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The Relationship of Screen Time and Emotional-Behavioral Problems in School-Aged Children: A Cross-Sectional Study

Clarita Jolanda Glorya Dauhan[1], Lenny Gannika[1], Susi Roida Simanjuntak[1]
[1]*School of Nursing, Faculty of Medicine, Sam Ratulangi University, Manado, Indonesia*

Correspondence author: Lenny Gannika
Email: lennygannika87@unsrat.ac.id
address : School of Nursing, Faculty of Medicine, Sam Ratulangi University, Manado, Indonesia
DOI:

ABSTRACT

Background: The rapid development of digital technology has led to increased screen time among children, raising concerns about its potential impact on emotional and behavioral development. Excessive screen exposure is suspected to contribute to psychosocial issues in school-aged children.
Objective: This study aims to analyze the relationship between screen time and emotional and behavioral problems in school-age children.
Method: A cross-sectional quantitative design was employed. A total of 92 parents of students at a private elementary school in Tahuna, North Sulawesi, were selected using proportionate stratified random sampling. Data were collected using a validated screen time questionnaire and the Pediatric Symptom Checklist-17 (PSC-17). Statistical analysis was performed to assess the relationship between screen time and emotional and behavioral problems.
Result: Findings showed that 83.7% of children had screen time exceeding WHO recommendations, and 84.8% exhibited signs of emotional and behavioral problems. A statistically significant relationship was found between excessive screen time and emotional and behavioral issues ($p < 0.05$).
Conclusion: Excessive screen time is significantly associated with an increase in emotional and behavioral problems among school-aged children. Interventions aimed at monitoring and reducing screen exposure are strongly recommended to support children's psychosocial well-being.

Keywords: behavioral problems, emotional problems, pediatrics, school-age children, screen time

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Introduction

Screen time refers to the duration of electronic media use, including gadgets, smartphones, laptops, and tablets (Kaye et al., 2020). The World Health Organization (2020) recommends that children aged 6 to 12 years should have no more than 2 hours of screen time per day. However, studies indicate that actual usage often exceeds these guidelines. In Australia, children aged 6 to 17 years reportedly spend 5 to 7 hours daily on screens, with 65% surpassing the recommended limit (Yu & Baxter, 2015). Similarly, a 2020 survey by Common Sense Media found that 78% of children in the Philippines use gadgets for social media, gaming, and watching videos, with an average screen time of 8 hours per day. In South Africa, children's average screen time reaches up to 9 hours daily (Rideout, 2022). In Indonesia, data from the Indonesian Internet Service Providers Association (APJII) in 2022 revealed that children spend an average of 5 to 6 hours per day online, primarily for gaming, video streaming, and social media activities (Asosiasi Penyelenggara Jasa Internet Indonesia, 2022).

While screen time can offer benefits such as access to educational resources and the development of digital skills, excessive use is associated with adverse outcomes. These include reduced face-to-face social interaction, sleep disturbances, and an increased risk of developmental problems (Muppalla et al., 2023; Swider-Cios et al., 2023). Research also shows that children who are exposed to prolonged screen time are more likely to experience emotional and behavioral issues (Männikkö et al., 2020; Swider-Cios et al., 2023).

Several studies have explored the relationship between screen time and emotional development (Adella et al., 2024; Männikkö et al., 2020; Panjeti-Madan & Ranganathan, 2023; Sangadi et al., 2024; Skalická et al., 2019). However, there is a lack of research specifically addressing the relationship between screen time and emotional and behavioral problems among school-age children in Tahuna, North Sulawesi. This gap is significant because children in this age group are increasingly using gadgets for entertainment, communication, and academic tasks.

This study is essential to provide insight into the duration of screen time among school-age children and its potential impact on their emotional and behavioral development. The findings can serve as a valuable reference for parents, educators, and policymakers in regulating optimal screen usage to prevent developmental issues. The research will be conducted at a private elementary school in the Tahuna sub-district, known for its high discipline and integration of technology in learning. In light of the growing concerns regarding screen time and its potential impact, this study aims to investigate the relationship between screen time and emotional and behavioral problems in school-age children.

Objective

This study aims to analyze the relationship between screen time and emotional and behavioral problems in school-age children.

Method

This study employed a quantitative research design with a cross-sectional approach. The research focused on two main variables: screen time as the independent variable and emotional and behavioral problems as the dependent variables. Data collection instruments included a validated screen time questionnaire and the Pediatric Symptom Checklist-17 (PSC-

17), which was used to assess emotional and behavioral problems in children (Arriza Dwi Melani et al., 2020; Jellinek et al., 1999; Marek, 2022).

The sampling method used was probability sampling, specifically proportionate stratified random sampling, to ensure representative participation across different grade levels. The study involved a total of 92 respondents, consisting of parents of school-aged children enrolled at St. Augustine Catholic Elementary School in Tahuna.

Result

Respondent Characteristics

Table 1 presents the demographic characteristics of the respondents. The majority of children were 11 years old (40.2%), followed by those aged 10 years (28.3%) and 12 years (26.1%). A greater proportion of respondents were female (55.4%) compared to male (44.6%). All fathers in the study were employed (100%), while 53.3% of mothers were housewives and 46.7% were either housewives or office workers. In terms of gadget use, nearly all children (96.7%) used mobile phones, while a small proportion used tablets or iPads (3.3%). Regarding applications, the majority of children used their devices for watching content on platforms like TikTok and YouTube (80.4%), followed by playing online games (18.5%), and browsing (1.1%).

