

Article

Parents' Perceptions of Screens, Addiction and the Impact on Teenagers' Sleep

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Highlights

What are the main findings?

- From the perspective of parents and guardians, most adolescents exceed the recommended screen time, showing signs of digital addiction and intensive daily use of social media.
- Statistically significant associations were identified between screen exposure time, sleep difficulties, and the parental perception of digital addiction.

What are the implications of the main findings?

- There is an urgent need to implement digital literacy strategies in school and community settings, actively involving families and healthcare professionals.
- The findings support the development of evidence-based guidelines for screen time regulation and the prevention of sleep disturbances in adolescents.

Abstract

Objective: This study aimed to analyze parents' perceptions regarding adolescents' screen use, signs of screen dependency, and its impact on sleep among 10- to 16-year-olds in the district of Leiria, Portugal. A descriptive–correlational, cross–sectional study was conducted in April 2024 using an online questionnaire completed by a non-probabilistic accidental sample of 616 parents or legal guardians. Nearly half of the respondents (48.2%) perceived adolescents as dependent on screens, while 68.7% believed that their screen time was excessive. Several behavioural signs consistent with digital dependence were reported. Increased screen use was significantly associated with shorter sleep duration, daytime sleepiness, and difficulties initiating sleep. Although many adolescents still achieved the recommended number of hours of sleep, those perceived as screen-dependent were more likely to experience compromised sleep quality and quantity. These findings reinforce the growing concern about adolescents' digital habits and underscore the importance of implementing targeted health promotion strategies focused on responsible screen use and sleep hygiene among school-aged youth.

Keywords: adolescent; parents; screen time; sleep; digital addiction; nursing



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1. Introduction

Adolescence is a critical stage in human development, marked by profound psychological, social, and identity transformations, which are often accompanied by challenges in emotional and behavioural regulation [1]. These factors make young people particularly vulnerable to the negative effects of screen use, reinforcing the need for further research in this field [2,3]. UNICEF warns that today's adolescents are growing up immersed in a digital ecosystem, where screen exposure is a constant part of daily life, with direct implications for their physical and emotional well-being [4].

International organizations such as the American Academy of Pediatrics (2016) and the National Health Service (2023) recommend limiting screen time to a maximum of two hours per day for children and adolescents, consistent with previous research findings [5–9]. However, multiple studies demonstrate that school-aged children and adolescents use electronic devices—such as smartphones, computers, game consoles, and/or tablets—for a large portion of the day [10–16], indicating that these recommendations are frequently exceeded. This trend has become a global phenomenon, with particularly negative impacts on adolescents' mental and digital health [4].

Recent World Health Organization (WHO) guidelines on sedentary behaviour for children under 5 years emphasize that “less is better,” and although no updated global limits exist for adolescents, these recommendations reinforce concerns about excessive screen exposure [12]. Although these recommendations provide general guidance, there is still no universal consensus on the definition of ‘excessive’ screen time in adolescents, which complicates cross-study comparisons and highlights the need for contextualized approaches.

Excessive screen time is associated with multiple adverse outcomes: poor academic performance, overweight/obesity, physical inactivity, inadequate sleep, and unhealthy dietary patterns [13]. Longitudinal and meta-analytic studies have confirmed associations between screen use and symptoms of depression and anxiety, identifying highlighting screen exposure time as a psychological risk factor [14]. Further evidence highlights, there is evidence of its impact on mental health, including a higher risk of social isolation, suicidal ideation, self-harm, and peer victimization [15].

Parents and caregivers express increasing concern about time adolescents spend using digital devices and believe that intensive technology use negatively affects their children, justifying the need to set limits and supervise accessed content [16–20]. A recent meta-analysis demonstrated that active parental mediation strategies—such as dialogue, rule negotiation, and joint engagement in digital activities—are significantly associated with a reduction in problematic internet use among adolescents, highlighting the regulatory role of families in promoting healthy digital habits [21].

Adolescents are especially vulnerable to screen dependency due to their ongoing cognitive, emotional, and social development, as they still have limited self-control and low risk perception [21,22]. Considered a new type of behavioural addiction, digital dependence shares traits with psychoactive substance addictions, including comparable neurobiological, cognitive, and behavioural patterns [23].

