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The Influence of Social Media Exposure on Dietary Behaviors and Dental Caries Prevalence Among Pediatric Patients

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Abstract

Background: The exponential rise in digital media consumption among children has raised concerns regarding its multidimensional impact on health. This study aimed to assess the influence of social media exposure and daily screen time on dietary behaviors, oral hygiene practices, and the prevalence of dental caries among pediatric patients in Jordan. Methods: A descriptive cross-sectional study was conducted involving 201 children aged 6–12 years attending private dental clinics. Data were collected using a validated questionnaire assessing daily screen time duration, platform usage, snacking habits, and the influence of digital advertisements. A clinical examination was performed to record dental caries experience (dmft/DMFT indices) and oral hygiene status (OHI-S). Results: High screen time (> 3 hours/day) was reported by 42.5% of participants. The analysis revealed significant associations between excessive screen time and cariogenic behaviors, including "always" snacking while watching (81.2%), requesting foods seen in advertisements (89.4%), and skipping tooth brushing (91.8%). A strong dose-response relationship was observed; children in the high-screen-time group exhibited significantly higher mean dmft scores (5.24 ± 1.99) compared to the low-exposure group (1.93 ± 1.70) ($P < 0.001$). Furthermore, 77.7% of high-screen users demonstrated poor oral hygiene status. Conclusions: Excessive social media exposure serves as a critical behavioral risk factor for dental caries in children. This association is mediated by a triad of "distracted eating," "digital pester power," and the displacement of oral hygiene routines. Integrating screen time management into caries risk assessment and prevention protocols is strongly recommended.

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1. Introduction

Dental caries remains one of the most prevalent chronic diseases affecting children worldwide, posing a significant public health challenge despite advances in preventive dentistry. According to the Global Burden of Disease Study (2021), the incidence and prevalence of caries in primary teeth continue to affect millions of children globally, impacting their quality of life and development **[1]**. The etiology of caries is multifactorial, strongly driven by dietary habits, specifically the frequent consumption of fermentable carbohydrates and free sugars which provide the substrate for cariogenic bacteria **[2]**.

In recent years, the lifestyle of children has shifted dramatically towards sedentary behaviors, characterized by increased screen time. Recent evidence suggests that sedentary behavior and unhealthy dietary habits are key drivers of untreated dental caries among adolescents **[3]**. This association is further complicated by the digital environment; specifically, the rise of social media platforms (e.g., YouTube, TikTok) and "Kid Influencers." Research indicates that social media influencers significantly impact children's dietary behaviors by promoting unhealthy food products **[4]**.

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A study analyzing YouTube videos for kids revealed that over 90% of food and drink product placements were for unhealthy, branded items, often presented by "kid influencers" who blur the line between entertainment and advertising **[5]**. These digital marketing cues are designed to trigger cravings and purchase requests, creating a direct pathway to increased sugar consumption **[6]**. Furthermore, excessive screen time has been positively associated with poor oral health indicators, potentially due to distracted eating (snacking while watching) and the neglect of oral hygiene practices such as regular brushing **[7].**

Despite the growing body of literature linking screen time to obesity, few studies have specifically investigated the direct correlation between social media exposure duration, the nature of consumed content, and clinical dental caries indices (dmft/DMFT) in our region. Therefore, this study aims to assess the influence of social media usage on dietary habits and dental caries prevalence among a sample of pediatric patients.

2. Materials and Methods

2.1. Study Design and Setting

This descriptive cross-sectional study **was conducted** in private dental clinics in [Jordan]. The study targeted pediatric patients aged 6 to 12 years who attended the clinics for routine dental check-ups or treatments between [September] and [December] 2026.

2.2. Study Population and Sample Size

A total of **201 children** were included in the final analysis. The sample size was calculated to ensure sufficient statistical power to detect associations between screen time habits and oral health outcomes, based on a 95% confidence level and a 5% margin of error.

