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COMPARATIVE EVALUATION OF CHILDREN BETWEEN 10 - 16 years WITH HIGH SCREEN TIME VERSUS LOW SCREEN TIME FOR DIFFERENCES IN BODY MASS INDEX, SLEEP QUALITY AND PHYSICAL ACTIVITY

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ABSTRACT

Background: Excessive screen time among children has become an important public health concern due to its possible association with sedentary behavior, increased Body Mass Index, poor sleep quality, and reduced physical activity. With increasing use of televisions, smartphones, tablets, computers, and gaming devices, children are spending more time in screen-based activities, which may adversely influence growth, lifestyle habits, and overall health. The aim is to comparatively evaluate children with high screen time and low screen time for differences in Body Mass Index, sleep quality, and physical activity.

Materials and Methods: This hospital-based comparative observational study was conducted at a tertiary care hospital among 160 children. Participants were divided into two groups, with 80 children in the high screen time group and 80 children in the low screen time group, based on average daily screen exposure. Data were collected using a predesigned structured proforma. Demographic details, screen time pattern, sleep-related parameters, and physical activity levels were recorded. Anthropometric assessment was performed, and Body Mass Index was calculated using weight in kilograms divided by height in meters squared. Sleep quality was assessed using sleep duration, sleep latency, night awakenings, daytime sleepiness, and bedtime screen exposure. Physical activity was assessed by duration of outdoor play, sports participation, and daily activity level. Data were analyzed using IBM SPSS Statistics version 27.0. A p-value of less than 0.05 was considered statistically significant.

Results: The two groups were comparable with respect to age, sex, and residence. Mean BMI was significantly higher in the high screen time group compared with the low screen time group (21.90 ± 4.10 kg/m² vs 19.80 ± 3.60 kg/m²; p=0.001). Overweight and obesity were more common among children with high screen time. Poor sleep quality was observed in 70.00% of children with high screen time compared with 35.00% of children with low screen time (p<0.001). Inadequate sleep duration, prolonged sleep latency, night awakenings, daytime sleepiness, and screen use before bedtime were also significantly higher in the high screen time group. Adequate physical activity was lower among children with high screen time compared with children with low screen time (31.25% vs 71.25%; p<0.001). Outdoor play and sports participation were also significantly reduced in the high screen time group.

Conclusion: High screen time was significantly associated with higher BMI, poorer sleep quality, reduced sleep duration, and lower physical activity among children. Limiting excessive screen exposure and encouraging outdoor play, regular physical activity, and healthy sleep habits may help improve child health outcomes.

Keywords: Screen time, Body Mass Index, Sleep quality, Physical activity, Children.

INTRODUCTION

Screen-based media has become an integral part of childhood and adolescence due to the increasing availability of smartphones, televisions, tablets, computers, laptops, online learning platforms, gaming devices, and internet-based entertainment. Although digital media may support learning, communication, and access to information, excessive or poorly regulated screen exposure has raised important health concerns in children. Childhood is a critical period for physical growth, sleep regulation, behavioral development, and formation of lifestyle habits. During this period, prolonged screen use may replace active play, reduce social interaction, delay bedtime, promote unhealthy eating behaviors, and increase sedentary time. Therefore, the evaluation of children with high screen time in comparison with those having low screen time is important to understand its possible influence on Body Mass Index, sleep quality, and physical activity.[1] Body Mass Index is one of the most commonly used clinical indicators for assessing nutritional status and weight-related health risk among children. In pediatric age groups, BMI must be interpreted according to age and sex because children are actively growing and body composition changes with age. Increased screen exposure may contribute to higher BMI through multiple pathways. Children who spend longer periods on screens usually remain seated for extended durations, resulting in reduced energy expenditure. Screen viewing may also be associated with snacking, exposure to food advertisements, irregular meal patterns, and reduced participation in outdoor activities. These behavioral changes may gradually contribute to overweight and obesity. At the same time, screen time alone may not fully explain weight gain, as diet, sleep, family environment, socioeconomic status, and genetic factors also influence BMI. Hence, comparative assessment between high and low screen time groups helps clarify the relationship between screen exposure and anthropometric status.[2] Sleep is another important domain that may be affected by excessive screen use. Adequate sleep is essential for growth, memory consolidation, emotional regulation, immune function, and daytime alertness. Screen use, especially during evening hours or before bedtime, may interfere with sleep by delaying bedtime, increasing mental stimulation, and exposing children to bright light from digital devices. These factors can disturb circadian rhythm and make it difficult for children to fall asleep on time. Children with high screen exposure may also develop irregular sleep routines, prolonged sleep latency, frequent night awakenings, reduced sleep duration, and daytime sleepiness. Poor sleep may further contribute to reduced physical activity, poor academic performance, irritability, and unhealthy weight gain. Therefore, sleep quality is an important parameter in studies examining the health effects of screen time.[3]