There is a high prevalence of screen addiction among adolescents [24]. Studies based on DSM-5 criteria define this condition by behaviours such as uncontrollable use, intense cravings, tolerance, loss of interest in other activities, irritability, and distress in the absence of digital stimuli [25]. These DSM-5 criteria also informed the development of the exploratory instrument used in the present study, given the lack of a validated parent-proxy tool in the Portuguese context. The World Health Organization stresses that such a pattern displaces essential activities such as eating, physical activity, and sleep [26]. In Portugal, a study validating a mobile phone dependence scale in adolescents reported a prevalence

of 14.3% dependence, reinforcing the relevance of addressing this issue in the national context [27].

Sleep, essential to adolescents' physical, cognitive, emotional, and psychosocial development and well-being [2,16,27,28], can be directly affected by screen dependency. A recent systematic review confirmed that screen use, especially at night, is significantly associated with a shorter sleep duration and poorer sleep quality among children and adolescents, representing an emerging risk factor for sleep disorders in this age group [29]. A European meta-analysis reported that each additional hour of daily screen time was associated with an average reduction of 4.2 min in adolescent sleep duration, highlighting the dose–response nature of this association [30]. Moreover, a systematic review found that 87% of included studies identified at least one adverse sleep outcome related to screen exposure, with mobile devices being the main contributor [31].

The literature also indicates a high prevalence of sleep disturbances, including insomnia, fragmented or non-restorative sleep, and daytime sleepiness in adolescents [5,6,15,27–30]. The National Sleep Foundation recommends 8 to 10 h of sleep for adolescents aged 14 to 17 [6,27,32], but problematic mobile phone use—particularly at night—has been associated with delayed sleep onset and cognitive arousal, which interfere with the ability to fall asleep [6,16,33].

Exposure to blue light emitted by screens during the night directly suppress melatonin production—a hormone crucial to circadian rhythm regulation—causing delayed sleep induction and reduced sleep quality [6,17,20,21,27–29,32]. Beyond these physiological effects, several stimuli associated with the use of digital devices—such as notifications, vibrations, and emotionally intense content—further increase neurocognitive arousal, hindering sleep onset and fragmenting sleep [2,5,10,11,17,20–22,27–32,34,35], thereby intensifying the negative impacts of screen use on sleep quality [28].

Prospective evidence supports this mechanism: a recent study found that increased screen time over a three-month period significantly deteriorated multiple dimensions of sleep, including duration, quality, and chronotype [36].

The combination of these factors leads to reduced sleep duration, insomnia, daytime sleepiness, and deficits in attention, memory, and mood, with a negative impact on academic performance [6,11,17,22,29,37]. The high prevalence of digital dependence among adolescents, together with its adverse effects on sleep, emotional well-being, and daytime functioning, underscores the urgent need to understand this issue in an integrated manner. This is particularly relevant in Portugal, where national evidence remains scarce and fragmented, and where parents' perspectives—crucial mediators of adolescents' digital behaviours—are underexplored.

Most existing studies rely on self-reported data from adolescents or focus on broad quantitative analyses, often neglecting parents' perspectives as key mediators of digital exposure and regulators of online behaviour. Nonetheless, recent evidence from a robust meta-analysis shows that active parental mediation—rather than restrictive control—can significantly reduce the risk of digital dependence and dysfunctional online behaviour [21].

Moreover, the lack of formal and up-to-date guidelines on screen use for this age group by the World Health Organization or national public health authorities reinforces the need for applied research. This need is recognized by international organizations such as UNICEF, which emphasize the importance of involving families in the conscious management of adolescents' digital lives, promoting safe, healthy, and balanced environments [4].

In this regard, the present study proposes an integrative approach that simultaneously examines patterns of screen use, the presence of signs of digital dependence, sleep impacts, and parental perceptions. In doing so, it aims to contribute relevant empirical evidence

to inform pediatric nursing practice, guide health education strategies, and support the development of public policies that are sensitive to the contemporary digital context.