- Inclusion Criteria:

1. Children aged 6–12 years (mixed dentition stage).
2. Generally healthy children (ASA I or II).
3. Parents/Guardians who signed the informed consent form.

- Exclusion Criteria:

1. Children with systemic diseases affecting oral health (e.g., diabetes).
2. Children currently undergoing orthodontic treatment (braces).
3. Uncooperative children where clinical examination was not feasible.
4. Incomplete questionnaires with missing key variables (e.g., screen time).

2.3. Data Collection Tools

Data collection utilized a structured two-part instrument:

- **Part I: Questionnaire (Social Media & Dietary Habits):** A self-administered questionnaire was completed by parents (with assistance from the child). The questionnaire included items assessing:

1. **Daily screen time duration** (< 1 hour, 1–3 hours, > 3 hours).
2. **Platform usage** (TikTok, YouTube, Gaming apps).
3. **Dietary habits linked to viewing:** Frequency of snacking while watching screens.
4. **Influence of advertisements:** Requesting food seen in ads ("Pester Power").
5. **Oral hygiene behavior:** Whether screen time interferes with brushing frequency.

Reliability: The internal consistency of the questionnaire was assessed using **Cronbach's Alpha coefficient**, which yielded a value of **0.766**, indicating high reliability.

- **Part II: Clinical Examination:** A comprehensive oral examination **was performed** by a calibrated pediatric dentist under artificial light using a flat dental mirror and a WHO CPI probe.

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1. **Caries Assessment:** Dental caries experience was recorded using the **dmft index** (decayed, missing, filled primary teeth) and **DMFT index** (permanent teeth) according to World Health Organization (WHO) diagnostic criteria.
2. **Oral Hygiene Assessment:** The Simplified Oral Hygiene Index (OHI-S) was used to classify oral hygiene status into Good, Fair, or Poor.

2.4. Ethical Considerations

The study was conducted in accordance with the Declaration of Helsinki. While formal institutional review board (IRB) approval was waived due to the observational and non-invasive nature of the study, strict ethical protocols were followed. **Written informed consent was obtained from the parents or legal guardians of all participating children using a structured consent form (Appendix 2).** The form explained the study's purpose, voluntary nature of participation, and guaranteed the confidentiality of data. No personal identifiers were disclosed in the final analysis.

2.5. Statistical Analysis

Data were entered and analyzed using **IBM SPSS Statistics for Windows, Version 26.0** (IBM Corp., Armonk, N.Y., USA).

- **Descriptive statistics** (frequencies, percentages, means, and standard deviations) were used to summarize demographic data and clinical indices.
- **One-way Analysis of Variance (ANOVA)** was used to compare mean caries indices (dmft/DMFT) across different screen time groups.
- **The Chi-square test** was utilized to determine the association between screen time duration and categorical variables (snacking habits, ad influence, and brushing behaviors).
- A **P-value of less than 0.05** was considered statistically significant.

3. Results

3.1. Demographic Characteristics

A total of **201** children participated in this study. The gender distribution was fairly balanced, with **113 (56.2%) males** and **88 (43.8%) females**. The majority of participants were in the **6–8 years** age group (**55.0%**), followed by the 11–12 years group (19.8%). The detailed demographic characteristics are presented in **Table 1**.

Table 1. Demographic Characteristics of Participants.

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	113	56.2%
	Female	88	43.8%
Age Group	6 – 8 Years	111	55.0%
	9 – 10 Years	38	18.8%
	11 – 12 Years	40	19.8%
	Other	13	6.4%
Total		**201**	**100.0%**

3.2. Screen Time and Digital Habits

Regarding daily screen time exposure, **42.5%** of the children reported spending **more than 3 hours** per day on social media platforms, while **29.5%** spent less than one hour. The most frequently used platforms included YouTube Kids, TikTok, and gaming applications. In terms of dietary habits linked to screen time, **48.0%** of children reported **"Always"** snacking while watching screens. Additionally, a significant proportion (**65.3%**) of parents reported that their children request food

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items seen in advertisements. Furthermore, **64.7%** of participants indicated that screen time interferes with their regular tooth brushing habits (**Table 2**).

