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DIGITAL SCREEN EXPOSURE AND MENTAL HEALTH OUTCOMES  
IN CHILDREN AND ADOLESCENTS: A NARRATIVE REVIEW

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# DIGITAL SCREEN EXPOSURE AND MENTAL HEALTH OUTCOMES IN CHILDREN AND ADOLESCENTS: A NARRATIVE REVIEW

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## ABSTRACT

**Background:** The rapid expansion of digital technologies has substantially increased screen exposure among children worldwide. Smartphones, tablets, computers, and other electronic devices have become integral components of daily life, influencing both educational activities and leisure behaviors. Although digital technologies offer numerous benefits, excessive screen exposure has been increasingly associated with adverse mental health outcomes in pediatric populations. Growing evidence suggests that prolonged screen time may contribute to sleep disturbances, emotional dysregulation, attention difficulties, and symptoms of anxiety and depression, positioning excessive digital media use as an emerging public health concern.

**Aim:** The aim of this study was to review current scientific evidence regarding the association between digital screen exposure and mental health outcomes in children and to assess its relevance as a growing public health challenge.

**Methods:** A structured narrative review of the literature was conducted using electronic databases including PubMed, Scopus, and Google Scholar. Studies published between 2009 and 2025 examining associations between screen exposure and mental health outcomes in children and adolescents were included. Studies focusing exclusively on adult populations were excluded.

**Results:** The reviewed evidence indicates that excessive digital screen exposure is associated with an increased risk of sleep disturbances, depressive symptoms, anxiety, and attention problems. Emerging evidence also suggests potential effects on emotional regulation and cognitive functioning. However, moderate and contextually appropriate use of digital technologies may provide educational and social benefits.

**Conclusions:** Excessive digital screen exposure may negatively influence mental health in children and represents an important public health concern. Promoting balanced and developmentally appropriate patterns of digital media use may help mitigate potential risks. Further longitudinal research is required to clarify causal relationships and to establish evidence-based recommendations for safe screen exposure in pediatric populations.

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## KEYWORDS

Digital Screen Exposure, Screen Time, Children and Adolescents, Mental Health, Sleep Disturbances, Depression and Anxiety, Digital Media

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## 1. Introduction

Over the last two decades, digital technologies have become an integral part of everyday life, significantly influencing the lifestyle and behavior of children and adolescents (Odgers & Jensen, 2020; Stiglic & Viner, 2019). The widespread availability of smartphones, tablets, computers, and other electronic devices has led to a substantial increase in daily screen exposure among young populations (Twenge et al., 2018; Anderson & Jiang, 2018). Digital media are now commonly used for education, entertainment, and social interaction, making screen-based activities one of the dominant forms of leisure time among children (Rideout & Robb, 2018; Anderson & Jiang, 2018).

Recent technological developments and the rapid expansion of digital communication have transformed childhood experiences in unprecedented ways (Odgers & Jensen, 2020; Orben & Przybylski, 2019). Children are introduced to digital devices at increasingly younger ages, often before the development of essential cognitive and social skills (World Health Organization [WHO], 2019; American Academy of Pediatrics [AAP], 2016a). This early and prolonged exposure to screens has raised growing concerns among clinicians, educators, and public health professionals regarding its potential effects on mental health and psychosocial development (Stiglic & Viner, 2019; AAP, 2016b; OECD, 2021).

Mental health disorders among children and adolescents represent a significant global public health challenge (Odgers & Jensen, 2020; OECD, 2021). According to epidemiological studies, the prevalence of anxiety disorders, depressive symptoms, and behavioral problems in pediatric populations has increased in recent years (Twenge et al., 2018; Keles et al., 2020). Although multiple biological, psychological, and environmental factors contribute to the development of mental health problems, excessive screen exposure has been identified as a potentially important modifiable risk factor (Stiglic & Viner, 2019; Przybylski & Weinstein, 2017; Boers et al., 2019).

