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REPERCUSSIONS OF SCREEN USE ON MENTAL HEALTH IN EARLY CHILDHOOD

REPERCUSSÕES DO USO DE TELAS PARA SAÚDE MENTAL NA PRIMEIRA INFÂNCIA

REPERCUSIONES DEL USO DE PANTALLAS EN LA SALUD MENTAL EN LA PRIMERA INFANCIA

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ABSTRACT
This study aimed to identify the repercussions of excessive screen time on the mental health of children in early childhood. This is an integrative review that selected articles from the Medline, Lilacs, BDENF and SciELO databases. The terms "child", "screen time" and "mental health" were used as descriptors registered in the Health Sciences Descriptors (DeCS) database, and were associated by the Boolean operator AND. After applying the eligibility criteria for the study, a sample of 12 original articles was obtained, which focused mainly on the study of the complications of excessive screen time on neurodevelopmental delay, worsening of pre-existing disorders or the emergence of symptoms of mental distress in children. This demonstrated the existence of close relationships between excessive screen time and mental health problems in the first years of life.
Keywords: *child; screen time; mental health.*

RESUMO
A presente pesquisa teve por objetivo identificar as repercussões do uso excessivo de telas à saúde mental de crianças na primeira infância. Trata-se de uma revisão integrativa que selecionou artigos nas bases de dados Medline, Lilacs, BDENF e SciELO. Foram utilizados como descritores cadastrados na base dos Descritores em Ciências da Saúde (DeCS) os termos "criança", "tempo de tela" e "saúde mental", sendo associados pelos operadores booleanos E/AND. Após aplicação dos critérios de elegibilidade para o estudo, foi obtida uma amostra de 12 artigos originais, os quais tinham como foco principal o estudo das complicações do uso excessivo de telas no atraso do neurodesenvolvimento, no agravamento de transtornos preexistentes ou no surgimento de sintomas de sofrimento mental em crianças. Foi evidenciada, dessa forma, a existência de estreitas relações entre o uso excessivo de telas e os problemas para saúde mental nos primeiros anos de vida.
Descritores: *criança; tempo de tela; saúde mental*.

RESUMEN
La presente investigación tuvo como objetivo identificar las repercusiones del uso excesivo de pantallas en la salud mental de los niños en la primera infancia. Se trata de una revisión integradora, que seleccionó artículos de las bases de datos Medline, Lilacs, BDENF y SciELO. Los términos "niño", "tiempo de pantalla" y "salud mental" fueron utilizados como descriptores registrados en la base de datos Descriptores de Ciencias de la Salud (DeCS), siendo asociados por el operador booleano E/AND. Tras aplicar los criterios de elegibilidad para el estudio, se obtuvo una muestra de 12 artículos originales, que tuvieron como foco principal el estudio de las complicaciones del uso excesivo de pantallas en el retraso del neurodesarrollo, el empeoramiento de trastornos preexistentes o la aparición de síntomas de malestar mental en los niños. Esto pone de relieve la existencia de estrechas relaciones entre el uso excesivo de pantallas y los problemas de salud mental en los primeros años de vida.
Descriptores: *niño; tempo frente a la pantalla; salud mental.*

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INTRODUCTION

With the advent of portable digital devices, such as *laptops*, *tablets*, *smartphones*, among others, which allow instant access to the internet, it can be seen that the time spent exposed to electronic screens is growing exponentially. The facilities offered by such equipment attract and retain users' attention, becoming an indispensable part of their routines. Because they have a wide range of options, they are able to reach audiences from different social backgrounds and are present throughout all age groups, even during early childhood[1].

Early childhood, the period encompassing the first six years of life, plays a fundamental role in the child's brain maturation. It is during this phase that constant biological and psychosocial changes take place, which are responsible for the formation of the social and affective structure, as well as motor, cognitive, and language development. As such, the consequences of prematurely exposing children to the use of screens, as well as the ideal frequency of use, are aspects that need to be debated[2].

According to the Brazilian Society of Pediatrics (SBP), up to the age of two, exposure to digital devices should be avoided; from two to five, it should be limited to one hour a day, and children aged between 6 and 10 should be limited to a maximum of 1 to 2 hours a day[3]. However, in practice, the appropriate time of use is often not respected. It is not yet known for sure how harmful this behavior can be, but some studies point to some repercussions, including concerning the mental health of this public.

The potential adverse association between screen time and children's mental health is widely discussed. Research has already associated excessive screen use with impaired social skills, attention problems, reduced sleep duration and quality, aggression, the development of depressive disorders, anxiety, and other psychiatric problems in children. However, some results have revealed inconsistencies on the subject, pointing out that, in addition to screen time, other risk factors could be directly related to impaired mental health in children, thus making it difficult to draw a precise conclusion on the subject[1,4-6].

