

SCREEN TIME AND EXTRACURRICULAR SPORTS PARTICIPATION AMONG CHILDREN IN A LOCAL COMMUNITY IN SERBIA

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SUMMARY: Introduction: There is evidence that higher levels of screen time are associated with various negative effects on children's health. On the other hand, amounts of physical activity greater than 60 minutes provide additional health benefits. The aim of our study was to compare screen time and participation in extracurricular sports activities between two groups of adolescents in Indija. **Materials and methods:** A cross-sectional study was conducted in a Primary Healthcare Center Indija. 200 students participated, of which 100 fifth grade elementary school students and 100 first grade secondary school students. Data were collected by means of a questionnaire, which was designed for this study. **Results:** In our study 200 of students participated, of which 41% were boys. Secondary school students ignored the recommendations for daily screen time significantly more than elementary school students, on workdays ($\chi^2=28.06$, $p<0.01$), and at weekends ($\chi^2=40.996$, $p<0.01$). Elementary school students participated in extracurricular sports significantly more than secondary school students ($\chi^2=5.225$, $p<0.05$). High school boys participated in extracurricular sports considerably more than high school girls ($\chi^2=16.234$, $p<0.01$), and elementary school girls also participated more than high school girls ($\chi^2=7.966$, $p<0.05$). **Conclusion:** This research showed that more than half of the students in Indija ignored the recommendations for screen time on workdays and at weekends, high school students considerably more than elementary school students. Approximately forty percents of the students did not participate in extracurricular sports. Elementary school students participate in extracurricular activities significantly more than secondary school students, with significant decline in high school girls.

Keywords: adolescents; sedentary habits; digital media; screen time; extracurricular sports activities; physical activity

INTRODUCTION

Independent of physical activity levels, sedentary habits are associated with increased risk of cardio-metabolic disease, all-cause mortality, and a variety of physiological and psychological problems [1]. The issue of screen time for children being online, while still debated, is out-of-date. This is because there is no clear agreement on when the time spent on digital technology goes from moderate to excessive; 'how much is too much' is highly individual, depends on the child's age, individual characteristics and broader life context [2]. The American Academy of Pediatrics has recommended no more than two hours of screen time for children and teenagers for extracurricular activities [3]. But children and youth spend more than 7 h per day using media; the vast majority of them have access to television in the bedroom, access to a computer,

the Internet, a video-game console, and a cell phone [4]. There is evidence that higher levels of screen time are associated with various negative effects on the health of children and youth, with the evidence for adiposity, unhealthy diet, depressive symptoms and quality of life being the strongest [5]. Recent evidence raises concerns about media's effects on aggression, sexual behavior, substance use, disordered eating, and academic difficulties [3]. In order to improve cardiorespiratory and muscular fitness, bone health, and cardiovascular and metabolic health biomarkers of children, those aged 5–17 should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily [6]. One of the voluntary global targets for prevention and control of non-infectious diseases to be attained by 2025 is 10% relative reduction in prevalence of insufficient physical activity [7].

The aim of our study was to compare screen time and participation in sports activities between two groups of adolescents in Indija.

METHODS

Study design and setting: A cross-sectional study was conducted in Primary Healthcare Center "Dr Milorad Mika Pavlovic", Indija in the period September 2018-September 2019. Indija is a town and a municipality located in the Srem District of the autonomous province of Vojvodina, Serbia. Per 2011 census, the town has the total population of 26,025, while the municipality has 47,433 inhabitants [8]. Primary Healthcare Centers' Pediatric Department had approximately 6870 medical records of children aged 1-18 in the study period.

Data collection and variables. Participation in the study was voluntary. 200 students participated, of which 100 fifth grade elementary school students and 100 first grade secondary school students. Data were collected by means of a questionnaire, which was designed for this study. Participants filled the questionnaire when they were at the pediatrician examination. Fifth grade children (younger than fifteen) were with their parents who had given their consent for participation. First grade secondary school children consented to participate in the study. Daily screen time for extracurricular activities longer than 2 hours was considered ignoring the recommendations. Students who went in for extracurricular sport trainings for more than six months before the study started were considered sports participants.

Statistical methods. The results are presented by the method of descriptive statistics and the

differences between the groups were calculated by chi-square test. P-value of <0.05 was considered significant.

RESULTS

Out of all 200 participants, 118 (59%) were girls, and 82 (41%) were boys. In the elementary school students group 56% were girls, and in the secondary school students group 62% were girls. There were not significant gender differences between these two groups. Mean age in the group of elementary school students was 10.64, and in the group of secondary school students 14.76.

