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A Descriptive Epidemiology of Screen-Based Media Use among School Children in Turkey

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Abstract: The purpose of this study was to estimate the prevalence and amount of Television (TV) watching and computer use among primary schoolchildren. Our study group was composed of 318 children between the ages of 8 and 14 who attended a private school in Bursa, Turkey. The mean time spent on screen-based media was found to be 2.4 and 3.7 h/day on weekdays and weekends, respectively. About 65% of the time spent on computers was used for entertainment and games. This study showed that screen-based media are important for the children in our study group. On the other hand, among the activities that they performed together with their family members or friends, computers lost their importance. This commitment is not true for watching TV; hence, among family activities, it has still an enormous proportion.

Key words: Screen based media, computer use, TV watching

INTRODUCTION

Screen-based media continues to play a vital role for today's generation. Many studies have shown that the total amount of time children spend in front of a television or computer screen is increasing at the expense of other activities (Stefaneseu *et al*., 2005; Subrahmanyam *et al*., 2000; Livingstone, 2001; http://www.kkf.or; Rideout *et al*., 2005; Livingstone and Bober, 2005). A digital media culture has emerged that entertains, informs and connects children to one another. This virtual mall is a place where children go to socialize, communicate, do their homework, play, listen to music and follow popular trends.

US Census Bureau data indicate that between 1997 and 2003 the proportion of households with computers increased 1.7 times and the proportion of households with Internet access increased 2.9 times (U.S. Department of Commerce, 2004). According to the data, U.S. children and teenagers use computers and the Internet more than any other age group. Ninety percent of children between the ages of 5 and 17 use computers and 65-75% of 10-17 year olds use the Internet. Internet use is increasing for people regardless of income, education, age, races, ethnicity, or gender (U.S. Department of Commerce, 2002).

In the UK, 71% of children aged 9-19 have a computer and 75% have access to the Internet. Most are daily or weekly users and spend one hour to one and half hours daily online (Livingsrom and Bober, 2006).

A systematic review of 90 studies published in English journals between 1949 and 2004 suggests that contemporary youth watch on average 1.8-2.8 h of TV per day depending on age and gender (Marshall *et al*., 2006). WHO's Health Behaviour in School-aged Children (HBSC) study showed that more than a quarter of all respondents (26%) report high levels of television use on each weekday; this rises to 45% at weekends (WHO, 2004).

These and many other studies show that today's children and adolescents live in a new, massive and complex virtual universe, even as they carry on their lives in the real world. Studies have also revealed that screen-based media constitute a significant part of young people's leisure time in many countries and regions. However, many of the studies about the prevalence and amount of use are from developed European and North American countries. Whether the youth of developing countries show the same tendencies is not well-known.

A developing country, Turkey became familiar with TV at the beginning of the 1970s. The first personal computers came on the market in 1986. The Internet became a part of daily life at the beginning of the 1990s.

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Today, 96% of Turkish households have a TV receiver and there are about 45 personal computers and 78 Internet users per 1000 people in the whole country (The World Bank, 2006). Owning a personal computer and access to the Internet rises to 99 and 133 for the upper-middle income group, respectively. The percentage of schools connected to the Internet is about 40% and for upper-middle income group, 60% (The World Bank, 2006).

Few studies have been conducted in Turkey about the prevalence and amount of the use of screen-based media among school children. According to a study by the Turkish Radio Television Supervisory Council, the average daily TV watching time for the entire population is about 4 h. A study among schoolchildren revealed that children watch TV 2.1±1.2 h during the weekdays and 3.4±2.1 h at the weekends (Toyran *et al*., 2002). Another study among 1510 children between 6 and 17 years of age showed that 50.7% of children watched TV for 3-4 h daily (Simsek *et al*., 2005).

In this study, we wanted to assess the prevalence and amount of the use of screen-based media among upper-middle-class primary schoolchildren. In our study, the term screen-based media refers to TV and computers.