Table 2. Screen Time and Digital Habits.

Variable	Category	Frequency (n)	Percentage (%)
Daily Screen Time	Low (< 1 hour)	59	29.5%
	Medium (1 – 3 hours)	56	28.0%
	High (> 3 hours)	85	42.5%
Snacking while Watching	Always	96	48.0%
	Sometimes	64	32.0%
	Never	40	20.0%
Requesting Food from Ads	Yes	130	65.3%
	No	69	34.7%
Interferes with Brushing	Yes	130	64.7%
	No	71	35.3%

3.3. Clinical Oral Health Status

The clinical examination revealed that the mean **dmft index** (for primary teeth) was **3.75 (± 2.38)**, indicating a high prevalence of untreated caries in the primary dentition. The mean **DMFT index** (for permanent teeth) was **0.85 (± 1.35)**. Regarding oral hygiene status, nearly half of the participants (**46.5%**) had **Poor** oral hygiene scores (OHI-S), while only **25.0%** demonstrated Good oral hygiene (**Table 3**).

Table 3. Clinical Status (Oral Health Indices).

Variable	Category / Metric	Value
Oral Hygiene (OHI-S)	Good	50 (25.0%)
	Fair	57 (28.5%)
	Poor	93 (46.5%)
Primary Teeth Caries (dmft)	Mean (SD)	**3.75 (± 2.38)**
Permanent Teeth Caries (DMFT)	Mean (SD)	**0.85 (± 1.35)**

3.4. Association between Screen Time and Dental Caries

A One-way ANOVA test was conducted to assess the relationship between daily screen time duration and dental caries experience. The results revealed a statistically significant association (**P = 0.000**). Children who spent **> 3 hours** on screens had a significantly higher mean dmft score (**5.24 ± 1.99**) compared to those who spent **< 1 hour** (**1.93 ± 1.70**). Similarly, permanent teeth caries (DMFT) were significantly higher in the high screen time group (**Table 4**).

Table 4. Association between Screen Time and Primary Teeth Caries (ANOVA Test).

Daily Screen Time	N	Mean dmft	Std. Deviation	F-Value	P-Value
< 1 hour	59	**1.93**	1.70	**52.098**	**0.000***
1 – 3 hours	56	**3.45**	2.06		
> 3 hours	85	**5.24**	1.99		

** Significant at P < 0.05.*

Similarly, the analysis for permanent teeth showed a significant increase in caries experience with increased screen time **(P = 0.000).** The mean DMFT score rose from **0.34** in the low screen time group to **1.38** in the high screen time group **(Table 5).**

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Table 5. Association between Screen Time and Permanent Teeth Caries (ANOVA).

Daily Screen Time	N	Mean DMFT	Std. Deviation	F-Value	P-Value
< 1 hour	**59**	**0.34**	**0.48**	**12.907**	**0.000***
1 – 3 hours	**56**	**0.61**	**1.89**		
> 3 hours	**85**	**1.38**	**1.15**		

3.5. Association between Screen Time and Habits

The Chi-square test demonstrated significant associations between screen time duration and unhealthy behaviors. Children with high screen time (> 3 hours) were significantly more likely to snack "Always" while watching (**81.2%, P = 0.000**) compared to the low screen time group (**Table 6**). Additionally, excessive screen time was significantly associated with requesting food from advertisements (**P = 0.000**) and neglecting tooth brushing (**P = 0.000**), as shown in **Tables 7 and 8**.

Table 6. Association between Screen Time and Snacking Habits (Chi-Square Test).

