Effect of Web-Based Educational Sessions on Mothers' Knowledge and Practices regarding Screen Time Hazards and Safety for Young Children

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Abstract:

Background: Many young children around the world are spending more time viewing screen, but recent research shows that screen media use may have severe adverse effects on children's health over the long term, making this an insistent public health concern. **So, this study aimed to**: evaluate the effect of web-based educational sessions on mothers' knowledge and practices regarding screen time safety and hazards for young children. **Research Design:** pre/post-test quasi-experimental design was utilized to conduct this study. **Subjects:** A purposive sample of 128 mothers employed at Sohag University. **Data collection tools:** Tool I: A structured interviewing questionnaire includes mother's socio-demographic data, children characteristics and data related to electronic screen used by children. Tool II: Mothers' knowledge assessment sheet. Tool III: Mothers' reported practices assessment sheet. **Results:** 27.3% of mothers had satisfactory level of knowledge regarding electronic screens before the implementation of educational sessions, compared to 83.6% post-implementation (P=.001**). Also, 11.7% of mothers had an adequate level of practices regarding electronic screens before the implementation of the educational sessions compared to 71.1% post-implementation with (P=.001**). **Conclusion**: Implementation of web-based educational sessions was effective in enhancing mothers' knowledge and practices regarding screen time safety and hazards for young children. **Recommendations**: Additional research that assesses the long-term effects of the teaching program about safety screen time for kids of various ages.

Key words: Mothers' knowledge and practices, Screen time, Wed- based educational sessions and young children.

Introduction

Tablets, cellphones, televisions, and gaming consoles are just a few of the many screen-based devices that are becoming more and more common in children's life in our technologically advanced culture. Around the world, a lot of young children spend a lot of time viewing screens **(WHO, 2019& Susan et al., 2019)**. The use of mobile and touch screen devices has become present everywhere and across all social classes, regardless of family's social or economic status. Children begin of increasing to use these devices at ever younger ages **(Rideout, 2017).**

Mobile devices are undoubtedly attractive as they are easy to carry, and use. Also, they help parents keep their children busy when they need to complete tasks and have a break from long energetically day. They can access numerous entertainment and information sources at relatively low costs **(Sharara et al., 2019).** Electronic devices have communication, revolutionized learning, and information dissemination, but recent research shows that screen media use may have severe adverse effects on children's health over the long term, making this an insistent public health concern **(Liu et al., 2022)**.

World Health Organization (WHO) defined screen time as "the amount of sedentary time spent passively on screen-based devices without active physical activity" **(Ansari, 2019).** In addition, children can use screen time at

anywhere and anytime for several causes, such as chatting, doing schoolwork, playing games, and searching the internet **(Toshiki, 2018).**

WHO provides recommendations about screen time that children under two years should not be exposed to screen time, and children 2-5 years should have limited screen time of no more than one hour daily **(WHO, 2019)**.These WHO recommendations are similar to guidelines by the American Academy of Pediatrics (AAP**), (Boonmun et al., 2023).** The AAP advised that children below 2 years can be exposed to video chatting but avoid any screen use. When parents of children aged 1.5- 2 years old want to introduce screen viewing to their children, they should co-view with them and select high-quality programming. Moreover, they should encourage their children to spend time with appropriate activities **(American Academy of Pediatrics, 2016).**

There is an increasing concern regarding excess screen exposure and its association with mental health and adverse impact on child development. In recent periods there has been a significant increase in use of electronic media among children. Multiple factors are responsible for this progress such as easy accessibility, rising market of digital devices and increase use of screen media by families and society **(Karki& Sravanti, 2021).**

Numerous detrimental health and wellness markers in young people have been linked to increased screen use. Compared to children who reported 2 hours or more of leisure screen time, children who self-reported less than 2 hours scored considerably higher on 4 measures of wellbeing (physical, parental, peers, and school) **(Belton et al., 2021).** It has increased the risk of childhood obesity, behavioral issues, irregular sleep patterns, poor academic performance, decreased wellbeing, and a lower quality of life **(Amelia & Ramdani, 2019; Sudheer et al., 2023).** Also, playing aggressive games or viewing aggressive programs can lead violent behavior (**Montanari, 2017).**

However, frequent computer use is linked to decreased parent-child interaction, particularly verbal interaction with parents that hinders socio-emotional development, increased social isolation, irritability, low mood, depression, and loneliness later in life, poor educational performance **(Hosokawa, 2018).**

Young children have a vital role in placing the basis for well-being and long-term physical health **(Feng et al., 2021).** Promoting physical activity in young children, reducing sedentary behavior, and emphasizing good sleep has several advantages, such as enhancing their physical fitness **(Wong et al., 2022),** encouraging the growth of their motor and cognitive abilities, and averting childhood obesity and related health problems **(Jiang et al., 2024).** According to a number of research, these constructive behavioral patterns can help form enduring habits that last throughout adulthood after childhood and adolescence **(Guerlich et al., 2024).** Children's screen time has become a common form of sedentary behavior **(Black et al., 2017).**

Pediatricians should ask family about screen media usage and talk about the significance of offline activities that enhance growth, such as reading, play, physical activity, and social interaction, since pediatric primary care is a universal touch point for families **(McArthur et al., 2022).**

Mothers have important responsibilities when their children's use technology. First and foremost, they should limit their children's daily screen time, which includes time spent on TV, mobile devices, DVD players, and computers. They should also encourage their children to participate in a variety of activities that will keep them entertained and stimulate their creativity and thinking so they don't spend too much time staring at screens.