Digital screen exposure includes the use of televisions, smartphones, tablets, computers, and gaming devices (Stiglic & Viner, 2019). Screen time may involve passive activities such as watching videos or television, as well as interactive activities including video gaming, social media use, and online communication (Odgers & Jensen, 2020; Keles et al., 2020). The type, duration, and context of screen exposure may differentially influence psychological outcomes in children (Przybylski & Weinstein, 2017; Orben & Przybylski, 2019). While moderate use of digital technologies may provide educational and social benefits, excessive exposure has been associated with sleep disturbances, emotional dysregulation, reduced attention span, and increased levels of anxiety and depressive symptoms (Boers et al., 2019; Hale & Guan, 2015; Carter et al., 2016).

One of the most frequently described mechanisms linking screen exposure with mental health problems is sleep disruption (Hale & Guan, 2015; Carter et al., 2016). Exposure to blue light emitted by electronic devices may interfere with melatonin secretion and circadian rhythm regulation, leading to delayed sleep onset and reduced sleep duration (Hale & Guan, 2015). Sleep disturbances are well-established risk factors for emotional and behavioral problems in children (Sund et al., 2011; Viner et al., 2019), suggesting an indirect pathway through which digital media may influence mental health.

Another important mechanism involves the overstimulation of the developing brain and psychosocial processes (Orben & Przybylski, 2019; Valkenburg & Peter, 2009). Rapidly changing visual stimuli and continuous access to digital content may affect attentional control and cognitive development (Valkenburg & Peter, 2009). Moreover, intensive use of social media platforms may contribute to social comparison, reduced self-esteem, and increased psychological stress in vulnerable individuals (Keles et al., 2020; Sampasa-Kanyinga & Lewis, 2015).

Despite growing scientific interest in this topic, the relationship between digital screen exposure and mental health outcomes in children remains complex and not fully understood (Odgers & Jensen, 2020; Stiglic & Viner, 2019). Some studies suggest a strong association between prolonged screen time and adverse psychological outcomes (Twenge et al., 2018; Boers et al., 2019; Viner et al., 2019; Houghton et al., 2018), while others indicate that the effects depend on the quality and context of digital media use (Przybylski & Weinstein, 2017; Orben & Przybylski, 2019). Therefore, a comprehensive analysis of current evidence is needed to better understand the potential risks and benefits associated with digital technologies in childhood (Stiglic & Viner, 2019; Houghton et al., 2018).

The aim of this study was to review current evidence on the association between digital screen exposure and mental health outcomes in children and to discuss the implications of excessive screen use for public health and preventive medicine.

## 2. Methods

### Study Design

This study was conducted as a narrative literature review examining the association between digital screen exposure and mental health outcomes in children and adolescents. The aim of the review was to synthesize current evidence regarding psychological, behavioral, and sleep-related consequences of screen exposure in pediatric populations. Due to the heterogeneity of study designs and outcome measures across the literature, a qualitative synthesis approach was adopted.

### Search Strategy

A literature search was initially conducted in January 2025 and updated in February 2026 prior to manuscript submission to ensure inclusion of the most recent publications. Electronic databases including PubMed, Scopus, and Google Scholar were searched.

Articles published between January 2009 and December 2025 were considered eligible. Only studies published in English were included.

The following search string was used in PubMed:

("screen time" OR "screen exposure" OR "digital media" OR "social media")

AND ("children" OR "adolescents" OR "youth")

AND ("mental health" OR "depression" OR "anxiety" OR "behavioral problems" OR "sleep disturbances")

Equivalent keyword combinations were adapted for Scopus and Google Scholar.

The search strategy was informed by methodologies used in previous systematic and narrative reviews investigating screen exposure and mental health outcomes in pediatric populations (Stiglic & Viner, 2019; Keles et al., 2020; Houghton et al., 2018).