Accordingly, the aim of this study was to analyze caregivers' perceptions of adolescents' screen use and indicators of digital dependence, as well as the consequent impact on sleep among 10–16-year-olds in the Leiria district, thereby providing empirical evidence to inform pediatric nursing practice, public health recommendations, and culturally relevant family-centred interventions.

2. Materials and Methods

2.1. Study Design

This is a quantitative, descriptive, and correlational cross-sectional study, conducted through a structured survey, administered online via the Google Forms platform. The study was conducted as part of the Research Project course unit of the Nursing Degree at the School of Health of the Polytechnic Institute of Leiria, Portugal. Data collection took place in April 2024 at public schools in the district of Leiria. To support the theoretical framework, a bibliographic search was conducted in the PubMed database in October 2023. Filters were applied to include articles published between 2021 and 2023, excluding studies with data collection prior to 2018 or conducted during the COVID-19 pandemic. Only texts in Portuguese and English with free full-text access (Free Full Text) were considered. After reviewing all 689 initial results, the sources most relevant to the study objectives were selected. Although this design has inherent limitations, such as not allowing causal inference and relying on non-probabilistic sampling, it is widely used in adolescent health research to explore associations between behavioural variables and health outcomes, particularly screen use and sleep patterns [13–16]. In this context, the chosen design is appropriate for the exploratory purposes and hypothesis generation of this study, providing baseline data that may inform future longitudinal or interventional research. This study followed the STROBE reporting guidelines. The completed STROBE checklist is available as Table S1.

2.2. Participants and Sample

The target population consisted of guardians of adolescents aged 10 to 16 enrolled in public schools in the district of Leiria ($n = 25,573$). The sample size was calculated based on a 95% confidence level and a 5% margin of error, resulting in a minimum sample of 379 participants. To account for possible losses, a 10% increase was applied, resulting in a target sample size of 417 participants. The sampling was non-probabilistic and accidental, a technique often used in descriptive studies with direct access to the target population in real contexts, such as schools [38]. Although appropriate for reaching many caregivers in real school settings, this non-probabilistic sampling limits the external validity of the findings, which should be interpreted with caution. The inclusion criteria were: being the guardian of a teenager between 10 and 16 years old; having access to the internet; possessing functional literacy in Portuguese; and consenting to participate in the study. Incomplete responses or those not meeting the specified criteria were excluded. After screening, 616 valid responses were obtained (5 were eliminated due to inappropriate age and 28 because they did not belong to schools in the district of Leiria).

2.3. Data Collection Instrument

A structured online self-administered questionnaire was used, consisting of 16 questions (mostly multiple-choice, except for the age variable). The questionnaire covered four main dimensions: sociodemographic data of participants and adolescents (age, gender, degree of kinship); Screen use patterns (types of devices, daily duration, nighttime use, social networks); Indicators of digital addiction, assessed based on DSM-5 criteria for internet and

screen use disorder [24]. Sleep outcomes were explored through three items: average sleep duration on school nights, difficulty initiating sleep, and daytime sleepiness. Sleep duration was categorized according to the parameters of the National Sleep Foundation, in line with previous studies on adolescent sleep disorders [7,11,15,17,27,30]. Excessive screen time was defined as ≥ 2 h per day, in line with recommendations from the American Academy of Pediatrics and the Canadian Paediatric Society [5–8], and consistent with thresholds widely applied in adolescent health research [13–16]. The questionnaire was pretested to five participants, leading to minor adjustments. However, the instrument was exploratory in nature and has not undergone formal psychometric validation in the Portuguese context. We recognize this as a significant methodological limitation, although items were grounded in DSM-5 indicators and National Sleep Foundation parameters, and the pretest ensured clarity and face validity. The full questionnaire used in this study is provided in Table S2.

2.4. Data Analysis

Data analysis was performed using IBM SPSS Statistics, version 29. Descriptive statistics (means, standard deviations, absolute and relative frequencies) were used to characterize the sample and the variables under study.