They should encourage active physical play and any activities that involve relationships and interactions with real people. There should be no screens in children's bedrooms. In addition, TVs and computers should be maintained in a common area so that mothers may watch what their kids are doing and participate in their fun. TVs ought to be switched off during mealtimes and bedtimes. Limiting their personal screen time is another way that mothers can set an example for their young children **(Waziry, 2019).**

Significance of the study:

Young children cry, is a common parents' complain, it has become recently a common phenomenon when talking about electronic screen usage. These devices embedded in and dominate everyone's lives, especially children under the age of five years in uncontrolled way **(Riesch et al., 2019& Kostyrka- Allchorne et al., 2017).**

A meta-analysis that examines samples from 63 studies to assess whether young children are adhere to guidelines regarding their screen time per day, revealed that the majority of children aged 5 and under are not **(McArthur et al., 2022)**. Existing evidence shows positive relations between children's language development and early language exposure **(Wang et al., 2020)**, IQ **(Gilkerson et al., 2017)**, brain function **(Romeo et al., 2021)**, and socio-emotional development **(Gómez & Strasser, 2021).** Children's screen time may affect their growth and development **(Arai et al., 2023).**

It is very important to establish interactive home environment during the early years of life **(Walker& Carta, 2020)**. Parents need guidance and provision of interventions that help mediate household's screen use to reduce sedentary behavior, but also through building a mutual gratification between family members, for example, goal setting (**Florence et al., 2019; Shirley & Kumer, 2020)**. Consequently, there are guidelines and recommendations to guide parents regarding screen use during early childhood, have been disseminated by international organizations in developed countries (**WHO, 2019**), but no similar guidelines for young children established in Egypt.

So, community health and pediatric nurse participation in certain areas as primary health care setting is necessary to unique access to large numbers of young children's mothers to communicate these recommendations, as well as confirming on the healthy alternatives for screen activities, especially for at-risk children who are under-five-year-olds (**Hinkley & McCann, 2018; Lee & Kim, 2022**).

Operational definitions:

Web-based educational sessions: refer to using wed application to provide designed learning experiences that include some sort of communication and are meant to enhance health literacy, involving acquiring information and developing life skills that benefit individuals and community health.

Screen time: is the overall hours per day that child spent viewing any forms of electronic screens.

Aim of the study:

The aim of this study is to evaluate the effect of web-based educational sessions on mothers' knowledge and reported practices regarding screen time hazards and safety for young children, through:

Objectives of the study:

1.Assess mothers' knowledge regarding screen time hazards and safety for young children.

2.Assess mothers' reported practices regarding screen time hazards and safety for young children.

3.Design, implement and evaluate the effect of educational sessions on mothers' knowledge and reported practices regarding screen time hazards and safety for young children.

Research Hypothesis

1.Mothers' knowledge regarding screen time hazards and safety for young children will be improved after implementation of educational sessions.

2.Mothers' reported practices regarding screen time hazards and safety for young children will be improved after application of educational sessions.

3.There will be a statistically significant relation between mothers' knowledge and reported practices regarding screen time hazards and safety for young children before and after implementation of educational sessions.

Subjects and method

Research design:

Pre/post-test quasi-experimental design was used to conduct this study.

Research setting:

The study was carried out in 8 colleges (40%) at Sohag University- Sohag Governorate including Colleges of Arts, Education, Engineering, Nursing, Veterinary Medicine, Agriculture, Law and Commerce. These collages were selected randomly from 18 collages at Sohag University.

Sampling:

A purposive sample of 128 mothers employed in previous setting was used in this study. The sample was calculated by using power analysis

according to the population flow at a confidence interval of 95% with precision levels of 5% and P < 0.05.

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times \left(d^2 \div z^2\right)\right] + p(1-p)\right]}$$

The study included mothers who agreed to participate in the study and had children with the following criteria:

- Both sexes from 1 to 6 years.
- Having access to electronic devices such as mobiles, computers, tablets and T.V.
- Free from special needs.

Tools for data collection:

The following tools were used to collect data during the pre/post-educational program.

Tool (I): A structured interviewing questionnaire:

This tool was developed by the researcher based on an extensive review of related literature **(Boonmun et al., 2023, Arippin et al., 2021, Mohamed et al., 2021& WHO, 2019)** and consultation of the experts. It includes three parts:

Part(1): ***Mother's socio-demographic data as*** mothers' age, level of education, marital status, occupation, family income and family type.

Part (2): ***Children characteristics as*** child's age, birth order and number of siblings.

Part (3): ***Data related to electronic screen used by children*** as sleeping hours per day, difficult sleeping, types of electronic screen used by children, types of programs watched by children, and children's screen time per day.

Tool (II): Mothers' knowledge assessment sheet:

It was developed by the researchers to assess mothers' knowledge regarding electronic screen used by their children; It included 10 questions in the form of multiple choice (6 questions); Yes/No (3 questions) and essay (1 questions) such as do you think electronic screen can help child acquire new skills?; what skills can children acquire from electronic screen?; what is the recommended screen time for a child under two years?; what is the recommended screen time for a child 2-5 years?; what is the recommended screen time for a child 6-10 years?; what is the recommended screen time for a child 11-13 years?, weather excessive screen time negatively affects the child's health?; List effects of increased screen time on child's health?; weather watching screen for long periods expose child to screen addiction?; and list symptoms of screen addiction in children?.

Total knowledge score was classified as:

Each knowledge item (10 questions) was given a score (1) for correct answer and (0) for incorrect answer. The total score of knowledge was 10 that calculated and classified as follows:

- Satisfactory knowledge if the score was ≥ 60%
- Unsatisfactory knowledge if the score was < 60%

Tool (III): Mothers' reported practices assessment. It was developed by the researchers to assess mothers' reported practices regarding electronic screen used by their children. It includes 19 yes/No questions about whether mother control children's screen time; whether mothers use electronic screen to reward their children for good behavior; whether mothers use screen time to punish their children for bad behavior; whether mothers set rules for using electronic screen at home; whether child watches electronic screen in the presence of the parents, whether watching electronic screen for long periods of time leads to poor academic achievement; whether mothers discuss with children what they see on screen; the child participates in setting laws and controls electronic screen time; If the child watches electronic screen during meal times; The child watches electronic screen when playing non-electronic games; The time your child spends in front of electronic screen conflicts with what the family wants from the child; The child sleeps in front of electronic screen; The room lighting is insufficient while the child is watching electronic screen; Electronic screen are turned off at least one hour before bedtime; Your child takes a break between hours of watching electronic screen. Use monitoring programs to monitor your child's electronic devices; Your child tells you about the programs that interest him on electronic screen; Your child watches programs that contain violence or horror; The mother chooses programs that support the family values.

