

Impact of Electronic Media in Health Status and Behavior of Children in Qassim Region, KSA

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Abstract: Social media use is one of the most popular leisure activities among children. Electronic media use during childhood is linked with physical health risks, such as obesity and poor sleep. Aim: to assess the effect of using electronic media on health status and behavior of children in Qassim region. Methods: A descriptive research design was conducted on 400 children and their mothers by convenience sample who enrolled at Qassim region, Kingdom Saudi Arabia. Researcher collected data by using Google form include arabic questionnaire consisted of demographic characteristics, using electronic media, Physical health activity, psychological health, social health and face-to-face interaction with family and friends. Results: stated that 50% of studied students spend 2 - <4 hours on electronic media per day. Mean score of minutes spent on physical activity for students who spend 1 <2 hours was 87.9 ± 16.5 , who spend 2 <4 hours was 69.04 ± 14.5 and who spend >6 hours was 21.09 ± 8.7 . Also, stated that 57.2%, 64.3% and 71.4% of students who spend 1 <2 hours had low loneliness, high social relation and very often Face-to-face interaction with family and friends. While 79.7%, 87.5% and 40.6% of students who spend >6 hours had high loneliness, low social relation and rare face-to-face interaction with family and friends. Conclusion: Increasing in time spent on electronic media causes children's loneliness, decreases social relations, face-to-face interaction with family and friends and limited physical activity of them. Additionally, factors such as having access to the internet at home, having one's own phone, and allowing students to use the internet at school increase the amount of time spent on electronic media. Recommendation: Informed the parents about the possible impacts of electronic media usage on children's physical, social and psychological health. Providing training program for Parents about factors affecting using social media. Further research study for assessing the effect of education program for children on negative using of electronic media.

Keywords: Children; Electronic media; Health status; Behavior.

1. INTRODUCTION

Over the last decade, there has been a sharp increase in the availability and use of electronic media devices, such as smartphones, tablet devices, portable games, home video games, and computers, which have all had a strong influence on children's lives.¹ In recent years, electronic media have assumed an important place in our lives. Technology is very easy to find even in rural areas due to the low prices with sufficient quality. Electronic media use has become the most popular leisure-time activity for children.²

These days, young children are exposed to a wide range of electronic media devices and their usage of electronic devices is rapidly increasing worldwide.³ Recent results showing that 70–80% of under-fives in the UK use smart devices.⁴ Children are exposed to electronic media for considerable time daily, and early exposure to electronic media may affect the physical and cognitive development in young children. However, the content of exposure, timing of exposure, duration of exposure, and socio-demographic characteristics of children influences the impact of exposure to these interferences.⁵

According to the USA Centers for Disease Control and Prevention, an average child spends about 8 hours a day watching electronic screens.⁶ These early years of childhood are also a time when children's media use dramatically rises and children have growing autonomy over the media they consume. Children who frequently use technology often ignore their surroundings. They prefer facing sophisticated technology they have than playing with their peers in the playground or the environment surrounding them. As a result, social communication between children and the environment reduces. The extent to which electronic media may affect the lives of children is hotly debated.⁷

In systematic reviews, electronic media use during childhood is linked with physical health risks, such as obesity and poor sleep. Additionally, evening exposure to bright light from a television or computer screen may suppress melatonin and consequently disrupt the circadian rhythm.⁸ There is an agreement among health authorities that excessive screen exposure time has an adverse effect on normal childhood development. The American Academy of Pediatrics guidelines recommend that children younger than 2 years should not spend time on electronic media, and media usage of children aged 2 or older should be restricted to <2 h per day.⁹

A frequent use of electronic media at early children has been linked to reduced physical fitness and physical health but also to decreased well-being and psycho-social health.¹⁰ Previous cross-sectional studies revealed that early children who spend more time in front of the electronic screens have more behavioral difficulties and sleep problems and show a generally lower psycho-social health than children who spend less time.¹¹