MATERIALS AND METHODS

This is a cross-sectional and descriptive study. We invited primary schoolchildren (grades 2-8) to participate in our survey about "use of screen-based media." All of the participants were students at a private primary school located in Bursa, Turkey. The study protocol was approved by the school-parent committee of the eligible private school. A confidential student survey was administered during class time by the classroom teachers during March-April 2006. Of a total of 350 students from grades 2 through 8, 318 participated; 32 students were absent (the average participation rate by the school was 91.4%). All first-grade students were excluded from the survey because they were not able to read and write. Use of screen-based media was assessed by self-report responses written on the printed questionnaire*.

All the answers were classified and coded by the researchers S.S and M.B. and data input was done by using an IBM compatible personal computer. For statistical analysis, SPSS Version 9.0 was used. Additional information regarding the socio-economic characteristics of the families was gathered from the school's official records.

***Questionnarie:**

Check all the appropriate boxes:
I am a ☐boy ☐girl
My grade is ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8
My age is ☐8 ☐9 ☐10 ☐11 ☐12 ☐13 ☐14
I have a TV in my bedroom: ☐yes ☐ no (pleavse indicate where the TV is:.....)
I have a computer in my bedroom: ☐ yes ☐no (please indicate where the computer is.....)
I have Internet access in my bedroom: ☐yes ☐ no (please indicate where the internet access is.....)
How much time do you spend watching TV? (broadcast, DVD and VCD)
Weekdays: .....hours.....minutes daily
Weekends: hours.....minutes daily
How much time do you spend using a computer (Internet and games included)?
Weekdays: .....hours.....minutes daily
Weekends: hours.....minutes daily
Take the time that you spend using a computer into account and answer the following questions:
How much time do you spend on finding information? .....hours.....minutes daily
How much time do you spend on entertainment (games, chatting, just surfing the Internet, etc.) .....hours.....minutes daily
Tell us about the most performed 3 activities when you are together with your family.
1-.....
2-.....
3-.....
Tell us about the most performed 3 activities when you are together with your friends.
1-.....
2-.....
3-.....
How many times a week do you play sports (playing baseball, football, gym, swimming, biking, etc.)?
.....hours.....minutes weekly
Are you using MSN?.....
If yes, what is the purpose?.....
What do you feel when you play video and computer games?
.....
Please fill in the blank:
Without computers, my life would be.....

RESULTS

Of the 318 participants, 53.1% were boys and 46.9% were girls. All have at least one TV, a computer and Internet access at their homes. All participants were members of upper-middle-class families and both parents had at least a high school education. None of the participants had a TV in their bedroom. Most of the TV sets were located in the living room. About 95% of the participants had a personal computer in their bedrooms with access to the Internet. For the remaining 5%, the computer and access to the Internet were elsewhere in the home. The distribution of the study group according to age and gender is shown in Table 1.

The mean TV watching time was 1.3 ±0.05 h day^{-1} on weekdays and 2.0±0.07 h day^{-1} on weekends. For computer use, these means were 1.06±0.05 and 1.7±0.06 h day^{-1}, respectively. Table 2 shows the mean TV watching and computer use time on weekends and weekdays for the study group broken down by gender.

We found no statistical significant difference between boys and girls in regard to the time spent on screen-based media. Table 3 shows the percentage distribution of the study group according to the AAP (American Academy of Pediatricians) TV viewing criteria. On weekdays, only 2.9% of the study group were in the high viewers category, but on weekends, this percentage increased to 11.2%.

We found no statistical significant difference among age and mean TV watching time for both weekdays and weekends. On the other hand, there was a significant difference among age and mean time spent on computer use both on weekdays and weekends. The results are shown in Table 4. As shown in Table 4, with the children's age increased, the mean time spent on computers increased both on weekdays and weekends.