Physical activity is a key component of healthy growth and development in children. Regular physical activity improves cardiovascular fitness, muscle strength, bone health, body composition, metabolic function, and psychological well-being. Active play, outdoor games, sports participation, walking, cycling, and school-based physical activity are important opportunities for children to maintain adequate movement. However, with increasing screen exposure, children may spend more time indoors and less time engaging in moderate-to-vigorous physical activity. Excessive screen use may displace active recreation and promote sedentary behavior. This displacement effect is important because reduced physical activity and increased sitting time may together contribute to higher BMI and poorer sleep outcomes.[4] The relationship between screen time, BMI, sleep quality, and physical activity is complex and interlinked. High screen time may directly increase sedentary behavior, but it may also indirectly affect BMI through reduced physical activity and disturbed sleep. Similarly, poor sleep may lead to tiredness and reduced motivation for outdoor play, while lower physical activity may worsen sleep quality. Children who use screens for entertainment or gaming for long durations may be more likely to have irregular routines compared with those who use screens mainly for educational purposes. The timing of screen exposure is also important, as screen use before bedtime may have a stronger association with sleep disturbance than daytime educational use. Thus, a comparative evaluation of high and low screen time groups provides a practical approach for identifying differences across multiple health-related domains.[5] In recent years, screen exposure among children has increased further because of digital schooling, online assignments, social media, video streaming, and mobile gaming. This has made it difficult for parents and clinicians to distinguish necessary screen use from excessive recreational use. In clinical settings, children may present with weight gain, sleep complaints, tiredness, reduced outdoor activity, or behavioral concerns without screen time being routinely assessed. A tertiary care hospital provides an appropriate setting to evaluate these associations because children from different backgrounds attend for various health-related concerns, and anthropometric assessment, sleep history, and physical activity history can be systematically recorded. Such assessment can help identify modifiable lifestyle factors and guide counseling for children and parents.[6]

MATERIALS AND METHODS

This study was designed as a hospital-based comparative observational study conducted from October 2024 to October 2025 at a tertiary care hospital. The study aimed to compare children between 10-16 years with high screen time and low screen time with respect to Body Mass Index, sleep

quality, and physical activity levels. Children attending the outpatient department or admitted to the pediatric services who fulfilled the eligibility criteria were considered for inclusion in the study. A total of 160 children were included in the study. The participants were divided into two groups based on their average daily screen time. Children with higher screen exposure more than 4 hours were categorized as the high screen time group, while children with comparatively lower screen exposure less than 2 hours were categorized as the low screen time group. Screen time included the use of television, mobile phones, tablets, computers, laptops, and video gaming devices for entertainment, education, or communication purposes.

Ethical Committee approval of the institute taken before the start of study.

Inclusion Criteria:

Children within the selected pediatric age group attending the tertiary care hospital and whose parents or guardians provided informed consent were included in the study. Children who were able to provide reliable information regarding screen use, sleep pattern, and physical activity, either directly or with the help of parents or guardians, were considered eligible for participation.

Exclusion Criteria:

Children with chronic systemic illness, endocrine disorders, genetic syndromes, neurodevelopmental disorders, physical disabilities limiting activity, long-term medication use affecting weight or sleep, and children with acute severe illness at the time of assessment were excluded from the study. Children whose parents or guardians were unwilling to provide consent or who provided incomplete information were also excluded.

Methodology: Participants were categorized into high screen time and low screen time groups based on average daily screen exposure. Screen time was assessed by asking parents or guardians about the child's usual duration of use of electronic screen-based devices on weekdays and weekends. The average daily screen time was calculated and used for group allocation. The type of device used, purpose of screen use, timing of screen exposure, and screen use before bedtime were also recorded.

Data were collected using a predesigned structured proforma. Information regarding demographic details, age, sex, residence, socioeconomic background, dietary habits, daily screen exposure, sleep pattern, and physical activity was obtained from the child and parent or guardian. Relevant clinical examination was performed for all participants. The collected information was entered carefully and checked for completeness before statistical analysis.