Given the above, this study aimed to identify the repercussions of excessive screen use on the mental health of children in early childhood. It is believed that carrying out a bibliographic survey of the implications that the use of screens can have on children's mental health will help to identify gaps and provide support for the production of scientific knowledge to raise awareness among health professionals and the population in general about the risks that this practice poses to children's health, to gradual social change and leading to more conscious use of these devices.

METHODS

It is an integrative review study, which is a methodologically rigorous research technique that enables a critical analysis and synthesis of the available evidence on the subject under investigation, contributing to the advancement of knowledge, the implementation of effective health care interventions, the reduction of costs, and the identification of gaps to be filled by future studies[7].

The Problem/Population, Concept and Context (PCC) strategy, a mnemonic used to help identify key topics[8], was used as the basis for the study's guiding question. Thus, "P" was defined for children in early childhood; "C" for excessive use of screens; and "C" for mental health. It led to the following guiding question: What are the repercussions of excessive screen use on the mental health of children in early childhood?

The articles were selected between December 2024 and January 2025 from the *Medical Literature Library of Medicine* (Medline), Latin American and Caribbean Literature (Lilacs), and Nursing Database (BDENF) databases; studies were also searched for in the *Scientific Electronic Library* (SciELO).

To survey the literature, keywords from the Health Sciences Descriptors (DeCS) and *Medical Subject Headings* (*MeSH*) were used: *child*, *screen time,* and *mental health*. When carrying out the bibliographic research, the descriptors were linked using the Boolean operator "OR" and the connector "AND", generating the following search key: ((Criança OR *child*) AND (Tempo de tela OR *screen time*) AND (Saúde Mental OR *mental health*)). This key was used in all the databases investigated.

To answer the study's guiding question, the articles in the sample were selected according to the following inclusion criteria: original scientific articles, available in full and free of charge, in any language, which address the repercussions of excessive screen use on the mental health of children aged 0 to 6, published in the last 5 years (2020 to 2025). The time frame adopted in the selection of articles was aimed at gathering current information, given that in the last five years, the impacts of social isolation, as well as the advent of new technologies, have increased the use of electronic devices, further expanding debates on the subject in the academic world.

In this way, incomplete or repeated articles in different databases, review studies, secondary publications and those focusing on other research subjects or topics unrelated to the objective proposed by the review were excluded.

The search and pre-selection of articles took place simultaneously, with two reviewers reading and analyzing the data. To identify the articles that met the eligibility criteria, a preliminary analysis was carried out by reading the titles and abstracts of the studies collected. Subsequently, the selected articles were read in full to assess whether they corresponded to the research objective. The articles identified were presented in a synoptic table, considering the PCC strategy.

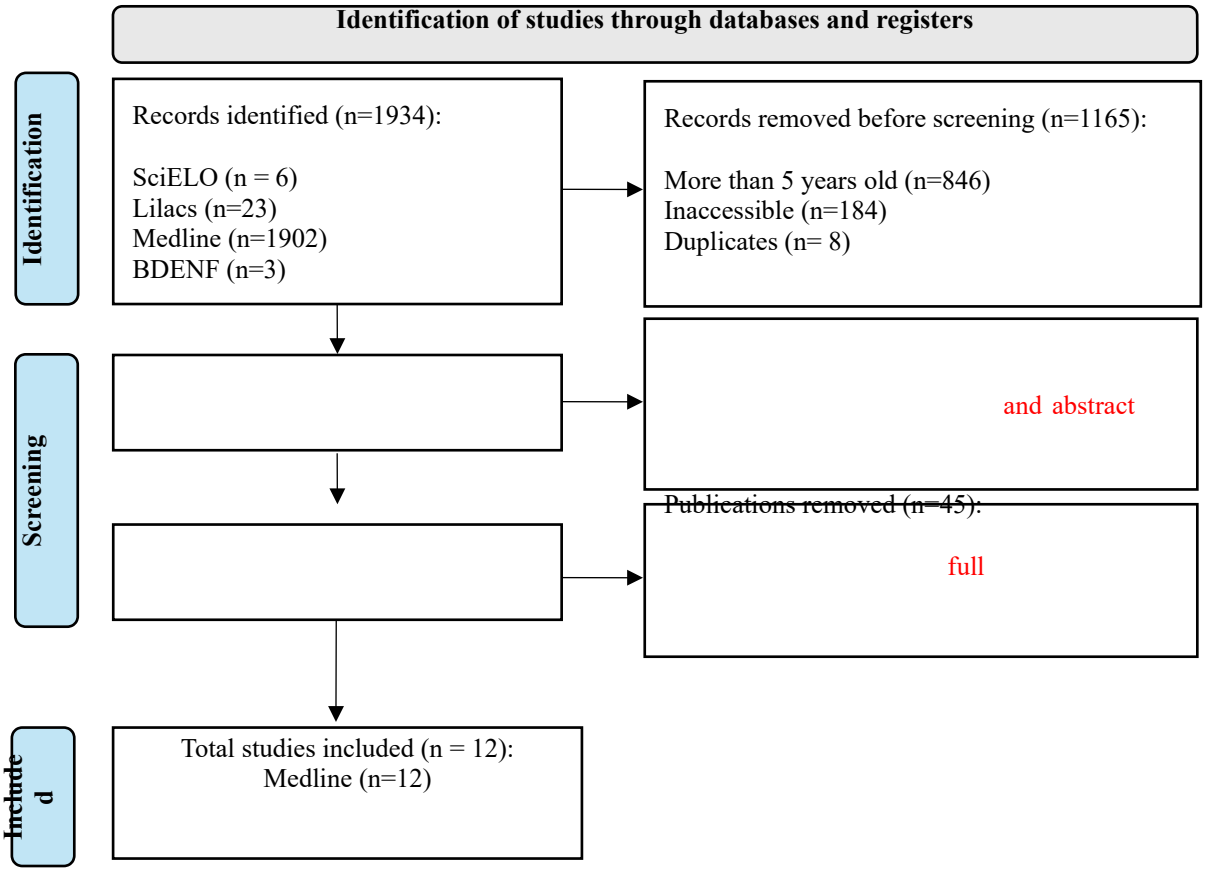
In the data analysis process, the articles were first considered individually; they were then compared with each other in order to identify variables of common interest and key concepts that made it possible to categorize the extracted data into thematic groups, from which the research results were obtained, used to achieve the proposed purpose of an integrative literature review[10].