Normality and homogeneity of variances were assessed using the Kolmogorov–Smirnov and Levene’s tests. The results indicated non-normal distribution and heterogeneity of variances, justifying the use of non-parametric statistical tests [38,39].

Associations between categorical variables were analyzed using Pearson’s Chi-square test, complemented by the calculation of Cramér’s V to determine the strength of association. When the assumptions for the Chi-square test were not met (i.e., expected frequencies below 5 in more than 20% of the cells), Fisher’s Exact Test was applied [39]. The level of statistical significance was set at $p < 0.05$. Given the exploratory aim of this research, analyses were primarily descriptive and correlational, designed to identify associations rather than establish causal relationships.

2.5. Ethical Considerations

The study was approved by the Ethics Committee of the Polytechnic Institute of Leiria (Opinion no. CE/IPLEIRIA/18/2023) and authorized by the Portuguese Directorate-General for Education (Survey no. 1452600001). Participation by caregivers was voluntary, informed, and anonymous, with digital informed consent obtained before the questionnaire was completed.

All procedures were conducted in accordance with the General Data Protection Regulation (GDPR) and the ethical principles of the Declaration of Helsinki.

2.6. Data Availability and Use of Artificial Intelligence

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request. No generative artificial intelligence (GenAI) tools were used for data analysis, content generation, or interpretation of results. GenAI (OpenAI ChatGPT, July 2025 version GPT-5) was used exclusively to assist with language editing and manuscript organization, and at the literature discovery stage to surface candidate article. All authors reviewed and approved the final content and are fully responsible for the manuscript.

3. Results

3.1. Sample Characterization

A total of 616 parents and guardians of adolescents, residing in the district of Leiria, participated in this study. Most respondents were mothers (87.7%), with an average age

of 45 years (range 27–72). Among adolescents, 52.6% were male, with a mean age of 13 years (Table 1).

Table 1. Sociodemographic characteristics of caregivers and adolescents (*n* = 616).

Variable	<i>n</i>	%
Caregivers		
Mothers	540	87.7
Fathers	69	11.2
Other relatives	7	1.1
Mean caregiver age (years)	45	(min 27–max 72)
Adolescents		
Male	324	52.6
Female	292	47.4
Mean adolescent age (years)	13	(range 10–16)

3.2. Screen Usage Patterns

Smartphones were the most frequently used devices (95.6%), followed by computers (82.5%), televisions (73.9%), game consoles (28.9%), and tablets (24.2%). Only one participant reported not using electronic devices. Regarding total screen time, 55.4% of adolescents reported 1–2 h/day, 21.8% reported 2–3 h/day, and 12.5% reported 3–4 h/day. Only 1% reported <30 min/day.

In the evening, 39% used screens for 30 min–1 h after dinner, 23.5% for 1–2 h, while 12.3% reported no evening use. Most (89.1%) use social networks daily (Table 2).

Table 2. Screen use patterns among adolescents.

Variable	<i>n</i>	%
Devices used		
Smartphone	589	95.6
Computer	508	82.5
Television	455	73.9
Game consoles	178	28.9
Tablet	149	24.2
None	1	0.2
Daily screen time		
<30 min	15	2.5
30 min–1 h	49	8.0
1–2 h	341	55.4
2–3 h	134	21.8
3–4 h	77	12.5
Evening use (after dinner)		
None	76	12.3
<30 min	148	24.0
30 min–1 h	240	39.0
1–2 h	145	23.5
≥2 h	7	1.2
Daily social media use	549	89.1

3.3. Sleep Outcomes

In relation to adolescents’ sleep duration, caregivers reported that 80.2% of adolescents slept 8–9 h per night, 7.6% slept 7 h, and 11% slept ≥10 h. Only 1.1% slept 6 h.

With respect to sleep quality, caregivers indicated that 14.8% of adolescents experienced daytime sleepiness, and 13.1% had difficulty falling asleep (see Table 3).

Table 3. Sleep duration and quality indicators.