Anthropometric Assessment: Body weight was measured using a calibrated weighing scale with the child wearing light clothing and without footwear. Height was measured using a stadiometer with the child standing erect, barefoot, with heels together and head positioned in the Frankfurt plane. Body Mass Index was calculated using the formula weight in kilograms divided by height in meters squared. BMI was interpreted using age- and sex-appropriate reference standards. Participants were classified as underweight, normal weight, overweight, or obese according to standard pediatric BMI percentile criteria.

Assessment of Sleep Quality: Sleep quality was assessed using a structured sleep-related questionnaire completed with the help of parents or guardians. Parameters recorded included total sleep duration, bedtime, wake-up time, sleep latency, night awakenings, daytime sleepiness, difficulty waking in the morning, irregular sleep schedule, and use of screen devices before bedtime. Poor sleep quality was considered in children with reduced sleep duration, delayed sleep onset, frequent night awakenings, excessive daytime sleepiness, or irregular sleep patterns.

Assessment of Physical Activity: Physical activity was assessed by recording the average time spent in outdoor play, sports, walking, cycling, exercise, school-based physical activity, and other moderate-to-vigorous activities. Sedentary time, apart from screen exposure, was also noted. Children were classified according to their level of physical activity based on daily duration and frequency of active play or exercise. Reduced physical activity was considered when the child had insufficient daily active movement and increased sedentary behavior.

Screen Time Assessment: Screen time was evaluated by recording the average duration of exposure to televisions, smartphones, tablets, computers, laptops, and gaming devices. Separate information was obtained for weekday and weekend use. The purpose of screen use, such as educational activity, entertainment, gaming, social media, or video viewing, was documented. Screen exposure during meals and screen use within one hour before sleep were also recorded, as these were considered important behavioral parameters.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using IBM SPSS Statistics version 27.0. Quantitative variables were expressed as mean and standard deviation, while qualitative variables were expressed as frequency and percentage. The high screen time and low screen time groups were compared for BMI, sleep quality, and physical activity parameters. The chi-square test or Fisher's exact test was used for categorical variables, and the independent sample t-test or Mann–Whitney U test was used for continuous variables depending on the distribution of data. A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 160 children were included in the study, with 80 children in the high screen time group and 80 children in the low screen time group.

In [Table 1], the demographic characteristics of the participants were comparable between the two groups. In the high screen time group, 18 children

(22.50%) were aged 5–8 years, 31 (38.75%) were aged 9–12 years, and 31 (38.75%) were aged 13–16 years. In the low screen time group, 22 children (27.50%) were aged 5–8 years, 29 (36.25%) were aged 9–12 years, and 29 (36.25%) were aged 13–16 years. The difference in age distribution was not statistically significant (p=0.766). Similarly, sex distribution was also comparable, with males comprising 56.25% of the high screen time group and 52.50% of the low screen time group (p=0.751). Residence was also not significantly different between groups, as 63.75% of the high screen time group and 60.00% of the low screen time group belonged to urban areas (p=0.745).

In [Table 2], the mean age was 10.20 ± 2.80 years in the high screen time group and 10.00 ± 2.70 years in the low screen time group, with no statistically significant difference (p=0.646). However, mean BMI was significantly higher among children with high screen time, 21.90 ± 4.10 kg/m², compared with 19.80 ± 3.60 kg/m² in the low screen time group (p=0.001). BMI category distribution also showed a significant difference between the groups (p=0.005). Overweight and obesity were more common in the high screen time group, with 22 children (27.50%) overweight and 14 children (17.50%) obese, compared with 10 children (12.50%) overweight and 5 children (6.25%) obese in the low screen time group. Normal BMI was more frequent in the low screen time group, observed in 55 children (68.75%), compared with 38 children (47.50%) in the high screen time group.

In [Table 3], sleep quality parameters showed significant differences between the two groups. Good sleep quality was reported in only 24 children (30.00%) in the high screen time group, compared with 52 children (65.00%) in the low screen time group. Poor sleep quality was seen in 56 children (70.00%) with high screen time, compared with 28 children (35.00%) with low screen time, and this difference was statistically significant (p<0.001). Adequate sleep duration was also less common in the high screen time group, observed in 28 children (35.00%), compared with 60 children (75.00%) in the low screen time group (p<0.001). Prolonged sleep latency was present in 50 children (62.50%) in the high screen time group, compared with 21 children (26.25%) in the low screen time group (p<0.001).

