analysis Parent sample size: 51 Child Age: 5–9	Five themes 1) Change of child interests between Year 1 and 4 2) Impact of child age on behaviour 3) Change in the devices and content that are available to children 4) Difficulties in managing screen-time 5) Principles of managing screen-time
Lindsay et al. [41] USA	To explore the beliefs, attitudes, and practices of Brazilian immigrant mothers living in the United States related to their preschool-age children's Screen time (ST) behaviours	Study design: Explorative Qualitative Study Methods: Focus groups discussions; thematic analysis Parent sample size: 37 Child Age: 11–15	Nine themes and their subthemes Theme 1: Perceptions and Concerns About Preschool-Age Children's Screen Time Behaviors Theme 2: Reasons for Screen Time Theme 3: Mothers Accept Screen Time as an Integral Part of Children's Daily Lives Theme 4: Socio-environmental Influences on Screen Time Theme 5: Screen Time Is Influenced by the Weather Theme 6: Screen Devices Readily Available at Home Theme 7: Watching Television and Playing Video Games With Their Children Theme 8: Parenting Practices to Manage Children's Screen Time Theme 9: Mothers' Confidence in the Ability to Manage Children's Screen Time
Prioreschi et al. [42] South Africa	To use a qualitative approach to understand how mothers perceive play and physical activity during the first 2 years of life, and to understand whether and how they promote this behaviour.	Study design: Qualitative Study Methods: Focus group discussions and in-depth interviews; thematic analysis Parent sample size: 19 Child Age: 0–2	Four themes1) Physical activity as an indicator for health 2) Promoting play and development 3) Gender bias in play 4) Screen time

Table 1. continued

Study (year), country	Aim	Methodology	Results
Dorey et al. [36] New Zealand	To assess parents' views about their children's Television (TV) viewing, strategies they use to reduce viewing, obstacles faced when trying to implement such strategies and their views of two types of electronic monitors that can be used to restrict TV viewing.	Study design: Qualitative Study Methods: Focus group discussions; Content analysis Sample size: 40 Age: 9–12	Three themes 1 Parental perspectives on children's TV viewing 2 Strategies parents employ to control children's viewing 3 Using electronic monitors to restrict children's TV viewing
del Rio Rodriguez et al. [35] USA	To explore parental outcome expectations (OE) regarding children's TV viewing among a sample of primarily Hispanic parents of overweight and obese children attending community pediatric clinics.	Study design: Qualitative Study Methods: Semi-structured interview; thematic analysis Parent sample size: 22 Child Age: 5–8	Three Themes 1 Positive outcome expectations for Allowing Their Children to Watch TV 2 Positive outcome expectations for Limiting Children's TV Viewing 3 Negative outcome expectations for Limiting Children's TV Viewing
Sergi et al. [49] Iran	To comprehend the subtle differences of parents' views and children's interactions with portable digital devices (PDDs), and expand previous research in this area.	Study design: Qualitative Study Methods: In-depth interviews; type of analysis not mentioned Sample size: 5 Child Age: 4–7	Six themes 1) User routines 2) Entertainment purpose of digital devices 3) Digital devices as educational tool 4) Parental involvement 5) Sources of influences 6) Parental concerns
Solomon-Moore et al. [43] United Kingdom	To examine mothers' and fathers' views on their 8–9-year-old child's screen-viewing (SV) behaviour, in terms of the internal conflict felt by parents regarding the positive and negative aspects of SV, and the importance placed on achieving a 'digital balance'.	Study design: Qualitative Study Methods: Semi-structured telephone interviews; thematic content analysis Parent sample size: 51 Child Age: 8–9	Two themes and their subthemes 1 Importance of achieving a digital balance 2 Sources of internal conflict regarding child screen-viewing
Thompson et al. [44] United Kingdom	To address these gaps in the literature by quantitatively measuring the screen-viewing (SV) of both parents and their 5- to 6-year-old child and examining parents' qualitative perceptions of their child's SV within the context of their own SV time.	Study design: Mix-method study Methods: Semi-structured telephone interviews; Deductive content analysis Parent sample size: 53 Child Age: 5–6	Three themes 1) Parent's personal screen-viewing-related views and behaviors 2) Family environment 3) Rules and setting limits
Veitch et al. [45] Australia	To gain in-depth insights from mothers living in disadvantaged neighbourhoods regarding their perceptions of their child's resilience to low physical activity and high screen-time.	Study design: Qualitative study Methods: Semi-structured interview; Inductive thematic analysis Parent sample size: 38 Child Age: 8–12	Two themes 1) Parental control – set rules and encourage alternative outdoor activities 2) Child's individual preferences