RESULTS

By adapting the PRISMA[9] flowchart, shown in Figure 1, we tried to clarify how the articles were identified and how the studies were included and excluded. Initially, 1934 articles were identified in all the databases searched. Of these, 1,165 were excluded after applying the inclusion and exclusion criteria, and 769 manuscripts were

selected, of which, after screening, 57 articles were considered eligible for analysis. After reading them in full, 45 were excluded because they were outside the scope of this review. Finally, 12 articles were selected for this review.

Figure 1 - Study selection process following the PRISMA 2020 flowchart.



Source: own elaboration, 2025. Adapted from the PRISMA flowchart[9].

Once the selection process was complete, the twelve articles included in the sample were analyzed in terms of their content and categorized according to the names of the authors, year of publication, title, target audience, type of study, database of origin, and language of presentation. This characterization is shown in Table 1.

Table 1 - Categorization of articles. Fortaleza, 2025.

NO.	Author/ Year	Title	Audience	Type of study	Database/ Language
1	Huang et al., 2024[11]	*Screen time, brain network development and socio-emotional competence in childhood: moderation of associations by parent-child Reading*	Mother-child dyads (from pregnancy to age 7)	Prospective birth cohort	Medline - English
2	Vaidyanathan	*Screen Time exposure in*	Children aged	Cross-	Medline

	et al., 2021[12]	*Preschool Children with aDHD: a Cross-Sectional exploratory Study from South india*	2.5 to 6 years, diagnosed with ADHD	sectional exploratory	- English
3	Takahashi et al., 2023[13]	*The association between screen time and genetic risks for neurodevelopmental disorders in children*	Children aged 24 to 40 months	Longitudinal cohort	Medline - English
4	Al-Mehmadi et al., 2024[14]	*Electronic device usage among preschool children and its association with mental health status in Saudi Arabian kindergartens*	Children aged 3 to 6	Analytical cross-sectional	Medline - English
5	Niiranen et al.,2024[15]	*Children's screen time and psychosocial symptoms at 5 years of age - the role of parental factors*	Mothers and fathers of 5-year-old children	Cross-sectional birth cohort	Medline - English
6	Shih et al., 2023[16]	*Attention-deficit hyperactivity disorder in children is related to maternal screen time during early childhood in Taiwan: a national prospective cohort study*	Mother-child dyads (6 months to 8 years)	Longitudinal prospective birth cohort	Medline - English
7	Liang et al., 2024[17]	*Association between screen time and physical activity on mental health among preschoolers: a cross-sectional study from Southwest China*	Children aged 3 to 7	Cross-sectional observational	Medline - English
8	Luo et al, 2024[18]	*Multidimensional screen exposure and its impact on psychological well-being in toddlers*	Caregivers of 2- and 3-year-old children	Exploratory cross-sectional	Medline - English
9	McNeil et al. 2021[19]	*Cross-Sectional Associations of Application Use and Media Program Viewing with Cognitive and Psychosocial Development in Preschoolers*	Parents of preschoolers (3 to 5 years)	Observational	Medline - English
10	Sugiyama et al, 2023[20]	*Outdoor Play as a Mitigating Factor in the Association Between Screen Time for Young Children and Neurodevelopmental Outcomes*	Children aged 1 year and 6 months to 4 years	Birth cohort	Medline - English