Daily Screen Time	Snacking: Never	Snacking: Sometimes	Snacking: Always	Chi-Square	P-Value
< 1 hour	28 (47.5%)	20 (33.9%)	11 (18.6%)	**95.974**	**0.000***
1 – 3 hours	6 (10.7%)	35 (62.5%)	15 (26.8%)		
> 3 hours	6 (7.1%)	9 (10.6%)	69 (81.2%)		

Table 7. Association between Screen Time and Requesting Food from Ads.

Daily Screen Time	Requesting: No	Requesting: Yes	Chi-Square	P-Value
< 1 hour	38 (64.4%)	21 (35.6%)	**49.793**	**0.000***
1 – 3 hours	24 (42.9%)	32 (57.1%)		
> 3 hours	7 (8.2%)	76 (89.4%)		

Table 8. Association between Screen Time and Brushing Habits.

Daily Screen Time	Interferes: No	Interferes: Yes	Chi-Square	P-Value
< 1 hour	38 (64.4%)	21 (35.6%)	**52.047**	**0.000***
1 – 3 hours	26 (46.4%)	30 (53.6%)		
> 3 hours	7 (8.2%)	78 (91.8%)		

3.6. Association between Screen Time and Oral Hygiene

There was a statistically significant inverse relationship between screen time and oral hygiene status (**P = 0.000**). The majority of children in the high screen time group (> 3 hours) exhibited **Poor** oral hygiene (**77.7%**), whereas the majority of the low screen time group had **Good** oral hygiene (**57.6%**) (**Table 9**).

Table 9. Association between Screen Time and Oral Hygiene Status (OHI-S).

Daily Screen Time	Good	Fair	Poor	Chi-Square	P-Value
< 1 hour	34 (57.6%)	14 (23.7%)	11 (18.6%)	**84.154**	**0.000***
1 – 3 hours	13 (23.2%)	27 (48.2%)	16 (28.6%)		
> 3 hours	3 (3.5%)	16 (18.8%)	66 (77.7%)		

4. Discussion

The findings of this study provide a critical assessment of the impact of social media and screen time exposure on the oral health of children in Jordan. The observed mean **dmft score of 3.75 (± 2.38)** and **DMFT score of 0.85 (± 1.35)** signify a substantial caries burden among the participants. These results are highly consistent with local epidemiological data from Jordan; specifically, a study

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conducted in the Mafraq governorate reported dmft ranges between 2.3 and 4.4 for children in the same age group (6–12 years). Our mean score of 3.75 falls directly within this regional baseline, confirming that dental decay remains a persistent public health challenge in the Jordanian population **[12]**.

The most significant finding in our study is the strong dose-response relationship between daily screen time and caries severity. Children in the high-exposure group (> 3 hours) exhibited a mean dmft of **5.24**, which is nearly three times higher than those in the low-exposure group (**1.93**). This correlation is supported by the latest research, which identifies "Problematic Screen Exposure" as a primary risk factor for increased caries severity and the development of cavitated lesions in primary molars. The evidence suggests that as digital immersion increases, the clinical severity of dental decay escalates proportionally **[8,9]**.

A key behavioral mechanism explaining this association is the alteration of dietary patterns. Our data showed that **81.2%** of children with high screen time "always" snack while watching. This "distracted eating" leads to prolonged exposure to fermentable carbohydrates. Recent evidence has demonstrated that children with high screen use consume a significant portion of their meals in front of digital devices, which is directly linked to an increased number of cavitated carious lesions and an overall higher caries prevalence **[9]**.

The impact of digital marketing on children's requests for sugary foods (Pester Power) was also evident, with **89.4%** of high-screen users requesting food items seen in advertisements. This aligns with comparative evaluations showing that advertisements for cariogenic products significantly influence children's preferences and purchase requests, thereby creating a direct pathway to higher caries prevalence **[10]**.