The mean time spent on computers for playing games was 1.12±0.08 h day^{-1} for boys and 0.9±0.07 for girls. Boys spent more time on computer games than girls (t-test = 2.134, p = 0.03). We found no statistically

Table 1: Distribution of the study group by age and gender

	Boys		Girls		Total	
Age	N	(%)	N	(%)	N	(%)
8	30	17.8	28	18.8	58	18.2
9	23	13.6	29	19.5	52	16.4
10	30	17.8	16	10.7	46	14.5
11	19	11.2	15	10.1	34	10.7
12	27	16.0	16	10.7	43	13.5
13	15	8.9	23	15.4	38	11.9
14	25	14.8	22	14.8	47	14.8
Total	169	100.0	149	100.0	318	100.0

Table 2: Distribution of the study group by gender and according to the time spent on screen-based media usage (h day^{-1})

Type of screen -based media	Gender	Days	h day^{-1} Mean±SE	Test and significance	95% Confidence Interval of the difference Lower	Upper
TV	Boys	Weekdays	1.3±0.007	t = -0.511		
	Girls		1.3±0.007	p = 0.610	-0.2532	0.1489
	Boys	Weekends	2.0±1.022	t = 0.464		
	Girls		1.9±0.009	p = 0.643	-0.2127	0.3440
	Both	Weekdays	1.3±0.05	F = 15.863		
	sexes	Weekends	2.0±0.07	p = 0.0001		
Computer	Boys	Weekdays	1.1±0.007	t = 0.322		
			1.0±0.007	p = 0.748	-0.1693	0.2356
	Girls	Weekends	1.8±0.009	t = 1.957		
	Boys		1.6±0.009	p = 0.510	-0.0015	0.5355
	Both	Weekdays	1.1±0.05	F = 10.251		
	sexes	Weekends	1.7±0.06	p = 0.0001		
TV+Computer	Boys	Weekdays	2.4 ± 0.115	t = -0.114		
	Girls		2.3 ± 0.119	p = 0.909	-0.3475	0.3094
	Boys	Weekends	3.9 ± 0.167	t = 1.431		
	Girls		3.6 ± 0.158	p = 0.153	-0.1247	0.7902
	Both	Weekdays	2.4±0.08	F = 7.941		
	sexes	Weekends	3.7±0.1	p = 0.0001		

Table 3: Distribution of the study group regarding the AAP TV viewing criteria

		Weekdays		Weekends	
Screen-based media	Viewing criteria	N	(%)	N	(%)
TV	≤2 h day^{-1}	284	89.3	230	72.3
	More than 2 h day^{-1}	34	10.7	88	27.7
Computer	≤2 h day^{-1}	292	91.8	253	79.6
	More than 2 h day^{-1}	26	8.2	65	20.4
TV + Computer	≤2 h day^{-1}	189	59.4	82	25.8
	More than 2 h day^{-1}	129	40.6	236	74.2

Table 4: Students' ages and time spent on screen-based media

Type of media	Days	Time(h day^{-1}) spent on screen-based medIa (Mean ± SE) Age 8 N = 58	Age 9 N = 52	Age 10 N = 46	Age 11 N = 34	Age 12 N = 43	Age 13 N = 38	Age 14 N = 47	Kruskall Wallis test	p
TV	weekdays	1.5±0.1	1.3±0.1	1.2±0.1	1.3±0.2	1.2±0.1	1.5±0.1	1.0±0.09	11.113	0.085
	weekends	1.9±0.2	1.7±0.1	1.9±0.1	2.3±0.2	2.5±0.3	2.1±0.2	1.9±0.1	12.608	0.050
Computer	weekdays	1.0±0.07	1.1±0.1	1.1±0.2	1.0±0.2	1.1±0.2	1.5±0.1	0.8±0.1	23.789	0.001
	weekends	1.3±0.1	1.5±0.1	1.7±0.2	1.7±0.2	2.2±0.3	2.1±0.2	1.7±0.1	20.075	0.003
TV+	weekdays	2.5±0.2	2.4±0.2	2.3±0.2	2.4±0.3	2.3±0.3	2.9±0.2	1.7 ±0.2	23.979	0.001
Computer	weekends	3.2±0.2	3.2±0.2	3.7±0.3	4.0±0.4	4.7±0.5	4.2±0.3	3.6± 0.2	16.774	0.01

Table 5: Purpose of computer use and time spent according to age and gender

Age	Time h day^{-1} Playing games	Finding information
8	0.7±0.07	0.7±0.07
9	0.8±0.1	0.6±0.05
10	1.0±0.1	0.8±0.09
11	0.9±0.1	0.8±0.1
12	1.3±0.3	0.9±0.1
13	1.3±0.2	0.8±0.09
14	1.1±0.1	0.7±0.08
Kruskall-Wallis test of significance	12.678	9.364
p	0.048	0.154
Gender		
Boys	1.1±0.08	0.7±0.6
Girls	0.8±0.07	0.7±0.6
Student t test	2.134	-0.657
p	0.034	0.512

