

# Comparison of screen time and digital gaming habits of Turkish children before and during the coronavirus disease 2019 pandemic

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## What is already known on this topic?

*Technological advances have not only affected many things in our lives but also changed children's play habits. Today, screen time and digital game habits, which replace the street games of children, are increasing day by day.*

## What this study adds on this topic?

*During the coronavirus disease 2019 pandemic, it was observed that the screen and digital gaming times of Turkish children increased compared with before the pandemic.*

## ABSTRACT

**Objective:** The aim of this study is to compare the screen time and digital gaming habits of Turkish children before and during the coronavirus disease 2019 (COVID-19) pandemic.

**Material and Methods:** This cross-sectional descriptive study was carried out in a university hospital between May 7, 2020 and June 27, 2020. Healthy children aged 3–10 years who applied to the pediatrics clinics for outpatient care were included in the study. A structured survey was applied to the parents who agreed to participate.

**Results:** A total of 253 children were included in the study. It was found that the ratio of children with screen time of  $\geq 1$  hour during the pandemic was significantly higher than before the pandemic ( $p < 0.001$ ). It was determined that the ratio of children watching both adult and children's programs increased during the pandemic ( $p < 0.001$ ). The ratio of children playing digital games during the pandemic was also found to be increased significantly compared with that before the pandemic ( $p < 0.001$ ).

**Conclusion:** This study demonstrated that screen and digital gaming time increased independently of sociodemographic characteristics during the COVID-19 pandemic compared with before the pandemic.

**Keywords:** Children, coronavirus disease 2019, digital game, pandemic, screen time

## Introduction

Coronavirus disease 2019 (COVID-19) started as a viral outbreak in Wuhan city of Hubei province in China in December 2019 (1). This viral epidemic, which later spread to many countries of the world and was reported in 114 countries, was declared as a pandemic by the World Health Organization (WHO) on March 11, 2020 (2). The cause of this pandemic is a new strain from the coronavirus family and is named as 2019 new coronavirus, severe acute respiratory syndrome coronavirus 2, or COVID-19 (3). In Turkey, the first case was diagnosed at a slightly later date than other European countries, on March 11, 2020. From this date in Turkey, as a result of measures against a national pandemic taken by scientific committee, schools and nurseries were closed on March 12, and a curfew was implemented for those under the age of 20 on April 3 (4).

Children were reported to be more likely to become infected with the new coronavirus but less likely to develop serious symptoms (5). Although this new viral epidemic affects children less physically, it is emphasized that children are at risk in terms of the psychological and social effects of the pandemic. It was reported that children faced negative experiences such as fear, uncertainty, physical and social isolation, and school kidnapping because of the COVID-19 outbreak. Fear of asking questions about the epidemic, concerns about rel-

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atives' health, sleep problems such as nightmares, excessive indulgence, and separation problems are seen as the main psychological problems that children experience in this difficult period (6).

According to the estimates of the United Nations Educational, Scientific and Cultural Research Organization, 1.38 billion children cannot attend school or daycare, cannot participate in group activities or team games, and cannot access playgrounds because of the pandemic (7, 8). During the pandemic, the end of which is unclear, some parents continue to work remotely while giving care to their children. For many individuals, it has been reported that it is difficult to keep children busy and safe at home, and this difficulty increases even more in crowded and low socioeconomic households (9).

Table 1. Sociodemographic characteristics of children	
Characteristics	n (%) (N=253)
<b>Age</b>	
≤5 years	92 (36.4)
>5 years	161 (63.6)
<b>Gender</b>	
Female	119 (47.0)
Male	134 (53.0)
<b>Maternal age</b>	
<35 years	115 (45.5)
≥35 years	138 (54.5)
<b>Paternal age</b>	
<35 years	65 (25.7)
≥35 years	188 (74.3)
<b>Maternal education</b>	
<High school	38 (15.0)
≥High school	215 (85.0)
<b>Paternal education</b>	
<High school	30 (11.9)
≥High school	223 (88.1)
<b>Residence</b>	
Province	212 (83.8)
District	41 (16.2)
<b>Family type</b>	
Nuclear	220 (86.9)
Extended	33 (13.1)
<b>Number of children</b>	
1	53 (20.9)
≥2	200 (79.1)
<b>Maternal occupation during pandemic</b>	
Going to work	41 (16.2)
Working at home because of flexible work schedule	43 (17.0)
No	169 (66.8)
<b>Paternal occupation during pandemic</b>	
Going to work	149 (58.9)
Working at home because of flexible work schedule	48 (19.0)
No	56 (22.1)
<b>Caregiver during pandemic</b>	
Parents	223 (88.1)
Relatives	24 (9.5)
Nursemaid	6 (2.4)

