

Excessive electronic media exposure in developing behavior problems among preschool children

Gharam Mahmoud Ibrahim Ibrahim⁽¹⁾, Amany Sobhy Sorour⁽²⁾ & Gamalat Mustafa Abd El- Ghany⁽³⁾

⁽¹⁾ Demonstrator in Community Health Nursing, Faculty of Nursing, Zagazig University, ⁽²⁾ Professor of Community Health Nursing Faculty of Nursing at Zagazig University, & ⁽³⁾ Assistant Professor of Community Health Nursing, Faculty of Nursing at Zagazig University

Abstract

Background: Exposure to electronic media is one of the most common sedentary behaviors among preschool children. Too much screen viewing associated with many negative impacts on children's behaviors. **Aim of the study:** The aim of the present study was to assess the effect of excessive electronic media exposure in developing behavior problems among preschool children. **Subjects and Method: Research design:** A prospective descriptive research design was used to accomplish the aim of the present study. **Setting:** The present study was conducted at four governmental nursery schools in Zagazig city. **Subjects:** 160 mothers of preschool children were selected by using a multistage cluster sampling technique. **Tools of data collection:** Data were collected by using an interview questionnaire sheet composed of three parts: Sociodemographic data, Excessive electronic media exposure questionnaire, and Strengths and difficulties questionnaire (SDQ). **Results:** The study results revealed that there was a statistically significant positive correlation between child exposure hours to media and SDQ negative. Additionally, regarding emotional problems domain there was a statistically significant difference was found between first and second measurement of scores of SDQ. Furthermore, female child and income were statistically significant independent positive predictors of SDQ positive score. While, father education, watching media associated with certain action and No. of media, were a statistically significant independent negative predictor of SDQ positive score. **Conclusion:** The study concluded that increasing hours of daily exposure to media accompanied with behavior problems among preschool children. **Recommendations:** it is recommended that Health education programs for parents about the negative effects of excessive exposure to electronic media on behaviors of preschool children.

Key words: Electronic media, Behavior problems, and Preschool children.

Introduction:

Recently, young children live in highly saturated environment with electronic media devices such as T.V, tablets, smartphones, computers and gaming consoles. The Time young children spent on electronic media is progressively increasing.⁽¹⁾ The World Health Organization recommended that the time of screen viewing for preschool age children not exceed 1 hour per day.⁽²⁾

Preschool age is a critical developmental stage, in which habits are easily formed and inappropriate use of electronic media at this age associated with lots of problems in later life.⁽³⁾

Excessive screen exposure is associated with many adverse child outcomes as externalizing behavior,

emotional problems, impaired cognitive function, poor self-regulatory behaviors and sleep problems.⁽⁴⁾

Community health nurse plays an important role toward minimizing negative effects of electronic media on children and provide education to parents and caregivers about reasonable use of media by their young children.⁽⁵⁾

Significance of the Study:

Worldwide, behavior problems are relatively common among children, and continue to late childhood, causing significant loads on children and parents⁽⁶⁾. The excessive use of electronic media may have many negative effects on young children's

cognitive, social and physical development in addition to decreasing the time of other useful non-digital activities. ⁽⁷⁾. A great focus of concern from health care advocates toward children's exposure to media because there is an association between excessive exposure to electronic media and poor mental health. ⁽⁸⁾

Aim of the study:

The aim of the study was:

To assess the effect of excessive electronic media exposure in developing behavior problems among preschool children.

Research questions:

- Is there a relation between excessive electronic media exposure and developing behavior problems among preschool children?

Subjects and Methods:

Research design:

A prospective descriptive research design was used to accomplish the aim of this study.

Study Setting:

The present study was conducted at four governmental nursery schools in Zagazig city. These nursery schools were Omar Al-Farouk official language, Boubasta B1, Umm Al-Muomneen, and Al-Nasiriyah nursery school, which were randomly selected from two educational zones available in Zagazig city.

Study Subjects:

The existing Study enrolled 160 mothers of preschool children, who attended the above-mentioned nursery schools according to the following inclusion criteria:

- Have preschool child.
- Agree to participate.
- Their children are Free from mental and physical disability or chronic disease that might interfere with child behaviors.

