Original Article

Digital Hygiene: Need of the Hour in View of Mounting Screen Time among 0-4 Years Children

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Abstract

Introduction: To grow up healthy, children need to sit less and play more. Children 0-4years must spend less time sitting watching screens, or restrained in prams and seats, get better quality sleep and have more time for active play if they are to grow up healthy, according to new guidelines issued by the World Health Organization (WHO). The objective of the study was to determine the prevalence and factors responsible for excessive screen time in children.

Methodology: A cross sectional study was conducted among children aged 0-4 years for a period of six months in a tertiary care hospital of Karnataka, India. Data was collected through a self-reported pre-designed and pre-tested, questionnaire distributed to mothers of children. Microsoft excel 2010 was used for data entry and SPSS v 27for analysis. Statistical significance was assessed at 5% level of significance (p value <0.05)

Results: A total of 177 study participants were interviewed for the study. Maximum were 3-4years and majority belonged to class II and class III socio-economic status. Among the total of 177 study participants, 59 (33.33%) were following the screen viewing time recommended as per WHO and 118 (66.67%) children were exposed to excessive screen time. Majority were 2-4years children who had excess screen viewing time (76.27%). The significant factors were children residing in joint families, not having siblings and more than three screen devices at home (p<0.05)

Conclusion: More than 60% of under five children are exposed to excess screen viewing time. What we really need to do is bring back play for children. The magnifying screen time activity in early childhood is an emerging issue of digital age linked with negative physical, mental and social impact.

Keywords: Age, Children, Devices, Digital, Play, Screen, Time.

Introduction

Children aged 0-4years must spend less time sitting watching screens, or restrained in prams and seats, get better quality sleep and have more time for active play if they are to grow up healthy, according to new guidelines issued by the World Health

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Organization (WHO). "Early childhood is a period of rapid development and a time when family lifestyle patterns can be adapted to boost health gains."[1] Early childhood (under 5 years of age) is a period of rapid physical and cognitive development and lays foundation for lifelong lifestyle routines and health, a time during which a child's habits are formed and family lifestyle routines are open to changes and adaptations.[2] The invention of telegraph in 19th century marked a new era of communication and entertainment. Presently, screens which are in form of either as smart phones, television, computers, or in theatres, constitute an integral part of daily life, which have become ubiquitous across the world.[2,3] The economic boom has been increasing the middle class's purchasing power of these gadgets.[4] Although the electronics have become essential to all aspects of daily life, children are unavoidably exposed to digital media earlier in life and for longer hours with children in affluent homes with an internet-connected device spending more than two hours a day on the screens.[3]

Among 0-4 years children, excess screen time prevalence varies from 10% to 93.7% across the high-income countries, and 21% to 98% in the middle income countries. Overall screen time ranged from 0.9 to 3.5 hours/day among under five children. Indian studies demonstrate shows a similar trend as western world with initial exposure to screen-based media as early as 2 months of age; and median age of first exposure to screen at 10 months. Most children are exposed to screen-based media by 18 months of age; with greater usage of smartphones (96%) than television viewing (89%). Nearly 65% families keep their television on while having dinner. Four out of five preschool children reported using smartphone devices, primarily for games and videos. Factors influencing screen time can be related to children (age of introduction of screen device, duration of sleep, sedentary preferences, eating in front of screen, fast food consumption); parents and caregivers (parental screen-time and perceptions, working hours, education); and demographics and environment (easier access to digital media, high background television time, number of screen devices at home, socioeconomic status, working of parents from home, lockdown).[5]

Consequences of Screen-based media exposure have become more predominant. In view of their easy availability and increasing use in Indian children, and their excessive use being linked to physical, developmental and emotional problems, obesity, sleep and behavioral problems, scholastic back wardness there is a need to develop guidelines related to ensure digital hygiene and wellness so as to regulate screen time in infants, children, and adolescents.[2,5,6] With rapid technological advancement, the prevalence and undesirable effects of excess screen time on children have become a mounting issue worldwide.[7]

Why focus on this age group?[8]

- Habit-forming, and early overexposure increases the likelihood of overuse in later life.
- Health routines, including family media use, are established more easily in early childhood than later on
- Screen use tends to increase over time to include more entertainment (versus exclusively educational viewing)

As Screen time has increased, regular engagement with natural environments has concurrently decreased among children. Children are now experiencing significantly lower levels of contact with nature, or green time. Natural areas also tend to be less crowded, with reduced air and noise pollution, which is beneficial for overall health. Furthermore, time spent exposed to natural sunlight helps to regulate circadian rhythms, encouraging healthy sleep-wake cycles and improved sleep, which is pivotal for psychological well-being and overall healthy growth of the children. Hence, the study was envisioned know the prevalence of screen viewing time and also the associated factors among 0-4years children.