In [Table 4], additional sleep-related problems were more common among children with high screen time. Night awakenings were present in 33 children (41.25%) in the high screen time group, compared with 19 children (23.75%) in the low screen time group, and this difference was statistically significant (p=0.028). Daytime sleepiness was reported in 44 children (55.00%) in the high screen time group, compared with 22 children (27.50%) in the low screen time group (p=0.001). Screen use before bedtime was markedly higher among children with high screen time, seen in 65 children (81.25%), compared with 24 children (30.00%) in the low screen time group (p<0.001). These results suggest that high screen exposure, particularly before bedtime, was associated with disturbed sleep and daytime sleepiness.

In [Table 5], physical activity was significantly lower among children with high screen time. Adequate physical activity was observed in only 25 children (31.25%) in the high screen time group, compared with 57 children (71.25%) in the low screen time group (p<0.001). Inadequate physical activity was much more common in the high screen time group, affecting 55 children (68.75%), compared with 23 children (28.75%) in the low screen time group. Outdoor play for at least 60 minutes per day was reported by 27 children (33.75%) in the high screen time group, compared with 61 children (76.25%) in the low screen time group (p<0.001). Participation in sports was also significantly lower in the high screen time group, 22 children (27.50%), compared with 44 children (55.00%) in the low screen time group (p=0.001).

In [Table 6], screen-related behavioral parameters differed significantly between groups. The mean daily screen time was 4.60 ± 1.10 hours in the high screen time group, compared with 1.70 ± 0.60 hours in the low screen time group (p<0.001). Mean sedentary time was also higher in the high screen time group, 2.90 ± 0.80 hours/day, compared with 1.10 ± 0.50 hours/day in the low screen time group (p<0.001). Screen use during meals was reported in 58 children (72.50%) in the high screen time group, compared with 28 children (35.00%) in the low screen time group (p<0.001). Predominant entertainment or gaming use was also higher among children with high screen time, observed in 42 children (52.50%), compared with 20 children (25.00%) in the low screen time group (p=0.001).

Table 1: Distribution of Participants According to Demographic Characteristics

Variable	High screen time n (%)	Low screen time n (%)	Total n (%)	p-value
Age 5–8 years	18 (22.50%)	22 (27.50%)	40 (25.00%)	0.766
Age 9–12 years	31 (38.75%)	29 (36.25%)	60 (37.50%)	
Age 13–16 years	31 (38.75%)	29 (36.25%)	60 (37.50%)	
Male	45 (56.25%)	42 (52.50%)	87 (54.38%)	0.751
Female	35 (43.75%)	38 (47.50%)	73 (45.62%)	
Urban residence	51 (63.75%)	48 (60.00%)	99 (61.88%)	0.745
Rural residence	29 (36.25%)	32 (40.00%)	61 (38.12%)	

Table 2: Comparison of Anthropometric Parameters Between Groups

Parameter	High screen time	Low screen time	p-value
Mean age, years	10.20 ± 2.80	10.00 ± 2.70	0.646
Mean BMI, kg/m²	21.90 ± 4.10	19.80 ± 3.60	0.001
Underweight	6 (7.50%)	10 (12.50%)	0.005
Normal BMI	38 (47.50%)	55 (68.75%)	
Overweight	22 (27.50%)	10 (12.50%)	
Obese	14 (17.50%)	5 (6.25%)	

Table 3: Comparison of Sleep Quality Parameters

Sleep parameter	High screen time n (%)	Low screen time n (%)	Total n (%)	p-value
Good sleep quality	24 (30.00%)	52 (65.00%)	76 (47.50%)	<0.001
Poor sleep quality	56 (70.00%)	28 (35.00%)	84 (52.50%)	
Adequate sleep duration	28 (35.00%)	60 (75.00%)	88 (55.00%)	<0.001
Inadequate sleep duration	52 (65.00%)	20 (25.00%)	72 (45.00%)	
Normal sleep latency	30 (37.50%)	59 (73.75%)	89 (55.62%)	<0.001
Prolonged sleep latency	50 (62.50%)	21 (26.25%)	71 (44.38%)	

Table 4: Comparison of Additional Sleep-Related Problems

Parameter	High screen time n (%)	Low screen time n (%)	Total n (%)	p-value
Night awakenings present	33 (41.25%)	19 (23.75%)	52 (32.50%)	0.028
Night awakenings absent	47 (58.75%)	61 (76.25%)	108 (67.50%)	
Daytime sleepiness present	44 (55.00%)	22 (27.50%)	66 (41.25%)	0.001
Daytime sleepiness absent	36 (45.00%)	58 (72.50%)	94 (58.75%)	
Screen use before bedtime	65 (81.25%)	24 (30.00%)	89 (55.62%)	<0.001
No screen use before bedtime	15 (18.75%)	56 (70.00%)	71 (44.38%)	