The total score of reported practices was derived from 19 items. The scoring of each item was (1) for correct action, and (0) for incorrect action. The score of each item was summed up and then converted into a percent score. The total score ranged from 0-19. It was categorized as:

- Adequate practices if the score was ≥ 60%.
- Inadequate practices if the score was < 60%.

Tools validity and reliability:

The study's tools, educational booklet and videos were assessed for content validity and clarity by (5) specialists in Pediatric Nursing and Community Health Nursing from the Faculty of Nursing at Sohag University to determine their validity and clarity. Every member was called and requested to assess the tool's content and structural design to ensure the item's completeness and clarity. All comments and ideas were taken into account, and some statements were reworded and sequenced accordingly.

Reliability: The researcher used the test-retest procedure to test the internal consistency of the tools' reliability. It was completed prior to the start of data collection during the pilot research. Cranach's alpha for knowledge is 0.798 and 0.861 for practices.

Ethical considerations:

Official permission was obtained to obtain the approval of the faculty of Nursing Sohag University's ethical committee (was approved with number 81 on date of 18/1/2021), as well as the deans of previous mentioned collages; all gave their official permission and approval prior to the study's conduct. Furthermore, all mother participants verbally agreed to participate once the researchers described the purpose of the study and assured them that confidentiality would be maintained during the experiment. All participants were informed that their information would be kept confidential and used solely for research purposes, that their participation in the study was completely voluntary, and that they could withdraw at any time.

Pilot study:

A pilot study was conducted on 10% of the total sample size working in the previously specified settings to assess the clarity and applicability of the tools and to establish the time required to complete the structured questionnaire. Subjects from the pilot research were included in the study because there were no significant changes to the study equipment. The pilot study's goal was to evaluate the clarity and relevance, comprehensiveness, understanding, application, and ease of use of tools, as well as estimate the time required to fill out the various data collection tools. The questionnaire forms were delivered to mothers, and data were collected from mothers. The questionnaire form took between 20 and 30 minutes to complete. The findings of the pilot

study were used to plan the implementation of the instructional sessions.

Field work:

Data was gathered for 10 months from the start of August 2022 to the end of May 2023 from 8 collages at Sohag University. The researchers were present at the study settings by a rotation two days per week on Sunday and Wednesday to gather data. Their availability was from 9 AM in the morning to 1 PM in the afternoon. The researcher who has interviewed mothers in the previously mentioned settings to examine their knowledge and reported practices regarding screen time hazards and safety for young children. The questionnaire sheet was delivered to the mothers based on their availability to participate, and the researcher was present at all times while the mothers filled out the pre assessment questionnaire sheet.

The study was conducted through the following four phases:

I- Assessment phase (pre planning phase):

Initially, the researcher interviewed each mother, identified herself to the mothers participating in the study, and gained their verbal consent to participate in the study after explaining the purpose of the study to them. The mothers were then requested to fill out the structured interviewing questionnaire alone in order to acquire baseline data.

II- Planning phase:

This phase included analyzing the assessment phase (pre-test) findings and a determination of the actual requirements of the study's mothers. The researcher then created an educational session to improve mothers' knowledge and reported practices about regarding screen time hazards and safety for young children, taking into consideration the most recent relevant literatures.

The general objectives:

By the end of the web-based educational sessions, the mothers' knowledge and reported practices regarding screen time hazards and safety for young children will be improved.

Specific objectives: By the end of the educational sessions, the mothers were being able to:

1) State types of electronic screen.
2) Describe benefits of electronic screen for children.
3) List hazards and health problems caused by excessive screen time.
4) List signs of screen addiction in children.
5) Compare recommended screen time for different age groups.
6) Demonstrate general guidelines for parents to control children's screen time and safety.
7) Implement tips to reduce screen time for children.
8) Suggest activities to reduce children's screen time and improve their abilities and skills.

III- Implementation phase:

Educational sessions for mothers about children's screen time and safety were implemented through two sessions each session was for about one an hour.

First session: Researchers introduced themselves to small groups comprising around 5-10 mothers in each collage who fulfill the inclusion criteria, the aim and nature of the study was explained, oral consent was obtained from mothers before the participation in the study and make offer to them to withdrawal at any time.

Personal data about the mothers and their children was filled through structured interview questionnaire. Researchers collected data regarding mothers' knowledge and practices regarding screen time hazards and safety for young children by distributing questionnaire to mothers (pretest of mothers' knowledge and practices); each question/statement was explained to parents and then answered by them. Then, researchers provided detailed explanation about types of electronic screens, benefits of electronic screen for children, hazards and health problems caused by excessive screen time, signs of screen addiction in children,

recommended screen time for different age groups, and general guidelines for mothers to reduce screen time hazards and provide safety exposure. Offer booklet to each mother. The booklet was designed to provide written information in simple and direct language to be understood by mothers. Later on researchers took WhatsApp numbers of studied others and made 3 WhatsApp groups (each group contained 43 mothers) to implement second session, answer mothers' questions and follow up.

Second session: included detailed explanation about mothers' precautions and tips to control screen time for children, and demonstrated many videos about hazards of extreme screen time and suggested activities to reduce children's screen time and improve their abilities and skills.

Through WhatsApp groups researchers used teaching method such as lectures, videos, and discussion were used to provide mothers with information about safe screen time and controlling hazards for their young children. Researchers were available online through WhatsApp groups to answer questions, solve problems, and provide advices for individual obstacles.

Evaluation phase:

Knowledge and practices of mothers was examined three months after the educational sessions implementation. The post-tests were given using the same data collection tools as the pre-test after 3 months through Google form.