Variable	<i>n</i>	%
Sleep duration (hours)		
6	7	1.1
7	47	7.6
8	242	39.3
9	252	40.9
10	63	10.2
11	5	0.8
Sleep-related problems		
Difficulty falling asleep	81	13.1
Daytime sleepiness	91	14.8

3.4. Caregivers’ Perception of Screen Use and Control

Most caregivers expressed concern about the content accessed by adolescents (94%) and reported setting limits on screen time (89.8%). However, 68.7% believed that adolescents used screens for longer than appropriate. Nearly half (48.2%) considered their children dependent on screens (Table 4).

Table 4. Caregivers’ perceptions of screen use and dependency.

Variable	<i>n</i>	%
Concern about content	579	94.0
Perception of adequate hours	193	31.3
Limiting screen time	553	89.8
Perception of dependency	297	48.2

3.5. Indicators of Digital Addiction

Among the most frequently reported signs of digital addiction were: Loss of interest in usual activities (33.4%), Preference for screens over social interactions (33%), Decreased attention (30.7%), Intense desire to use screens (19.3%), Increased usage time to achieve satisfaction (15.3%), Loss of control over use (11.7%).

Approximately 28.7% of adolescents did not exhibit any of these signs (Table 5).

Table 5. Indicators of digital dependence.

Behaviour	<i>n</i>	%
Loss of interest in usual activities	206	33.4
Preference for screens over social interactions	203	33.0
Decreased attention	189	30.7
Intense desire to use screens	119	19.3
Increased use to achieve satisfaction	94	15.3
Loss of control over use	72	11.7
None of the above	177	28.7

3.6. Associations Between Screen Use, Dependence, and Sleep

Daily screen time ≥ 2 h was significantly associated with difficulty falling asleep ($\chi^2 = 11.512, p < 0.001, V = 0.137$), daytime sleepiness ($\chi^2 = 12.591, p < 0.001, V = 0.143$), caregiver perception of dependence ($\chi^2 = 61.804, p < 0.001, V = 0.317$), and perception of inadequate use ($\chi^2 = 51.245, p < 0.001, V = 0.288$) (Table 6).

Table 6. Associations between daily screen time and psychosocial variables (Pearson’s Chi-square test).

Variable	p-Value	Chi-Square (χ^2)	Cramér’s V
Difficulty falling asleep	<0.001	11.512	0.137
Daytime sleepiness	<0.001	12.591	0.143
Perceived dependency (reported by caregivers)	<0.001	61.804	0.317
Adequate screen time (reported by caregivers)	<0.001	51.245	0.288

Caregivers’ perception of dependency was strongly associated with all DSM-5–based signs, with the highest associations observed for preference for screens over social interaction ($\chi^2 = 78.013, p < 0.001$), intense desire ($\chi^2 = 60.306, p < 0.001$), and loss of interest in usual activities ($\chi^2 = 36.306, p < 0.001$) (Table 7).

Table 7. Associations between digital dependence indicators and caregivers’ perception of dependency.

Variables	Significance (p)	Chi-Square Value (χ^2)	Cramer’s V
Daytime sleepiness	<0.001	11.814	0.138
Time limit imposed on screen use	0.002	9.163	0.122
No signs of dependency	<0.001	97.235	0.397
Strong desire to use screens	<0.001	60.306	0.313
Increased screens use to achieve satisfaction	<0.001	18.369	0.173
Loss of control over screen use	<0.001	28.539	0.215
Decreased attention	<0.001	23.754	0.196
Loss of interest in usual activities	<0.001	36.306	0.243
Preference for screen use over social contact with family and/or friends	<0.001	78.013	0.356

Significant associations were also observed between screen variables and sleep outcomes. Sleep duration was associated with difficulty falling asleep (Fisher = 33.725, $p < 0.001$), daytime sleepiness (Fisher = 61.945, $p < 0.001$), and daily screen time (Fisher = 28.679, $p < 0.001$). Evening use after dinner was associated with both daytime sleepiness (Fisher = 27.484, $p < 0.001$) and shorter sleep duration (Fisher = 32.441, $p < 0.001$) (Table 8).

Table 8. Association between screen-related variables and sleep outcomes (Fisher’s Exact Test).