Increased electronic media time leads to social isolation leading to depression and loneliness. Constant surfing on media or watching television leads to decreased social activities with an increased risk of obesity.¹² The children on media for longer time decreases active verbal interaction with adverse developmental consequences, including language development, self-regulation, and later academic achievement. With frequent use of media, the child's playtime with peers and creative play is disturbed, interfering with their problem-solving skills and creative expression affecting their overall development.¹³

Playing violent games on mobiles or computers or viewing violent media programs on television can lead to aggressiveness, violent behavior increasing anxiety and fear in children.¹⁴ Excessive media time has effects on eyesight, decrease in bone density, difficulty to focus, and attention deficit hyperactivity disorder (ADHD). Speech and language delay is the most common form of childhood disabilities and affects about 1 in 12 children or 5%–8% of preschool children.¹⁵

Delay in speech and language skills may be associated with other cognitive impairments including lower IQ scores, slower information processing skills, and poorer literacy skills such as reading and spelling. Too much screen time can affect your child's physical health as well as their behavior.¹⁶ For this reason, guidelines in the United States of America (USA), Australia, and Canada are consistent in recommending that electronic media use for children aged 2–6 years should be limited.¹⁷

Aim: The study aimed to assess the effect of using electronic media on health status and behavior of children.

Research questions:

- What is the effect of using electronic media on health status of young children?
- Is there relation between time spent on electronic media and child health?
- What are factors affecting time spent on electronic media among children?

2. METHODS

Research design

A descriptive research design was used.

Setting: This study was conducted at Qassim region, Kingdom Saudi Arabia.

Subject: A convenience sample included 400 children and their mothers enrolled at previous mentioned school, who willing to participate in the study, from October 1st, 2021, to December 30th, 2021.

Tools of Data Collection:

An Arabic questionnaire was developed by the researchers after extensive literatures review (Dylan B.Jackson et al., 2020)¹⁷. It is intended to measure physical, social, behavior, and psychological health of children using electronic media. It consisted of three items:

-Demographic characteristics of children included age, gender, child lives with whom, school system and number of siblings.

-Characteristics of children related using electronic media as had own phone, available internet at home, activities on phone, time spent on electronic media and allow using internet at school.

-Physical health activity as doing physical activity in school, doing physical activity outside school, hanging out with friends after school and minutes spent on physical activity per day. Each activity scored yes by one score and no by zero score.

- Psychological health of children by assess Loneliness through Asher's scale. Asher et al., (1984)¹⁸ developed 16 items of a loneliness measure and assessed the reliability of the scale. Sixteen questions were asked to measure children's loneliness as it is easy for me to make new friends at school; I have nobody to talk to in class; I'm good at working with other children in my class; It's hard for me to make friends at school; I have lots of friends in my class; I feel alone at school...etc. Respondents were asked to rate each of the items by indicating how much the statement was true for them. The answer was coded as: "always true" = 1, "true most of the time" = 2, "sometimes true" = 3, "hardly ever true" = 4, "not true at all" = 5. Several items.

A possible score ranged from 16 to 90. High loneliness if score >70%, moderate if score 50 % to 70% and low if score <50%.

-Social relations: three items designed by Mesch's (2001)¹⁹ to measure social relations with friends: "It is important for me to spend time with friends"; "I have had close friends for a long time"; "My friends are willing to listen to my problems" Respondents were asked to answer by Likert scale from "strongly disagree" to "strongly agree," which was coded from 1 to 5. 1 indicated a low level of social relations while 5 indicated a high level of social relations. High social relation if score >70%, moderate if score 50 % to 70% and low if score <50%.

-Face-to-face interaction with family and friends; variable was used to assess the relationship between Internet use and children's interaction with people. Respondents were asked how often they talk with their parents and siblings per day and given five choices coded as the following: "not at all" = 1, "rarely" = 2, "sometimes" = 3, "often" = 4, "very often" = 5.