Table 1. Distribution of Characteristics of Respondents (n = 92)

Variable	n (%)
Child's Age	
12 years	24 (26.1)
11 years	37 (40.2)
10 years	26 (28.3)
9 years	5 (5.4)
Child's Gender	
Female	51 (55.4)
Male	41 (44.6)
Father's Occupation	
Employed	92 (100)
Not Working	0 (0)
Mother's Occupation	
Housewife & Office Worker	43 (46.7)
Housewife	49 (53.3)
Type of Gadget	
Handphone	89 (96.7)
Tablet and iPad	3 (3.3)
Applications Used	
Online Games	17 (18.5)
Browsing	1 (1.1)
Watching (TikTok & YouTube)	74 (80.4)

Univariate Analysis

As shown in Table 2, 83.7% of the children exceeded the WHO screen time recommendation of no more than two hours per day. Additionally, 84.8% of children exhibited indications of emotional and behavioral problems. Regarding the PSC-17 subscales, 16.3% of respondents demonstrated internalizing problems, 27.2% showed externalizing problems, and 41.3% had attention-related issues.

Table 2. Univariate Frequency Distribution (n = 92)

Variable	Frequency	(%)
Screen Time		
In accordance with WHO recommendations	15	16.3
Not in accordance with WHO recommendations	77	83.7
Emotional and Behavioral Problems		
No indication of problems	14	15.2
Indication of problems	78	84.8
Internalization Subscale		
No indication of impairment	77	83.7
Indication of impairment	15	16.3
Externalization Subscale		
No indication of impairment	67	72.8
Indication of impairment	25	27.2
Attention Subscale		
No indication of impairment	54	58.7
Indication of impairment	38	41.3
Total	92	100

Bivariate Analysis

Table 3 illustrates the relationship between screen time and emotional and behavioral problems. Among respondents who exceeded the WHO-recommended screen time, 81.53% showed signs of emotional and behavioral issues, while only 2.17% did not. Conversely, among those who followed the WHO guidelines, 13.04% had no signs of problems, and 3.26% did. The chi-square test resulted in a p-value of 0.000 ($p < 0.05$), indicating a statistically significant association between screen time and emotional and behavioral problems in school-age children.

Table 3. Relationship between Screen Time and Emotional and Behavioral Problems (n=92)

Screen Time	No Indication of Emotional and Behavioral Problems	Indications of Emotional and Behavioral Problems	p-value
In accordance with WHO recommendations	12 (13.04%)	3 (3.26%)	0.000
Not in accordance with WHO recommendations	2 (2.17%)	75 (81.53%)	0.000
Total	**14 (15.21%)**	**78 (84.79%)**	

Discussion

This study revealed a high prevalence of excessive screen time among school-aged children, with a significant proportion exhibiting emotional and behavioral problems. Internalizing behaviors, including symptoms such as anxiety and sadness, were the most frequently reported. Externalizing behaviors—such as aggression—and attention difficulties were also commonly observed, especially among children with prolonged screen exposure.

These findings are consistent with previous international studies that have demonstrated a significant association between excessive screen time and impaired emotional regulation, increased behavioral problems, and attentional deficits in children (Männikkö et al., 2020; Swider-Cios et al., 2023; Panjeti-Madan & Ranganathan, 2023). Prolonged exposure to digital media may reduce opportunities for direct social interactions, physical activity, and adequate sleep—all of which are crucial for emotional and behavioral development (Muppalla et al., 2023; Skalická et al., 2019).

However, due to the cross-sectional nature of this study, causality cannot be inferred. Furthermore, potential confounding variables such as parenting style, household screen time rules, and socioeconomic factors were not controlled in this study. These variables may influence both screen use habits and child behavior, and should be included in future longitudinal studies to more accurately delineate the causal pathways of these associations.

The practical implications of these findings highlight the need for evidence-based screen time guidelines, increased parental monitoring, and the encouragement of alternative activities, such as outdoor play, reading, and interpersonal social engagement. Educational interventions targeting both parents and schools are also essential to raise awareness and promote healthier and more balanced screen use among children.

Conclusion

This study demonstrates a significant association between excessive screen time and the presence of emotional and behavioral problems among school-aged children in Tahuna. These findings underscore the importance of addressing excessive screen use as a potential risk factor for developmental challenges in children. Therefore, it is essential to implement preventive strategies, including the reduction of screen exposure, the enhancement of parental supervision, and the promotion of healthy, screen-free activities. To better understand the directionality and underlying mechanisms of these associations, future research should adopt longitudinal designs and consider potential moderating variables such as parenting practices, socioeconomic status, and educational environment.

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Authors' contribution

Each author contributed equally in all the parts of the research. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Conflict of interest

The researchers stated that there is no conflict of interest related to the implementation and publication of the results of this research. The entire research process, from planning, data collection, analysis, to report preparation, was carried out independently without any influence or pressure from any third party. A commitment to research ethics is upheld throughout the research process, ensuring transparency, accuracy and honesty in reporting results. Respondents' participation was voluntary with informed consent, and their confidentiality and privacy were maintained in accordance with applicable research ethics standards. With this statement, researchers hope that the research results can be trusted and used as a valid reference for the development of science and health practices related to ethnomedicine and reproductive health.

Ethical consideration

Not applicable.

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