

## A Nationwide Survey on the Daily Screen Time of Iranian Children and Adolescents: The CASPIAN - IV Study

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**Date of Submission:** Sep 10, 2013

**Date of Acceptance:** Dec 17, 2013

**How to cite this article:** Jari M, Qorbani M, Motlagh ME, Heshmat R, Ardalan G, Kelishadi R. A nationwide survey on the daily screen time of Iranian children and adolescents: The CASPIAN - IV study. *Int J Prev Med* 2014;5:224-9.

### ABSTRACT

**Background:** Leisure time activity is an important life-style habit. This study aims to determine the screen time of a nationally representative sample of Iranian children and adolescents.

**Methods:** This nationwide cross-sectional study was conducted as part of the fourth survey of a surveillance system. The participants consisted of 14880 students, with aged range from 6 to 18 years, living in 30 provinces in Iran. Screen time, i.e. the time spent on watching television (TV)/video and computer games during leisure time, was assessed by using the questionnaire of the Global Student Health Survey of the World Health Organization.

**Results:** The study participants were 13486 school students (participation rate of 90.6%) with a mean age of 12.47 (3.36) years. Overall, 75.6% of students were from urban and 24.4% from rural areas and 50.8% were boys respectively. Overall, 33.4% and 53% of students watched TV/video more than 2 h a day in their leisure time during school days and holidays, respectively. Likewise, 6.3% and 10.9% of students used computer more than 2 h a day in their leisure time during the school days and holidays, respectively. Overall, 47.1% of urban students and 24.2% of rural students used personal computer in their leisure time during the school days. The corresponding figures were 50.8% and 27.2% in weekends and holidays, respectively.

**Conclusions:** The time spent on screen activities is long in a considerably high number of Iranian children and adolescents. It should be reduced by increasing the public awareness and by providing facilities for regular daily physic activity for students' leisure times.

**Keywords:** Children and adolescents, computer, Iran, television watching

### INTRODUCTION

Children and adolescents compose a large part of population and establishment of their healthy life-style habits has a main role in the development and advancement of societies. The leisure time physical activity is one of the important issues in this regard. The screen time, consisting of the time spent on

watching television (TV) and computer games, is one of the main leisure time habits of children and adolescents all around the world.

Day by day, the number of TV channels and programs and in turn the number of children and adolescents watching them are increasing. The long time spent on watching TV is one of the major causes of the sedentary life-style and related health consequences as excess weight.<sup>[1-3]</sup> Similar to many other developing countries, Iran is facing an epidemiological transition and changes in life-style habits as sedentary leisure time activities. Some previous studies among Iranian school students have reported that more than half of them prefer watching TV rather than playing out and doing after-school physical activities; more than 80% of them watched TV 1 h/day and about 25% of them watched it more than 4 h daily.<sup>[4,5]</sup> Watching TV has many benefits such as reinforcement of learning power, increase of public information level, reinforcement of social behaviors and relation with others, development of brain power, imagination, recreation etc. however it can have many negative effects, as well.<sup>[6]</sup> Many of studies have confirmed the relationship of watching TV or video for more than 2 h a day with excess weight gain.<sup>[5,7-14]</sup>

Given the escalating trend of childhood obesity and its health consequences,<sup>[14,15]</sup> more attention shall be paid to the time spent on TV watching. Moreover, children eat high-calorie snacks while watching TV.<sup>[4,13]</sup> The long time spent on watching TV can also lead to the development of behavior disorders in children and adolescents.<sup>[2,5,13,16,17]</sup>

By the appearance of computer and video-computer games in 1972 and improvement in quality and variety of games, this device has been used gradually by children and adolescents as the second entertainment after TV.<sup>[18,19]</sup> Although using computer and playing its games has some benefits like increase of mental and motion skills, learning and education, coordination between the eye and hand, strengthening of imagination and foresight etc., but may also have adverse effects such as a game or computer addiction, increase of violence and aggression etc.<sup>[19-23]</sup> By reducing physical activity, spending the leisure time activity on computer games can also lead to excess weight gain.<sup>[24]</sup>

With regard to increasing duration of the screen time and consequently its physical and mental effects, global and local health societies paid special attention to this issue.