Screen-Related Variable	Significance (p)	Fisher’s Value
Difficulty falling asleep ↔ Sleep duration	<0.001	33.725
Daytime sleepiness ↔ Sleep duration	<0.001	61.945
Daily screen time ↔ Sleep duration	<0.001	28.679
Screen time after dinner ↔ Daytime sleepiness	<0.001	27.484
Screen time after dinner ↔ Sleep duration	<0.001	32.441

4. Discussion

This study aimed to analyze caregivers’ perceptions regarding screen use, signs of digital addiction, and their impact on adolescents’ sleep. The findings revealed intensive patterns of digital device use, with important implications for adolescent health and well-being, in line with previous research [5–7,13,14].

A considerable proportion of adolescents in our study exceeded the 2 h daily limit recommended by international health organizations [5–8], and, according to parental reports, almost all made use of multiple devices. This finding reflects the complex and immersive digital environment that increasingly shapes adolescence, consistent with international evidence [13]. UNICEF has already warned that today’s young people

grow up immersed in a digital ecosystem with direct repercussions for their health and well-being [4]. Moreover, the WHO emphasizes that, while recommendations exist for younger children, there are still no universally accepted limits for adolescents. This lack of consensus highlights the importance of developing culturally adapted guidelines that respond to local realities [12].

About social media, adolescents used these platforms daily, and some of them for more than two hours per day. This prolonged exposure has been linked to a dose–response relationship with depressive and anxiety symptoms in adolescents, according to longitudinal and meta-analytic studies [14–16], suggesting that even moderate and sustained use may adversely affect mental health. Although our study did not directly measure psychological outcomes, parental perceptions of dependency and loss of interest in offline activities may be interpreted as potential early indicators of psychosocial vulnerability, although such risks were not directly assessed in this study. These observations are also consistent with DSM-5–based conceptualizations of behavioural addiction [22–24]. In the Portuguese context, a study validating a mobile phone dependence scale in adolescents reported a prevalence of 14.3% dependence [27], which reinforces the national relevance of these findings and highlighting the value of caregiver perspectives as a proxy for detecting problematic usage patterns.

Concerning sleep, caregivers reported that most adolescents had a total sleep duration consistent with recommendations from the National Sleep Foundation (8–10 h per night for adolescents aged 14 to 17) [7,36,37]. However, a significant minority of adolescents were reported to sleep less than recommended. Significant associations emerged between extended daily screen time and poorer sleep outcomes, including difficulty initiating sleep and daytime sleepiness. These associations support existing evidence that excessive screen use—particularly at night, interferes with melatonin production and circadian rhythms, negatively impacting sleep regulation [27–30,35].

Evening use of digital devices was also associated with shorter sleep duration and increased daytime somnolence, reinforcing the importance of the timing of digital exposure. This aligns with systematic reviews indicating that screen use close to bedtime is a key risk factor for sleep disturbances in adolescents [30,32,36]. Nevertheless, interpretation must be cautious: the findings rely solely on caregiver reports, which may underestimate nocturnal or concealed use, and the questionnaire used was exploratory in nature and lacked formal psychometric validation. Even within these limitations, the results underscore the need for pediatric nurses and other health professionals to routinely assess digital habits during routine clinic visits to provide anticipatory guidance on sleep hygiene, including recommendations to reduce screen exposure in the hour before bedtime. These findings highlight the need for culturally adapted guidelines to support families in promoting healthier routines [12].

Regarding digital addiction, caregivers perceived their children as dependent on screen use, a prevalence similar to that reported in other studies [40,41]. Associations also emerged between higher screen exposure and perceived dependency, as well as between dependency and indicators of compromised sleep quality. These findings reinforce international evidence linking problematic digital use with poor sleep, emotional dysregulation, and reduced daytime functioning [10,19,27,30,42]. Moreover, the behaviours most frequently perceived by caregivers—such as loss of interest in usual activities, preference for online interactions, and reduced attention—are consistent with DSM-5–based criteria for behavioural addictions [22–24]. In the Portuguese context, a study validating a mobile phone dependence scale in adolescents identified a prevalence of 14.3% [27], which underlines the local relevance of these results. From a clinical perspective, these findings emphasize the need for pediatric nurses and other health

professionals to recognize early signs of digital dependency, for instance by routinely inquiring about sleep disruption, social withdrawal, or loss of interest in offline activities during health surveillance visits.