Although technological developments affect many things in our lives, children's play habits have also evolved toward digital games (10). A wide variety of screens such as televisions, smartphones, and tablets have come to dominate the leisure time of many children (11). For today's children who do not know traditional games, whose schools are closed, and who have to stay at home because of the lockdown, another risk associated with pandemics may be an increase in screen time and digital gaming habits. Considering the various difficulties that parents experience while caring for their children in these unusual days, parents' behavior in limiting the screen exposure of their children may also change. Sharing these concerns, the American Academy of Pediatrics (AAP) has published new recommendations on media habits for children and teenagers during the COVID-19 pandemic, limiting screen entertainment and setting a structured daily routine. Although more allowances for screen entertainment during the COVID-19 crisis are often justified, it was also suggested that screen time should not cover most of the waking hours of any child or hinder sleep because of this indulgence (12).

Although the concerns and observations are that screen time and digital gaming habits change during the pandemic period, as far as we know, there is no study investigating this prediction in the literature. There is a need for scientific data to form the basis for public health measures to be taken in this regard. Therefore, the purpose of this study is to compare Turkish children's screen time and digital gaming habits before and during the COVID-19 outbreak.

## Material and Methods

### Study design

This cross-sectional descriptive study was carried out in a university hospital between May 7, 2020 and June 27, 2020. Healthy children aged 3–10 years who applied to the pediatrics clinics for outpatient care were included in the study. Children having a history of chronic physical and psychiatric illness were excluded. Permission to carry out the study was approved by Afyonkarahisar University of Health Sciences local ethics committee (Project no: 2011-KAEK-2). All study procedures were performed in accordance with the Declaration of Helsinki.

### Data collection

Parents of children who were waiting in the waiting room before the examination and whose children met the criteria for participation in the study were informed about the content and purpose of the study. Consent was obtained from the participants who agreed to participate in the study. A structured survey was then applied to the parents, and the surveys were collected during the examination. Counseling was provided at the points where problems were detected and monitoring was planned.

### Structured survey

The structured paper survey consisted of 31 questions that were fulfilled by the parents. With this survey, the sociodemographic characteristics, daily screen times (except for the daily time required for online education) and digital gaming habits before and during the pandemic, whether parents set rules for these habits and the compliance of children with these rules before and during the pandemic, and the reasons for difficulties that parents experience in this regard were questioned.

Characteristics	Before pandemic (%)	During pandemic (%)	p	$\chi^2$
<b>Child's daily ST</b>				
≥1 hours	57.7	88.9	<0.001	73.423
<b>Type of TV program the child watches</b>				
Both children's and adult's TV programs	37.2	52.2	<0.001	26.740
<b>Parental limitation for ST</b>				
Yes	72.4	75.0	<0.001	31.225
<b>Child's compliance with limitation for ST<sup>b</sup></b>				
Yes	88.4	71.2	<0.001	21.355
<b>Child's presence of DG habit</b>				
Yes	67.6	79.4	<0.001	23.684
<b>Child's daily DG time</b>				
≥1 hours	24.6	53.3	<0.001	42.666
<b>Parental limitation for DG time<sup>c</sup></b>				
Yes	94.6	84.4	<0.001	12.565
<b>Child's compliance with limitation for DG time<sup>b</sup></b>				
Yes	89.1	74.6	<0.001	15.384

DG: digital gaming; ST: screen time. <sup>a</sup>McNemar's test was used to compare the two dependent groups. <sup>b</sup>Only the children whose mothers set limits both before and during pandemic were compared. <sup>c</sup>Only the children who played digital games both before and during pandemic were compared.

Reasons reported by mothers (N=253)	n (%)
Parents' inability to find enough activities for children because of curfew	144 (56.9)
Parents' inability to spare enough time for the child because of household chores	61 (24.1)
Parents' inability to deal with the child because of their extreme concerns about the pandemic	31 (12.3)
Child's inability to play alone	54 (21.3)
Child's inability to play because of having no peers	66 (26.1)
Child's tendency to take his brother or sister as an example in this regard	31 (12.3)
Parents' being more tolerant to their children because of the curfew	149 (58.9)
Parents' inability to intervene because they are at work	19 (7.5)
No idea	8 (3.1)

### Statistical analysis

Descriptive statistics for the whole sample were generated as follows: frequency for categorical variables; mean and standard deviation for continuous variables with normal distributions; and median with minimum (min) and maximum (max) values for continuous variables without normal distributions. McNemar's test was used to compare two dependent categorical variables. Statistical analysis was performed using the Statistical Package for the Social Sciences version 22.0 (IBM SPSS Corp.; Armonk, NY, USA) package program. Values of  $p < 0.05$  were considered as statistically significant.

