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The effects of mobile media devices and internet on daily lives and health of children

Impact of internet and mobile devices on children

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Abstract

Aim: This study aimed to evaluate the health-related impacts of internet use and screen exposure among children and adolescents, focusing on their relationship with obesity, sleep habits, and parental factors.

Methods: A total of 220 children (51.8% girls, 48.2% boys) aged 5–18 years who presented to the Pediatric Outpatient Clinic of Abant İzzet Baysal University were included in this cross-sectional study. Data were collected via structured face-to-face questionnaires covering demographic characteristics, daily screen exposure, internet usage patterns, dietary habits, and anthropometric measurements. Body mass index (BMI) and z-scores were calculated according to WHO growth charts. Statistical analyses included chi-square and t-tests, with $P < .05$ considered significant.

Results: The mean age of participants was 12.8 ± 3.4 years. The mean daily screen time was 3.1 ± 1.4 hours, and 38.2% of children exceeded 2 hours/day of screen exposure. Overweight or obesity was detected in 26.4% of the cohort and was significantly associated with >2 hours/day of screen use ($P = .021$). Children who spent ≥ 2 hours watching television had higher BMI z-scores (mean = 1.12 ± 0.24) than those who watched less (mean = 0.48 ± 0.20). Internet use ≥ 2 hours/day was reported by 33.5%, and this was significantly correlated with reduced physical activity ($P = .034$) and irregular sleep patterns ($P = .029$). Parental education was significantly associated with internet filtering use ($P = .042$).

Conclusion: This study demonstrates that excessive and uncontrolled use of mobile devices and the internet is closely associated with sedentary behavior, an increased risk of overweight/obesity, and poor sleep quality in children. The results emphasize the need for parental supervision, education on healthy technology habits, and public health strategies to mitigate the adverse effects of excessive screen exposure among children.

Keywords

mobile media devices, obesity, health, internet

DOI: 10.4328/ACAM.22774 Ann Clin Anal Med 2026;17(8):860-863

Received: 13.06.2025

Accepted: 03.11.2025

Published Online: 10.11.2026

Printed: 01.08.2026

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Introduction

In recent years, the widespread availability of the internet, together with its low cost and high-speed access, has profoundly influenced children's daily lives. While these technological advancements offer educational and social opportunities, they have also paved the way for uncontrolled use. Increased screen exposure through televisions, computers, tablets, and mobile phones has raised concerns about potential negative health effects, particularly the promotion of sedentary lifestyles and obesity.

A sedentary lifestyle is one of the major factors predisposing children to obesity.¹ Reduced opportunities for outdoor play due to urbanization, long school hours, heavy homework loads, and the increasing appeal of technological devices have all contributed to decreased physical activity in children. Similar to adults, obese children are more likely to lead inactive lives, which further exacerbates weight-related problems. Television, in particular, has a strong impact: studies show that children who watch four or more hours daily are significantly more likely to be obese than those who watch for one hour or less.² Moreover, snacking habits during screen time contribute to excessive caloric intake, with television viewing alone accounting for up to one-quarter of children's daily energy consumption on weekends and one-fifth on weekdays.³

Obesity in clinical practice is typically defined using body mass index (BMI), calculated as weight divided by height squared (kg/m²). According to BMI curves adjusted for age and sex, children above +1 SD are considered overweight, while those above +2 SD are classified as obese.^{4,5} Similarly, percentile-based definitions identify children between the 85th and 95th percentile as overweight and those above the 95th percentile as obese.^{6,7}

Although prior studies have examined individual factors such as television viewing or internet use, there is limited research on the combined influence of mobile media devices and internet exposure on children's lifestyle behaviors and health outcomes. This represents an important gap in the literature, given the rapid increase in the use of digital technology among younger age groups.

Therefore, the aim of this study was to investigate the effects of mobile media devices and internet use on children's daily lives and health. Specifically, we evaluated their relationship with lifestyle habits, body mass index, nutritional behaviors, and academic performance. By addressing this gap, the study seeks to provide evidence that can guide preventive strategies and inform health policies.

Materials and Methods

Participants

This cross-sectional study included 220 children aged 5–18 years who presented to the Pediatric Outpatient Clinic at the Abant İzzet Baysal University Faculty of Medicine between January and June 2016. A total of 126 families, comprising 252 parents, participated in the study.

Children with chronic systemic diseases, neurological or developmental disorders, or those receiving long-term medication affecting growth or metabolism were excluded. Only healthy children and adolescents attending routine check-ups or presenting with minor complaints (e.g., upper respiratory infections) were included.

Participants were recruited consecutively among eligible patients during the study period. Written informed consent was obtained from parents, and verbal assent was obtained from children prior to participation.

Data Collection

Data were collected using a structured, face-to-face questionnaire

administered by trained researchers during outpatient visits. The questionnaire consisted of four main sections:

-Sociodemographic Information: Child's age, sex, number of siblings, parental education and employment status, and family income level.