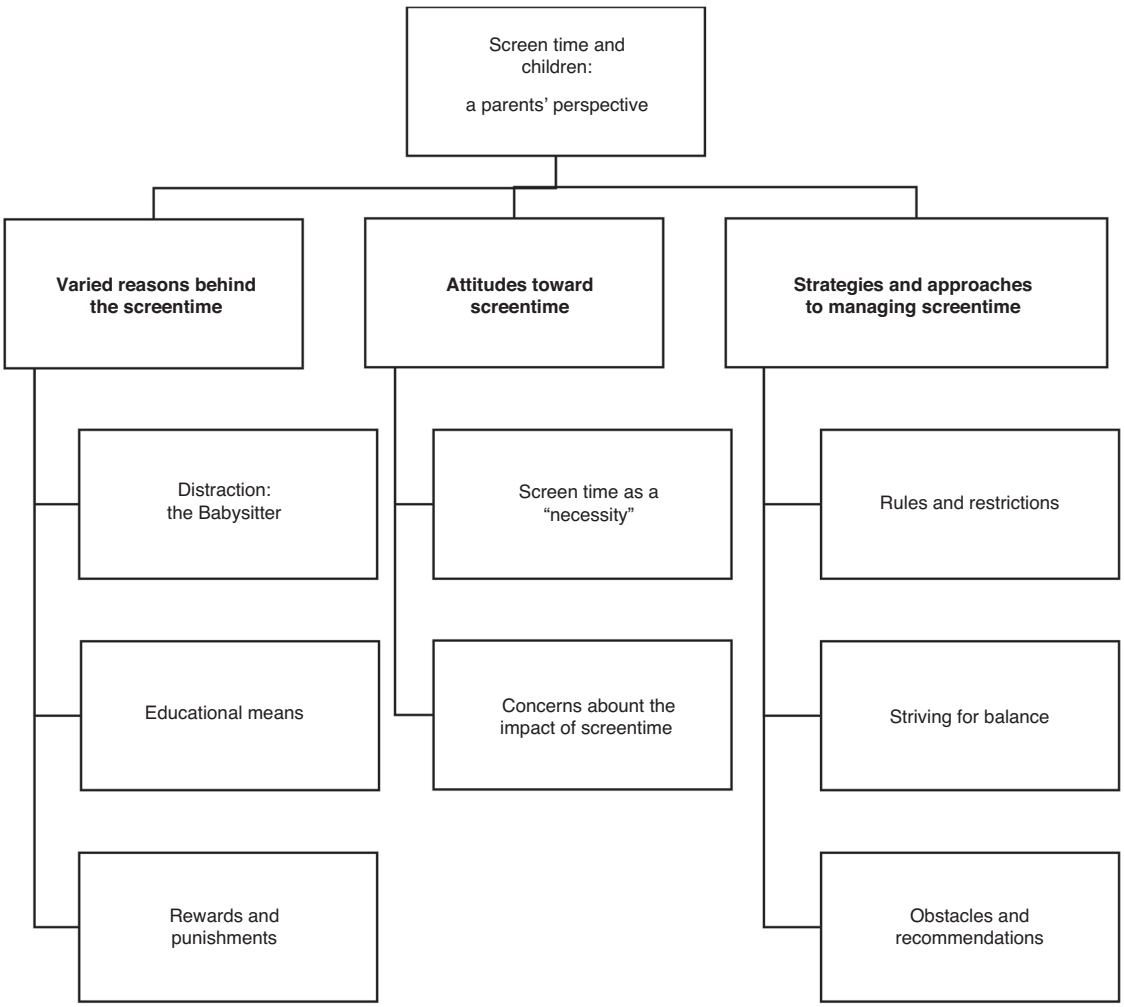

Fig. 2 Themes and subthemes. Summary of themes and subthemes identified using the Sandelowski and Barroso's two-step approach.