### Results

A total of 253 children were included in the study. The mean age of participant children was  $6.3 \pm 1.4$  years (min, 3; max, 10). Of the participants, 92 (36.4%) were ≤5 years old and 119 (47.0%) were female. Sociodemographic characteristics of children are seen in Table 1.

Among the participants, there were no children with no screen exposure. When the screen time of children before and during the pandemic was compared, it was found that the ratio of children with screen time of ≥1 hour during the pandemic was significantly higher ( $p < 0.001$ ). It was also determined that the ratio of children watching both adult and children's programs increased during the pandemic ( $p < 0.001$ ). The ratio of children playing digital games during the pandemic also increased significantly compared with before the pandemic ( $p < 0.001$ ). Comparison of screen time and digital gaming characteristics of children before and during the pandemic are seen in Table 2.

When the relationship between the pre-pandemic screen time of children and their sociodemographic characteristics (child's age, child's gender, maternal and paternal age, maternal and paternal employment status, residence status, number of children at home) were examined, no significant difference was found ( $p > 0.05$ ). There was also no significant difference between the pre-pandemic digital gaming habits of children and their sociodemographic characteristics ( $p > 0.05$ ). Similarly, during the pandemic period, no significant difference was detected between screen time and digital gaming habits of children and their sociodemographic characteristics ( $p > 0.05$ ).

Table 3 shows the mothers' views on the reasons for the increase in both screen time and digital gaming of children during the pandemic. The most common reason reported by mothers, at 58.9%, was that parents were more tolerant of their children because of the curfew. The second most frequent reason reported by mothers, at 56.9%, was that parents were unable to find adequate activities for children because of the lockdown.

### Discussion

The COVID-19 pandemic has been reported to create a potential risk for higher overall screen time among children and adolescents worldwide because of social isolation sanctions, such as school closings and obligations to stay home (13). In her article, Wiederhold reported that the screen time of chil-

dren doubled during the pandemic and emphasized that the recommendations regarding screen time restrictions for the pandemic are not clear. Even AAP, which has strict limits on screen time for younger children, has suggested rethinking screen time rules during the pandemic (14). This study, as far as we know, is the first study to examine the change in screen time and digital gaming habits during the pandemic of Turkish children facing social isolation. It was demonstrated that the ratio of children with higher screen time and watching adult TV programs increased during pandemic lockdown. It was also determined that the ratio of children playing digital games during the pandemic increased compared with that before the pandemic.

Digital media, which are indispensable for online education during the pandemic, are also the only way for children to contact their peers and friends (13). However, using screens more than necessary may cause mental health problems such as poor sleep, depression, and anxiety (15). Although screen time is traditionally an example of sedentary behavior, WHO reported that screen time can be used to promote physical activity, such as online physical activity classes (13, 15, 16). It is obvious that children who are unfamiliar with traditional games and who lost their chances of outdoor games during the pandemic are at risk of the negative effects of digital media. International and national action plans are needed to reduce the negative impact of digital exposure.

This study showed that the two most common reasons reported by mothers for the increase in both screen time and digital gaming during the pandemic were that parents were more tolerant of their children because of the curfew and they were unable to find adequate activities for children. Parents who are desperate in this matter should be supported with action plans created by the experts in this subject. It may be an appropriate action plan for the Ministry of Education to support parents by establishing a scientific committee on this issue.

Another situation caused by pandemics worldwide is flexible working (17). Although flexible working gives parents the chance to spend more time with their children, this study showed that parents at home may face various obstacles. For instance, some mothers reported that they are unable to spare enough time for their child because of household chores. Some also reported that they are unable to deal with their child because of their extreme concerns about the pandemic. Although there is not much to do for the first one, the amount of quality time that parents can devote to their children can be increased by measures that can be taken to relieve the parents' concerns about the pandemic. Özdin et al. (18) evaluated the levels of anxiety and health anxiety in Turkish society during the COVID-19 pandemic and suggested that the groups most psychologically affected by the COVID-19 pandemic are women. Although Turkish mothers are under the responsibility of household chores, they also experience intense pandemic anxiety. While this is the case, it should be noted that mothers facing the responsibility of spending valuable time with their children need help. The mother and child couple need accurate, effective, and realistic measures to overcome the pandemic period in a psychologically healthy way.

In conclusion, this study determined that screen and digital game time increased during the pandemic compared with before the pandemic, regardless of sociodemographic features. Efforts to minimize the harm to children caused by the pandemic, the end of which is uncertain, are an important responsibility of both national and international organizations. One of the precautions to be taken for extreme screen time and digital gaming of children should be to raise the awareness of parents and support them in this regard.

**Ethical Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Afyonkarahisar University of Health Sciences (Project no: 2011-KAEK-2).

**Informed Consent:** Written informed consent was obtained from all participants who participated in this study.

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