Statistical analysis:

The collected data was organized, categorized, coded, tabulated and analyzed using the Statistical Package for Social Sciences (SPSS) version 26. Data was presented in tables and figures using numbers, percentages, means, standard deviation McNemar test and Pearson Chi-Square test was used in order to find an association between two qualitative variables. Statistically significant was considered at P-value < 0.05.

Results:

Table 1 exhibited that 59.4% of mothers were between 30 and 40 years old, while 7.8% of them were more than 40 years with a mean± SD age of 31.02± 6.21 years old. As regard mothers' education, 9.4% of them had a secondary education, while 57.8 % of them had a postgraduate education. The majority of mothers (98.4%) were married. In addition, 57.8 % of fathers had a university education. Concerning family income, (96.9 %) of mothers had sufficient family income and 71.1 % were nuclear families. Regarding child order 93.0% of children their ordering lie between 1st and 3 rd. compared to 7 % were the fourth child or more. Also, (41.4 %) of children had two siblings while 34.4 %of them had no siblings. Concerning children's age, 54.7 %of children were from 5 to less than 6 years while 45.3 % were from 1 to 3 years.

Table 2 showed that 39.1 % of children sleeps from 6 to 8 hours/ day, 15.6 % of children have difficulty sleeping compared to 30.6% who sometimes have difficulty sleeping. Regarding electronic devices 88.3% of children used touch phones and (48.4%) of them watched television. Relating to programs that children watch, (74.2 %) of children were watching animation and cartoon films, (56.3%) were playing digital games, 44.5% were watching educational programs, while 10 % were watching violent and horror films. In children's screen time per day (time spent by child using any electronic screens per day) 22.7% of children spent from 1 to 2 hours per day, 18.8% spent from 2 to 3 hours, 16.4% spent 3 to 4 hours and (33.5 %) of them spent more than 4 hours.

Figure 1 revealed that 27.3% of mothers had satisfactory level of knowledge regarding screen time hazards and safety for young children before the implementation of the educational sessions, compared to 83.6% post-implementation. This figure covered the first research hypothesis.

Figure 2 indicated that only 11.7% of mothers had an adequate level of reported practices regarding screen time hazards and safety for young children before the implementation of the educational sessions compared to 71.1% post-implementation with (P=.001**). This figure covered the second research hypothesis.

Table 3 exposed a highly statistically significant relation between mothers' education and their total knowledge scores pre-

implementation of the educational sessions (P =.007**).

Table 4 exhibited a highly statistically significant relation between mothers' education and total practices scores before sessions implementation (P =.002**) and a statistically significant after implementation (P =.037*). Also, statistically significant relation was found between the mothers' family type and their total knowledge scores before educational sessions implementation (P =.043*).

Table 5 revealed a statistically significant relation between the sleeping difficulty in children and total knowledge scores post educational sessions implementation (P =.043*)

Table 6 presented a highly statistically significant relation between difficulty sleeping in children and mothers' total practices score pre- and post-sessions implementation (P = .001** and P = .005**) respectively. Also, there was a statistically significant relation between children's screen time per day and mothers' total practices score pre-sessions implementation (P= .037***),** and a highly statistically significant relation post-implementation (P = .001****).**

Figure 3 presented a highly statistically significant relation between the mothers' total practices, and their total knowledge scores, regarding electronic screens used by their children pre-sessions implementation (P =.001**). This figure covered the third research hypothesis.

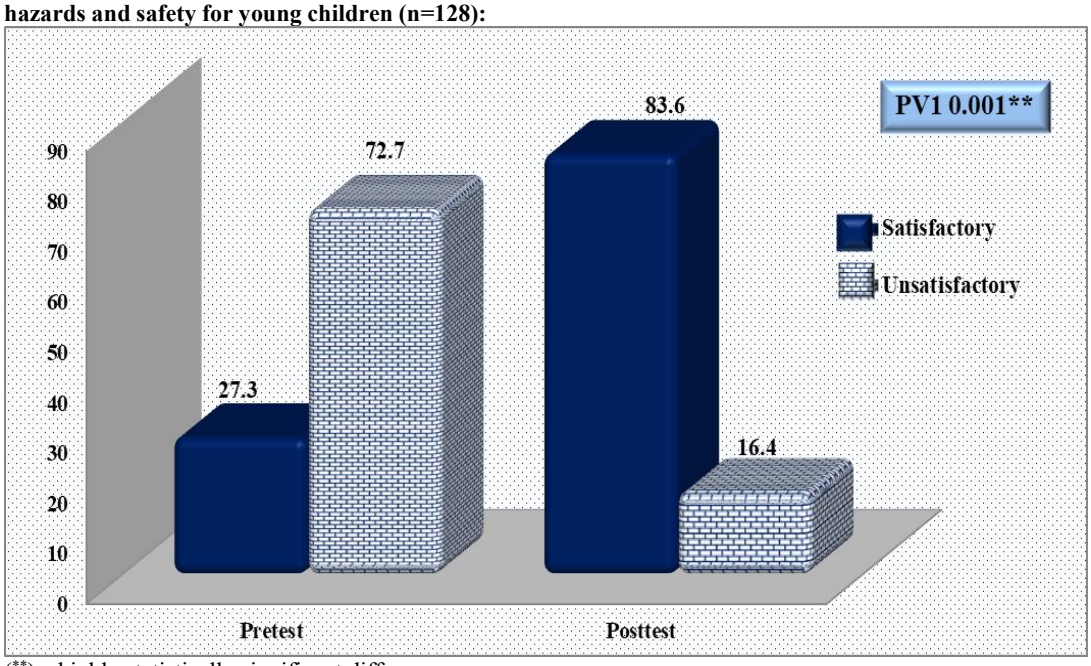
Table (1) Distribution of the studied mothers' socio-demographic data and their children characteristics (n=128):