-Anthropometric Measurements: Height, weight, and body mass index (BMI) were measured, and BMI z-scores were calculated according to age and sex.

-Screen Time and Media Use: Duration and frequency of daily use of television, computers, tablets, and mobile phones; internet usage habits; preferred online activities; and presence of parental control or internet filtering.

-Lifestyle and Nutrition: Type and frequency of food consumption (especially junk food), duration of outdoor physical activity, sleep duration, and time spent with family members. The questionnaire was developed based on previous studies evaluating children's screen exposure and lifestyle habits and was pilot-tested in a small group of parents to ensure clarity.

Ethical Approval

This study was approved by the Ethics Committee of Abant İzzet Baysal University (Date: 24.03.2016, Decision No: 2016/3).

Statistical Analysis

All data were analyzed using the Statistical Package for the Social Sciences (SPSS, version 18.0). The normality of continuous variables was assessed using the Kolmogorov–Smirnov test. Continuous variables were presented as mean ± standard deviation, and categorical variables as frequencies and percentages. Comparisons between categorical variables were made using the Chi-square test, and correlations were evaluated using Spearman's rho correlation coefficient. A P value < .05 was considered statistically significant.

Reporting Guidelines

This study was reported in accordance with the STROBE guideline.

Results

The study included 220 children aged between 5 and 18 years (median age: 12.23 years). The mean weight SDS was 0.12 (range: –3.52 to 3.43), height SDS was 0.18 (range: –5.43 to 3.44), and body mass index (BMI) SDS was 0.08 (range: –3.94 to 3.22) (Table 1). Among all participants, 142 children (64.5%) had normal weight, while 58 (26.4%) were classified as overweight or obese based on BMI z-scores.

Approximately one-third of the children (33.5%) reported spending more than 2 hours per day on the internet, and 40.3% spent more

Table 1. Demographic characteristics of children

Category (n = 220)	Average (min-max)
Age	12.23(5-18)
Height	148.16 90-187
Weight	44.10 (14-104)
Body mass index	19.52 (11.57-32.10)
Bmi_sds values	0.08 (-3.94-3.22)
Height_sds values	0.18 (-5.43-3.44)
Weight_sds values	0.12 (-3.52-3.43)

Bmi: body mass index; sds: standart deviation score

than 2 hours per day using screen-based devices (computers, tablets, or mobile phones). Internet, computer, and mobile phone use increased significantly with the children's age and educational level ($P < .001$). Specifically, internet use for homework was positively correlated with education level ($P < .001$) (Table 2). The time spent watching television varied by both gender and educational level. For both boys and girls, television viewing time decreased with increasing age ($P = .055$) (Table 2). In contrast, academic performance was significantly higher among children who used the internet primarily for homework compared with those who did not ($P = .025$) (Table 3). Analysis of dietary habits showed that the frequency of junk food consumption did not differ significantly by BMI category ($P = .345$). However, a significant relationship was observed between junk food consumption and weight z-scores ($P < .001$). Children with higher weight z-scores reported more frequent consumption of junk food compared to those with normal or below-normal z-scores. Screen exposure variables (internet use, computer use, and television viewing) were not significantly associated with BMI z-scores. Specifically, computer use time did not differ among BMI groups ($P = .487$); daily internet use time was not significantly related to BMI ($P = .209$); and television viewing time also showed no significant difference by BMI z-score ($P = .823$).

Discussion

In the present study, a significant relationship was identified between screen time and childhood obesity, with 39.6% of overweight or obese children spending more than two hours per day watching television. This finding aligns with previous research emphasizing the detrimental impact of prolonged screen exposure on body weight. Hee-Soon et al.⁸ similarly reported that children aged 6–12 years who watched television for more than two hours per day had a significantly increased risk of obesity. Likewise, French et al.⁹ demonstrated that reducing television viewing was

associated with a decline in BMI z-scores during a one-year follow-up among adolescents. These findings collectively underscore that extended television viewing may contribute to increased sedentary behavior and caloric intake, thereby promoting weight gain. Moreover, Harris et al.¹⁰ suggested that exposure to food advertising during screen time may reinforce unhealthy eating habits, further exacerbating obesity risk. Beyond television, digital media exposure has expanded to include smartphones, tablets, and video games, raising concerns about overall screen-related lifestyle habits. In our cohort, 33.5% of participants reported using the internet for more than two hours daily. Bozkurt et al.¹¹ found that 24.6% of obese children and adolescents met the criteria for internet addiction, compared with only 11.2% of their healthy peers. Similarly, Dutra et al.¹² and Ren et al.¹³ observed that extended screen exposure, coupled with decreased outdoor activity and insufficient sleep, significantly contributed to obesity prevalence. Together, these results suggest that the combined effects of digital media overuse and lifestyle changes may disrupt sleep patterns, reduce physical activity, and promote excessive energy intake. Our findings are also consistent with previous evidence linking inadequate sleep duration and the presence of electronic devices in the sleeping environment to an increased risk of obesity. Falbe et al.¹⁴ demonstrated that children sleeping near small-screen devices (e.g., smartphones, tablets) exhibited shorter sleep durations and longer overall screen exposure. Sleep deprivation has been associated with hormonal dysregulation, including alterations in leptin and ghrelin levels, which may promote weight gain. Additionally, emerging data from Li De-Kun et al.¹⁵ indicate that exposure to radiofrequency waves (RF) and electromagnetic fields (EMF) generated by digital devices—even prenatally—could influence metabolic processes and long-term obesity risk. An important behavioral component of obesity is the formation