Some previous studies have assessed the leisure time physical activity of children and adolescents,<sup>[12,13,25,26]</sup> but as the number of TV channels has increased and the use of personal computer (PC) is becoming more widespread, it is necessary to conduct more studies in this regard.

This study aims to determine the screen time of a nationally representative sample of Iranian children and adolescents.

## METHODS

This study was conducted as part of the fourth survey of the national school-based surveillance system entitled the “Childhood and Adolescence Surveillance and Prevention of Adult Non-communicable Disease” study. The questionnaire of the World Health Organization-Global Student Health Survey was used to determine the leisure time screen activities; i.e. the time spent on watching TV/video and on using computer. We have previously described the methodology of this study,<sup>[27]</sup> and here we report it in brief.

The study populations were students from elementary, intermediate and high-schools from rural and urban areas of Iran who were selected by multistage, cluster sampling method from 30 provinces of the country (48 clusters of 10 people in each province). Stratification was performed in each province according to location of residence (urban/rural) and school grade (elementary/intermediate/high school) proportional to size and with equal sex ratio; meaning that the number of boys and girls from each province were the same and the ratios in urban and rural areas were proportionate to the population of urban and rural students. In this way, the number of samples in rural/urban areas and in each school grade was divided proportionally to the population of students in each grade.

Cluster sampling with equal clusters was used in each province to reach the sample size of interest. The clusters were determined at the level of schools, containing 10 sample units (students and their parents) in each cluster.

The sample size was determined according to the cluster sampling method and to achieve a good estimate of the main risk factors of interest such as dietary behaviors, overweight and obesity

and physical inactivity. The maximum sample size which could give a good estimate of all risk factors of interest was selected. Thus, the sample size was calculated to be 480 subjects in each province.

**Statistical analysis**

Data were analyzed by using SPSS software version 16 (Chicago, IL. SPSS, Inc.). Findings of continuous and categorical variables are presented as frequency (percent) and mean (standard deviation [SD]) respectively.

**RESULTS**

The population of this nationwide survey was 13486 students (participation rate of 90.6%), aged 6-18 years. They consisted of 6640 girls (49.2%) and 6846 (50.8%) boys, with mean (SD) age of 12.47 (3.36) years, without significant difference among boys and girls (12.36 [3.40] vs. 12.58 [3.32] years, respectively,  $P > 0.05$ ). Overall, 75.6% of students were from urban and 24.4% from rural areas. Table 1 presents the demographic characteristics of students by gender, living area and education level.

According to the self-report of students regarding watching TV/video in their leisure time during school days, 3.9% of them did not watch TV, 33%, 29.2, 19% and 14.4 of them watched TV for 1, 2, 3 and >4 h, respectively. Overall, 33.4% of students watched TV/video more than 2 h a day in their leisure time during school days. Table 2 shows the results of the time spent on watching TV by students in their leisure time during school days and in holidays. During the weekends and holidays, 5.3% of students did not watch TV/video, whereas 17.6%, 24%, 22.6% and 30.4% of them watch it for 1, 2, 3 and >4 h, respectively. In weekends and holidays, 53% of students watched TV/video more than 2 h a day.

As you can be seen in in Table 3, 58.5% of students reported that they did not use PC in school days, 25.3% used it for 1 h, 8.3% for 2 h, 3.2% for 3 h and 3.1% for >4 h a day, respectively. Nearly 6.3% of students used PC more than 2 h a day in their leisure time during the school days. It also shows that 54.9% of students did not use PC in weekends and holidays, 20.6% used it for 1 h, 11.2% for 2 h, 5.6% for 3 h and 5.3% for >4 h a day. Nearly 10.9% of students used PC for more than 2 h a day in their leisure time in weekends and holidays. Overall, 47.1% of urban students and 24.2% of rural students

used PC in their leisure time during the school days. The corresponding figures were 50.8% and 27.2% in weekends and holidays, respectively.