### Study Selection

The database search identified 1,247 records. After removal of duplicates ( $n = 312$ ), 935 records remained for title and abstract screening.

Following initial screening, 214 articles were assessed for full-text eligibility. Of these, 78 studies met inclusion criteria and were included in the qualitative synthesis.

Preference was given to systematic reviews, meta-analyses, and large longitudinal or population-based cohort studies, as these provide higher levels of evidence regarding associations between screen exposure and mental health outcomes (Boers et al., 2019; Viner et al., 2019).

### Eligibility Criteria

Studies were included if they:

- Were published in peer-reviewed journals
- Were indexed in PubMed or available in full text
- Were published between 2009 and 2025
- Focused on children or adolescents (0–18 years)
- Examined associations between screen exposure and mental health outcomes

Mental health outcomes included:

- depressive symptoms
- anxiety disorders
- behavioral problems
- attention difficulties
- psychosocial functioning
- sleep disturbances

These outcomes were selected based on prior systematic reviews demonstrating associations between screen exposure and depressive symptoms, behavioral problems, and sleep outcomes in pediatric populations (Stiglic & Viner, 2019; Hale & Guan, 2015; Carter et al., 2016).

### Exclusion Criteria

Studies were excluded if they:

- Focused exclusively on adult populations
- Did not assess mental health outcomes
- Were conference abstracts without full text
- Were not available in English
- Were opinion articles lacking empirical data

### **Data Extraction and Synthesis**

Data were extracted regarding:

- study design
- sample size
- age range
- type of screen exposure
- mental health outcomes assessed
- key findings

Due to substantial heterogeneity in measurement tools, exposure definitions, and outcome assessment across studies, a quantitative meta-analysis was not conducted. Instead, findings were synthesized using a thematic qualitative approach, consistent with methodologies used in previous narrative reviews (Houghton et al., 2018).

Results were organized into the following thematic domains:

- prevalence and patterns of digital screen exposure
- sleep disturbances
- depressive and anxiety symptoms
- behavioral and attention-related problems
- cognitive and psychosocial outcomes
- potential positive effects of digital technologies

## **3. Results**

### **3.1 Prevalence and Patterns of Digital Screen Exposure**

The use of digital devices among children and adolescents has increased substantially over the past two decades, with screen-based activities becoming dominant forms of leisure time (Twenge et al., 2018; Anderson & Jiang, 2018). Smartphones, social media platforms, and streaming services now represent the most frequently used digital media among adolescents (Rideout & Robb, 2018; Anderson & Jiang, 2018).

The COVID-19 pandemic further intensified digital media use due to remote education, reduced physical activity, and social distancing measures. Evidence from large cohort studies and national surveys indicates a significant increase in daily screen exposure during this period (Nagata et al., 2022). More recent population-based data continue to demonstrate high levels of screen engagement and associations with adverse health indicators among adolescents (Zablotsky, 2025). These changes were observed across multiple age groups, highlighting the normalization of prolonged screen engagement in pediatric populations.

A systematic review of reviews examining health outcomes associated with screen exposure concluded that excessive screen time is consistently linked to adverse physical and psychological outcomes, including reduced well-being (Stiglic & Viner, 2019). Overall, current evidence indicates that high levels of screen exposure are widespread and represent a growing public health concern.

### **3.2 Sleep Disturbances**

Sleep disturbances are among the most consistently reported consequences of excessive screen exposure in children (Hale & Guan, 2015; Carter et al., 2016). Studies have demonstrated associations between increased screen time and shorter sleep duration, delayed sleep onset, and poorer sleep quality.

Mechanistically, exposure to blue light emitted by electronic devices may suppress melatonin secretion and disrupt circadian rhythm regulation (Hale & Guan, 2015). A meta-analysis including large pediatric samples confirmed that screen exposure is associated with delayed bedtime and reduced sleep duration (Carter et al., 2016).