Table 5: Comparison of Physical Activity Parameters

Physical activity parameter	High screen time n (%)	Low screen time n (%)	Total n (%)	p-value
Adequate physical activity	25 (31.25%)	57 (71.25%)	82 (51.25%)	<0.001
Inadequate physical activity	55 (68.75%)	23 (28.75%)	78 (48.75%)	
Outdoor play ≥60 minutes/day	27 (33.75%)	61 (76.25%)	88 (55.00%)	<0.001
Outdoor play <60 minutes/day	53 (66.25%)	19 (23.75%)	72 (45.00%)	
Participation in sports	22 (27.50%)	44 (55.00%)	66 (41.25%)	0.001
No participation in sports	58 (72.50%)	36 (45.00%)	94 (58.75%)	

Table 6: Comparison of Screen-Related Behavioral Parameters

Screen-related parameter	High screen time n (%)	Low screen time n (%)	Total n (%)	p-value
Mean daily screen time, hours	4.60 ± 1.10	1.70 ± 0.60	—	<0.001
Mean sedentary time, hours/day	2.90 ± 0.80	1.10 ± 0.50	—	<0.001
Screen use during meals	58 (72.50%)	28 (35.00%)	86 (53.75%)	<0.001
No screen use during meals	22 (27.50%)	52 (65.00%)	74 (46.25%)	
Predominant entertainment/gaming use	42 (52.50%)	20 (25.00%)	62 (38.75%)	0.001
Predominant educational/other use	38 (47.50%)	60 (75.00%)	98 (61.25%)	

DISCUSSION

A total of 160 children were evaluated in the present study, with equal distribution of 80 children each in the high screen time and low screen time groups. The demographic profile was comparable between both groups, as age distribution (p=0.766), sex distribution (p=0.751), and residence (p=0.745) did not show statistically significant differences. This comparability is important because it suggests that the later differences in BMI, sleep quality, and physical activity were less likely to be due to baseline demographic imbalance. Similar hospital-based findings were reported by Donthu et al. (2023), who studied children aged 5–15 years in a tertiary care setting and found that screen time was significantly associated with child-related and parent-related demographic factors, while sleep disturbance and avoidance of outdoor activity were frequently reported with increased screen use.[7] In the present study, mean age was nearly similar in both groups, being 10.20 ± 2.80 years in the high screen time group and 10.00 ± 2.70 years in the low screen time group (p=0.646). This finding supports that both groups were age-matched and suitable for comparison. Nagata et al. (2023), in a large cross-sectional study of 5797 adolescents aged 10–14 years, reported a mean age of 12.00 ± 0.60 years and 50.40% male participants, showing that screen time and adiposity studies commonly involve school-age children and early adolescents; in their study, mean screen time was 6.50 ± 5.40 hours/day and 35.00% had overweight or obesity, which is comparable to the increased weight-related burden observed in the high screen time group of the present study.[8] The present study showed that mean BMI was significantly higher among children with high screen time, 21.90 ± 4.10 kg/m², compared with 19.80 ± 3.60 kg/m² among children with low screen time (p=0.001). Overweight and obesity were also more frequent in the high screen time group, with 27.50% overweight and 17.50% obese children, compared