Parental mediation emerged as a key theme. Although most caregivers reported limiting their child's screen time, they still perceived dependency, suggesting that rule-setting alone may not be sufficient without active engagement and dialogue. Recent evidence indicates that, unlike restrictive rules, which tend to intensify conflicts, active mediation based on dialogue, negotiation, and joint activities is more effective and significantly influences adolescents' online behaviours and sleep [20,21,43]. This finding highlights an opportunity for healthcare professionals to empower parents with tools for constructive mediation, rather than focusing solely on restriction.

Beyond the family setting, schools represent a critical arena for promoting digital health literacy and sleep hygiene through programmes that actively engage both adolescents and caregivers. At the policy level, national health authorities should prioritize the development of culturally adapted recommendations on screen use, aligned with WHO and UNICEF benchmarks but tailored to the Portuguese context, to provide clearer guidance for families and professionals.

Many caregivers expressed concern about the type of content accessed by their children, a concern reflected in parental reports of difficulty initiating sleep (13.5%) and daytime sleepiness (14.7%). These results suggest that both the quantity and quality of digital content must be considered when evaluating its impact. Previous studies have shown that exposure to violent or emotionally intense content is associated with poorer sleep and greater emotional dysregulation [20,22,35]. Therefore, future studies in Portugal should go beyond measures focused solely on screen time and also incorporate qualitative dimensions of online engagement.

This scenario aligns with concerns raised by UNICEF (2022), which highlight how adolescents grow up immersed in a digital ecosystem that affects their health, sleep, socialization, and parenting practices. UNICEF recommends active engagement from families and healthcare professionals in promoting digital literacy and preventative education to foster safer and healthier digital habits [4].

In summary, this study shows that, from caregivers' perspectives, digital habits affect adolescents' sleep, well-being, and family life. The results highlight the need for action at multiple levels: in clinical practice, pediatric nurses can address digital use and sleep during routine care in partnership with families; in education, schools can promote digital health literacy; and in policy, national guidelines adapted to the Portuguese context are needed to support healthier routines. Coordinated efforts across these domains are essential to protect adolescent health in the digital age.

4.1. Limitations

This study has several limitations. First, its cross-sectional, descriptive–correlational design does not allow causal inference; findings should be interpreted as associations and hypothesis-generating. Second, the non-probabilistic, convenience sampling, restricted to one Portuguese district and with an overrepresentation of younger adolescents, limits external validity and age generalizability. Third, data were caregiver-reported via an online survey, which may introduce perception, recall, and social desirability biases; reliance on a single informant may also underrepresent adolescents' own behaviours. Fourth, the questionnaire was exploratory and not formally validated in the Portuguese context. Although items were based on DSM-5 criteria and National Sleep Foundation parameters and pretested for clarity, the absence of psychometric testing reduces internal validity. Fifth, the definition of "excessive" screen time relied on a ≥ 2 h/day cut-off, which is widely used

but not universally agreed upon; results might differ under alternative thresholds. Sixth, potential confounders (e.g., mental health, physical activity, academic load, family routines, caffeine intake) were not assessed, so residual confounding cannot be excluded. Seventh, data collection took place in a single month (April 2024, during the school term), without accounting for seasonal variation in sleep and screen behaviours. Finally, given the number of bivariate comparisons, type I error cannot be ruled out.

Future research should use probability or multi-site sampling, adopt longitudinal designs, validate parent-proxy instruments (or employ established validated measures), triangulate caregiver and adolescent reports, incorporate objective measures (e.g., device-logged screen time, actigraphy), and apply multivariable modelling to address confounding. Despite these limitations, the study provides timely, context-specific insights from a large caregiver sample, with direct implications for pediatric nursing assessment, counselling, and family-centred interventions.