Pilot study

A pilot study was conducted on a group of 40 children and their mothers (10 %). It was conducted prior to data collection to assess the feasibility, duration, and cost of a full-scale research project. No modification was carried out, therefore the participants in the pilot were included in the study. Internal consistency reliability by using Cronbach's alpha coefficient (Cronbach's α) appeared to be good (Cronbach's α = 0.833)

Study framework

The data was collected using Google Forms <https://forms.gle/XY2gbFZDvVrUdhg5zDA> and distributed to the participants via Facebook and WhatsApp. The researchers sent the link to the children in order to collect the data, and all of the responses were compiled into an online spreadsheet. The survey's first section greets participants and instructs them to complete all of the questions.

Ethical Consideration

Verbal Consent was obtained from all parents of student before participation. In addition, participants who agreed to participate in the study were assured that all information obtained would be kept confidential and that they had the right to withdraw from the study at any time.

Statistical Analysis

The collected data was coded and entered into the statistical package for social sciences (SPSS) (SPSS Inc; version 24; IBM Corp., Armonk, NY, USA). After completing entry, the data was explored to detect any errors. Then, it was analyzed

by the same program for presenting frequency tables with percentages. Qualitative data was presented as a number and percent. Furthermore, Pearson Correlation coefficients are used to measure the strength of the linear relationship between two variables. A chi-square (χ^2) statistic is a measure of the difference between the observed and expected frequencies of the outcomes of a set of events or variables. The results were considered statistically significant at $P \leq 0.05$ and highly significant at $P < 0.01^{**}$.

3. RESULTS

Table (1) Distribution of studied children according to their characteristics (n=400)

Items	n	%
Age		
6 - <8	157	39.3
8 - <10	130	32.5
10 - 12	113	28.2
Mean (SD)	8.96±2.10	
Gender		
Male	175	43.8
Female	225	56.2
Whom child lives with		
Mother	32	8
Father	9	2.2
Both parents	349	87.3
Others	10	2.5
School system		
Public	315	78.7
Private	85	21.3
Number of siblings		
none	78	19.5
1-2	225	56.3
3-4	97	24.2

Table (1) revealed that mean age of studied students was 8.96 ± 2.10 years, 56.2% of them were female. Also, 87.3% of studied students lived with both parents and 78.7% of them studied at public school. Furthermore, 56.3% of studied students had 1 – 2 siblings.

Table (2) Distribution of studied children according to using electronic media(n=400)

Items	n	%
Child had own phone		
Yes	275	68.8
No	125	31.2
Available internet at home		
Yes	355	88.8
No	45	11.2
Activities on phone and computers “select more answer”		
Games	400	100
Using social media	276	69
YouTube	400	100
Time spent on electronic media / day		
1- < 2 hour	42	10.5
2- <4 hours	200	50
4- 6 hours	94	23.5
>6 hours	64	16
Allow using internet at school		
Yes	130	32.5
No	270	67.5

Table (2) revealed that 68.8% of studied students had phone, 88.8% of them had internet at home, all students used phone for games and YouTube. In addition, 50% of studied students spend 2 - <4 hours on electronic media per day and 32.5% of them using internet at home.

Table (3) Distribution of studied children according to physical activity in relation with Time spent on electronic media / day (n=400)

	1<2 hours	2<4 hours	4<6 hours	>6 hours	Chi-square P value
	Yes N (%)	Yes N (%)	Yes N (%)	Yes N (%)	
Doing physical activity in school	39(92.8)	132(66)	20(21.3)	8(12.5)	19.674 <0.01**
Doing physical activity outside school	33(78.6)	119(59.5)	14(14.9)	6(9.4)	17.080 <0.01**
Hanging out with friends after school	40(95.2)	152(76)	29(30.8)	14(21.9)	18.990 <0.01**
Minutes spent on physical activity per day Mean SD	87.9 ±16.5	69.04 ± 14.5	36.02 ± 10.08	21,09 ±8.7	ANOVA test 15.143 <0.01**

**high significant <0.01

Table (3) stated that 92.8%, 78.6% and 95.2% of students who spend 1 <2 hours doing physical activity in school, doing physical activity and hanging out with friends after school. While 12.5%, 9.4% and 21.9% of students who spend >6 hours doing physical activity in school, doing physical activity and hanging out with friends after school. In addition, mean score of minutes spent on physical activity for students who spend 1 <2 hours was 87.9 ±16.5, who spend 2 <4 hours was 69.04 ± 14.5 and who spend >6 hours was 21,09 ±8.7.