11	Wang et al., 2024[21]	*Types of On-Screen Content and Mental Health in Kindergarten Children*	Children aged 3 to 6	Longitudinal cohort	Medline - English
12	Xuedi et al., 2021[22]	*Screen Use and Mental Health Symptoms in Canadian Children and Youth During the COVID-19 Pandemic*	Children and youth aged 2 to 18 years	Longitudinal cohort	Medline - English

Source: own elaboration, 2025.

Although the search was carried out in different databases and libraries, all the studies in the sample were obtained from *Medline* (n = 12) and, consequently, available in English (n = 12), with 2024 being the year with the highest number of publications (n = 6).

In terms of design, cohort studies were the most widely used methodology for investigating the topic (n=7), with birth cohort studies standing out (n=4). With regard to the target audience, the main focus of the studies was on monitoring and observing children in the first years of life (n=6); however, some studies also looked at parents and caregivers (n=5).

The studies evaluated different impacts of screen use on children's mental health. The aspects covered, as well as the objectives and results achieved by the studies, are summarized in Table 2.

Table 2 - Summary of the studies included in the sample. Fortaleza, 2025.

NO.	Mental health aspects addressed	Objective	Outcome
1	Brain network development and socio-emotional competence	To provide mechanistic *insights* into the association between screen time, brain network development and socioemotional competence, using brain network topology, and to examine the potential role of parent-child reading in mitigating the effects of screen time.	Infant screen time was significantly associated with emotion processing and cognitive control network integration. This network integration also significantly mediated the association between screen time and both measures of socioemotional competence. Parent-child reading time significantly moderated the association between screen time and emotion processing and cognitive control network integration.
2	Correlation of screen time with ADHD severity	To evaluate screen exposure in preschool children with ADHD and to study the correlation of screen time with ADHD severity and parental stress levels.	Total screen time in preschool children with ADHD was higher than recommended standards. ADHD severity and parental stress levels were positively correlated with increased screen time in the child.

3	The association between screen time and genetic risks for neurodevelopmental disorders	To identify the trajectories of screen time in children and explore whether genetic risks for neurodevelopmental disorders are correlated with the trajectories.	The genetic risk of ASD was associated with increased screen time, and that of ADHD with an increase in screen time over time.
4	Association between the use of electronic devices and mental health status	To estimate the prevalence of electronic device use and its association with mental health status among preschool children aged 3-6 years	A significant correlation was observed between the use of electronic devices and mental health scores.
5	Screen time and psychosocial symptoms in children associated with parenting style dimensions	To investigate whether the psychological distress of parents and the dimensions of parenting style explain the association between children's screen time and psychosocial symptoms.	A high level of screen time in children was associated with attention and concentration difficulties, hyperactivity and impulsivity symptoms, as well as internalizing and externalizing symptoms among 5-year-olds. It was especially pronounced among children whose mothers had poorer mental well-being.
6	Relationship between attention deficit hyperactivity disorder in children and maternal screen time	To assess the association between screen time during early childhood in families and the incidence of ADHD.	No significant relationship was observed between children's or parents' screen time and ADHD. Greater maternal screen time, when the child was 3 years old, was associated with a higher incidence of ADHD in this population-based study.
7	Association between screen time and physical activity in mental health	To examine the associations between physical activity, screen time and mental health problems among Chinese preschoolers.	Less physical activity and more screen time are positively related to mental health problems, but the relationship differs by type of physical activity, total time and gender.
8	Impact of multidimensional screen exposure on the psychological well-being of young children	To investigate the impact of screen use on psychological issues in children aged 2 to 3, considering screen time and types of media and screen content. media and screen content.	The amount of time spent using computers, cell phones and VR devices and the proportion of exposure to non-educational content and fast-paced content were significantly associated with psychological problems among children aged 2 to 3.

