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ARAŞTIRMA / RESEARCH

Okul öncesi çocukların ekran kullanım sürelerinin ebeveyn ekran kullanım alışkanlıkları ve aile işlevleri ile ilişkisi

Screen time of preschool children in relation to their parents screen usage habits and family functions

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Abstract

Purpose: The aim of this study was to investigate the screen time of preschool children in relation to their parents' screen-use habits and family functions.
Materials and Methods: We included 198 parents whose children were attending a kindergarten in Sarıçam district of Adana. Data were collected using a questionnaire and the Family Assessment Scale. Screen times were calculated by adding up the time spent in front of tablets, TV, mobile phones, and computers.
Results: The screen times were >2 h in 57.6% children on weekdays and in 76.3% on weekends, and screen times increased as age increased. Further, 88.9% parents indicated that they had family rules about screen use, 62.6% stated that their children were in front of the screen while eating, and 44.4% said their children had a screen of their own, whereas 90.9% told that they had not received any recommendations regarding screen use from family physicians or pediatricians. Low education level of parents, lack of family rules on screen use, children having their own screens, and having received no recommendations from doctors regarding screen use were noted to increase the screen times of children. There was a relationship between the screen times of children and that of parents as well as between screen times of children on weekdays and the communication subscale of family functions.
Conclusion: From the results of the study, individual and institutional initiatives are recommended for family physicians and pediatricians who have many contacts with this age group to turn it into an opportunity and have a more active role in advising parents regarding screen use

Keywords: Preschool, screen time, parents, family physician

Öz

Amaç: Bu çalışmda okul öncesi çocukların ekran kullanım sürelerinin ebeveyn ekran kullanım alışkanlıkları ve aile işlevleri ile ilişkisinin araştırılması amaçlanmıştır.
Gereç ve Yöntem: Çalışmamıza Adana ili, Sarıçam ilçesinde anaokuluna devam eden çocuğu olan 198 ebeveyni dahil ettik. Veriler bir anket formu ve Aile Değerlendirme Ölçeği kullanılarak toplandı. Ekran süreleri; tablet, TV, cep telefonu ve bilgisayar başında geçirilen süre toplanarak hesaplandı.
Bulgular: Çocukların %57,6'sının hafta içi, %76,3'ünün hafta sonu ekran kullanım sürelerinin iki saatin üzerinde olduğu ve yaş arttıkça ekran süresinin arttığı saptandı. Ebeveynlerden %88,9'u ekran konusunda aile içi kurallarının olduğunu, %62,6'sı çocuklarının yemek yerken ekran karşısında olduğunu, %44,4'ü çocuklarının kendine ait bir ekranının olduğunu, %90,9'u aile veya çocuk hekimlerinden ekran kullanımı konusunda herhangi bir öneri almadıklarını bildirdi. Ebeveynlerin eğitim düzeyinin düşük olmasının, ekran konusunda aile içi kuralların olmamasının, çocukların kendilerine ait ekranlarının olmasının, hekimlerin ekran kullanımı konusunda öneride bulunmamasının çocukların ekran kullanım sürelerini arttırdığı bulundu. Çocukların ekran kullanım süreleri ile ebeveynlerin ekran kullanım süreleri arasında ve çocukların hafta içi ekran kullanım süreleri ile aile işlevlerinin iletişim alt ölçeği arasında ilişki saptandı.
Sonuç: Çalışmanın bulguları göz önüne alındığında, bu yaş grubuyla birçok teması olan aile hekimlerinin ve pediatristlerin bunu fırsata çevirerek ebeveynlere ekran kullanımı konusunda danışmanlık vermede daha aktif rol almaları için bireysel ve kurumsal girişimler önerilir.
Anahtar kelimeler: Okul öncesi, ekran süresi, ebeveyn, aile hekimliği