Personal data	**N**	**%**
Age		
20-≤ 30 years	42	32.8
30-≤ 40 years	76	59.4
More than 40 years	10	7.8
Age (mean± SD)	**31.02±6.21**	
Education level		
Secondary education	12	9.4
University education	42	32.8
Postgraduate	74	57.8
The mother's marital status		
Married	126	98.4
Divorced	2	1.6
Widow	0	0.0
Education level of the child's father:		
Illiterate	1	0.8
Secondary school education	17	13.3
University education	74	57.8
Postgraduate	36	28.1
Family income		
Sufficient	124	96.9
Insufficient	4	3.1
Family type		
Nuclear family	91	71.1
Extended family	37	28.9
Children characteristics	**N**	**%**
Child order		
1st -3rd	119	93.0
4th and more	9	7.0
Number of the child's siblings		
None	44	34.4
2	53	41.4
4 and more	31	24.2
Child's age (years)		
1-3	58	45.3
4-<6	70	54.7

Table (2) Distribution of the studied children according to their electronic screens data (n=128):

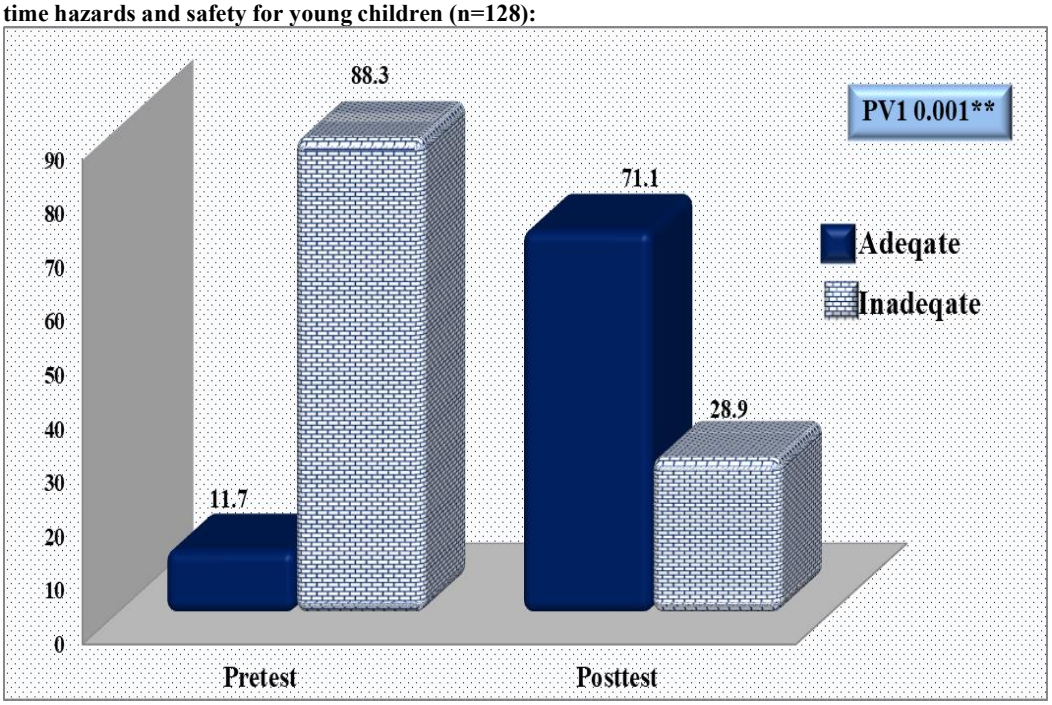
Electronic screens data	N	%
Number of children sleeping hours/day		
6-8 hours	50	39.1
8-10 hours	72	56.2
More than 10 hours	6	4.7
Children have difficulty sleeping		
Yes	20	15.6
No	69	53.9
Sometimes	39	30.5
Electronic screen used by children (more than one answer)		
Television	62	48.4
Computer	29	22.7
Touch phone	113	88.3
Tablet	25	19.5
Video game devices	8	6.3
Programs watched by children (more than one answer)		
Digital games	72	56.3
Animation and cartoon films	95	74.2
Violent and horror films	13	10.2
Educational programs	57	44.5
Songs and entertainment programs	39	30.5
Children's screen time per day (time spent by a child using any electronic screens per day)		
Less than an hour	11	8.6
1-2 hours	29	22.7
2 - 3 hours	24	18.8
3-4 hours	21	16.4
More than 4 hours	43	33.5

Figure (1) Distribution of the studied mothers according to total knowledge regarding screen time hazards and safety for young children (n=128):



(**) a highly statistically significant difference

Figure (2) Distribution of the studied mothers according to total reported practices regarding screen time hazards and safety for young children (n=128):



(**) a highly statistically significant difference

Table (3) Relation between the studied mothers' total knowledge regarding screen time hazards and safety and their personal data in pre and post-test (n=128):

Personal data	Total knowledge about electronic screens									
	Pre-test				p-value	Post-test				p-value
	satisfactory (35)		unsatisfactory (93)			satisfactory (107)		unsatisfactory (21)		
	N	%	N	%		N	%	N	%	
Age of the child's mother:										
≤20 - 30years old	16	45.7	26	28.0		36	33.6	6	28.6	
30-40 years	15	42.9	61	65.5	0.102	63	58.9	6	61.9	0.938
> 40 years	4	11.4	6	6.5		8	7.5	13	9.5	
Education level of the child's mother:										
Secondary education	1	2.9	11	11.8		12	11.2	0	0.0	0.108
University education	6	17.1	36	38.7	**0.007****	37	34.6	5	23.8	
Postgraduate	28	80.0	46	49.5		58	54.2	16	76.2	
The mother's marital status	34	97.1	92	98.9	0.469	105	98.1	21	100.0	0.528
Married	1	2.9	1	1.1		2	1.9	0	0.0	
Divorced										
Family income										
Sufficient	33	94.3	91	97.8		103	96.3	21	100.0	0.368
Insufficient	2	5.7	2	2.2	0.302	4	3.7	0	0.0	
Family type										
Nuclear family	23	65.7	68	73.1	0.410	75	70.1	16	76.2	0.573
Extended family	12	34.3	25	26.9		32	29.9	5	23.8	