9	Relationship between electronic media use and cognitive and psychosocial development	To investigate the associations of electronic media use (viewing programs and using apps) with cognitive and psychosocial development in preschoolers.	Small but significant negative associations were observed for total electronic media use and program viewing with children's visual-spatial working memory. However, high-dose app users demonstrated higher phonological working memory scores compared to non-users. Similarly, compared to non-users, users of low-dose apps showed statistically significantly fewer total difficulties.
10	Neurodevelopmental outcome of outdoor play as a mitigating factor of screen exposure time	To investigate whether more screen time at 2 years of age is associated with neurodevelopmental outcomes at 4 years of age and whether this association is mediated by the frequency of outdoor play at 2 years and 8 months of age.	More screen time at age 2 was directly associated with poorer communication at age 4. This was also associated with daily living skills, but the frequency of outdoor play at 2 years and 8 months of age alleviated this, suggesting that outdoor play mitigated the association between increased screen time and sub-optimal neurodevelopment.
11	Relationship between types of screen content and mental health	To examine the allocation and longitudinal changes in screen exposure to different types of content and explore their associations with mental health in children aged 3-6 years.	Both total screen time and different types of content were associated with mental health problems in children aged 3 to 6.
12	Screen use and mental health symptoms during the COVID-19 pandemic	To determine whether specific forms of screen use were associated with mental health symptoms in children and young people during COVID-19.	Higher levels of screen use were associated with poor mental health in children and young people during the COVID-19 pandemic. In younger children, more TV or digital media time was associated with higher levels of conduct problems and hyperactivity/inattention.

Source: own elaboration.

When the data was grouped together, there was a predominance of themes about the complications of excessive screen use, whether they be delayed neurodevelopment, the worsening of pre-existing disorders, or the emergence of symptoms of mental distress in children.

ADHD was the focus of three studies that investigated different perspectives, ranging from the influence of screens on the cause of this disorder to their being seen as a consequence or aggravation of an already defined condition, establishing a

relationship not only between the direct use of screens by the child, but also between their use by their guardians[12-13,16].

In addition, other aspects of parental lifestyle have also been examined, which have linked greater repercussions on children's mental health to family environments in which excessive use of screens was associated with the behavior and psychological well-being of parents[15-16].

In addition, it is worth noting that the adoption of healthy stimuli, such as physical activity, reading and outdoor play, has been recognized by the studies investigated as a way of combating and mitigating the effects of technological dependence on children's mental health and development [11,17,20].

Finally, according to the studies analyzed, exposure time and the type of content consumed are crucial parameters in defining the boundary between healthy and pathological use [18-21].

DISCUSSION

From the results obtained in this review, it was possible to identify that exposure to digital screens is associated with a series of negative repercussions related to children's mental health, since their excessive use is capable of generating addiction, causing symptoms such as stress, anxiety, irritability and depression[23]. In this context, the study carried out by Tana and Amâncio showed that children who exceed the screen time recommended by the SBP are at greater risk of having their capacity for concentration and self-control diminished, becoming more hyperactive, inattentive and impulsive[24].

In addition, studies show that this practice also poses threats to neurodevelopment. According to research by Tomopoulos and colleagues, screen time in children up to 6 months old was associated with an increased risk of later language and communication difficulties[25].

In relation to children's exposure to screens and the incidence of ADHD diagnosis, despite much work in the literature, this association remains inconclusive. However, articles point to a positive correlation between the severity of ADHD and an increase in the amount of time children are exposed to screens[12]. One possible explanation, according to Roth and Saykinet, is that the greater the executive function deficits, the more difficult it is for children to engage in tasks that require sustained attention, leading them to prefer screen devices to play-based activities[26].

Still on the subject of repercussions on ADHD, a study carried out with children aged 2 to 9 in Germany correlated maternal screen time with an increase in children's screen time and, consequently, an increase in ADHD symptoms, thus demonstrating the impact of parental lifestyle on children's behavior and habits[27]. From this perspective, Detnakarintra and colleagues showed that children who lived with more participative and interactive parents at 18 months used screens less often between two and three years

of age. Unlike those raised by parents with authoritarian, negligent and permissive styles, who ended up using screens to a greater extent[28].

It is therefore important that children are constantly stimulated in the family environment. Therefore, active play, together with physical activity, are key factors in promoting mental health and reducing technological dependence in this group, as they promote other benefits. Some studies suggest that more active children have better cognitive development scores, executive function, language, motor skills and learning in general[(29) (,) (30)]. In addition, the benefits of physical exercise on brain function mean that people who are physically active have a lower risk of suffering from mental disorders than those who are sedentary[31,32].

In addition to screen time, the mental health implications of the type of content they transmit is another point worth highlighting. Most digital content has restrictions on consumption according to age group. However, other precautions should be taken before choosing content for children. Some studies have found that the pace of programs can play a role in overstimulating the brain, which can lead to health damage and developmental delays. Educational programs, however, have a slower pace implying fewer risks to mental health[33-35].

CONCLUSION

This study has shown that, although technology is increasingly present at all stages of human life, there are close links between the excessive use of screens and mental health problems for children in early childhood.

The harmfulness of digital media during the first years of life may have significant long-term effects, as it can cause delays in neurodevelopment and other symptoms of psychological impairment, with the potential to cause major clinical repercussions. In this sense, family members and caregivers of young children should avoid introducing electronic screens at an early age, as well as providing appropriate stimuli to promote healthy child growth and development.