with 12.50% overweight and 6.25% obese children in the low screen time group (p=0.005). These findings are consistent with Nagata et al. (2021), who reported in a prospective cohort study of 9–10-year-old children that each additional hour of total screen time per day was associated with a 0.22 higher BMI percentile at one-year follow-up, supporting a positive relationship between screen exposure and later BMI increase.[9] The higher burden of overweight and obesity in the high screen time group may be explained by the combined effect of sedentary behavior, reduced energy expenditure, and displacement of active play. In the present study, only 47.50% of children in the high screen time group had normal BMI compared with 68.75% in the low screen time group, whereas combined overweight/obesity was 45.00% in the high screen time group compared with 18.75% in the low screen time group. Laurson et al. (2014), in a study of 674 children aged 7–12 years, assessed physical activity, screen time, and sleep duration together and found that only 9.20% of children met all three recommendations, and those children were least likely to be obese, supporting the concept that unhealthy clustering of high screen time, poor sleep, and reduced activity increases obesity risk.[10] Sleep quality was significantly poorer among children with high screen time in the present study. Poor sleep quality was found in 70.00% of children in the high screen time group compared with 35.00% in the low screen time group (p<0.001). Adequate sleep duration was also lower in the high screen time group, 35.00% versus 75.00%, and prolonged sleep latency was higher, 62.50% versus 26.25% (p<0.001). These findings are in agreement with Hale et al. (2015), who reviewed 67 studies on screen time and sleep among school-aged children and adolescents and found that screen time was adversely associated with sleep outcomes in 90.00% of studies, mainly through shorter sleep duration and delayed sleep timing.[11] Additional sleep-related problems were also significantly higher among children with high screen time. Night awakenings were present in 41.25% of children in the high screen time group compared with 23.75% in the low screen time group (p=0.028), while daytime sleepiness was reported in 55.00% versus 27.50%, respectively (p=0.001). Carter et al. (2016), in a systematic review and meta-analysis involving 20 studies and 125,198 children, found that bedtime access to or use of portable screen-based media devices was significantly associated with inadequate sleep quantity, poor sleep quality, and excessive daytime sleepiness, closely supporting the present study's findings of disturbed sleep and greater daytime sleepiness among high screen users.[12] Screen use before bedtime was one of the most striking differences in the present study, being present in 81.25% of children with high screen time compared with 30.00% of those with low screen time (p<0.001). This finding suggests that not only the amount of screen exposure but also the timing of exposure plays an important role in sleep disturbance. Cain et al. (2010), in a review of 36 studies involving school-aged children and adolescents, reported that television viewing, computer use, electronic gaming, internet use, mobile phones, and music devices were commonly linked with adverse sleep patterns, supporting the present observation that evening or bedtime screen exposure may contribute to prolonged sleep latency, night awakenings, and poor sleep quality.[13] Physical activity was significantly reduced among children with high screen time in the present study. Adequate physical activity was seen in only 31.25% of children in the high screen time group compared with 71.25% in the low screen time group (p<0.001). Outdoor play for at least 60 minutes/day was also lower in the high screen time group, 33.75% compared with 76.25%, and sports participation was 27.50% compared with 55.00% in the low screen time group (p=0.001). Whiting et al. (2021), using WHO European Childhood Obesity Surveillance Initiative data from 25 countries among children aged 6–9 years, reported that 79.40% actively played for more than one hour/day, 60.20% had screen time below two hours/day, and 84.90% slept 9–11 hours/night, showing that healthier screen behavior is commonly linked with better activity and sleep profiles.[14] Screen use during meals was significantly higher in the high screen time group in the present study, observed in 72.50% of children compared with 35.00% in the low screen time group (p<0.001). Predominant entertainment or gaming use was also higher among high screen users, 52.50% compared with 25.00% in the low screen time group (p=0.001). Lutz et al. (2024), in a study of 532 toddlers, reported that median daily television time was 42 minutes, 25.00% had television usually on during mealtimes, and children with more daily television exposure or mealtime television had significantly less healthy dietary practices, including greater intake of sugar-sweetened beverages, fast food, and junk food, supporting the present study's finding that mealtime screen use may be an important unhealthy behavioral marker.[15] Overall, the present study demonstrated that high screen time was associated with a clustering of adverse outcomes: higher mean BMI, greater overweight/obesity, poorer sleep quality, shorter sleep duration, prolonged sleep latency, increased daytime sleepiness, reduced outdoor play, lower sports participation, and greater sedentary time. The mean daily screen time was 4.60 ± 1.10 hours in the high screen time group compared with 1.70 ± 0.60 hours in the low screen time group (p<0.001), while sedentary time was 2.90 ± 0.80 versus 1.10 ± 0.50 hours/day (p<0.001). Zink et al. (2024), in a one-year longitudinal study of U.S. youth, found that associations between screen time and BMI depended on the type of screen use and whether it displaced physical activity or sleep; replacing 30 minutes of screen-based behaviors with physical activity or sleep was associated with lower follow-up BMI z-score in different sex-specific models, supporting the interpretation that screen time affects child health partly by replacing healthier behaviors.[16]

CONCLUSION

The present study showed that children with high screen time had significantly higher BMI and greater prevalence of overweight and obesity compared with children with low screen time. High screen time was also associated with poorer sleep quality, inadequate sleep duration, prolonged sleep latency, and increased daytime sleepiness. Children with low screen time had better physical activity levels, more outdoor play, and greater sports participation. These findings highlight the need to limit excessive screen exposure and promote healthy lifestyle practices among children.

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