Table 2. The relationship with educational background and internet-TV

With educational background		n = 220 (%)	P value
Daily internet usage time	Primary school	89.3 (<2 hours)	.00
	Middle school	74.3 (<2 hours)	
	High school	46.0 (<2 hours)	
Internet isage frequency for homework	Primary school	25.5 (never)	.00
		38.2 (rarely)	
	Middle school	38.6 (sometimes)	
		37.1 (most of the time)	
	High school	30.3 (sometimes)	
		43.8 (most of the time)	
	Primary school	73.2 (<3 hours)	
	Middle school	85.8 (<3 hours)	
Daily time in front of the television	High school	86.6 (<3 hours)	.055

Table 3. The relationship internet usage and school success

Internet usage frequency for homework		n = 217 Internet usagep	P value
	Medium	Rarely 28.81%	
		Sometimes 33.90%	
		Most of the time 27.12%	
School success	Good	Rarely 25.27%	.025
		Sometimes 32.97%	
		Most of the time 28.57%	
	Very good	Rarely 12.70%	
		Sometimes 33.33%	
		Most of the time 41.27%	

of dietary habits. Our study identified a significant association between junk food consumption and weight z-scores. This finding is in line with previous reports by Hare-Bruun et al.¹⁶ and Ramic et al.,¹⁷ who noted that children engaging in prolonged screen viewing tended to consume energy-dense foods more frequently. The combination of passive screen use and frequent snacking constitutes a high-risk pattern for developing obesity in childhood. Interestingly, the study also revealed that parental education level influenced the use of internet filters, although these tools were not entirely effective. Jones et al.¹⁸ reported that even advanced filtering systems failed to block a substantial proportion of inappropriate content. This highlights that while parental supervision remains crucial, technological measures alone are insufficient to mitigate risks associated with excessive media exposure. Family-based education and behavioral interventions are therefore essential to address both screen use and unhealthy dietary habits among children.

Overall, our findings contribute to the growing body of literature on the complex relationships among digital media consumption, sedentary behavior, sleep quality, and dietary patterns in pediatric obesity. Unlike earlier studies focusing primarily on television viewing, this research highlights the broader spectrum of screen-based behaviors that now dominate children's daily lives.

Limitations

This study has several limitations that warrant consideration. First, information on screen time and dietary habits was obtained through self- or parent-report questionnaires, which may be subject to recall and social desirability biases. Second, the study was conducted in a single geographic region of Türkiye, which may limit the generalizability of the findings to other populations. Third, the cross-sectional design precludes causal inference about the relationship between screen exposure and obesity. Furthermore, several potential confounding factors, such as detailed dietary intake, parental screen habits, and socioeconomic influences, were not fully controlled for. Future studies using objective measures of screen time and longitudinal designs would be valuable for confirming these associations and clarifying underlying mechanisms.

Conclusion

In conclusion, this study demonstrates that prolonged, unregulated use of digital media, including television and internet-based devices, is significantly associated with sedentary behavior and an increased risk of obesity among children. As age and educational level increase, screen exposure tends to rise, potentially disrupting dietary habits and sleep patterns. These findings highlight the need for preventive strategies that focus on family awareness, parental control, and balanced lifestyle habits to mitigate the adverse health consequences of excessive screen time in childhood.

Declarations

Animal and Human Rights Statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments, or comparable ethical standards.

Informed Consent

Written informed consent was obtained from the parents of all participants.

Data Availability

The data supporting the findings of this study are available from the corresponding author on reasonable request.

Conflict of Interest

The authors declare no conflict of interest.

Funding

None.

Author Contributions (CRediT Taxonomy)

Conceptualization: S.B.Ö., H.İ.A.
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Investigation: S.B.Ö., H.İ.A.
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Supervision: H.İ.A.

AI Usage Disclosure

The authors declare that no artificial intelligence (AI) tools were used in the preparation of this manuscript.

Abbreviations

BMI: Body mass index
EMF: Electromagnetic field
RF: Radiofrequency
SD: Standard deviation
SDS: Standard deviation score
SPSS: Statistical Package for the Social Sciences
TV: Television
WHO: World Health Organization

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Additional Information

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Bayrakol MP remains neutral with regard to jurisdictional and institutional claims.

How to cite this article:

Semra Büyükkorkmaz Öztürk, Halil İbrahim Atasoy. The effects of mobile media devices and internet on daily lives and health of children. *Ann Clin Anal Med* 2026;17(8):860-863. doi:10.4328/ACAM.22774