Materials and Methods

Study design:

A cross-sectional study was conducted for a period of six months among mothers of 0-4years children in a tertiary care hospital in Karnataka.

Sample size

Considering a proportion of 50% children being exposed to screen, q=1-p, L as relative error 15%, at 95% confidence interval, the final sample size was estimated to ne 177.

Inclusion and Exclusion criteria:

Inclusion criteria for the study was children aged 0-4years. Mothers who consented to participate in the study on voluntary basis. Exclusion criteria for the study were children with disability, impairment and developmental delay.

Data collection:

Data was collected by interviewing mothers of all the 0-4years children, using a pre-designed and pre tested questionnaire. The mothers were interviewed in tertiary care hospital till the required sample size was achieved.Mothers were asked to self-report the average amount of time their child spent watching TV, playing on a smart phone or tablet, using computers, playing video games, playing outdoors, and reading. In formed consent was obtained from one of the parents after explaining the details of their contribution in the study.

Ethical clearance:

Ethical clearance was obtained from Institutional Ethical Clearance Committee.

Study instrument:

It was divided into two parts. Part I consisted of questions pertaining to sociodemographic details. Part II included screen time related questions as per the recommendation of World Health Organization (WHO). The questionnaire used in the study was translated to vernacular language and validated by the investigators. Data was collected after voluntary consent explaining the details of the study.

Definitions:

Screen viewing time (SVT): Screen viewing time (SVT), or digital/screen exposure, is the total time spent by an individual viewing or using any digital or electronic device, such as a television (TV), smart phones, tablets, or computers.[5,9]

Screen devices: Television (TV), smart phones, tablets, or computers and video games.[5,9]

Consequences of excess SVT:[10]

- Children are less likely to have the fine motor skills necessary for writing when entering kindergarten.
- Vocabulary, communication skills and eye contact are reduced.
- Developmental delays are documented with increased device use. Screen time, for instance, has been linked to ADHD symptoms (self-regulation).
- Attention, decision-making and cognitive control are reduced.
- Creativity also suffers. Screen time interferes with problem solving.
- Psychiatric disorders reported. A premature thinning of the cortex based on brain scans.

Recommendations by WHO[2]

Infants (less than 1 year) (0-11 months)	Screentimeisnotrecommended. When sedentary, engaging in reading and storytelling with a caregiver is encouraged
Children 1–2 years of age (12-24 months)	Screen time should be no more than 1 hour; less is better. When sedentary, engaging in reading and storytelling with a caregiver is encouraged.
Children 3–4 years of age (25-48 months)	Screen time should be no more than 1hour; less is better. When sedentary, engaging in reading and storytelling with a caregiver is encouraged.

Statistical Analysis

Data analysis was done using SPSS software version 27.0. Descriptive statistics, Chi-square test was applied to find an association between two attributes and $P<0.05$ was considered as statistically significant.

Results

Table 1: Sociodemographic details of0-4years children (n=177)

Parameters	Number	Percentage
Age		
0-11 months	37	20.90
12-24 months	20	11.30
25-48 months	120	67.80
Gender		
Boys	94	53.11

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Girls	83	46.89
Type of Family		
Nuclear	54	30.51
Joint	64	36.16
Three Gen	59	33.33
Socioeconomic status		
I	75	34.37
II	34	19.20
III	30	16.94
IV	18	10.16
V	20	19.33
Place of Residence		
Urban	91	51.41
Rural	86	48.59

**As per Modified B G Prasad Classification 2023.*[12]

Table no 2: Prevalence of Screen Viewing Time (SVT) among 0-4 years children as per WHO recommendation (n=177)

Age group	SVT in Limits (n=59)		SVT Excess (n=118)	
	No.	%	No.	%
0-11 months (37)	18	30.51	19	16.10
12-24 months(20)	11	18.64	09	7.63
25-48 months(120)	30	50.85	90	76.27

Table no 3: Association of demographic factors with excess screen time viewing among 0-4 years children (n=177)

Parameters	Screen time for 0-4 years children as per WHO recommendation				Test of Significance
	Yes (59, 33.33%)		No (118, 66.67%)		
	No.	%	No.	%	
Age in years					
<1yr (37)	18	30.50	19	16.10	χ^2=3.361 *P*=0.185712 Not significant
1-2yrs (20)	11	18.64	09	7.63	
2yrs (54)	12	27.12	38	32.20	
3-4yrs (66)	14	23.74	52	44.07	
Gender					
Males (94)	26	44.06	68	57.63	χ^2=2.9039 *P*=0.088637 Not Significant
Females (83)	33	55.93	50	42.37	
Type of Family					
Nuclear (54)	35	59.32	19	16.10	χ^2=37.6088 *P*=0.00001 Significant
Joint (64)	08	13.56	56	47.46	
Three Gen (59)	16	27.12	43	36.44	
Socioeconomic Status*[11]					
I (75)	17	28.81	58	49.15	χ^2=8.7853 *P*=0.12368 Not significant
II+III (64)	23	38.98	41	34.74	
IV+V (38)	19	32.21	19	16.11	
Place of Residence					
Urban (91)	34	57.63	57	48.31	χ^2=1.3683 *P*=0.241 Not significant
Rural (86)	25	42.37	61	51.69	