(**) a highly statistically significant difference

Table (4) Relation between the studied mothers' total reported practices regarding screen time hazards and safety and their personal data in pre and post-test (n=128):

Personal data	Total practices regarding electronic screens									
	Pre-test				p-value	Post-test				p-value
	adequate (15)		inadequate (113)			adequate (91)		inadequate (37)		
	N	%	N	%		N	%	N	%	
Age of the child's mother:										
≤20 -30 years old	7	46.7	35	31.0		32	35.2	10	27.0	
30-40 years	7	46.7	69	61.0	0.624	52	57.1	24	64.9	
> 40 years	1	6.7	9	8.0		7	7.7	3	8.1	0.781
Education level of the child's mother:										
Secondary school	0	0.0	12	10.6		12	13.2	0	0.0	
education	0	0.0	42	37.2	**0.002****	26	28.6	16	43.2	**0.037***
University education	15	100.0	59	52.2		53	58.2	21	56.8	
Postgraduate										
The mother's marital status										
Married	15	100.0	111	98.2	0.604	90	98.9	36	97.3	0.507
Divorced	0	0.0	2	1.8		1	1.1	1	2.7	
Family income										
Sufficient	15	100.0	109	96.5	0.459	88	96.7	36	97.3	0.861
Insufficient	0	0.0	4	3.5		3	3.3	1	2.7	
Family type										
Nuclear family	14	93.3	77	68.1	**0.043***	65	71.4	26	70.3	0.896
Extended family	1	6.7	36	31.9		26	28.6	11	29.7	

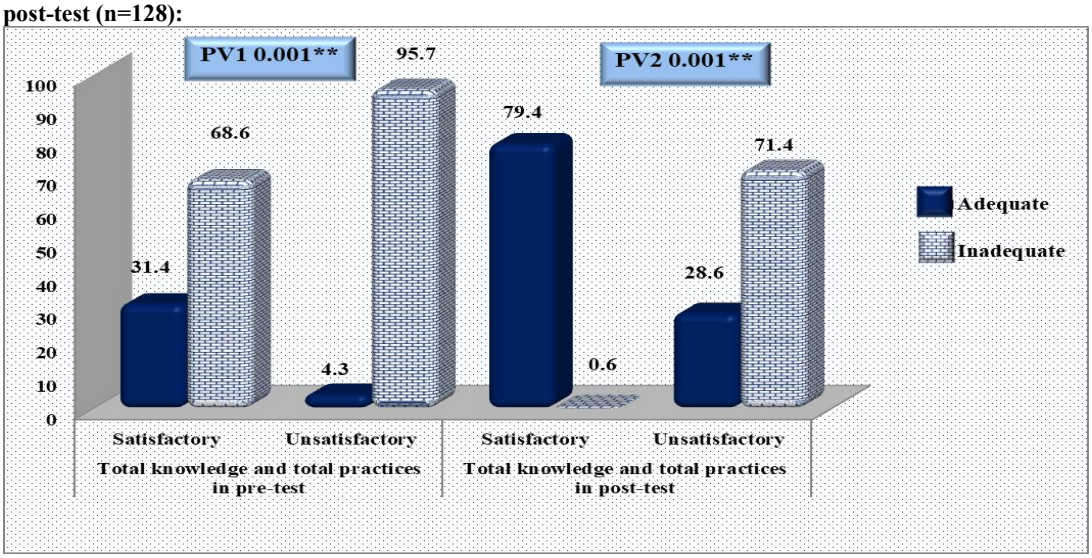
(*) statistical significant difference **(**) a highly statistically significant difference**

Table (5) Relation between the studied mothers' total knowledge regarding screen time hazards and safety and their electronic screens data in pre and post-test (n=128):

Electronic screens data	Total knowledge about electronic screens									
	Pre-test				p-value	Post-test				p-value
	adequate (35)		inadequate (93)			adequate (107)		inadequate (21)		
	N	%	N	%		N	%	N	%	
The number of children sleeping hours/day										
6-8 hours	12	34.3	38	40.9		43	40.2	7	33.3	
8-10 hours	21	60.0	51	54.8	0.775	58	54.2	14	66.7	0.392
> 10 hours	2	5.7	4	4.3		6	5.6	0	0.0	
Child has difficulty sleeping										
Yes	7	20.0	13	14.0	0.704	13	12.1	7	33.3	
No	18	51.4	51	54.8		59	55.1	10	47.7	**0.043***
Sometimes	10	28.6	29	31.2		35	32.7	4	19.0	
Children's screen time per day (time spent by a child using any electronic screens per day)										
< an hour	4	11.4	7	7.5		9	8.4	2	9.5	
1 - 2 hours	7	20.1	22	23.6	0.913	23	21.5	6	28.6	0.630
2 - 3 hours	6	17.1	18	19.4		22	20.6	2	9.5	
3-4 hours	5	14.3	16	17.2		16	15.0	5	23.8	
> 4 hours	13	37.1	30	32.3		37	34.5	6	28.6	

(*) statistically significant difference

Figure (3) Relation between the studied mothers' total knowledge and total reported practices in pre and post-test (n=128):



PV1 (between total knowledge and total practices in pre-test)
PV2 (between total knowledge and total practices in post-test)
(**) a highly statistically significance

Table (6) Relation between the studied mothers' total reported practices regarding screen time hazards and safety and their electronic screens data in pre and post-test (n=128):