Although the risks of screen use in early childhood have been gaining significant visibility in academic circles, especially after the period of social isolation, future research is needed to analyze different aspects, especially in the national scenario, since the reality of Brazilian children, in some aspects, differs from that observed in other countries; in addition, knowing the national needs is essential to plan and implement effective actions based on specific demands.

REFERENCES

1. Nobre JN, Santos JN, Santos LR, Guedes SD, Pereira L, Costa JM, Morais RL. Fatores determinantes no tempo de tela de crianças na primeira infância. Cienc Amp Saude Coletiva [Internet]. 2021 [citado 12 dez 2024];26(3):1127-36. Disponível em: https://doi.org/10.1590/1413-81232021263.00602019.
2. Ministério da Saúde (BR). Sistema de Vigilância Alimentar e Nutricional. Saúde da criança: Primeira infância. [Internet]. [Brasília]: Ministério da Saúde (BR); [2024?] [citado 20 jan 2024]. Disponível em: https://www.gov.br/saude/pt-br/assuntos/saude-de-a-a-z/s/saude-da-crianca/primeira-infancia.
3. Sociedade Brasileira de Pediatria (SBP). Grupo de Trabalho Saúde na Era Digital (2019- 2021). Manual de Orientação. Menos Telas Mais Saúde. [Internet]. [Rio de Janeiro]: Sociedade Brasileira de Pediatria (SBP); 2019. [citado 20 jan 2024]. Disponível em: https://www.sbp.com.br/fileadmin/

user_upload/_22246c-ManOrient_-__MenosTelas__MaisSaude.pdf. Acessado em: 25 de janeiro de 2024;
4. Dutra GF, Kaufmann CC, Pretto AD, Albernaz EP. Television viewing habits and their influence on physical activity and childhood overweight. J Pediatr [Internet]. Jul 2015 [citado 12 fev 2024];91(4):346-51. Disponível em: https://doi.org/10.1016/j.jped.2014.11.002,
5. Santos NC, Costa-Filho PM. Abreu CN, Eisenstein E, Estefenon SG. Vivendo esse mundo digital: impactos na saúde, na educação e nos comportamentos sociais. Porto Alegre: Artes Médicas; 2013. Cienc Amp Saude Coletiva [Internet]. Mar 2014 [citado 12 fev 2025];19(3):991-4. Disponível em: https://doi.org/10.1590/1413-81232014193.21882013.
6. Andrade BM, Barreto AS, Campos AM, Carranza BL, Santana LM, Almeida LM, Ribeiro MC, Mendonça NP, Mendonça VP, Soares AC. Os fatores associados à relação entre tempo de tela e aumento de ansiedade em crianças e adolescentes durante a pandemia de COVID-19: uma revisão integrativa. Res Soc Dev [Internet]. 11 jun 2022 [citado 12 fev 2025];11(8):e8511830515. Disponível em: https://doi.org/10.33448/rsd-v11i8.30515.
7. Mendes KD, Silveira RC, Galvão CM. Revisão integrativa: método de pesquisa para a incorporação de evidências na saúde e na enfermagem. Texto Amp Contexto Enferm [Internet]. Dez 2008 [citado 25 jan 2024];17(4):758-64. Disponível em: https://doi.org/10.1590/s0104-07072008000400018.
8. Brun CN, Zuge SS. Revisão sistemática da literatura: desenvolvimento e contribuição para uma prática baseada em evidências na enfermagem. In: Lacerda MR, Costenaro RGS, organizadoras. Metodologias da pesquisa para a enfermagem e saúde. Porto Alegre: Moriá; 2015. p. 77- 98.
9. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, Shamseer L, Tetzlaff JM, Akl EA, Brennan SE, Chou R, Glanville J, Grimshaw JM, Hróbjartsson A, Lalu MM, Li T, Loder EW, Mayo-Wilson E, McDonald S, McGuinness LA, Stewart LA, Thomas J, Tricco AC, Welch VA, Whiting P, Moher D. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ [Internet]. 29 mar 2021 [citado 2 fev 2025]:n71. Disponível em: https://doi.org/10.1136/bmj.n71.
10. Broome ME. Integrative literature review for the development of concepts. In: Rodgers BL, Knafl KA. Concept development in nursing. Philadelphia: Saunders; 2000. p. 231-50.
11. Huang P, Chan SY, Ngoh ZM, Ong ZY, Low XZ, Law EC, Gluckman PD, Kee MZ, Fortier MV, Chong YS, Zhou JH, Meaney MJ, Tan AP. Screen time, brain network development and socio-emotional competence in childhood: moderation of associations by parent–child reading. Psychol Med [Internet]. 5 fev 2024 [citado 2 fev 2025]:1-12. Disponível em: https://doi.org/10.1017/s0033291724000084.
12. Vaidyanathan S, Manohar H, Chandrasekaran V, Kandasamy P. Screen Time Exposure in Preschool Children with ADHD: A Cross-Sectional Exploratory Study from South India. Indian J Psychol Med [Internet]. 11 ago 2020 [citado 3 fev 2025]:025371762093978. Disponível em: https://doi.org/10.1177/0253717620939782.
13. Takahashi N, Tsuchiya KJ, Okumura A, Harada T, Iwabuchi T, Rahman MS, Kuwabara H, Nomura Y, Nishimura T. The association between screen time and genetic risks for neurodevelopmental disorders in children. Psychiatry Res [Internet]. Ago 2023 [citado 2 fev 2025]:115395. Disponível em: https://doi.org/10.1016/j.psychres.2023.115395.
14. Al-Mehmadi SO, Halawani AT, Sulaimani MT, Al-Mehmadi TO. Electronic device usage among preschool children and its association with mental health status in Saudi Arabian kindergartens. Saudi Med J [Internet]. Set 2024 [citado 2 fev 2025];45(9):945-51. Disponível em: https://doi.org/10.15537/smj.2024.45.9.20240354.
15. Niiranen J, Kiviruusu O, Vornanen R, Kylliäinen A, Saarenpää-Heikkilä O, Paavonen EJ. Children's screen time and psychosocial symptoms at 5 years of age – the role of parental factors. BMC Pediatr [Internet]. 3 ago 2024 [citado 2 fev 2025];24(1). Disponível em: https://doi.org/10.1186/s12887-024-04915-8.
16. Shih P, Chiang TL, Lin PI, Lin MY, Guo YL. Attention-deficit hyperactivity disorder in children is related to maternal screen time during early childhood in Taiwan: a national prospective cohort study. BMC Psychiatry [Internet]. 10 out 2023 [citado 2 fev 2025];23(1). Disponível em: https://doi.org/10.1186/s12888-023-05242-5.