encapsulated the experiences of 1311 parents who had children aged 0 to 12 years old. The qualitative data collected were either through semi-structured interviews, in-depth interviews, or focus group discussions. Data analyses of the included studies were conducted using either thematic or content analyses.

The meta-synthesis identified three main themes: (a) Varied reasons behind ST; (b) Attitudes toward ST; (c) Strategies and approaches to managing ST. A detailed discussion of these themes and eight subthemes is described in the following sections and illustrated in Fig. 2. Studies that contributed to these themes are presented in Supplementary File S6.

Varied reasons behind the ST

This theme identified the many reasons parents allowed ST to their children including as a distraction, for educational means, and as a reward or punishment.

Distraction: the babysitter. Parents from fifteen studies highlighted ST as a substitute 'babysitter' and a distraction tool for children. Parents encouraged ST to keep their children occupied and entertained, while "busy with household chores", "running errands", or "work demands".[21,32–44] Parents mentioned being overwhelmed at times and requiring some time to themselves, referring ST as a "lifesaver"[33] and a "coping tool" to entertain their children.[21,33–35,38,39,44] Parents have expressed using ST for their children to relax,[21,32,33,36,40,43,45] describing it as "…good way for [children] and themselves to have a rest and some downtime…".[21] Few parents described using ST to calm and manage their children's disruptive behaviors.[32,34,35,38,41] ST provided relief to parents, knowing their children are kept safe at home and not in the "more dangerous" outdoors.[35,36]

Educational means. Parents from fourteen studies indicated the educational value of ST. Parents perceived the educational possibilities of ST for their children.[21,32,33,37–39,41–44,46–49] Parents have highlighted that interactive devices including computers and mobiles, could develop their children's technical skills and cognitive development,[21,32,33,37,39,41,43,49] describing ST having "…educational games, and getting [child] to read and write".[21] Some parents have shared their preference that "interactive screen time was better than passive television watching",[32,33] while other parents reported television documentaries could enhance language development and improve their children's general knowledge.[32,42] Parents believed early ST engagement can provide learning tools to prepare for school, and technical and communication skills to improve future employability,[38,39,43] describing the "…[children] need to be technically minded" for better employability.[43]

Rewards and punishments. Parents from six studies described ST as a tool to reward or punish their children's behaviors. Parents offered ST to their children to promote "good behavior"[32,36,39,40,43,49] and restricted ST as punishment for "bad behaviors".[32,40,43] Parents recognized ST as a behavior "desired" by

their children.[36,40] As such, some parents made access to ST contingent upon completing predetermined task(s),[36] while limiting ST was best achieved by negotiating using desirable alternative activities.[40] However, one of the studies found that the ST punishment methods led to parent-child conflict.[40]

Attitudes toward screentime

This theme provides an overview of different attitudes parents have about ST for their children.

Screentime as a "necessity". Parents from fifteen studies acknowledged ST as part of daily life and a "necessity" in the modern world.[32,41,46–48] Parents recognized ST as an inevitable part of their children's upbringing and some parents encouraged and took pride in their children's skill proficiencies in using ST.[32,41,47] Some parents expressed no guilt or worry about their children's ST behaviors.[32,34,38,41–43,47] A few parents had no restrictions on ST as they felt children "did not have the attention span for extended periods of [screentime]".[32,45] Some parents viewed computer ST to have more benefits than television,[32–34,39] while others found television to be more family inclusive and parents could control the programs that were watched by their children.[32] A few studies highlighted some contention between the different parenting styles[21,40,41,44] as mothers mentioned that fathers were often "less restrictive" towards children's ST.[32,38–41]