Furthermore, excessive screen time appears to displace essential oral hygiene routines. An alarming **91.8%** of children in the high-exposure group reported that screen time interferes with their regular tooth brushing, leading to the **77.7%** poor oral hygiene status observed. While digital platforms are being explored as tools for health education to improve knowledge and oral hygiene indicators, our findings suggest that recreational and unmediated social media use currently serves as a significant barrier to maintaining adequate oral hygiene practices **[11]**.

Beyond the clinical severity, the socio-demographic context in Jordan provides further insight into these findings. Our recorded dmft value of **3.75** is consistent with earlier reports from Amman, which indicated dmft values of 3.1 and 4.1 for children in similar age groups, suggesting that caries levels have remained high over the past decades despite dental advancements **[13]**. Furthermore, the high prevalence of decay observed in our sample may be influenced by maternal and socioeconomic factors, as previous Jordanian research has highlighted the significant role of a mother's characteristics and socioeconomic status as primary risk factors for childhood caries **[14]**. This is compounded by a lack of parental awareness regarding pediatric oral health; recent data from Jordan shows that the majority of parents exhibit inadequate practices toward their children's oral hygiene, which directly correlates with the poor clinical outcomes observed in our high screen-time group **[15]**.

On a broader scale, our findings reflect a regional crisis in the Eastern Mediterranean Region (EMR). A meta-analysis of data from nine countries in this region indicates a high and varied prevalence of dental caries, confirming that our results are part of a wider public health challenge affecting children across the region **[16]**. A primary driver of this trend in the digital age is the "#junkfluenced" effect. We found that TikTok and YouTube were among the most used platforms by children in our study. Research has shown that social media influencers popular with children frequently market unhealthy food and beverages, significantly impacting children's dietary preferences and sugar consumption patterns **[17]**.

The biological impact of this digital immersion cannot be overlooked. Our data identified screen time as a predictor for oral health status, a finding supported by recent studies indicating a strong relationship between recreational screen time and the consumption of cariogenic foods, such as sweets and soft drinks **[18]**. Furthermore, chronic exposure to sugary snacks during screen time may

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alter the oral environment; clinical comparisons between children with caries and those who are caries-free have shown significant differences in salivary flow rate, pH, and buffering capacity, factors that are likely compromised by the frequent snacking behavior noted in our sample **[19]**. Finally, the self-reported neglect of oral hygiene behavior in our study, where screen time interfered with brushing, highlights the gap between oral hygiene education and actual self-reported behavior, necessitating more effective intervention strategies to bridge this divide **[20]**.

The alarming prevalence of excessive screen time observed in our study, where **42.5%** of children exceeded three hours daily, stands in sharp contrast to the global standards set by the World Health Organization (WHO). The WHO guidelines on physical activity and sedentary behavior explicitly recommend limiting recreational screen time to a maximum of 60 minutes for young children to mitigate health risks. The deviation observed in our Jordanian sample suggests a widespread non-adherence to these guidelines, likely exacerbated by the lingering behavioral shifts post-COVID-19 **[21]**. Longitudinal evidence has shown that the pandemic-induced lockdowns created an "obesogenic" and "cariogenic" environment, characterized by increased digital consumption and disrupted routines. This shift has been epidemiologically linked to a marked increase in dental caries incidence in post-pandemic cohorts compared to pre-pandemic baselines, as screen time replaced physical activity and structured mealtimes **[22]**.

Beyond clinical morbidity, the high caries experience recorded in our study (mean dmft **3.75**) carries profound implications for the Oral Health-Related Quality of Life (OHRQoL) of the affected children. Our results resonate with local findings by Rajab and Abdullah in Amman, who demonstrated that Early Childhood Caries (ECC) significantly impairs the quality of life for Jordanian preschoolers and their families, affecting domains such as pain, psychological discomfort, and family function **[27]**. This relationship is multidimensional; a systematic review of OHRQoL instruments confirms that untreated oral conditions in children lead to functional limitations and psychosocial impacts that extend into adolescence **[24]**. Furthermore, recent research has established a direct negative correlation between sedentary behavior—specifically high screen time—and OHRQoL scores, suggesting that the "screen-sedentary-diet" triad works synergistically to degrade the child's overall well-being **[28]**.