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INTRODUCTION

Children now-a-days are growing up in a digital world, which has led to an increase in children's screen time[1-3]. Increased screen time has resulted in a conflict between education and industry authors and health authors, and the dilemmas have contributed to an increase in research on this issue in the recent years[2,4]. High-quality and interactive screen time have some beneficial effects; however, excessive screen time in children is associated with various physical, behavioral, and cognitive problems. These problems primarily include obesity due to sedentary lifestyle, metabolic syndrome caused by obesity, increased risk of cardiovascular disease and increased prevalence of asthma, depressive symptoms, anxiety, attention deficit and hyperactivity, sleep disorders, decrease in academic success, and cognitive development[2,5-7]. Therefore, many health institutions, especially the World Health Organization, have issued guidelines for the purpose of protecting children from the harmful effects of screen use[8-11]. American Academy of Pediatrics's recommendations on screen use (2018) for robust child monitoring are as follows: Hands-on exploration of their environment is essential for the development of children younger than 2 years. Video chatting is acceptable for children younger than 18 months; otherwise digital media should be avoided. Parents and caregivers may use educational programs and applications with children aged 18–24 months. If screen time is used for children aged 2–5 years, the AAP recommends a maximum of 1 h/day that occurs at least an hour before bedtime. Longer usage can cause sleep problems and increase the risk of obesity and socioemotional delays[8,10]. According to the Infant, Child and Adolescent Monitoring Protocol of Public Health Institution in Turkey (2018) "Zero screen time for children younger than 2 years; not >1 h/day for those aged 2–5 years; and not >2 h/day for those aged 5–11 years" have been recommended[11]. It is observed that the overall rates of compliance with these recommendations are low all over the world and the screen time continues to increase in children[3,12].

Family system theory and family-oriented care suggest that the behaviors of individuals should be understood in the context of the family[13,14]. Although there are studies that investigated the relationship between family factors and screen use in children, most of these studies are about school-going children and adolescents. There is no study that investigated the relationship between screen use in preschool children and family functions. With increasing access to mobile devices today, children's screen use starts at a much earlier age, and this period is critical for growth and development as well as for future screen-use habits[15-17]. To develop effective interventions, studies that investigate factors affecting screen time, especially in this age group, are of key importance[18]. Given the fact that more information on the relationship between children's screen use and their family characteristics can be a reference for professionals to guide parents, in this study, we aimed to investigate the relationship between the screen use in children aged 4–6 years and parents' screen use and family functions.

MATERIALS AND METHODS

All kindergartens (Cukurova University Kindergarten, Abdullah Ongen Kindergarten, Kozanoglu Lions Kindergarten, Sevgi Kindergarten and Rotary Club Kindergarten) that provide educational services in the district of Sarıcam in Adana province were included in this descriptive and cross-sectional study. After receiving the necessary approvals from Cukurova University Faculty of Medicine Non-Interventional Clinical Research Ethics Committee (03.03.2017/62) and Adana Provincial Directorate of National Education, permission was received from the executives of schools in which the questionnaire was to be applied.

The minimum sample size as calculated as 185 by taking the margin error as 5%, the confidence interval of 95%, and the response distribution rate as 70%. Informed consent forms and questionnaires requesting descriptive information were delivered to the parents (n = 980) and collected from them (n = 220) through the instructors. The study was conducted under the original Declaration of Helsinki and its later amendments or comparable ethical standards. Questionnaires of single-parent families and incomplete questionnaires were excluded from the study (n = 22).

Measures

Information sheet

In the first part of the information sheet, sociodemographic data (child's age, child's gender, mother's age, mother's education level, father's age,

father's education level, and economic situation of the family) and the time spent by family members (mother, father, and child attending kindergarten) in front of tablet, television, mobile phone, and computer on the weekdays and weekends (min and/or h) were investigated. In the second part, we investigated screen-use habits (whether the family has rules about screen use; applicability of the screen rules for the family, if there are any; whether the child uses the screen while eating; and whether the child has its own electronic device) and whether the parents were given advice by a family physician or pediatrician regarding the screen use of their children.

Family Assessment Scale (FAS)

FAS is a measurement tool that determines in which areas the family can or cannot fulfill its functions. The McMaster Model of Family Functioning was obtained by clinically applying it to the families. The study of validity and reliability of the scale in Turkey was conducted by Bulut that comprises 60 questions and seven subscales[19]. These subscales include problem solving, communication, roles, emotional response, showing the necessary attention, behavior control, and general functions. An increased score from 1 upward is considered to be an increase in problems about family functions.

Statistical analysis

The data collected were encoded and entered into the computer, and Statistical Package for Social Sciences program was used for statistical analyses. Screen times were calculated by summing up the times spent in front of tablet, television, smartphone, and computer. The data on the sociodemographic characteristics of the participants and their screen-use habits were evaluated by numbers, percentages, means, and standard deviations. Student's t-test and ANOVA were used for normally distributed variables, and Mann–Whitney's U test and Kruskal–Wallis test were used for non-normally distributed variables for the analysis of differences between independent variables and mean screen times. Spearman correlation analysis was used to evaluate the relationship between screen times of children and parents and FAS scale scores. A p value of <0.05 was considered statistically significant.

RESULTS

A total of 65.2% of the 198 questionnaires were filled by the mother, 11.6% by the father, and 23.2% by the parents together. The mean ages of the mothers and fathers were 32.59 ± 4.65 and 36.5 ± 4.68 years, respectively. Further, 52% children were male, and 49% were in the age group of 6 years.