115 (57.5%) of all children on workdays and 111 (55.5%) at weekends ignored the recommendations for screen time. Daily screen time among secondary school and elementary school students is presented in Table 1 and Table 2. Gender differences and differences between screen time on workdays and at weekends in both groups individually did not reach statistical significance. Secondary school students spent significantly more time in front of screens (> 2 h daily) for extracurricular activities both on workdays ($\chi^2=28.06$, $p<0.01$), and at weekends ($\chi^2=40.996$, $p<0.01$) than elementary school students. Secondary school girls spent more time in front of screens than elementary school girls both on workdays ($\chi^2=15.246$, $p<0.01$), and at weekends ($\chi^2=10.384$, $p<0.01$). Secondary school boys spent more time in front of screens than elementary school boys both on workdays ($\chi^2=15.5$, $p<0.01$), and at weekends ($\chi^2=21.5$, $p<0.01$)

Table 1. Screenshot daily – secondary school students

Screen time secondary school	< 2h		> 2h		Total N
	N	%	N	%	
Workdays	24	24.0	76	76.0	100
Weekends	22	22.0	78	78.0	100
Workdays girls	16	28.6	40	71.4	56
Workdays boys	8	18.2	36	81.8	44
Weekends girls	16	28.6	40	71.4	56
Weekends boys	6	13.6	38	86.4	44

Table 2. Screentime daily - elementary school students

Screen time elementary school	< 2h		> 2h		Total N
	N	%	N	%	
Workdays	61	61.0	39	39.0	100
Weekends	67	67.0	33	33.0	100
Workdays girls	40	64.5	22	35.5	62
Workdays boys	23	60.5	15	39.5	38
Weekends girls	36	58.0	26	42.0	62
Weekends boys	24	63.2	14	36.8	38

Out of all participants, 84 (42%), 50 (50%) of secondary school students and 34 (34%) of elementary school students did not participate in extracurricular sports activities (Table 3 and Table 4). Secondary school boys participated in extracurricular sports considerably more than secondary school girls ($\chi^2=16.234$, $p<0.01$). Gender differences for extracurricular sports participation between elementary school

students did not reach statistical significance. Elementary school students participated significantly more in extracurricular sports than secondary school students ($\chi^2=5.225$, $p<0.05$). Elementary school girls participated in extracurricular sports considerably more than secondary school girls ($\chi^2=7.966$, $p<0.05$). There was no significant difference in sports participation between boys.

Table 3. Extracurricular sports participation - secondary school students

Sports- secondary school	Yes		No		Total (N)
	N	%	N	%	
All	50	50.0	50	50.0	100
Girls	18	32.1	38	67.9	56
Boys	32	72.7	12	27.3	44

Table 4. Extracurricular sports participation - elementary school students

Sports- elementary school	Yes		No		Total (N)
	N	%	N	%	
All	66	66.0	34	34.0	100
Girls	36	58.0	26	42.0	62
Boys	28	73.7	10	26.3	38

DISCUSSION

Computer use, video games and ownership of devices, such as tablets and smart phones, occurs at an increasingly young age. Screen time, television viewing, in particular, has been negatively associated with the development of physical and cognitive abilities, and positively associated with obesity, sleeping problems, depression and anxiety [9]. Recent research by

the Institute of Public Health of Serbia shows that 57.8% of students in the 5th, 7th grade of elementary school and the 1st grade of secondary school spend more than two hours a day watching television on weekdays. There is a significantly higher percentage of boys of the same age, who play games for more than two hours a day during weekdays and at weekends [10]. In our study no significant gender

differences were present in both groups individually, 5th grade of elementary school and the 1st grade of secondary school children, across screen time per day. But secondary school students ignored the recommendations for daily screen time significantly more than elementary school students, gender differences between elementary and secondary school students did reach statistical significance.

Physical activity and body mass index are strongly linked from childhood to adulthood, the relationship between these gets increasingly higher with age and therefore it is important to establish healthy habits early to prevent obesity in later life. Studies have shown that physical activity, sports and participation in sports competitions decline during adolescence, especially in girls [11]. While physical activity levels decline drastically during adolescence, levels of screen time increase considerably [12]. Our research shows that in our two groups elementary school students participate in extracurricular sports activities significantly more than secondary school students, with a significant decline in secondary school girls.

Promoting physical activity and a healthy diet might prove a better strategy than merely reducing screen time to decrease harmful effects of screen time on the health of children and youth. Some studies have shown that parental rules regarding screen time and participation in physical activity play a role in the amount of screen time among children and adolescents, concluding that programs that encourage limit-setting by parents and promote physical activity may reduce screen time among youth [13]. Screen time was also associated with poor attachment to parents and peers in adolescents [14]. Therefore, anticipatory guidance for healthy behavioral changes should be focused on the family. Parents should recognize and

understand their own roles in modeling appropriate media use and balance between media time and other activities [15]. To maximize health benefits, approaches to resolve the inactivity crisis should attempt to both increase deliberate physical activity and decrease sedentary behaviours, especially in the pediatric population [16].

There were several limitations that need to be considered in interpreting these results. We collected our data by means of a questionnaire which was designed for this study, but our results were easy to interpret and to compare with other studies. We also have a moderate sample of this two uniform groups of students. At first, the strength of our study could be considered through the research work in primary healthcare. The method of this study could be the basis for larger studies with more participants included.

CONCLUSIONS

This research showed that more than half of the students in Indija ignored the recommendations for screen time on workdays and at weekends, secondary school students considerably more than elementary school students. Approximately forty percents of the pupils did not participate in extracurricular sports. Elementary school students participate significantly more than secondary school students, with significant decline in secondary school girls. In the future some public programs should be focused on students of these two groups (5th - 8th grade of elementary school) to prevent decline in sports activities among high school students resulting in screen time increase.

Conflict of interest: None declared.

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