Table 6: Activities done together with family members and friends (as % of activities)

Activity	Family	Friends
Watching TV and or DVD-VCD	21.3	3.6
Having a meal	12.2	1.9
Playing (indoor and outdoor games)	10.5	27.9
Playing ball	2.0	9.4
Talking to each other	21.8	24.3
Sightseeing	12.5	12.0
Using computers	4.2	7.9
Shopping	3.6	0.7
Listening to music, having fun, dancing	4.9	5.8
Reading books	2.8	-
Doing homework	2.9	6.5
Cleaning up the house	1.3	-

significant difference for the mean time spent on computers for finding information between boys and girls (boys: 0.7±0.04; girls: 0.8±0.05; p = 0.5). The mean time spent on computer games increased as the children's age increased and the difference was statistically significant. No significant difference was found between different ages when the children used computers to find information (Table 5). The most popular activities done together with their families and their friends are shown in Table 6.

Talking, watching TV and sightseeing were the three most popular activities performed together with their families. Those performed together with friends were playing indoor and outdoor games, talking and sightseeing. The mean time spent on sport activities was found to be 4.3±0.3 h/week for boys and 3.0±0.2 h/week for girls.

Table 7: Feelings that come from playing pc games

Feelings	% Students (N = 289)
Action- Adventure- Excitement	24.3
Fear	4.5
Entertainment- Happiness-Relaxation	71.1
Sadness-Distress-Stress	4.7
Effort-Greed	5.0
Protection	1.3
Creativity-Desire to learn	6.5
Violence- Hate	4.6
Satisfaction-Success- Glory	3.4

Table 8: Distribution of students according to their answers to the question: "What would it be like if there were no computers?"

If there were no computers . . .	% Students (N = 318)
We would be more healthy, happy and successful	5.8
Communication would be difficult	28.7
Life would be boring and we would be unhappy	29.4
We could not find information easily	15.2
There would be no PC games	2.6
We would use typewriters instead of PCs	0.3
We would spend time on other activities	3.0
Nothing would change	11.3

Seventy percent of the students used MSN. MSN (or Microsoft Network) is an Internet service provider and web portal (initially meant to be a parallel net to the Internet) created by Microsoft on August 24, 1995. The word "MSN" has come to be synonymous with MSN Messenger in Internet slang. MSN has since been extended to Microsoft's Hotmail web mail service and MSN Messenger instant messaging client, as well as other Microsoft-branded websites (http://en.wikipedia.org/wiki/MSN.). Among MSN users, 22.4% used this service for communication and 77.6% used the service for entertainment.

Eight boys and 21 girls said that they had never played PC games. The students' feelings about PC games are shown in Table 7. Seventy-one percent of students admitted that PC games are entertaining, give them happiness and provide relaxation.

The answers to the question, "What would be if there were no computers?" are shown in Table 8. The most popular answers were the following: life would be boring (29.4%); communication would be difficult (28.7%) and we could not find information easily (15.2%). Only 5.8%

mentioned that they would be more healthy, happy and successful and 11.3% admitted that nothing would change.