17. Liang Y, Jin Q, Miao J, Ni X, Qian X, Xiong Y, Liu Z, Xue H. Association between screen time and physical activity on mental health among preschoolers: a cross-sectional study from Southwest China. BMC Public Health [Internet]. 22 jan 2024 [citado 4 fev 2025];24(1). Disponível em: https://doi.org/10.1186/s12889-024-17722-8.
18. Luo S, Guo W, Chen H, Zhu Y, Zhu G, Jia Y. Multidimensional screen exposure and its impact on psychological well-being in toddlers. Front Public Health [Internet]. 11 dez 2024 [citado 3 fev 2025];12. Disponível em: https://doi.org/10.3389/fpubh.2024.1466541.
19. McNeill J, Howard SJ, Vella SA, Cliff DP. Cross-Sectional Associations of Application Use and Media Program Viewing with Cognitive and Psychosocial Development in Preschoolers. Int J Environ Res Public Health [Internet]. 8 fev 2021 [citado 2 fev 2025];18(4):1608. Disponível em: https://doi.org/10.3390/ijerph18041608.
20. Sugiyama M, Tsuchiya KJ, Okubo Y, Rahman MS, Uchiyama S, Harada T, Iwabuchi T, Okumura A, Nakayasu C, Amma Y, Suzuki H, Takahashi N, Kinsella-Kammerer B, Nomura Y, Itoh H, Nishimura T. Outdoor Play as a Mitigating Factor in the Association Between Screen Time for Young Children and Neurodevelopmental Outcomes. JAMA Pediatr [Internet]. 23 jan 2023 [citado 2 fev 2025]. Disponível em: https://doi.org/10.1001/jamapediatrics.2022.5356.
21. Wang H, Zhao J, Yu Z, Pan H, Wu S, Zhu Q, Dong Y, Liu H, Zhang Y, Jiang F. Types of On-Screen Content and Mental Health in Kindergarten Children. JAMA Pediatr [Internet]. 4 dez 2023 [citado 5 fev 2025]. Disponível em: https://doi.org/10.1001/jamapediatrics.2023.5220.
22. Li X, Vanderloo LM, Keown-Stoneman CD, Cost KT, Charach A, Maguire JL, Monga S, Crosbie J, Burton C, Anagnostou E, Georgiades S, Nicolson R, Kelley E, Ayub M, Korczak DJ, Birken CS. Screen Use and Mental Health Symptoms in Canadian Children and Youth During the COVID-19 Pandemic. JAMA Netw Open [Internet]. 28 dez 2021 [citado 7 fev 2025];4(12):e2140875. Disponível em: https://doi.org/10.1001/jamanetworkopen.2021.40875.
23. Kamaleddine AN, Antar HA, Ali BT, Hammoudi SF, Lee J, Lee T, Bhang SY, Chung S, Salameh P. Effect of Screen Time on Physical and Mental Health and Eating Habits During COVID-19 Lockdown in Lebanon. Psychiatry Investig [Internet]. 25 mar 2022 [citado 12 fev 2025];19(3):220-8. Disponível em: https://doi.org/10.30773/pi.2021.0239.
24. Tana CM, Amâncio ND. Consequências do tempo de tela na vida de crianças e adolescentes. Res Soc Dev [Internet]. 4 jan 2023 [citado 12 fev 2025];12(1):e11212139423. Disponível em: https://doi.org/10.33448/rsd-v12i1.39423.
25. Tomopoulos S, Dreyer BP, Berkule S, Fierman AH, Brockmeyer C, Mendelsohn AL. Infant Media Exposure and Toddler Development. Arch Pediatr Amp Adolesc Med [Internet]. 1 dez 2010 [citado 12 fev 2025];164(12). Disponível em: https://doi.org/10.1001/archpediatrics.2010.235.
26. Roth RM, Saykin AJ. Executive dysfunction in attention-deficit/hyperactivity disorder: cognitive and neuroimaging findings. Psychiatr Clin North Am [Internet]. Mar 2004 [citado 12 fev 2025];27(1):83-96. Disponível em: https://doi.org/10.1016/s0193-953x(03)00112-6.
27. Poulain T, Ludwig J, Hiemisch A, Hilbert A, Kiess W. Media Use of Mothers, Media Use of Children, and Parent–Child Interaction Are Related to Behavioral Difficulties and Strengths of Children. Int J Environ Res Public Health [Internet]. 22 nov 2019 [citado 12 fev 2025];16(23):4651. Disponível em: https://doi.org/10.3390/ijerph16234651.
28. Detnakarintra K, Trairatvorakul P, Pruksananonda C, Chonchaiya W. Positive mother-child interactions and parenting styles were associated with lower screen time in early childhood. Acta Paediatr [Internet]. 7 out 2019 [citado 12 fev 2025];109(4):817-26. Disponível em: https://doi.org/10.1111/apa.15007.
29. Carson V, Hunter S, Kuzik N, Wiebe SA, Spence JC, Friedman A, Tremblay MS, Slater L, Hinkley T. Systematic review of physical activity and cognitive development in early childhood. J Sci Med Sport [Internet]. Jul 2016 [citado 12 fev 2025];19(7):573-8. Disponível em: https://doi.org/10.1016/j.jsams.2015.07.011.
30. Tandon PS, Tovar A, Jayasuriya AT, Welker E, Schober DJ, Copeland K, Dev DA, Murriel AL, Amso D, Ward DS. The relationship between physical activity and diet and young children's cognitive