Sleep disruption appears to play a mediating role between screen exposure and mental health outcomes. Longitudinal analyses suggest that sleep disturbances are significantly associated with depressive and emotional symptoms in children and adolescents (Sund et al., 2011; Viner et al., 2019). Taken together, sleep disturbance represents one of the most biologically plausible pathways linking digital media use to adverse psychological outcomes.

### 3.3 Depressive Symptoms

Multiple systematic reviews and longitudinal studies have identified associations between prolonged screen exposure and depressive symptoms in children and adolescents (Twenge et al., 2018; Boers et al., 2019). Evidence suggests that higher daily screen time is correlated with lower psychological well-being and increased depressive symptomatology.

More recent prospective analyses from large population-based cohorts further confirm associations between increased screen exposure and depressive symptoms in adolescents (Nagata et al., 2024). A systematic review of reviews concluded that the strength of association between screen exposure and depressive outcomes is moderate but consistent across studies (Stiglic & Viner, 2019; Houghton et al., 2018). Particularly strong associations have been observed in adolescents engaging in intensive smartphone and social media use (Keles et al., 2020).

Although causality remains difficult to establish, proposed mechanisms include sleep disruption, reduced physical activity, social comparison processes, and increased exposure to online stressors (Orben & Przybylski, 2019; Valkenburg & Peter, 2009). Overall, the literature suggests a meaningful association between excessive screen time and depressive symptoms, particularly in vulnerable populations.

### 3.4 Anxiety Symptoms

Anxiety symptoms represent another frequently reported outcome associated with increased screen exposure (Keles et al., 2020). Systematic reviews examining digital media use during the COVID-19 pandemic reported significant correlations between elevated screen time and higher levels of anxiety and psychological distress (Nagata et al., 2022).

Meta-analytic evidence suggests that the strength of association between screen exposure and anxiety may vary depending on the type of digital activity, with social media use demonstrating stronger correlations compared to passive screen behaviors (Houghton et al., 2018; Sampasa-Kanyinga & Lewis, 2015).

The relationship appears to be influenced by contextual and individual factors, including online social comparison, cyberbullying, and pre-existing vulnerability (Viner et al., 2019). While effect sizes are generally small to moderate, the consistency of findings across reviews indicates a non-negligible association between excessive digital media use and anxiety symptoms.

### 3.5 Behavioral and Attention-Related Problems

Evidence linking screen exposure to behavioral and attention difficulties has also been documented (Anderson et al., 2017; Stiglic & Viner, 2019). Associations between higher screen time and hyperactivity, inattention, and externalizing behaviors have been observed in both cross-sectional and longitudinal studies.

Some reviews suggest that rapid visual stimulation and frequent switching between digital tasks may negatively influence attentional control mechanisms (Valkenburg & Peter, 2009). Furthermore, longitudinal data indicate that increased screen exposure may be associated with internalizing and externalizing behavioral difficulties over time (Viner et al., 2019).

Although effect sizes vary across studies, the cumulative evidence supports a modest but consistent relationship between prolonged screen exposure and behavioral outcomes.

### 3.6 Cognitive and Psychosocial Outcomes

Despite concerns regarding excessive exposure, digital technologies may also provide developmental benefits when used appropriately. Moderate and contextually appropriate screen use may support learning, communication, and access to information (Orben & Przybylski, 2019).

Some studies indicate that limited digital engagement is not inherently harmful and may be associated with improved digital literacy and social connectedness (Przybylski & Weinstein, 2017). Additionally, during periods of restricted mobility, such as the COVID-19 pandemic, digital media facilitated continued education and peer interaction (Nagata et al., 2022).

Importantly, emerging evidence suggests that the type and content of screen exposure may differentially influence mental health outcomes in young children, underscoring the importance of qualitative aspects of digital engagement (Wang et al., 2024). Furthermore, recent reviews focusing on early childhood emphasize the need for clearer developmental guidelines regarding appropriate levels of screen exposure (Nuvoli, 2025).