**DISCUSSION**

This nationwide study showed that in general, a considerable part of the leisure time of Iranian children and adolescents is spent on screen-based activities. This finding is in line with previous studies in Iran<sup>[12,13]</sup> and some other countries,<sup>[5,11,28]</sup> in which the screen time of children and adolescents has been more than the recommended time of 2 h a day. However, in some other studies, as a study on Australian children, aged 4-12 years, the average time spent watching TV was within the recommended range.<sup>[29]</sup>

In line with some previous studies,<sup>[5,12,13,28-30]</sup> we did not document any difference between the time spent watching TV among boys and girls. However studies in some countries as Saudi Arabia<sup>[28]</sup> and Thailand<sup>[11]</sup> reported that girls have spent more time watching TV than boys. This difference can be due to differences in cultural and socio-economic issues, as well as differences in available leisure time activities for girls and boys outside home in different societies.

**Table 1:** Demographic characteristics of students by living area, gender and school level: The childhood and adolescence surveillance and prevention of adult non-communicable disease-IV study

Variables	Age groups <i>n</i> (%)			Total
	6-10 years	11-14 years	15-19 years	
Living area				
Urban	2881 (28.4)	3840 (34.1)	3826 (37.5)	10187 (100)
Rural	1468 (44.6)	1198 (36.4)	629 (19)	3295 (100)
Gender				
Boy	2301 (33.6)	2366 (34.6)	2175 (31.8)	6842 (99/8)
Girl	2048 (30.8)	2312 (34.8)	2280 (34.3)	6640 (100)
School level				
Elementary school	4325 (69.8)	1821 (29.4)	49 (0.8)	6195 (100)
Middle school	22 (0.6)	2834 (81.2)	635 (18.2)	3474 (100)
High school	2 (0.1)	23 (0.6)	3771 (99.3)	3796 (100)

**Table 2:** The time spent on watching TV/video by students in their leisure time during school days and holidays: The childhood and adolescence surveillance and prevention of adult non-communicable disease-IV study

Variables	Time spent watching TV n (%)					Total
	Not at all	About 1 h	About 2 h	About 3 h	4 h or more	
School days						
Living area						
Urban	376 (3.7)	3212 (31.5)	2997 (29.4)	2023 (19.9)	1543 (15.1)	1051 (99.6)
Rural	150 (4.6)	1245 (37.8)	938 (28.5)	535 (16.2)	396 (12)	3246 (99.1)
Gender						
Boy	255 (3.7)	2217 (32.4)	1994 (29.1)	1343 (19.6)	1002 (14.6)	6811 (99.5)
Girl	271 (4.1)	2240 (33.7)	1941 (29.2)	1215 (18.3)	937 (14.1)	6604 (99.5)
School level						
Elementary	205 (3.3)	2536 (41.9)	1808 (29.2)	949 (15.3)	633 (10.7)	6161 (99.4)
Secondary	119 (3.4)	979 (28)	1051 (30.1)	698 (20)	627 (18)	34 (99.5)
High school	202 (5.3)	942 (24.8)	1076 (28.3)	911 (24)	649 (17.1)	3780 (99.6)
Weekends/holidays						
Living area						
Urban	514 (5)	1764 (17.1)	2326 (22.8)	2347 (23)	3171 (31.1)	10104 (99.1)
Rural	198 (6)	608 (18.5)	877 (26.6)	647 (20.5)	896 (27.2)	3253 (98.7)
Gender						
Boy	383 (5.6)	1252 (88.3)	1592 (23.3)	1518 (22.2)	2019 (29.5)	6744 (98.8)
Girl	329 (5)	1102 (16.6)	1611 (24.3)	1503 (22.6)	2048 (30.8)	6593 (99.3)
School level						
Elementary	285 (4.6)	1297 (20.9)	1686 (27.2)	1303 (21)	1563 (25.2)	6134 (99)
Secondary	163 (4.7)	494 (14.1)	809 (23.3)	814 (23.3)	1187 (34)	3467 (99.3)
High school	264 (7)	563 (14.8)	708 (18.7)	904 (12.38)	1317 (34.7)	3756 (98.9)

TV=Television

In the current study, the time spent watching TV was not different among urban and rural students. This finding is consistent with some other studies.<sup>[3,12,28,30]</sup> This finding may serve as a confirmatory evidence of changes in lifestyle of rural residents and their tendency to sedentary leisure time activities same as urban residents.