Concerns about the impact of screentime. Parents from sixteen studies expressed their concerns about ST. Parents were generally worried about the amount of ST their children were spending,[21,32–34,36,38,41,43,46,48,49] claiming "it's bad, [parent] don't even like saying it out loud, but [screentime] was almost like a pacifier…".[33] Parents felt ST interfered with their children's normal childhood and outdoor play, and "they're not being children".[34,41] Parents were aware of the negative effects of ST on their children's psychological and physical development.[21,32–35,39,43,46] Many parents felt ST could "lead to addiction".[21,32,34,41,43,46,49] Parents professed ST as a barrier to communication and family time with their children.[34,35] Some parents were concerned about ST on their children's eyesight,[34,35,39,43] disruption to their sleep patterns,[41,43,46] and their exposure to potential inappropriate content.[21,35,36,39,41,46] Parents mentioned the sedentary nature of ST could affect their children's social functioning and physical activity, which could lead to social isolation and childhood obesity, respectively.[21,32,34–36,41–43,46,47,49,50]

Strategies and approaches to manage ST

This theme identified the parents' hopes and desires in their management of their children's ST.

Rules and restrictions. Parents from fifteen studies were keen to implement certain rules and restrictions on ST. Parents expressed interest to decrease their children's ST and develop healthy ST habits.[21,36,38,41,45,46] Many parents "had to impose rules…" to limit their children's ST.[33–35,39,41,42,44,45,49,50] Methods include monitoring and setting a time limit,[21,39,41,42,49] implementing rules like "no screen time during certain times of the day…",[33,34,39,41,44,45,50] participating in more organized outdoor sports activities,[34,35] "…hiding screen devices and their remotes" away from children,[32,41] or simply turning off the electronic equipment.[34,45]

Striving for balance. Parents from eleven studies revealed the need for a balance of ST. Parents noted the importance of "balance between screen time and tasks".[39,41,43,46] Some parents reported their inability to manage and disengage their children from ST,[32,39,41,43,46] describing it as "…a daunting and exhausting task".[36] Some parents reported their children would have "tears and tantrums when screen-viewing was taken away".[32,35,41] Parents expressed the added complexity when children of different age groups were involved, in balancing the appropriate ST among them, which led to parents feeling "conflicted" and "guilty".[32,47] Parents adopted strategies such as spending more quality family time and outdoor physical activities "to achieve digital screen balance".[43] Parents recognized the importance of setting a good example by role-modeling good ST habits and encouraging more physically active lifestyles.[21,38,39,41,50]

Obstacles and recommendations. Parents from seven studies outlined the path forward with ST. Parents felt they were uncertain and often had differing views with their peers on the amount of ST their children should have.[41,48] Parents expressed difficulty in complying with the differing guidelines by reputable sources including pediatricians.[21,38,47] Some parents had experienced pediatricians they consulted "…to take a rather laid-back approach…" in ST.[47] However, parents still believed that easy dissemination and accessibility of reputable information would motivate a change in implementing healthier ST habits for their children.[21] Parents shared some ideas to encourage appropriate ST behaviors, including offering it for music, dancing, or games requiring movements as an alternative to encourage physical activities;[38,39] getting their children to do art and crafts;[38,40] helping out with chores or playing with other children.[38] Some parents even suggested using timing devices to schedule limits on ST.[40] Parents suggested increasing neighborhood play equipment which may encourage their children to be more active outdoors.[21]

DISCUSSION

This qualitative meta-synthesis consolidated the parents' perception of their children's ST. Three identified themes highlighted the varied reasons behind ST, the attitudes toward ST, and the strategies and approaches to managing ST. Importantly, our review revealed the differences in opinions about ST among parents, requiring the need to inform future practice guidelines to educate and inform parents regarding the appropriate use of ST.