development: A systematic review. Prev Med Rep [Internet]. Jun 2016 [citado 12 fev 2025];3:379-90. Disponível em: https://doi.org/10.1016/j.pmedr.2016.04.003.
31. Antunes HK, Santos RF, Cassilhas R, Santos RV, Bueno OF, Mello MT. Exercício físico e função cognitiva: uma revisão. Rev Bras Medicina Esporte [Internet]. Abr 2006 [citado 12 fev 2025];12(2):108-14. Disponível em: https://doi.org/10.1590/s1517-86922006000200011.
32. Bezerra Campos T, Menezes Amaral CE. Atividade física e transtornos mentais comuns no CAPS AD de Quixadá/CE . Cadernos ESP [Internet]. 19º de abril de 2021 [citado 12 de fevereiro de 2025];15(1):63-76. Disponível em: https://cadernos.esp.ce.gov.br/index.php/cadernos/article/view/494.
33. Zimmerman FJ, Christakis DA. Associations Between Content Types of Early Media Exposure and Subsequent Attentional Problems. PEDIATRICS [Internet]. 1 nov 2007 [citado 12 fev 2025];120(5):986-92. Disponível em: https://doi.org/10.1542/peds.2006-3322.
34. Kostyrka-Allchorne K, Cooper NR, Gossmann AM, Barber KJ, Simpson A. Differential effects of film on preschool children's behaviour dependent on editing pace. Acta Paediatr [Internet]. 26 fev 2017 [citado 12 fev 2025];106(5):831-6. Disponível em: https://doi.org/10.1111/apa.13770.
35. Lillard AS, Peterson J. The Immediate Impact of Different Types of Television on Young Children's Executive Function. PEDIATRICS [Internet]. 12 set 2011 [citado 12 fev 2025];128(4):644-9. Disponível em: https://doi.org/10.1542/peds.2010-1919.