Table (4) Distribution of studied children according to physical activity in relation with Time spent on electronic media / day (n=400)

	1<2 hours N=42	2<4 hours N=200	4<6 hours N=94	>6 hours N=64	Chi-square P value
	N (%)	N (%)	N (%)	N (%)	
Children's loneliness					
High	3(7.1)	13(6.5)	20(21.3)	51(79.7)	16.444 <0.01**
Moderate	15(35.7)	102(51)	64(68.1)	9(14.1)	
Low	24(57.2)	85(42.5)	10(10.6)	4(6.2)	
Social relation					
High	27(64.3)	60(30)	4(4.3)	1(1.6)	15.900 <0.01**
Moderate	11(26.2)	92(46)	20(21.3)	7(10.9)	
Low	4(9.5)	48(24)	70(74.4)	56(87.5)	
Face-to-face interaction with family and friends:					
Rare	0(0)	4(2)	13(13.8)	26(40.6)	12.350 <0.01**
Sometimes	2(4.8)	33(16.5)	62(66)	30(46.9)	
Often	10(23.8)	109(54.5)	8(8.5)	3(4.7)	
Very often	30(71.4)	54(27)	11(11.7)	5(7.8)	

**high significant <0.01

Table (4) stated that 57.2%, 64.3% and 71.4% of students who spend 1 <2 hours had low loneliness, high social relation and very often Face-to-face interaction with family and friends

While 79.7%, 87.5% and 40.6% of students who spend >6 hours had high loneliness, low social relation and rare face-to-face interaction with family and friends.

Table (5) Correlation between time spent on electronic media and child health (n=400)

	Time spent on electronic media / day	
	r.	P value
Child had own phone	0.356	0.023*
Available internet at home	0.562	0.008**
Allow using internet at school	0.302	0.028*

**high significant <0.01 *slight significant <0.05

Table (5) showed that there was high positive correlation between availability of internet at home and time spent on electronic media at p value <0.01**. Meanwhile, there was slight positive correlation between had own phone, allowing using internet at home and time spent on electronic media at p value <0.05*.

Table (6) Correlation between time spent on electronic media and child health (n=400)

	Time spent on electronic media / day	
	r.	P value
Minutes spent on physical activity per day	-0.761	<0.01**
Children’s loneliness	0.699	<0.01**
Social relation	-0.730	<0.01**
Face-to-face interaction with family and friends	-0.701	<0.01**

**high significant <0.01

Table (6) showed that there was high positive correlation between Children’s loneliness and time spent on electronic media at p value <0.01**. Meanwhile, there was high negative correlation between Minutes spent on physical activity per day, social relation and Face-to-face interaction with family and friends and time spent on electronic media at p value <0.01**.

4. DISCUSSION

Technology is now profoundly ingrained in the lives of youngsters. Their reactions to these technologies range from negative to positive, with the majority of studies focusing on dangerous online conduct. Children’s experiences of health-related consequences of prolonged technology use, such as headaches, stomachaches, eye difficulties, excessive daytime sleepiness, and bad eating habits, have received less attention (Smahel et al., 2015)²⁰

Our study aimed to investigate the effect of using electronic media on physical, social and psychological health status of young children. Also, assess factors that increase using electronic media among children. The current study revealed that mean age of studied students was 8.96±2.10 years, more than half of them were female. Also, majority of studied students lived with both parents and more than half of them studied at public school and had 1 – 2 siblings. These results may be due to the remarkable family bonding in the State of Saudi Arabia, as well as the Kingdom’s interest in education. These results inconsistent with the study by Buda et al., 2021²¹ conducted at 4,191 school children mean age 13.9 ± 1.69 years, half of them were female and more than half of their family had medium family affluence.