Most included studies were concentrated in western countries, thus these findings may not be transferable to other geographical regions. Additionally, digital adoption rates may vary across different countries and globally, hence perhaps these studies best represent areas where ST is adopted prevalently in daily lives. Parenting styles can be strongly influenced by cultural beliefs, where stringent parenting styles are more common in Asian societies.[51] Hence, more research from Asian and other geographical regions is required to understand parents' holistic views about their children's ST. Our findings highlighted that most parents use ST to 'babysit' their children, which was similarly reported in a previous review by Minges, Owen, Salmon, et al. [22] This could be due to the sense of relief that ST could bring to parents, especially when parenting is often a challenging and stressful transition period for new parents of young children.[52] From varied parenting demands, work overload, and daily hassles, parents often resort to ST to get a break from childrearing demands.[53] Especially, when support from extended family members such as grandparents, or nannies is unavailable, media platforms like YouTube Kids were accessed by parents to keep their children "safe" and distracted.[53] In this review, parents considered ST to calm their children or reduce disruptive behaviors.[54] It could be possible that some parents might perceive themselves as inefficacious to manage disruptive behaviors, thus seeking recourse in ST to entertain and fulfill their children's psychological and social needs.[54] However, these findings focusing on the varied reasons behind ST given by parents require further research.

Our findings showed the growing parental acceptance of ST by their children. These findings are supported by Osorio-Saez, Eryilmaz, and Sandoval-Hernandez[55] who reported that with the ubiquitous availability of screen devices and growing interactive

educational content offered by digital platforms, parents willingly provided their children with computers or tablets hoping it would encourage children's learning to acquire "essential skills" around technology use.[54] The Unified Theory of Acceptance and Use of Technology (UTAUT) proposes that an individual's intention to use technology subsequently is determined by performance expectancy, effort expectancy, social influence, and enabling conditions.[56] Therefore, UTAUT explains that parental acceptance of ST for their children could be due to the perceived ease of use, social desirability, and influence that technology may have on their children's learning and development.[55] Especially in the digital era, being technologically equipped is found to be important for academic and future job success,[55] which could further explain why parents in this review could have found ST as an imperative educational tool and hence were less likely to restrict ST on their children. Parents in this review were also found to use ST as a shared family activity to enhance parent-child relationships. A previous study by Chen and Adler[16] supports these findings, highlighting that devices like computers that require more in-person instructions from parents, were found to increase parent-child interactions.[54] In addition, interactive screen media have been found in providing children with educational learning, instill good behavior and promote family dynamics.[5] Unlike previous reviews,[22–24] our findings uniquely highlighted that fathers were less likely to restrict ST among children. This could be because mothers remain the primary caregivers in most families, spending more time with their children[57] and consequently exerting more influence on their children's ST than the fathers.[57] However, these findings need to be further explored in future research.

Our findings uncovered parents concerning attitudes toward ST, which was similarly reported by previous reviews.[58,59] ST has been associated with deleterious health outcomes, such as obesity and lower cognitive stimulation.[60] Stavridou, Kapsali, Panagouli et al. [61] suggested excessive ST was related to sedentary behavior, which could aggravate childhood obesity rates. Furthermore, a longitudinal study following 4-years old children reported a negative association with mathematics and literacy grades at 8 years old when ST was introduced at 4 years old, suggesting ST impacts future academic achievement.[62] A recent systematic review also revealed the increased risk of myopia in children with early ST exposure.[63] However, the negative health outcomes could be multifactorial but parents in this review seem to be vigilant to monitor their children's ST as they were found to impose rules and restrictions around ST. Indeed, many interventional studies have reported similar rules and restrictions imposed by the parents,[22,64,65] but their effectiveness in restricting children's ST was mixed, more research is needed to examine the appropriate parental interventions in managing children's ST.