Tool for data collection:

One tool was used to carry out the present study:

Tool I: A structured interview questionnaire: This consisted of three parts;

Part 1: Socio- demographic data: It involved :

-Child data: such as; child's age, gender, birth order of child between siblings and child hobbies.

-Family data: such as; parents' age, educational level, occupation, family size, marital status of the mother and family income.

Part 2: Electronic media exposure questionnaire: It was developed by the researcher after reviewing literature which included:

mother hours on media, child media association, type of electronic device, duration of exposure, frequency of exposure.

Part 3: Strengths and difficulties questionnaire (SDQ) Ababneh and Alomari ⁽⁹⁾: It was used to assess emotional and behavioral problems in children and adolescents. The SDQ has four subscales:

- Conduct problems.
- Hyperactivity-inattention.
- Emotional symptoms.
- Peer problems.

And one subscale to assess strengths

- Prosocial behavior.

Scoring system:

SDQ: For each item, the responses "Not True," "Somewhat True" or "Certainly True" were respectively scored 0, 1, 2. Scoring was reversed for negative items. The scores of each domain were summed. A cut-off for each domain set by the tool authors was applied to categorize SDQ into high or low.

Content Validity and Reliability:

The tool was revised by three experts from the department of Community health medicine at the Faculty of Medicine, Zagazig

University and the Pediatric Nursing, Ain Shams University, where the panel reviewed the tools connects for relevance, clarity, comprehensiveness, and understandability. The reliability of this tool was tested through measuring its internal consistency Coefficient Alpha (Cronbacks): The internal consistency of the tool was, 0.73.

Field work:

Once permission was granted to proceed with the study, the researcher met with each director of the selected nursery schools, explained the study aim and procedures, as well as the data collection forms. Through collaboration between the director of each nursery school and the researcher, the researcher met the children and asked for their mothers' attendance to the nursery school .

After that the researcher spent time with mothers to be familiar with the researcher. The researcher explained the aim of the study and asked for their acceptance in filling the questioner. A number of the accepted mothers in participation left their phone numbers to the researcher for participation through telephone calls .

The field work was carried out twice, three months apart, **first time measurement** from first of October 2021 to first of November 2021 (four weeks). The researcher went to the nursery schools 2 to 3 days per week from 8 AM to 12 PM. The needed time for tool of data collection for each mother was about 20-25 minutes, around 5 to 7 mothers were met a day. Additionally, data collections through telephone calls were done about 3 days per week.

Second time measurement of data collection took about 4 weeks during February month 2022. The same technique of data collection was done at second time measurement.

Pilot study:

The pilot study was carried out on a sample of 16 mothers representing 10% of the calculated total sample size. The aim was to test clarity of the questions, the format of the questionnaire, comprehensiveness of the items and to estimate the exact time required for filling the questionnaire sheet. The mothers involved in the pilot study were excluded from the main study sample, since there was no modification in the tools of data collection.

Administration and Ethical consideration:

The official permission was obtained from the Education Directorate at Zagazig city based on letters issued from the post graduates department at Faculty of Nursing, Zagazig University explaining the aim and procedures of the study. Then, the director of West and East administration referred the researcher to the directors of the selected nursery schools with approval letters. Then the researcher met with each of them and explained the aim of the study and the nature of tool used for data collection. The researcher gave the director of each nursery school a copy of the tool and formal letters .

Firstly, the research protocol was approved by the Research Ethics Committee (REC) in faculty of Nursing, Zagazig University. The agreement of participant mothers was taken after full explanation of the aim of the study. Participants were given the opportunity to refuse participation and they were notified that they could withdraw at any time of the data collection interviews; also, they were assured that the information would be confidential and used for the research purpose only. The researcher assured maintaining anonymity and confidentiality of the children's data.

Statistical Analysis:

Descriptive statistics were used to present data as frequencies and

percentages for qualitative, and means, standard deviations and medians for quantitative variables. Analytic statistics included chi-square or Fisher exact tests for comparing categorical variables, and Spearman's rank correlation for the relations among quantitative and ranked variables. Multiple regression analysis was used to identify the independent predictors of the score of SDQ. The level of statistical significance was set at p-value <0.05. All analyses were performed on SPSS 20.0 statistical package.

Results:

Table 1 shows that 56.3% of children were at age group 4 years, with Mean±SD equal 4.0±0.4. As for gender, 50.6% of them were males, regarding birth order 41.3% of children were the last child, and 47.5% of children's hobbies were drawing/singing.