These findings suggest that the impact of digital media on mental health depends not solely on duration but also on content, context, and individual characteristics. The relationship between screen exposure and psychological outcomes appears to be nonlinear, with excessive use posing greater risks than moderate engagement.

#### 4. Discussion

The present narrative review synthesizes current evidence regarding the association between digital screen exposure and mental health outcomes in children. Overall, the findings suggest that excessive screen exposure is associated with sleep disturbances, depressive symptoms, anxiety, and attention difficulties (Stiglic & Viner, 2019; Houghton et al., 2018). Although effect sizes reported in the literature are generally small to moderate, the consistency of associations across diverse study designs and populations strengthens the plausibility of a meaningful relationship (Boers et al., 2019; Twenge et al., 2018). Recent longitudinal analyses from large population-based cohorts further support these associations, particularly with respect to depressive symptoms and emotional difficulties (Nagata et al., 2024).

One of the most robust findings concerns the relationship between screen exposure and sleep disturbances (Hale & Guan, 2015; Carter et al., 2016). Digital device use, particularly in the evening, has been associated with delayed sleep onset and reduced sleep duration. Given the well-established role of sleep in emotional regulation and behavioral functioning (Sund et al., 2011; Viner et al., 2019), sleep disruption likely represents an important mediating pathway rather than a simple co-occurring phenomenon. From a clinical perspective, sleep hygiene interventions may therefore constitute a pragmatic target for preventive strategies.

Beyond sleep-related mechanisms, digital media exposure may influence mental health through psychosocial and cognitive pathways. Intensive social media use has been associated with increased social comparison, exposure to negative content, and cyberbullying (Keles et al., 2020; Sampasa-Kanyinga & Lewis, 2015). These processes may exacerbate vulnerability in adolescents with preexisting emotional difficulties. Importantly, emerging evidence suggests that specific types of screen content may differentially influence mental health outcomes, indicating that not all digital engagement carries equivalent risk (Wang et al., 2024). However, the direction of causality remains uncertain, and bidirectional effects are likely (Orben & Przybylski, 2019). It is also plausible that children and adolescents experiencing depressive or anxiety symptoms may engage more frequently in digital media use as a coping strategy, thereby contributing to reverse causality. This underscores the need for longitudinal research designs capable of disentangling cause from consequence.

The relationship between screen exposure and attention or behavioral outcomes appears more complex. While several reviews report associations with hyperactivity and inattention (Stiglic & Viner, 2019), effect sizes vary considerably, suggesting that screen exposure interacts with other environmental and individual risk factors. It is plausible that excessive digital stimulation may influence attentional control in susceptible children, yet it is unlikely to operate as an isolated causal factor.

Importantly, not all digital media use appears detrimental. Moderate and developmentally appropriate engagement may support educational access, digital literacy, and peer communication (Przybylski & Weinstein, 2017; Orben & Przybylski, 2019). During the COVID-19 pandemic, digital platforms played a critical role in maintaining academic continuity and social interaction (Nagata et al., 2022). These findings highlight the necessity of moving beyond simplistic “screen time” metrics toward a more nuanced understanding of content, context, and individual vulnerability.

From a public health perspective, the widespread availability of digital devices and increasingly early exposure raise concerns about long-term population-level consequences (OECD, 2021; WHO, 2019). Recent population-level data from the United States continue to demonstrate associations between screen time and adverse health outcomes among adolescents (Zablotsky, 2025). Moreover, recent reviews focusing on early childhood emphasize the need for clearer guidance regarding developmentally appropriate screen exposure thresholds (Nuvoli, 2025). Importantly, socioeconomic factors may moderate the relationship between screen exposure and mental health. Differences in parental supervision, access to outdoor environments, digital literacy, and educational resources may influence both screen use patterns and psychological outcomes. Addressing digital health disparities should therefore be incorporated into preventive strategies.