DISCUSSION

The American Academy of Pediatrics recommends that children older than 2 should watch no more than 1-2 h of quality TV and videos a day and that children under the age of 2 should watch no screen time (AAP, 2001). 40.6% of our study group spent more than 2 h daily on screen-based media on weekdays and this percentage increased nearly twofold on weekends. The mean time spent on screen-based media was 2.4±0.08 h day^{-1} on weekdays and 3.7±0.1 h day^{-1} on weekends. About 1.3±0.05 h day^{-1} and 2.01± 0.07 h day^{-1} of this time was spent watching TV on weekdays and weekends, respectively. This suggests that the time spent watching TV was a little bit more than the time spent on computers both on weekdays and weekends. The research suggests that 8-18 year-old children and adolescents are watching TV nearly 4 h day^{-1} and using computers and playing games nearly 2 h day^{-1} (Rideout *et al*., 2005). The HBSC (Health Behaviour in School Aged Children) study revealed that more than a quarter of all schoolchildren across Europe spend 4 h/weekday or more on TV and this rises to 49% on weekends (WHO, 2004). The same study showed that high levels of computer use (3 h day^{-1} or more) was seen among 20% of children and is greater at weekends than on weekdays (WHO, 2004). Our study showed that school-aged children spend more time on screen-based media on weekends than on weekdays; the same result was also shown in other studies (http://www.kkf.org; Rideout *et al*., 2005; Livingstone and Bober, 2006; Marshall *et al*., 2006; WHO, 2004). One study showed that 31% of Turkish children spent at least 4 h a day watching TV during weekday and 71.7% during the weekend (Tuncer and Yalcin, 1999). Another study about obesity prevalence in a primary school and a high school in Ankara, Turkey, showed that 16.9% of obese children were watching TV 1-2 h day^{-1} and 32.4% were watching 5 h day^{-1} or more (Simsek *et al*., 2005). A study performed among second- and third-grade children in 2 different socioeconomic primary schools showed that during weekdays children watched TV 2.1±1.2 h day^{-1} and during weekends 3.4± 2.1 h day^{-1} (Toyran *et al*., 2002). Our study found that TV watching time was lower than the time found by other studies conducted in Turkey (Toyran *et al*., 2002; Simsek *et al*., 2005; Tuncer and Yalcin, 1999).

The mean time spent on TV watching and computer use was slightly higher for boys both on weekends and weekdays, but we found no significant difference according to gender (Table 2). The HBSC study showed that in the majority of countries across Europe slightly more boys than girls reported high television use, but the absolute gender difference rarely exceeded 10% (WHO, 2004). A study in South Africa found no gender differences regarding computer attitudes of primary schoolchildren (Bovee *et al*., 2006). The Kaiser Family Foundation study found that in the USA boys spent more than twice as much time playing video games as girls (Rideout *et al*., 2006). A systematic review found no differences by gender for TV viewing, but a gender effect for the amount of video game playing with boys playing longer than girls (Marshall *et al*., 2006). We also found that boys spent more time on computer games than girls.

We did not found a significant difference among students' age and mean TV watching time both on weekdays and weekends (Table 4). But, for computer use, there was a difference and with increasing age, the mean time of computer use increased both on weekdays and weekends, except for the 14 year olds, the 8th grade students. This decrease might be because the high school entrance exams, which are compulsory in Turkey. A recent study mentioned that TV viewing peaked at around 9-12 years of age and found age-related differences to be statistically insignificant (Marshall *et al*., 2006).

In our study, the most performed activities together with family members were talking to each other, watching TV and sightseeing, respectively. The Kaiser Family Foundation study found that watching TV with parents increased from 5% of total watching time in 1999 to 32% in 2004 (Rideout *et al*., 2006). These findings suggest that watching TV is an important activity that is performed together with families.

Nearly one third of our study group mentioned that life would be boring and they would feel themselves unhappy if there were no computers. Similar results were obtained from other studies and children commented that computers provide them with entertainment, a tool for accomplishing a goal and a vehicle leading toward present and future competence, autonomy and empowerment (http://www.futureofchildren.org).

CONCLUSION

The mean time spent on screen-based media was found to be lower than the time found in studies in Europe and USA. Increase in the use of screen-based media on weekends was significant and similar to other studies. TV watching was found to be the most popular screen-based media and also among frequently performed activities within families. We found no difference between

boys and girls in the use of screen-based media, but there were differences between different ages and increased with age until age of 14. Computer use for playing games was more frequent among boys and older children. Students pointed out that if there were no computers life would be boring, communication would be difficult and knowledge could not be easily found. Only 11.3% mentioned that nothing would change. These opinions suggested that computers have an important place in their lives.

LIMITATIONS

Our study group did not represent all the Turkish children aged 8-14 years of age. This study was performed in only one private school with students from upper-middle-class families. The results would be different if the study had been conducted in public schools and among students with lower socio-economic status.

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