Table 2 reveals that 55.6% of mothers of the study sample were at age group more than 30 years, with Mean±SD equal 30.9±4.7. Regarding mother education level 56.9% of them had university education level. Also 61.3% of mothers were house wives, and 93.1% of them were married. Whereas 56.1% of fathers of the study sample were at age group more than 35 years, with Mean±SD equal 35.9±5.6. Also 60.5% of fathers had university education level, and 84.7% of them were workers. In relation to family income 70.6% of families' income was sufficient.

Table 3 shows that a statistically significant negative correlation between SDQ positive and child exposure hours ($r=-.214$) and no. of media at home ($r=-.147$).

Table 4 indicates that a statistically significant difference was found between first and second measurement of scores of SDQ

regarding emotional problems ($p<0.001$).

Table 5 indicates that female child and income were a statistically significant independent positive predictors of SDQ positive score. Conversely, father education, watching media associated with certain action and No. of media, were a statistically significant independent negative predictor of SDQ positive score. The model explains 0.22% of the variation in this score as the value of r-square indicates.

Discussion:

Concerning answering of the research question about the relation between excessive electronic media exposure and behavior problems, the existing study results revealed that there was a statistically significant positive correlation between child exposure hours and SDQ negative. This might be due to that preschool child imitates everything and exposure to inappropriate media content as violence reflects on child behaviors with others.

In agreement with this result, a study conducted in Germany by Poulain et al. ⁽¹⁰⁾ showed that high electronic media use in preschool age associated with behavior problems later on life. In the same vein, a longitudinal study done by McNeill et al. ⁽¹¹⁾ in Australia found that higher levels of media exposure associated with increase externalizing behavior problems and total psychological difficulties. On the same way, a study conducted by Tezol et al. ⁽¹²⁾ in Turkey showed that excessive time of screen viewing was associated with increased risk of having behavior problems in preschool age.

Regarding domains of SDQ, the present study findings demonstrated that there was a statistically significant difference related to SDQ domain at second measurement compared to

first one. This might be due to multifactors as poor child-parent relationship, low parental involvement and negative family conditions.

Furthermore, Maheswari and Samundeeswari⁽¹³⁾ explained that behavior problems are influenced by both environmental and biological factors as family conflict, negligence, poor attention, poor supervision from parents toward children. As well too much exposure to media might has negative effects on child behaviors.

Regarding emotional problems domain, the present study result indicated that there was a statistically significant difference at second measurement compared to first one. On the same way, a study conducted in U.S by Twenge and Campbell⁽¹⁴⁾ demonstrated that excessive screen viewing was significantly associated with emotional problems in children.

Concerning predictors of SDQ, the current study results clarified that female child was a statistically significant independent positive predictor of SDQ positive. From the researcher point of view, this might be due to that female girl prefers playing with toys or joining in useful hobbies as drawing or singing .

These results were corresponded with Akyar and Sapsaglam⁽¹⁵⁾ in the Middle Black Sea explained that boys exposed to electronic media more than girls in which boys exposed to inappropriate media content affects their behavior on the contrary with girls. In agreement with these results, Xie et al.⁽¹⁶⁾ in China illustrated that boys had obvious correlation with high screen exposure time .

Conversely, a study conducted in Oregon by Loprinzi et al.⁽¹⁷⁾ demonstrated that there was not any difference between preschool boys and girls in relation to electronic media use.

The current study results revealed that income was a statistically significant independent positive predictor of SDQ positive. The possible explanation of such result is that high socio-economic status of the family reflects on child behaviors with others.

Father education was a statistically significant independent negative predictor of SDQ positive. The possible explanation of such result is that disciplinary strategies for child are not necessary require high education level of the father. On the contrary, a study conducted by Almuaigel et al.⁽¹⁸⁾ in Saudi Arabia emphasized that father with low education level, work for long time or study for many hours were associated with negative behavior score of their preschool age children.

Conclusion:

According to the findings of the present study, it was concluded that, there was a statistically significant positive correlation between excessive exposure to media and behavior problems among preschool children. Regarding SDQ domains there was a statistically significant difference related to domain of SDQ (emotional problems) at second measurement compared to first measurement.