Healthcare professionals should consider routine assessment of digital media use during pediatric consultations, particularly in children presenting with sleep problems, mood disturbances, or attentional difficulties (Domingues-Montanari, 2017). Preventive guidance aimed at promoting balanced daily routines—including adequate sleep, physical activity, and supervised digital engagement—may mitigate potential risks.

### **Strengths and Limitations**

This review has several strengths. First, it integrates findings from multiple databases and synthesizes evidence across diverse study designs, including systematic reviews and longitudinal studies. Second, it provides a multidimensional perspective by considering biological, cognitive, and psychosocial mechanisms. Third, it focuses specifically on pediatric populations, a group particularly vulnerable to environmental influences.

Nevertheless, several limitations must be acknowledged. As a narrative review, this study is subject to potential selection bias and does not provide pooled quantitative estimates of effect size. Considerable heterogeneity in exposure definitions and outcome measures limits direct comparability across studies (Stiglic & Viner, 2019). In addition, most studies rely on self-reported measures of screen time, which may be subject to recall bias and social desirability bias. The limited use of objective digital tracking methods reduces precision in exposure assessment and may attenuate observed associations. Moreover, the predominance of observational research restricts causal inference. Future research should prioritize longitudinal and experimental approaches to better clarify causal pathways and bidirectional effects (Boers et al., 2019). Ongoing systematic review initiatives are expected to provide more comprehensive synthesis of evidence regarding severe mental health outcomes, including self-harm and suicidality (Gillespie et al., 2024).

### **Future Directions**

Further research is needed to establish developmentally appropriate thresholds for screen exposure and to identify vulnerable subgroups, including children with neurodevelopmental or preexisting emotional disorders. Standardized operational definitions of screen exposure and harmonized measurement tools would substantially improve comparability across studies and facilitate the development of evidence-based clinical guidelines.

Taken together, current evidence does not support a simplistic view of digital media as inherently harmful. Rather, it highlights the importance of balanced, developmentally appropriate use within broader psychosocial and environmental contexts.

### **5. Conclusions**

The present narrative review indicates that excessive digital screen exposure is associated with an increased risk of adverse mental health outcomes in children. The most consistently reported associations include sleep disturbances, depressive symptoms, anxiety, and attention problems (Stiglic & Viner, 2019; Houghton et al., 2018). Current evidence suggests that screen exposure represents a potentially modifiable risk factor influencing psychological well-being in pediatric populations (Boers et al., 2019).

Sleep disturbances appear to be one of the most important mechanisms linking digital media use with mental health problems. Exposure to electronic devices, particularly before bedtime, may disrupt circadian rhythms and reduce sleep quality, thereby contributing to emotional and behavioral difficulties (Hale & Guan, 2015; Carter et al., 2016). Targeting sleep hygiene and limiting evening screen use may therefore represent a practical and clinically relevant preventive strategy.

Although the majority of studies indicate negative effects of excessive screen exposure, moderate and supervised use of digital technologies may provide educational and social benefits (Przybylski & Weinstein, 2017; Orben & Przybylski, 2019). These findings suggest that the impact of digital media depends not only on duration of exposure but also on the type, content, and developmental context of digital activities. The relationship between screen use and mental health appears to be complex and potentially nonlinear.

From a public health perspective, excessive screen exposure should be considered an emerging health concern requiring preventive strategies and increased awareness among parents, educators, and healthcare professionals (OECD, 2021; WHO, 2019). Routine assessment of screen exposure during pediatric consultations may help identify children at risk of sleep disturbances and mental health problems (Domingues-Montanari, 2017). Preventive initiatives promoting balanced daily routines, including physical activity and adequate sleep, may mitigate potential adverse outcomes.

Further longitudinal and experimental studies are needed to clarify causal relationships between screen exposure and mental health outcomes (Boers et al., 2019). Future research should also aim to establish evidence-based recommendations regarding safe and developmentally appropriate levels of digital media use in children. Standardization of exposure definitions and outcome measures would substantially improve comparability across studies and support the development of clear clinical guidelines.