4.2. Implications for Pediatric Nursing

The findings from this study underscore the importance of integrating digital health promotion into pediatric nursing interventions, particularly in school and community settings. Digital health education should be included in anticipatory guidance provided during pediatric nursing consultations and should involve participatory strategies with families and adolescents. Developing national guidelines on digital addiction, sleep, and parental mediation—in alignment with public health authorities such as the DGS and WHO—will be crucial to support clinical practice and promote adolescent well-being in the digital era.

It is important to acknowledge that reducing screen time “at any cost” is neither feasible nor desirable, as digital media are deeply embedded in adolescents’ education, socialization, and leisure. The challenge for future research is therefore not only to quantify screen exposure but also to examine qualitative and contextual aspects such as the type, timing, and purpose of use, and how these interact with developmental, familial, and school routines. Longitudinal and mixed-methods studies will be essential to capture these dynamics and to disentangle risk from opportunity in the digital environment.

From a practical perspective, school-based interventions appear highly relevant and feasible. Schools provide a privileged setting for health promotion, where adolescents, families, and teachers can engage in participatory programmes aimed at fostering balanced digital habits, sleep hygiene, and critical digital literacy. Evidence suggests that interventions combining health education, peer involvement, and parental engagement are more effective than approaches based solely on restriction. Future initiatives in Portugal should therefore test multi-level, school-based strategies that address both the quantity and quality of digital engagement, integrating educational content with practical tools for families and adolescents. Such interventions, if aligned with national public health priorities and supported by cross-sector collaboration between healthcare, education, and policy stakeholders, could be particularly impactful. By capturing caregivers’ perspectives, this study provides exploratory, context-specific evidence to inform such initiatives and guide the development of family-centred nursing interventions in Portugal.

5. Conclusions

The findings of this study suggest potentially harmful effects of excessive screen use among adolescents and confirm that caregivers have a critical and conscious perception of this issue. The average daily screen time exceeded the limits recommended by international organizations, despite most caregivers reporting that they impose restrictions, indicating that current parental strategies may be insufficient. This reality reinforces the need for clear

and accessible guidelines, supported by evidence, to help families and health professionals manage screen use and recognize signs of digital dependency.

Caregivers also expressed concern about the content accessed by adolescents and identified consistent signs of digital addiction, such as loss of interest in other activities, preference for digital interaction, and difficulty controlling usage time. These perceptions were proportional to the increase in digital exposure, pointing to behavioural patterns that deserve attention.

In relation to sleep, although most adolescents reported an average duration close to the recommended levels (8 to 10 h), the evening use of digital devices was significantly associated with disturbances such as daytime sleepiness and difficulty falling asleep. These findings align with the literature and support the hypothesis that blue light exposure and cognitive stimulation before bedtime negatively affects sleep quality and regularity.

Given these results, early intervention is essential. It is proposed that digital health literacy initiatives be developed in school, community, and family settings, with the active participation of nurses, teachers, and other health professionals. Pediatric nurses have a strategic role in health surveillance and in the promotion of conscious and balanced use of technology.

It is also important that future studies, preferably national and multicentric, include not only the perspective of caregivers but also the voices of adolescents, thus allowing a more comprehensive and participatory understanding. Despite the methodological limitations identified—namely the self-reported nature of the data, the non-probabilistic sampling, and the exploratory instrument—the objectives of the study were achieved, and relevant empirical evidence was produced, with direct implications for nursing practice and public health strategies.

In conclusion, screen use in adolescence should not be reduced at any cost, but rather managed in ways that promote balance, healthy routines, and critical digital literacy. Schools offer a feasible and strategic setting for such interventions, especially when they actively involve families, educators, and health professionals. Future research should therefore prioritize school- and community-based strategies that combine education, participation, and practical tools to support healthier digital engagement among adolescents.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/future3040024/s1>, Table S1: STROBE checklist; Table S2: full Questionnaire.

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Abbreviations

The following abbreviations are used in this manuscript:

DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
WHO	World Health Organization
UNICEF	United Nations International Children’s Emergency Fund
SPSS	Statistical Package for the Social Sciences
GDPR	General Data Protection Regulation
DGS	Directorate-General for Health

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