Electronic screens data	Total mothers' practices									
	Pre-test				p-value	Post-test				p-value
	Adequate (15)		inadequate (113)			adequate (91)		inadequate (37)		
	N	%	N	%		N	%	N	%	
The number of children sleeping hours/day										
6-8 hours	9	60.0	39	34.5	0.125	38	41.8	10	27.0	**0.167**
8-10 hrs	6	40.0	66	58.4		49	53.8	23	62.2	
> 10 hours	0.0	0.0	8	7.1		4	4.4	4	10.8	
Child has difficulty sleeping										
Yes	8	53.3	14	12.4		22	24.2	0	0.0	
No	6	40.0	63	55.7	**0.001****	45	49.4	24	64.9	**0.005****
Sometimes	1	6.7	36	31.9		24	26.4	13	35.1	
Children's screen time per day (time spent by a child using any electronic screens per day)										
< an hour	0	0.0	10	8.8	**0.037***	1	1.1	9	24.3	**0.001****
1 - 2 hours	0	0.0	30	26.6		22	24.1	8	21.6	
2 - 3 hours	2	13.3	22	19.5		15	16.5	9	24.3	
3-4 hours	4	26.7	17	15.0		18	19.8	3	8.1	
More than 4 hours	9	60.0	34	30.1		35	38.5	8	21.6	

(*) statistical significant difference
(**) a highly statistically significant difference

Discussion:

Children are exposed to a wide range of screen viewing devices in our technologically advanced world, such as televisions, tablets, smartphones, and gaming devices. Around the world, a lot of young children are spending more time in front of screens (**Boonmun et al., 2023) & World Health Organization, WHO, 2019)**. Improving parents' knowledge of how to protect their kids from media exposure is essential since it could affect how they interact with screens. Comprehensive advice and guidelines for parents on reducing the risks associated with screen time for mothers of preschool-aged children are lacking **(Ali et al., 2019)**.

Therefore, this study aimed to evaluate the effect of educational sessions for controlling screen time hazards for preschoolers' mothers. So, educational sessions would help mothers use screen media in a way that minimizes the incidence of its negative effects and provide evidence-based data that can develop pediatric nursing educations and research.

Concerning ***mothers' knowledge***, the findings of the present study on mothers' knowledge and regarding controlling screen time hazards for preschoolers are quite incredible and offer valuable insights into the effectiveness of such educational interventions. The presented data indicated a significant progress in mothers' knowledge levels regarding electronic screens post-education compared to pre intervention, as evidenced by the highly statistically significant differences (P=0.001**).

This significant shift in mothers' knowledge from unsatisfactory to satisfactory following the screen education sessions reflected the educational session's success in raising mothers' knowledge of the risks associated with screen time for their preschool-aged children. By filling up knowledge gaps, offering thorough content, and using specialized techniques. The program could effectively improve mothers' understanding and practices of screen time control by tailoring the content to address common misconceptions, uncertainties, and deficits in knowledge. By guaranteeing active participation, the program gave mothers the knowledge and skills they needed to confidently practices screen time control, which in turn helped their children develop healthier lifestyles.

These finding agree with a study conducted in Egypt by **Ibrahim et al., (2023)** illustrated that there was a statistically significant improvement between total mothers' knowledge regarding screen viewing time at pre, post and follow-up stages with P=0.000. Furthermore, these findings are consistent with a research done in Egypt by **Ali et al., (2019)** who revealed statistically significant difference between the mean of the total score of knowledge of parents before and after the educational program about children safety screen media exposure (5.60±1.373, 9.97±2.57) respectively. More than three quarter of parents (77.5%) were unfamiliar with children safety screen media exposure but more than two third of them (72.5%) became familiar with it after educational program, the percentage of correct answers before the educational program were ranged from 5% to 95% then improved and ranged from 65% to 100% after the program.

In contrast, **Arippin et al., (2019)** revealed that there is no signifcant difference between parents and knowledge but it was observed that both parents have poor overall scores of < 50% on knowledge of screen time.

Regarding mothers' reported practices, about screen time hazards and safety for their children pre and post participating in the educational sessions there is a significant improvement in their reported practices which (11.7%) of mothers had an adequate level of practices regarding electronic screens before the implementation of the program compared to (71.1%) post-implementation with (P=.001**). This demonstrated how the program's addressing of common misconceptions, practical advice, and promotion of evidence-based strategies helped to shape mothers' actions for better screen-controlling techniques. The significant rise in the proportion of mothers who report adequate practices highlights how well the program has worked to improve mothers' abilities and self-assurance in managing screen dangers.

This is similar to a study conducted by

Boonmun et al., (2023) who reported that parents' behaviors on children's screen time scores of the experimental group continuously increased after completing the intervention and showed a decreasing trend by the second month after the intervention. However, the parents' behaviors on children's screen time scores of the experimental group were greater than children in the control group after completing the interventions.

This also agrees with **Ibrahim et al., (2023)** that shows a statistically significant difference between children's total screen viewing time pre/post and at follow-up after implementation of the educational guidelines with ($p<0.001$) . Also, the current study findings were in accordance with the finding of a study done in North Dakota by **Panjeti- Madan's and Ranganathan, (2023)** who recommended that, daily children's screen time should ideally be restricted to zero minutes for the children between (0–2 years old), less than 60 minutes for the children between (3–5 years old) and capped at 60 minutes for (6–8 years old) children in order to facilitate, sustained and enhanced progress across various developmental domains. This underscores the significance of improving mothers' knowledge and practices in reducing screen media exposure time. So, the research findings align with and support the research hypotheses.

Concerning children's screen time per day (time spent by child using any electronic screens per day) the current study showed that 22.7% of children spent from 1 to 2 hours per day, 18.8% spent from 2 to 3 hours, 16.4% spent 3 to 4 hours and (33.5 %) of them spent more than 4 hours. This percentage highlights the extent of the issue discussed in the research and the subsequent risks it poses to children's intellectual, psychological and physical well-being.

This ensured through **Waziry, (2019)** study in Egypt who reported that The majority of children exceeded the allowed daily hours of using technological devices. Also, **Nwankwo et al., (2019)** showed that 41% of children spent over 3 hours on their tablets and the most frequently used screen device in the home such as TV, with estimated usage ranking more than 6 hours daily.

In addition to, Egyptian study done by **Mohamed et al., (2021)** reported that the majority of the studied children spent more than 2 hours as a total screen time was with mean 4.520(2.494) hours daily. In addition to, Australian study findings done by **(Tooth et al, 2019)** reported that children aged between 1-4 years exceeded the maximum screen time than recommended by the Australian Department of Health.