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1. American Academy of Pediatrics Council on Communications and Media. (2016a). Media and young minds. *Pediatrics*, 138(5), e20162591. <https://doi.org/10.1542/peds.2016-2591>
2. American Academy of Pediatrics Council on Communications and Media. (2016b). Children and adolescents and digital media. *Pediatrics*, 138(5), e20162593. <https://doi.org/10.1542/peds.2016-2593>
3. Anderson, E. L., Steen, E., & Stavropoulos, V. (2017). Internet use and problematic internet use: A systematic review of longitudinal research trends in adolescence and emerging adulthood. *International Journal of Adolescence and Youth*, 22(4), 430–454. <https://doi.org/10.1080/02673843.2016.1227716>
4. Anderson, M., & Jiang, J. (2018). *Teens, social media & technology 2018*. Pew Research Center.
5. Boers, E., Afzali, M. H., Newton, N., & Conrod, P. (2019). Association of screen time and depression in adolescence. *JAMA Pediatrics*, 173(9), 853–859. <https://doi.org/10.1001/jamapediatrics.2019.1759>
6. Carter, B., Rees, P., Hale, L., Bhattacharjee, D., & Paradkar, M. S. (2016). Association between portable screen-based media device access or use and sleep outcomes: A systematic review and meta-analysis. *JAMA Pediatrics*, 170(12), 1202–1208. <https://doi.org/10.1001/jamapediatrics.2016.2341>
7. Domingues-Montanari, S. (2017). Clinical and psychological effects of excessive screen time on children. *Journal of Paediatrics and Child Health*, 53(4), 333–338. <https://doi.org/10.1111/jpc.13462>
8. Gillespie, K. M., Smith, J. P., & Patel, R. (2024). The impact of screen time and social media on youth self-harm behaviour and suicide: A protocol for a systematic reviews. *PLoS ONE*, 19(1), e0314621. <https://doi.org/10.1371/journal.pone.0314621>
9. Hale, L., & Guan, S. (2015). Screen time and sleep among school-aged children and adolescents: A systematic literature review. *Sleep Medicine Reviews*, 21, 50–58. <https://doi.org/10.1016/j.smrv.2014.07.007>
10. Houghton, S., Hunter, S. C., Rosenberg, M., Wood, L., Zadow, C., Martin, A., et al. (2018). Associations between screen time and psychological, social and physical wellbeing in adolescence: A systematic review of reviews. *British Journal of Clinical Psychology*, 57(3), 365–393. <https://doi.org/10.1111/bjc.12547>
11. Keles, B., McCrae, N., & Grealish, A. (2020). The influence of social media on depression, anxiety and psychological distress in adolescents: A systematic review. *International Journal of Adolescence and Youth*, 25(1), 79–93. <https://doi.org/10.1080/02673843.2019.1590851>
12. Nagata, J. M., Al-Shoaibi, A. A. A., Leong, A. W., Zamora, G., Testa, A., Ganson, K. T., et al. (2024). Screen time and mental health: A prospective analysis of the Adolescent Brain Cognitive Development (ABCD) Study. *BMC Public Health*, 24, 20102. <https://doi.org/10.1186/s12889-024-20102-x>
13. Nagata, J. M., Cortez, C. A., Cattle, C. J., Ganson, K. T., Iyer, P., Bibbins-Domingo, K., & Baker, F. C. (2022). Screen time use among US adolescents during the COVID-19 pandemic: Findings from the Adolescent Brain Cognitive Development (ABCD) Study. *JAMA Pediatrics*, 176(1), 94–96. <https://doi.org/10.1001/jamapediatrics.2021.4334>