Recommendation:

On the basis of the current study findings, the following recommendations are suggested:

- Health education programs for parents regarding the negative effects of excessive exposure to media on behavior among preschool children.
- Health education programs for parents about the importance of exploiting their children time on playing sports, reading, drawing or participation in useful activities instead of using electronic media.

- Replicate the study on larger scale in other settings to permit for generalization of results.

Table 1: Socio-demographic characteristics of children in the study sample (n=160)

Socio demographic characteristics	Frequency	Percent
Age (years):		
3	70	43.8
4	90	56.3
Range		3.0-5.0
Mean±SD		4.0±0.4
Median		4.00
Gender:		
Male	81	50.6
Female	79	49.4
Birth order:		
First	60	37.5
Middle	34	21.3
Last	66	41.3
Child hobbies:		
Play games	37	23.1
Play with toys	29	18.1
Sports	18	11.3
Drawing/singing	76	47.5

Table 2: Socio-demographic characteristics of children's family in the study sample (n=160)

Socio-demographic characteristics	Frequency	Percent
Mother age:		
<30	71	44.4
30+	89	55.6
Range	23.0-43.0	
Mean±SD	30.9±4.7	
Median	30.00	
Mother education:		
Illiterate	1	0.6
Read/write	7	4.4
Basic	3	1.9
Secondary	58	36.3
University	91	56.9
Mother job:		
Housewife	98	61.3
Working	62	38.8
Marital status:		
Married	149	93.1
Unmarried (divorced/widow)	11	6.9
Father age:		
<35	69	43.9
35+	88	56.1
Range	25.0-57.0	
Mean±SD	35.9±5.6	
Median	35.00	
Father education:		
Illiterate	1	0.6
Read/write	6	3.8
Basic	6	3.8
Secondary	49	31.2
University	95	60.5
Father job:		
Employee	24	15.3
Worker	133	84.7
Income:		
Insufficient	47	29.4
Sufficient	113	70.6

Table 3: Correlation between SDQ scores and mothers and children's characteristics

Items	Spearman's rank correlation coefficient	
	SDQ negative	SDQ positive
Child age	-.049	-.092
Mother age	.053	.012
Mother education	.023	-.039
Father age	.009	.064
Father education	.058	-.097
Income	.043	.003
Mother hours on media	.062	-.015
No. of media at home	.047	-.147**
Child exposure hours	.228**	-.214**

(*) Statistically significant at $p < 0.05$ (**) Statistically significant at $p < 0.01$ **Table 4:** Difference between first and second measurement of scores of SDQ among children

SDQ	First measurement (n=160)		Second measurement (n=160)		Mann Whitney Test	p-value
	Mean±SD	Median	Mean±SD	Median		
Emotional problems	1.9±1.0	2.00	2.5±1.2	2.00	20.96	<0.001*
Conduct problems	1.6±1.1	1.50	1.9±1.2	2.00	3.05	0.08
Peer problems	3.3±0.8	3.00	3.2±0.8	3.00	0.89	0.35
Hyperactivity	3.6±1.9	3.00	4.0±1.8	4.00	3.43	0.06
Total negative	10.4±3.0	10.00	11.5±3.0	11.00	11.17	0.001*
Prosocial	7.7±2.1	8.00	7.2±2.1	7.00	2.46	0.12

(*) Statistically significant at $p < 0.05$ **Table 5:** Best fitting multiple linear regression model for the SDQ positive score

Items	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	7.22	1.19		6.061	<0.001	4.87	9.56
Female child	0.88	0.22	0.21	3.992	<0.001	0.45	1.31
Father education	-0.52	0.17	-0.20	-3.007	0.003	-0.87	-0.18
Income	0.72	0.23	0.19	3.116	0.002	0.27	1.18
Watching media associated with certain action	-1.15	0.31	-0.20	-3.725	<0.001	-1.75	-0.54
No. of media	-0.77	0.20	-0.20	-3.798	<0.001	-1.17	-0.37

r-square=0.22

Model ANOVA: $F=9.35$, $p < 0.001$

Variables entered and excluded: child age, hobbies, mother education, marital status, mother hours on media, time

References:

- 1- Ferrari, G. L. D. M., Pires, C., Solé, D., Matsudo, V., Katzmarzyk, P. T., & Fisberg, M. Factors associated with objectively measured total sedentary time and screen time in children aged 9–11 years. *Jornal de pediatria*, (2019). 95, 94-105.
- 2- World Health Organization. :Guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age. (2019). 33 p
- 3- Kaur N, Gupta M, Malhi P, Grover S: Screen time in under-five children. *Indian Pediatr*. (2019).;56:773–88
- 4- Mundy LK, Canterford L, Olds T, Allen NB, Patton GC: The association between electronic media and emotional and behavioral problems in late childhood *Acad Pediatr* , 2017. 17(6):620–624. <https://doi.org/10.1016/j.acap.2016.12.014>.
- 5- Kelpsa, S. : The role of the child and family health nurse in the digital era: A literature review. *Australian Journal of Child and Family Health Nursing*, (2019). 16(2), 11-18.
- 6- Stone, L. L., Janssens, J. M., Vermulst, A. A., Van Der Maten, M., Engels, R. C., & Otten, R: The Strengths and Difficulties Questionnaire: psychometric properties of the parent and teacher version in children aged 4–7. *BMC psychology*, (2015). 3(1), 1-12.
- 7- Ebbeck, M., Yim, H. Y. B., Chan, Y., & Goh, M: Singaporean parents' views of their young children's access and use of technological devices. *Early Childhood Education Journal*, in press, (2015). doi: 10.1007/s10643-015-0695-4.
- 8- Poitras VJ, Gray CE, Janssen X, Aubert S, Carson V, Faulkner G, Goldfeld GS, Reilly JJ, Sampson M, Tremblay MS : Systematic review of the relationships between sedentary behavior and health indicators in the early years (0–4 years). *BMC Public Health* (2017). 17(5):868. <https://doi.org/10.1186/s12889-017-4849-8>.
- 9- Ababneh, I., & Alomari, H. : Psychometric Properties of the Teacher Version of the Strength and Difficulties Questionnaire (SDQ) On Non-Clinical Jordanian Children in the Age Group (4-5) Years. *An-Najah University Journal for Research-B (Humanities)*, (2016). 30(7), 4.
- 10- Poulain, T., Vogel, M., Neef, M., Abicht, F., Hilbert, A., Genuneit, J., ... & Kiess, W: Reciprocal associations between electronic media use and behavioral difficulties in preschoolers. *International journal of environmental research and public health*, (2018). 15(4), 814.
- 11- McNeill, J., Howard, S. J., Vella, S. A., & Cliff, D. P: Longitudinal associations of electronic application use and media program viewing with cognitive and psychosocial development in preschoolers. *Academic pediatrics*, (2019). 19(5), 520-528.
- 12- Tezol, O., Yildiz, D., Yalcin, S., Oflu, A., Nergiz, M. E., Caylan, N., ... & Ozdemir, D. F: Excessive screen time and lower psychosocial well-being among preschool children. *Archives de Pédiatrie*, (2022). 29(1), 61-66.
- 13- Maheswari, K., & Samundeeswari, A. : Prevalence of preschooler behavioural problems. *Asian Pacific Journal of Health Science*, (2018). 5(4), 129-135.
- 14- Twenge, J. M., & Campbell, W. K. : Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. *Preventive medicine reports*, (2018). 12, 271-283.
- 15- Akyar, B. C., & Sapsaglam, Ö. : The effects of preschoolers' media usage habits on their daily life and sustainability. *Discourse and Communication for Sustainable Education*, (2019). 10(2), 112-128.
- 16- Xie, G., Deng, Q., Cao, J., & Chang, Q. : Digital screen time and its effect on preschoolers' behavior in China: results from a cross-sectional study. *Italian Journal of Pediatrics*, (2020). 46(1), 1-7.
- 17- Loprinzi, P. D., Schary, D. P., & Cardinal, B. J: Adherence to active

play and electronic media guidelines in preschool children: gender and parental education considerations. *Maternal and child health journal*, (2013). 17(1), 56-61.

- 18- Almuaigel, D., Alanazi, A., Almuaigel, M., Alshamrani, F., AlSheikh, M., Almuhana, N., ... & Mansi, K: Impact of Technology Use on Behavior and Sleep Scores in Preschool Children in Saudi Arabia. *Frontiers in psychiatry*, (2021). 12, 601.