In contrast, this finding was inconsistent with Canadian study by **Carson et al., (2012)** indicated that about half of the children spent less than 1 hour as total daily screen time with mean 74.8 (56.9) minutes when studied the associations between factors within the home setting and screen time among children aged 0–5 years.

Also, the current study shows that there is a statistically significant relation between children's screen time per day and mothers' total practices scores pre-program implementation (P = .037*), and a highly statistically significant relation post-program implementations (P = .001**). This consistent with **Tang et al., (2018)** who investigated the association between the media parenting practice of monitoring screen time and children's total screen time. For both mothers and fathers, monitoring the amount of screen time was inversely associated with children's weekday and weekend total screen time. These results demonstrated that parental monitoring of screen time could potentially change screen time viewing behavior among young children and may be an important target for interventions. Also, support previous research done by **Johnson et al., (2015**), which has shown that the media parenting practice of limit setting is successful in reducing children's total screen time.

Additionally, the programs' flexibility and accessibility are important because they allow moms to interact with the content at their own place, which probably helps explain the noted improvement in knowledge scores. So, the current study indicated that more than 57.8 % of mothers had university education. So, there is a highly statistically significant relation

between mothers' education and their total knowledge scores pre-implementation of the program (P =.007**).This indicates that the highly educated mothers were aware of the dangers that screens represent to their children and looked for solutions to this issue that the educational program offered. This agree with **Waziry, (2019)** that indicated a significant relation was found between mothers' level of education and their total score of awareness. Where the majority of mothers who had postgraduate studies (85.7%) were partially aware compared to only 9.7% of them who were not aware of using technological devices. On the other hand, none of mothers who had elementary or secondary education were partially aware of using technological devices compared to 20.4 % and 30.1% respectively of them who were not aware.

Also, Egyptian study conducted by **Ali et al., (2019)** presented the relationship between posttest knowledge score and personnel characteristics of parents, which there was a strong correlation between posttest knowledge score with level of education of parents. In addition to, **Maatta et al., (2017)** added that parents with high education valued the importance on limiting children's screen time compared to parents with low education.

Concerning electronic screens, the recent study revealed that 27.3% of mothers had an efficient level of knowledge regarding electronic screens before the implementation of the program, compared to 83.6% post-implementation. This in contrast with **Mohamed et al., (2021)** who revealed that the majority of the studied mothers had poor knowledge. This finding was similar to Egyptian study results done by **Mater & Bayoumy, (2019)** found that slightly more than three fourths of mothers didn't know the recommendation for safety screen media exposure for young children. Furthermore, American study results **Christakis, (2014)** found that most of the mothers weren't aware of the recommendations about safety screen media.

The present study indicated that only 11.7% of mothers had an adequate level of practices regarding electronic screens before the implementation of the program compared to 71.1% post-implementation with (P=.001**). This agreed with **Mohamed et al., (2021)** who clarified that in most of the studied mothers can't establish rules for their children screen time.

The present study exhibited a highly statistically significant relation between mothers' education and total practices scores before program implementation (P =.002**) and a statistically significant after program implementation (P =.037*). Mother education plays a significant role in making application more effective through their thorough understanding of program content and techniques. This demonstrated that the educational session is effective in demonstrating various practices based on references regarding controlling screen time and its hazards on children's health that are simple for mothers to implement with their children.

As regarding family type, A statistically significant relation between the family type and mothers' knowledge scores before program implementation (P =.043*).This is explained by the fact that, in contrast to extended families, mothers in nuclear families have more time to attend to the needs and issues of their children and regularly work to keep them safe. Mothers' awareness of screen time and its risks was higher in nuclear families than in extended families.

Concerning sleeping difficulty, the current study presented a highly statistically significant relation between difficulty sleeping in children and mothers' total knowledge and practices scores pre- and post-program implementation (P = .001** and P = .005**) this consistent with a study conducted by **Ibrahim et al., (2023)** found statistically significant differences regarding mothers' knowledge about negative screen viewings of the physical, psychological, mental, and neurodevelopmental effects on children during pre, post, and at follow-up stages with (p <0.001). This result aligns with results of a study conducted in Canada by **Neophytou and Eikelboom, (2019)** who reported that excessive screen time impacts children's neurodevelopment, cognition, learning, memory, and a risk for early neurodegeneration. Similarly,

a finding of a study done in India by **Utkarsh and Lakshmi, (2021)** who found that excess early childhood screen time negatively affects cognitive, language,

Regarding knowledge and practices relation, The current study presented a highly statistically significant relation between the mothers' total practices, and their total knowledge scores, regarding electronic screens used by their children pre-program implementation (P = 0.001). This consistent with Egyptian study done by **Ibrahim et al., (2023)** showed that, there was a positive correlation between mothers' knowledge, reported practices and time spent on screen viewing per day with their children's developmental health milestones at pre /post and follow-up stages with (P=0.000). This suggests that although knowledge, reported practices, were all positively impacted by the education program, the strength of these connections slightly decreased after the intervention. The fact that favorable correlations persisted after the intervention indicates that the educational program had a long-lasting effect on mothers' attitudes, behaviors, and knowledge.

Limitation of the study:

Data on practices was acquired through the self-reporting of respondents and was neither measured nor witnessed by the researcher.

Conclusion

The present study concluded that implementation of web-based educational sessions was effective in enhancing mothers' knowledge and practices regarding screen time safety and hazards for young children.

Recommendations:

1.Additional research that assesses the long-term effects of the teaching program about safety screen time for kids of various ages.

2.More studies are required to raise mothers' understanding of the safety of their children's exposure to screens in various settings.

3.The media should educate mothers about the value of involving their young children in activities other than electronic screens, such as reading, sports, and in-person social interactions.

4.Encouragement of mothers to establish and enforce rules for their children's use of technology in the home.

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