Also, present study detected that more than two thirds of studied students had phone, the majority of them had internet at home, all students used phone for games and YouTube. In addition, half of studied students spend 2 - <4 hours on electronic media per day. From the researcher’s point of view, this is the result of the state of societal well-being, the high level of a person’s income, and the interest of the Saudi government in the infrastructure and provision of the Internet in all parts of the Kingdom. These results cohort with the study conducted by Wiederhold, 2020²² about social media use during social distancing and found that less than two thirds of studied subjects use social media around three hours daily. Also, Viner et al., 2019²³ conduct study at London and stated that the studied young people was very frequent use of social media. Kelly et al., 2018²⁴ showed that greater hours social media use related to body weight dissatisfaction (≥ 5 h 31% more likely to be dissatisfied), which in turn linked to depressive symptom scores directly (body dissatisfaction 15% higher depressive symptom scores) and indirectly via self-esteem. Children who viewed influencers on social media with

unhealthy snacks had significantly increased overall intake (448.3 kilocalories [kcal]; $P = .001$), and significantly increased intake of unhealthy snacks specifically (388.8 kcal; $P = .001$) (Coates et al., 2019)²⁵

In addition, related to the physical health of studied children, we found that children who spent more than six hours on electronic media suffered from limited physical activity, notably more than those who spent less than four hours, and of course, less than two hours. The average number of minutes spent on physical activity for students who spent less than two hours was 87.9, for those who spent two to four hours was 69.04, and for those who spent more than six hours was 21.09. These results are attributed to a child who does not find time to exercise due to his constant preoccupation with electronic games and watching video games. These results agree with the study performed by Paakkari et al., 2021²⁶ at Finland on 3408 subjects and found that the study confirmed the association between problematic social media use and negative health outcomes and highlighted the need to pay close attention to adolescents at moderate risk who exhibited negative health outcomes. Richards et al., 2015²⁷ detected that there is an association between the use of social media and self-esteem and body image.

Furthermore, the increase in time spent on electronic media causes children's loneliness and decreases social relations and face-to-face interaction with family and friends. Additionally, factors such as having access to the internet at home, having one's own phone, and allowing students to use the internet at school increase the amount of time spent on electronic media. These results supported with the study conducted by Woods & Scott, 2016²⁸ on participants were 467 Scottish secondary school pupils and reported that there was high positive correlation between overall social media and anxiety, depression and emotional investment at p value $<0.01^{**}$. Also, the study which surveyed 1,787 participants at university in Pittsburgh, Pennsylvania and found that the lowest quartile of total time per day spent on social media, participants in the highest quartile had significantly increased odds of depression (AOR = 1.66, 95% CI = 1.14–2.42) after controlling for all covariates (Lin et al., 2016)²⁹. Kreski et al., 2021³⁰ who conduct study on 74,472 adolescents at united states and reported that among US adolescents, daily social media use is not a strong or consistent risk factor for depressive symptoms. Steinsbekk et al., 2021³¹ stated that using social media had negative impact on self esteem from childhood to adolescence. Multilevel analyses revealed positive between-person associations of friendship closeness with general WhatsApp use and Instagram use with close friends (Pouwels et al., 2021)³².

5. CONCLUSION

Increasing in time spent on electronic media causes children's loneliness, decreases social relations, face-to-face interaction with family and friends and limited physical activity of them. Additionally, factors such as having access to the internet at home, having one's own phone, and allowing students to use the internet at school increase the amount of time spent on electronic media

6. RECOMMENDATION

- Informed the parents about the possible impacts of electronic media usage on children's physical, social and psychological health.
- Providing training program for Parents about factors affecting using social media.
- Further research study for assessing the effect of education program for children on negative using of electronic media.

ACKNOWLEDGMENT

The authors extend their appreciation to all children and their families who agree to participated in the research

Sources of funding

This research did not obtain any specific grant from funding supports in the commercial, public, or not-for-profit sectors.

Conflict of interest: No conflict of interest in the current study was found.

Author contributions

This study's planning, implementation, and analysis were all overseen by all of the authors. The manuscript's content is the responsibility of all authors, who have critically examined and approved the final draft.

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International Journal of Novel Research in Healthcare and Nursing

 Vol. 9, Issue 1, pp: (63-71), Month: January - April 2022, Available at: www.noveltyjournals.com

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