In addition, 57.6% children had >2 h of screen time on weekdays. On weekends, this rate was 76.3%. On weekends, screen times (283.93 ± 187.79 min) were significantly higher than those on weekdays (192.47 ± 144.32 min) ($p < 0.05$).

The screen time increased as the age increased, and this difference between the age groups was statistically significant for weekdays; however, it was not significant for weekends. No significant difference was observed between the groups in terms of screen times of children by gender (Table 1).

Table 1. Screen times of children according to their age and gender

		N (%)	Screen time of the child	
			Mean ± SD on Weekdays (min)	Mean ± SD (min) on Weekends
Age of the child	4	34 (17,2)	160,59 ± 118,68	235,44 ± 171,52
	5	67 (33,8)	171,27 ± 145,02	286,24 ± 207,10
	6	97 (49,0)	218,30 ± 148,64	299,33 ± 178,01
	P		0.004*	0,232†
Gender of the child	Girl	95 (48,0)	189,16 ± 160,99	281,05 ± 203,72
	Boy	103 (52,0)	195,53 ± 127,76	286,58 ± 172,76
	P		0,338‡	0,449‡

*Kruskal–Wallis †ANOVA ‡Mann–Whitney's U

As the mother's education level increased, the child's screen time significantly reduced on both weekdays and weekends. The screen times of children of university-graduate fathers were significantly lower for weekdays. According to the economic situation of the family, there was no significant difference between the groups in terms of screen times of children (Table 2).

Table 2. Screen times of children according to education level and economic situation of parents

		N (%)	Screen time of the child	
			Mean ± SD on Weekdays (min)	Mean ± SD (min) on Weekends
Education level of the mother	Primary school	67 (33,8)	220,37 ± 180,65	318,13 ± 217,37
	High School	67 (33,8)	212,76 ± 137,12	291,99 ± 184,40
	University/master's degree/PhD	64 (32,4)	142,03 ± 86,00	239,69 ± 147,80
	P		0.000*	0.017*
Education level of the father	Primary school	50 (25,3)	218,60 ± 149,20	285,60 ± 164,75
	High School	66 (33,3)	233,86 ± 174,74	338,91 ± 226,28
	University/master's degree/PhD	82 (41,4)	143,23 ± 91,73	238,66 ± 154,01
	P		0.003*	0,146‡
Economic situation of the family	Bad	14 (7,0)	208,57 ± 138,51	259,64 ± 195,35
	Moderate	128 (64,7)	198,71 ± 150,08	287,80 ± 192,52
	Good	56 (28,3)	174,20 ± 132,53	281,16 ± 177,51
	P		0,339*	0,757*

*Kruskal–Wallis

Table 3. Screen times of children according to screen-use habits and rules of the family

Screen-use habits/rules of the family		N (%)	Screen use of the child	
			Weekdays (Mean ± SD)	Weekends (Mean ± SD)
Does your child have a habit of watching/using screens while eating?	Yes	124 (62,6)	200,89 ± 141,47	303,65 ± 190,20
	No	74 (37,4)	178,38 ± 148,88	250,88 ± 180,12
	P		0,077‡	0,290†
Do you have family rules about screen?	Yes	176 (88,9)	180,28 ± 127,89	275,50 ± 178,80
	No	22 (11,1)	290,00 ± 218,82	351,36 ± 242,99
	P		0.003‡	0,127‡
To what extent can you apply screen rules?	No-Rarely	13 (6,6)	182,31 ± 117,12	274,62 ± 211,72
	Sometimes	49 (24,8)	206,33 ± 112,60	297,86 ± 158,30
	Often/ Always	114 (57,6)	168,86 ± 134,39	265,99 ± 183,84
	P		0.031*	0,271*
Do you think the time your child spends in front of the screen is appropriate?	Yes	107 (54,0)	162,52 ± 143,25	256,34 ± 199,55
	No	91 (46,0)	227,69 ± 138,21	316,37 ± 168,29
	P		0.000‡	0.002‡
Does your child have a screen of his/her own?	Yes	88 (44,4)	203,58 ± 130,79	320,06 ± 191,57
	No	110 (55,6)	183,59 ± 154,31	255,03 ± 180,40
	P		0,101‡	0.011‡

‡Mann–Whitney's U; †t-test; *Kruskal–Wallis

The relationship between the screen-use habits of the family and the screen times of children is shown in Table 3. About 62.6% respondents reported that their children had a habit of using screens while eating, 88.9% said they had family rules regarding screen use, 54% believed the amount of time their

children spend in front of the screen is appropriate, and 44.4% reported that their children had a screen of their own. Children with a habit of using screens while eating had higher mean screen times than others on both weekdays and weekends, but this difference was not statistically significant. Children from families with screen rules had lower screen times; this difference between the groups was significant for weekdays but not for weekends. Children of the group who always/often enforced screen rules on weekdays had significantly lower screen times. Children of the parents who thought that their child's screen time was appropriate had significantly lower screen times than others both on weekdays and weekends.