In this review, parents reported the need to balance ST. Though parents recognized the need of introducing ST in contemporary society for learning purposes, they recognized the need of balancing it with outdoor activities. A previous literature review by Radesky, Schumacher and Zuckerman[5] similarly supported this finding, highlighting that appropriate ST technologies should not replace active play and social interactions among children, but instead recognised that interactive ST can be a valuable adjunct tool to support and enhance children's learning environment.[5] Our findings highlighted that parental role-modeling is important to influence their children in developing a healthy balance between ST and an active lifestyle. This finding aligns with Bandura's social cognitive theory (SCT)[66] which describes that individual experiences, the action of others, and external factors influence individual behaviors. As such, role-modelling on the optimal ST by their parents is crucial, as parents' behaviors do have an impact on children's ST.[67]

Finally, our findings have revealed parents' preferences and recommendations around ST. Parents proclaimed outdoor play and ST should be balanced. Promoting healthy ST habits was imperative and parents seek out reliable health guidelines around ST.[1] However, parents were confused and disappointed with the limited and varied views around ST, especially for children below 12 years old.[68] This highlights the crucial need for healthcare providers and other stakeholders to develop and standardize digital health guidelines and ensure proper dissemination and implementation of such guidelines.[1] The parents in this review seem to have differing views on the types of ST including active use for learning purposes or passive use for entertainment. Therefore, parents may not be able to determine the right balance, since there is varied information in these areas for guidance and attention. Hence, it is important to distinguish them and consider their long-term impacts, notably between the passive nature of television and the interactive ST devices including computer and mobile devices.[69] There is a need for robust research evidence relating to ST and its association with child development, so healthcare providers especially the pediatricians can provide consistent and evidence-based education to the parents.

Limitations and future implications

This qualitative meta-synthesis should be interpreted with the following limitations. First, potentially relevant studies might have been missed due to unclear titles or abstracts and poor indexing. Second, there could be potential bias in the perceptions of interviewed parents involving their children and their parenting ideals. Third, the geographical distribution of included studies was centered on western countries; hence, findings may not be transferable to other contexts. Fourth, this review was limited to studies published in English and finally, the population was confined to parents, therefore the holistic views from other relevant stakeholders such as grandparents, nannies, other caregivers, and school educators have been missed. Despite these limitations, this first-its-kind review has provided valuable insights into parents' perceptions of ST for their young children.

Further studies could consider exploring the perceptions of other stakeholders involving children's ST. Future research could explore various geographical regions and multicultural societies to gather holistic perspectives of parents from different cultural ideologies. Additionally, more research and information on the use of ST in particularly vulnerable groups such as low-income families, and parents of children with developmental needs will be necessary, as the unique challenges in parenting efficacy and adoption of digital devices for educational and recreational purposes may be different in these special groups. Healthcare providers especially pediatricians can then use these findings to understand parents' predicaments and needs to develop evidence-based educational programmes to ensure that parents understand the risk and benefits of ST, and ensure appropriate ST for their children. Other stakeholders such as the childcare facilitators can also use these findings to better support parents around their ST-related knowledge and concerns. However, these recommendations need to be further evaluated in future research.

CONCLUSION

This meta-synthesis consolidated the available qualitative evidence on parents' perceptions of children's ST. The parents provided varied reasons behind ST, describing it as a 'babysitter' for educational means, and to mediate children's bad behaviors. Parents shared differing attitudes toward ST from seeing ST as a useful educational tool to seeing it as a source of addiction. Parents in this review highlighted the strategies and approaches for better ST, including having rules and restrictions around its usage, and striving for balance between on and off ST. This review hopes to promote open conversations in addressing parenting needs around ST. Future research is needed to develop and evaluate better educational programs to ensure that parents

understand the risks and benefits of ST so that something that is now accepted as normal is used rationally and safely.

DATA AVAILABILITY

All data generated or analysed during this study are included in this published article and its supplementary information files.

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AUTHOR CONTRIBUTIONS

S.C.C. critically reviewed the manuscript for important intellectual content and edited and revised the manuscript. W.Z.T. conceptualized and designed the study, carried out the data collection, extraction, initial analyses, drafted the initial manuscript, and edited and revised the manuscript. S.S. conceptualized and designed the study, coordinated, and supervised data collection, and reviewed and revised the manuscript. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

COMPETING INTERESTS

The authors declare no competing interests.

ADDITIONAL INFORMATION

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