Using computer is becoming more and more popular in various populations, our findings showed large discrepancies in this regard. While during leisure time, PC was used by about half of urban students and about a quarter of rural students, some of them used it for long time. Overall, during their leisure time 6.3% and 10.9% of Iranian students used PC more than 2 h a day in school days and holidays, respectively. Although using PC in leisure time was much lower in Iranian children and adolescents than in their Western counterparts,<sup>[28,29]</sup> but the current data are from various cities with diverse socio-economic background; in large cities of Iran using computer devices during leisure time is comparable with industrialized countries. Similar to TV watching,

the frequency and time spent on using PC was not significantly different among boys and girls.

Scientific guidelines discourage media use by children with <2 years of age and recommend limiting the screen time of older children and adolescents to <2 h a day. Long-time of screen activities has many adverse effects as overweight, irregularity in sleep, behavioral problems, impaired academic performance and violence. An effective way against sedentary life-style is reducing the screen time. Public awareness should be increased about the appropriate duration of screen time for children and adolescents and facilities should be provided for active and creative entertainment during the leisure time.

### Study limitations and strengths

The main limitation of this study is its cross-sectional nature; moreover we used the self-reported time spent on screen time. The strengths of this study are its nationwide coverage and including a large sample size from urban and rural areas.



**Table 3:** The time spent on using computer by students in their leisure time during school days and holidays: The childhood and adolescence surveillance and prevention of adult non-communicable disease-IV study

Variable	Time spent using computer <i>n</i> (%)					Total
	Not at all	About 1 h	About 2 h	About 3 h	4 h or more	
School days						
Living area						
Urban	5394 (52.9)	2928 (17.1)	960 (9.4)	391 (3.8)	374 (3.7)	10104 (99.1)
Rural	2496 (75.8)	486 (14.7)	157 (4.8)	430 (1.3)	48 (1.5)	3230 (98)
Gender						
Boy	3664 (35.5)	1803 (26.3)	701 (10.2)	281 (4.1)	285 (4.2)	6734 (98.4)
Girl	4226 (63.6)	16.1 (24.3)	416 (6.3)	153 (2.3)	137 (2.1)	6543 (98.5)
School level						
Elementary school	42.9 (68.1)	1332 (21.5)	330 (5.3)	99 (1.6)	98 (1.6)	6078 (98.1)
Middle school	1972 (56.5)	918 (26.3)	320 (9.2)	131 (3.8)	106 (3)	3447 (98.7)
High school	1699 (44.8)	1164 (30.7)	467 (12.3)	204 (5.4)	218 (5.7)	3752 (98.8)
Weekends and holidays						
Leaving area						
Urban	5011 (49.2)	2360 (23.2)	1316 (12.9)	659 (6.5)	631 (6.2)	9977 (97.9)
Rural	2398 (72.8)	422 (12.8)	199 (6)	91 (2.8)	78 (6.9)	6654 (97.2)
Gender						
Boys	3979 (59.9)	1356 (20.4)	623 (9.4)	318 (4.8)	235 (3.5)	6511 (98.1)
Girls	4047 (65.3)	1143 (18.4)	489 (7.9)	178 (2.9)	162 (2.6)	60.9 (97.1)
School level						
Elementary school	1787 (51.2)	749 (21.4)	464 (13.3)	227 (6.5)	182 (5.2)	3409 (97.6)
Middle school	1575 (41.5)	890 (23.4)	562 (14.8)	345 (8.1)	365 (9.6)	3737 (98.4)
High school	1699 (44.8)	1164 (30.7)	467 (12.3)	204 (5.4)	218 (5.7)	3752 (98.8)

## CONCLUSIONS

The time spent on screen activities is long in a considerably high number of Iranian children and adolescents. Given the harmful effects of sedentary life-style for physical and mental health, it is necessary to reduce the screen time by increasing the public awareness and by providing facilities for regular daily physic activity, sport and recreation programs for students' leisure times.

## ACKNOWLEDGMENT

The authors are thankful to the large team working with this nationwide study in different parts of the country.

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**Source of Support:** This study was conducted as part of a national surveillance program funded by the Iranian Ministry of Health and Medical Education, **Conflict of Interest:** None declared.