The group with a screen of their own had higher screen times; this difference was significant for weekends but not for weekdaysA total of 90.9% (n = 180) reported that the pediatrician or family physician did not provide any suggestion regarding the screen time for their child. The mean of screen times of children of parents who received a doctor's recommendation on screen use were lower on both weekdays and weekends (141.67 ± 63.64 and 256.39 ± 147.74, respectively) than those who did not (197.56 ± 149.17 and 286.68 ± 191.45, respectively); this difference was significant for weekdays (p = 0.005) but not for weekends (p = 0.515).

Analyses of the correlation between the FAS and screen times of the mother, father, and child are shown in Table 4. According to the results of this analysis, the correlation between child's and parents' screen times was positive and moderate, the correlation between the child's and parents' screen times on weekdays and weekends was positive and moderate-very good, and the correlation between the screen times of the mother and father was moderate and good. Weak but significant correlations were observed between the screen time of child and the communication subscale of family functions; between the mother's screen time and the subscales of problem solving, communication, roles, and behavior control; and between the father's screen time and the subscales of communication and general function.

Table 4. Correlation analyses between family functions and screen times

	PS	COMM	ROLES	ER	SNA	BC	GF	Mother w.d. screen time	Mother w.e. screen time	Father w.d. screen time	Father w.e. screen time	Child w.d. screen time	Child w.e. Screen time
Mother w.d. screen time	.187**	.185**	.224**	.127	.137	.176*	.134	1					
Mother w.e. screen time	.119	.170*	.129	.082	.097	.083	.078	.692**	1				
Father w.d. screen time	.079	.209**	.090	.118	.081	.035	.181*	.410**	.355**	1			
Father w.e. screen time	.078	.251**	.126	.129	.055	.020	.152*	.355**	.512**	.778**	1		
Child w.d. screen time	.014	.144*	.113	.094	.107	.049	.091	.457**	.380**	.466**	.418**	1	
Child w.e. screen time	.015	.089	.075	.048	-.010	.003	.028	.392**	.444**	.304**	.441**	.750**	1

PS: Problem Solving, COMM: Communication, ER: Emotional Response, SNA: Showing Necessary Attention, BC: Behavior Control, GF: General Functions, w.d: weekday, w.e: weekend. *Correlation coefficient is 0.05, **Correlation coefficient is 0.01

DISCUSSION

The fact that digitalization is an important part of our children's future, and the information that too much screen time is harmful to their health have posed a challenge for parents and professionals. The concerns of previous generation about the effects of television are now valid considering the effects of the total screen time spent in front of computers, tablets, smartphones, and video games. Although there are some differences based on the country, it has been found in studies conducted in many countries that children's screen times are above the recommended times in general and tend to increase even further on

weekends[12,18,20]. In the present study, 57.6% and 76.3% children had a screen time of >2 h on weekdays and weekends, respectively, and the screen time on weekends was significantly higher than that on weekdays. Compared to the previous studies, the higher screen time found in the present study might be due to the increased use of mobile devices over the years, sociocultural reasons, or differences in the calculation of screen times in the studies.

In the present study, screen time increased with the child's age. In line with this finding, in a prospective birth cohort study conducted by Trinh et al. in 3895 children between 2007 and 2019, the median daily screen time, which was 30 min (interquartile range: 0–60) when the children were 12 months old, increased to 120 (interquartile range: 75–200) min when they were 36 months old[17]. Studies in older age groups have also reported that the mean daily screen times increase as children's age increases[5,21].

No significant differences were observed between boys and girls in terms of screen times either for weekdays or weekends. Previous studies on the relationship between screen time and gender have generally reported that boys have higher screen times than girls; there are also studies that did not find any relationship as in the present study[5,22]. This may be due to the fact that the difference between the screen times of boys and girls tends to increase with increasing age.