Table no 4: Association of other factors with WHO screen time recommendation among 0-4 years children (n=177)

Parameters	Screen time for 0-4 years children as per WHO recommendation				
	Yes (59, 33.33%)		No (118, 66.67%)		Test of significance
	NO.	%	NO.	%	
Siblings					
Present (76)	46	77.97	30	25.42	$\chi 2$=44.392 *P*=0.0001
Absent(101)	13	23.73	88	74.58	Significant
Occupation of parents					
Both working (88)	31	52.54	57	48.31	$\chi 2$=0.2825
Mother working (89)	28	47.46	61	51.69	*P*= 0.595071. Not significant
Number of screen device at home					
1-3 (74)	43	72.88	31	26.27	$\chi 2$=35.1237
>3 (103)	16	27.12	87	73.73	*P*<0.0001 Significant
Activity					
Eating (130)	41	69.50	89	75.42	$\chi 2$=0.7097
Others (Bed time, etc) (47)	18	30.50	29	24.58	*P*=0.399531 Not Significant
Outdoor sports					
Yes (90)	48	81.36	42	35.59	$\chi 2$=32.9586
No (87)	11	18.64	76	64.41	*P*=0.399531 Not significant

Table no 1 shows the sociodemographic profile of under five children. Majority of the children 37.28% were aged 3-4 years. 53.11 were males, middle class group of socioeconomic status were maximum and more than 50% resided in urban areas.

Table no 2 details: Among the total of 177 study participants, 59 (33.33%) were following the screen time recommended as per WHO and 118 (66.67%) children were exposed to excess screen time. Among the 118 (66.67%) with excess screen time, the majority were 2-4years children who had maximum screen exposure time (76.27%).

Table no 3 depicts the association of sociodemographic variables and screen time if under five children. The factors influencing excess screen time among under five children were male children, class I socioeconomic status and so on. But the statistically significant factor was residing in joint families. (p=0.0001).

Table no 4 illustrates the association of various factors with WHO screen time recommendation among under five children. It was observed that, many factors were reasons for increased screen time among under five children of which, not having siblings and households having more than three screen devices (P<0.0001).

Discussion

A total of 177 study participants were involved in the research. In the present study, the exposure to screen was from less than one year of age. In the present study, the average screen time was 1.5 hours and the exposure of screen started as early as less than one year of age. 57.63% of male children had more screen time. These findings can be compared to a study done by R R Shah[12] in Western India, it was observed that, average screen time was 2.7 hours and the age of screen time onset was less than three years. The screen time was more in households with more

than three screen devices and more in male children which was in similarity to the present study. The early exposure of screen time was observed when parents were using more digital means. More than three screen devices at households made more easy availability for the children to get through screens.

A study done by Shirley S A[6] in South India, found that, the average screen time was 139 minutes, 49.3% children screen time was excess when household had more than three screen devices whereas in our study more than 70% children were exposed. This shows that, the availability of multiple screens is a major contributor for excess screen time.

A study done in Italy by Xie G[3], concluded that, toddlers have more behavioural problems when exposed to more digital screen time. Also, Thirty percent of the screen time was spent on smartphone (25.5 min) and 45% was spent on television viewing (38.25 min), 10% was computer use (8.5) and 15% was video use whereas in the present study nearly 60% on smart phones followed by television. Smart phones are most easily available in all the households irrespective of the socioeconomic conditions and when internet has become a basic need for day to day routine and this in turn paves way for children to get access to the screen time.

The availability of affordable gadgets, digital devices, provision of EMIs all these factors makes the buyers at ease to own multiple screen devices and thereby promotion excess screen time among children. Adults spending more time on screen also have a direct impact on the children using the screen.

Conclusion

More than 60 % of children exceeded the advised screen time with smartphone and being the major contributors. Screen time must not replace other activities such as outdoor physical activities, sleep, family and peer interaction, studies and skill development, which are necessary for overall health and development of the children and adolescents. Families should ensure a warm, nurturing, supportive, fun filled and secure environment at home, and monitor their children's screen use to ensure that the content being watched is educational, age-appropriate and non-violent.

Conflict of interest: Nil

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