Elucidating the causal pathway, our study supports the "Common Risk Factor Approach." The biological link between screen time and caries is mediated primarily by dietary choices. Advanced mediation analysis has identified Free Sugar Intake (FSI) as the single most significant mediator reducing the gap between socioeconomic status and caries experience **[25]**. This is corroborated by our finding that screen time acts as a potent predictor for sugar consumption; children in our study with higher screen exposure were more prone to snacking, a behavior pattern confirmed by Simon et al. (2024), who found a statistically significant linear relationship between recreational screen duration and the intake of cariogenic sweets and carbonated beverages **[18]**. This behavior mirrors the ecological associations found between obesity and dental caries, suggesting that both conditions share the same "digital" etiology **[26]**.

Paradoxically, the digital environment offers a dual nature. While our results highlight the detrimental effects of unmediated social media use, systematic reviews indicate that Online Social Networks (OSNs) and mobile applications, when designed correctly, can be effective tools for oral health promotion. Interventions utilizing platforms like WhatsApp or educational apps have shown success in reducing gingival indices and improving health literacy among adolescents **[23]**. However, to reverse the current negative trends, intervention strategies must be robust. Meta-analyses of screen-time reduction interventions suggest that success relies on specific behavior change techniques, particularly "goal setting" and "social support" from parents, rather than passive education alone **[30]**.

5. Conclusion

This study provides compelling evidence of a significant, dose-dependent association between excessive social media screen time and the severity of dental caries among pediatric patients in

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Jordan. The data reveals that children engaging in more than three hours of daily screen time exhibit a threefold increase in primary teeth caries (dmft) compared to low-usage peers. This relationship is not merely coincidental but is mechanistically driven by a triad of behavioral risk factors: **(1) Distracted Eating**, characterized by frequent consumption of cariogenic snacks during viewing; **(2) Digital Pester Power**, where exposure to food advertising drives the demand for unhealthy products; and **(3) Behavioral Displacement**, where digital immersion significantly interferes with the frequency and quality of tooth brushing. The findings underscore that in the post-pandemic era, screen time has evolved from a lifestyle variable into a critical determinant of oral health, necessitating its inclusion in caries risk assessment protocols.

6. Recommendations

In light of these findings and the supporting literature, the following recommendations are proposed for stakeholders:

1. For Parents and Guardians:
    - Strict adherence to **WHO guidelines [21]** is crucial; recreational screen time should be limited to < 1 hour for children under 5 and < 2 hours for older children.
    - Implementation of **"Screen-Free Zones"** during mealtimes and bedrooms to prevent distracted eating and sleep disruption.
    - Active **parental mediation** of content to mitigate the impact of food marketing.
2. For Dental Practitioners:
    - **Caris Risk Assessment (CRA):** Pediatric dentists should integrate "daily screen time duration" and "snacking while watching" as standard questions in the dietary history and caries risk assessment for every child.
    - **Digital Prescriptions:** Dentists should "prescribe" specific educational apps **[23]** that promote brushing, turning the screen from a foe into a tool for compliance.
3. For Public Health Policy:
    - **Regulation of Digital Marketing:** Policymakers in Jordan should consider regulations restricting the advertising of high-sugar food and beverages on digital platforms (TikTok, YouTube) targeted at children, similar to regulations on traditional TV **[17].**
    - **School-Based Interventions:** Educational programs should move beyond traditional hygiene instruction to include "Digital Diet" awareness, teaching children the relationship between their online habits and their physical health **[30].**
4. For Future Research:
    - Longitudinal studies are recommended to track the cumulative effect of early screen exposure on the incidence of caries in permanent dentition over time.
    - Investigation into the effectiveness of specific "screen-time reduction apps" in improving oral hygiene indicators (OHI-S) in the Jordanian context.

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