As the mother's education level increases, the child's screen time considerably decreases on weekdays and weekends, and the screen times of children of university-graduate fathers have also been found to be significantly lower. These findings are consistent with the prospective cohort study of Trinh et al.[17]. Education level of parents may increase the awareness regarding screen use and compliance with the guidelines. Barkin et al. reported that active parental guidance is associated with "increase in knowledge that media exposure can affect the behavior of children aged between 2 and 5 years"[23]. Furthermore, children's screen times on weekdays reduced as the family's economic situation improved, but this was not statistically significant. In general, studies have shown that screen times (usually television) were higher in families with low socioeconomic levels, and this may be associated with environmental factors related with the economic situation (access to media sources and/or outdoor activities, perceived safety in the neighborhoods, etc.)[18,24-26].

The presence of rules set by parents about screen use reduces screen time[18,27,28]. In the present study, children of parents who had screen rules (88.9%) had lower screen times, which is consistent with the literature. In addition, children with a screen of their own (44.4%) had a higher screen time; this difference was significant for weekends. In some studies, it was not investigated whether the child has a screen of his/her own, but whether there is a television in his/her room, and it has been found in these studies that the presence of a screen in the child's bedroom significantly increased screen time[27,29,30,31]. Children of parents who think that their child's screen time is appropriate had significantly lower screen times than those whose parents do not think so both on weekdays and weekends. However, daily screen times of children in both groups were >2 h. This, it is clear that this situation also needs to be evaluated qualitatively (content, parental involvement, etc.). Indeed, a study by Altun (2019) with 628 preschool children and their parents found that although 44.6% children use information and communication technologies every day, only 6% of them use educational applications and programs[15].

In the present study, a positive and moderate relationship was observed between the screen times of the child and parents, a positive and moderate-very good relationship between screen times of the child and parents on weekdays and weekends, and moderate and good relationship between screen times of the mother and father. An increase in screen time in parents is associated with an increase in screen time in children[27,32]. It has been emphasized that parents being role models for watching television is more effective than just setting screen rules for children[25]. Further, mother's healthy life activities are more effective in children, whereas when both parents were involved in sedentary life activities, they were found to be equally modeled[33].

Family function is a concept that describes the patterns of interaction between the members of a family. In particular, it explains how family members manage their daily routines, how they perform their roles in the family, and how they communicate and connect emotionally. When family functions are considered in terms of screen use, the importance of parents' control of their child's screen use for content and time as well as screen times during which parents and children interact, play, participate, and watch together has been emphasized. Accordingly, there was a weak but significant relationship between the

communication sub-dimension of family functions and the screen time of the child in the present study. In addition, weak but significant relationships were observed between the mother's screen time and problem solving, communication, roles, and behavior control subscales as well as between the father's screen time and communication and general function subscales. We found no other study that has investigated the relationship between family functions and screen times of children aged 4–6 years. In a study with 101,672 parents who had children aged 6–17 years, Loprinzi (2015) reported that "youth are more active and engaged in less sedentary behavior if their family has greater family functioning" and suggested that "physical activity promotion and sedentary-reducing programs may wish to integrate components that aim to foster improvements in family functioning"[34].

The proportion of those who reported that the pediatrician or family physician did not provide any suggestion regarding screen use of the child was found to be 90.9% in the present study. Children of parents who received a doctor's recommendation regarding screen use had lower screen times on weekdays and weekends than the children of those who had not received any recommendation. This reveals the need for physicians to give counseling to families on this issue. Other studies have reported that only 16% pediatricians asked families about social media use, whereas 29% families considered the recommendations given by pediatricians[1,35]. Another recent study reported that "Compared with 2006, in 2017, pediatricians were more likely to discuss family behaviors related to screen time"[36]. Lavigne et al. conducted a study to identify the unanswered research questions in pediatric preventive care that are most important to parents and clinicians and to explore how questions from parents and clinicians may differ. Parents were more likely to identify questions about screen time, media exposure, and environmental toxins than clinicians[37].

According to the accessible literature, this is one of the rare studies in which the relationship between screen use and family functions is evaluated and the first study in children aged 4–6 years. This study has some limitations. Firstly, the data are subjective because it is a survey. The questionnaires were collected through classroom teachers, so there were no face-to-face interviews with parents, and whenever there were incomprehensible issues about the questionnaires, the necessary explanations could not be obtained.

In conclusion, the results of the present study are consistent with the literature. Two results are significant in terms of the potential contribution to the literature. These include the relationship between screen times of children aged 4–6 years and the communication subscale of family functions and the finding that the children of parents who received a doctor's recommendation on screen use have lower screen times. Thus, it can be said that there is a need for individual and institutional initiatives for family physicians and pediatricians who have many contacts with parents of the 4–6 age group to integrate their potential to give counseling to families on screen use into their daily practice. In addition, the use of qualitative methods together with quantitative methods can provide more information in the future studies to be conducted on this subject.

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