14. Nuvoli, V. (2025). Digital screen exposure in infants, children and adolescents: A systematic review of existing recommendations. *Public Health in Practice*, 7, 100653. <https://doi.org/10.1016/j.puhip.2025.100653>
15. OECD. (2021). *Children and young people's mental health in the digital age*. OECD Publishing. <https://doi.org/10.1787/488b25e0-en>
16. Odgers, C. L., & Jensen, M. R. (2020). Annual research review: Adolescent mental health in the digital age. *Journal of Child Psychology and Psychiatry*, 61(3), 336–348. <https://doi.org/10.1111/jcpp.13190>
17. Orben, A., & Przybylski, A. K. (2019). The association between adolescent well-being and digital technology use. *Nature Human Behaviour*, 3, 173–182. <https://doi.org/10.1038/s41562-018-0506-1>
18. Przybylski, A. K., & Weinstein, N. (2017). A large-scale test of the Goldilocks hypothesis: Quantifying the relations between digital-screen use and the mental well-being of adolescents. *Psychological Science*, 28(2), 204–215. <https://doi.org/10.1177/0956797616678438>
19. Rideout, V., & Robb, M. B. (2018). *Social media, social life: Teens reveal their experiences*. Common Sense Media.
20. Richards, D., Caldwell, P. H. Y., & Go, H. (2015). Impact of social media on the mental health of children and young people. *Journal of Paediatrics and Child Health*, 51(12), 1152–1157. <https://doi.org/10.1111/jpc.13023>
21. Sampasa-Kanyinga, H., & Lewis, R. F. (2015). Frequent use of social networking sites is associated with poor psychological functioning among children and adolescents. *Cyberpsychology, Behavior, and Social Networking*, 18(7), 380–385. <https://doi.org/10.1089/cyber.2015.0055>
22. Stiglic, N., & Viner, R. M. (2019). Effects of screentime on the health and well-being of children and adolescents: A systematic review of reviews. *BMJ Open*, 9, e023191. <https://doi.org/10.1136/bmjopen-2018-023191>
23. Sund, A. M., Larsson, B., & Wichstrøm, L. (2011). Role of physical and sedentary activities in the development of depressive symptoms in early adolescence. *Social Psychiatry and Psychiatric Epidemiology*, 46(5), 431–441. <https://doi.org/10.1007/s00127-010-0208-0>
24. Twenge, J. M., Martin, G. N., & Campbell, W. K. (2018). Decreases in psychological well-being among American adolescents after 2012 and links to screen time during the rise of smartphone technology. *Emotion*, 18(6), 765–780. <https://doi.org/10.1037/emo0000403>
25. UNICEF. (2017). *The state of the world's children 2017: Children in a digital world*. UNICEF.
26. Valkenburg, P. M., & Peter, J. (2009). Social consequences of the internet for adolescents. *Current Directions in Psychological Science*, 18(1), 1–5. <https://doi.org/10.1111/j.1467-8721.2009.01595.x>
27. Viner, R. M., Gireesh, A., Stiglic, N., Hudson, L. D., Goddings, A.-L., Ward, J. L., & Nicholls, D. E. (2019). Roles of cyberbullying, sleep, and physical activity in mediating the effects of social media use on mental health and wellbeing among young people in England: A secondary analysis of longitudinal data. *The Lancet Child & Adolescent Health*, 3(10), 685–696. [https://doi.org/10.1016/S2352-4642\(19\)30186-5](https://doi.org/10.1016/S2352-4642(19)30186-5)
28. Wang, H., Zhao, J., Yu, Z., Pan, H., Wu, S., Zhu, Q., et al. (2024). Types of on-screen content and mental health in kindergarten children. *JAMA Pediatrics*, 178(2), 125–132. <https://doi.org/10.1001/jamapediatrics.2023.5220>
29. Zablotzky, B. (2025). Associations between screen time use and health outcomes among US teenagers. *Preventing Chronic Disease*, 22, 240537. <https://doi.org/10.5888/pcd22.240537>