

**CHILDHOOD OBESITY
SURVEILLANCE
INITIATIVE, CROATIA
2015/2016 (CroCOSI)**

ZAGREB, 2018



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Preface

Childhood Obesity Surveillance Initiative 2015/2016 in Croatia was conducted by the Republic of Croatia, Croatian Institute of Public Health with the support of the Croatian Ministry of Health and the Croatian Ministry of Science and Education. The survey followed the Protocol of the World Health Organization European Childhood Obesity Surveillance Initiative, which was jointly developed by the World Health Organization Regional Office for Europe and the participating Member States. World Health Organization Regional Office for Europe and initially thirteen Member States set up the first round of European Childhood Obesity Surveillance Initiative implementation in 2006, with the aim of routine monitoring of childhood nutritional status in children aged 6.0-9.0 years. The second round took place in the year 2009/2010 and the third was organized in 2012/2013. Croatia has joined the fourth round 2015/2016 with more than 35 other countries that have conducted the research on the national level. Financial support for the project has been provided by World Health Organization Regional Office for Europe and the Croatian Institute of Public Health.



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Abbreviations

NCD Non-Communicable Diseases

CRO the Republic of Croatia

**WHO/
Europe** World Health Organization Regional Office for Europe

COSI European Childhood Obesity Surveillance Initiative

WHO World Health Organization

CIPH Croatian Institute of Public Health

MoH Ministry of Health

MSE Ministry of Science and Education

CroCOSI World Health Organization Regional Office for Europe: Childhood Obesity Surveillance Initiative, Croatia 2015/2016

BMI Body Mass Index

SD Standard Deviation

SE Standard Error

CI Confidence Interval

SES Socio-Economic Status

1. Introduction

Obesity is one of the leading public health issues and challenges in society today. It is globally accepted as an important modifiable health risk for noncommunicable diseases (NCD). According to the European Strategy for the Prevention and Control of Noncommunicable Diseases there are seven identified risks for the development of the leading NCDs (cardiovascular diseases, cancers, chronic obstructive lung diseases, mental diseases, and diabetes mellitus type2). There are four behavioral risk factors: nutrition, physical inactivity, smoking and alcohol, and three biomedical risks: hypertension, dyslipidemia, and obesity. From all identified risks, only overweight and obesity represent a significant risk for the development of all five leading NCDs. For this reason, it is necessary to act by preventing the occurrence of obesity at earliest age by promoting healthy habits and securing healthy environments.

In the Republic of Croatia (CRO), the data on nutrition status, physical activity and nutritional habits of school children are not a part of routine health statistics. Although all school children undergo regular physical exams where their anthropometrics are measured, this data is not collected in a standardized way, as it is in the European Childhood Obesity Surveillance Initiative (COSI) research. The inclusion of CRO in 2015/2016 as part of the COSI survey is a step forward for several reasons, including raising awareness of the growing problem of obesity in Croatia and by contributing to the continuous monitoring of the nutrition status of children in comparison to other European countries.

Taking into consideration the fact that there is a continuous rise of overweight children at the European and global level, the data collected through this study will provide important information of the current nutritional status of school-aged children in CRO. As such, they will serve to raise the priority of the issue among health workers and other experts dealing with the problem of obesity as a call for urgent interventions, not only through treatment of obesity but with a prominent focus on prevention.

2. Objectives

Among schoolchildren in Croatia (age 8.0 – 8.9):

- To determine prevalence of underweight, normal weight, overweight and obesity
- To identify children's eating habits and physical activity levels (as reported by parents)
- To gather information about school environments (nutritional and physical activity environments and practices)

Based on the obtained results:

- To develop a National strategy for childhood overweight and obesity prevention, as well as for health promotion among school children
- To obtain internationally comparable data by utilizing standardized research methods and questionnaires, developed by WHO/Europe
- To monitor trends by repeating the same study nationwide (every 3 years)
- To promote health among school children

3.

Methods

The World Health Organization (WHO) COSI collects information on the epidemic of childhood obesity across Europe and was first conducted in 13 participating WHO/Europe states in 2005/2006. The initiative was planned as a semi-longitudinal research that repeats at defined intervals. At each round of data collection either a new nationally representative cross sectional or sentinel sample of children of the same age is chosen. Accordingly, the second round was conducted in the school year 2009/2010 and the third in the school year 2012/2013. In the fourth round, the school year 2015/2016, CRO joined COSI for the first time. In Croatia, the research was conducted by the Croatian Institute of Public Health (CIPH) with the support of the Ministry of Health (MoH) and the Ministry of Science and Education (MSE), and the methodology used was in accordance with the WHO COSI Protocol.

The purpose of this research is to collect comparable data based on the measurement of body height, mass, waist and hip circumference with the aim of routine monitoring of childhood nutritional status in children aged 6.0-9.0 years. The data collected provides valuable insights into the nutritional status of children in lower grades of elementary school in Croatia in relation to other countries. In the most recent fourth round of data collection, over 35 European countries participated in this initiative.

3.1. Sampling Size and Design

Sampling was conducted at the national level and was in accordance with the COSI-Protocol of the WHO/Europe. For the purposes of the World Health Organization Regional Office for Europe: Childhood Obesity Surveillance Initiative, Croatia 2015/2016 (CroCOSI) research the age range from 8.0-8.9, i.e. 96-107 months-of-age was chosen. Based on the selected age range, second and third grades of all main elementary schools in CRO were included in sampling. In order to improve the monitoring of obesity in children, the Protocol aims to achieve coverage of a minimum 2800 children aged 8.0-8.9 including 1400 girls and boys respectively. When calculating sample size, a response rate of 75% was assumed.

The sampling unit in the CroCOSI study was grade. According to the list obtained from the MSE, pupils from second and third grades from 878 main elementary schools were included in sampling. The average number of pupils per grade was 19.1. In Croatia, a sample size of 3500 school children from second and 3500 school children per third grade was planned. In order to reach the planned sample size and using the STATISTICA program (S/N BX307F817503CNET1-C), 182 second and 182 third grade classes from 164 main elementary schools were randomly

selected. Finally, by random selection, 7150 second and third grade 8.0 – 8.9 years old pupils were chosen to participate in the CroCOSI research.

3.2. Data Collection and Analysis

In the process of the preparations for the implementation of the CroCOSI survey, upon consulting the COSI Manual and the WHO/Europe, the CIPH purchased 22 sets of anthropometric measurement instruments. A major part of the finances for procuring the measuring equipment was secured through financial support from WHO and some contributions from the CIPH. The number of sets was selected according to the number of children included in the research, the number of research teams, and the number of Croatian counties, 21 in total. An additional set was purchased for the CIPH as a Principal Investigator. These sets included weighing scales (SECA 877), height boards (SECA 217), adapter for completing weighing scales and height boards (SECA 437), transport bag for a set (SECA 414) and non-elastic tape with blank lead-in (SECA 203) for measuring waist and hip circumference.

The research team members were selected based on competences and the field of professional work. In the implementation of this research a total of 26 field workers have taken part of which 19 were medical doctors, epidemiology residents, 3 nurses, 1 sanitary engineer, 1 education and rehabilitation specialist, 1 kinesiologist, and 1 anthropologist. Fieldwork, during which all the children whose parents had provided signed Consent were measured, was performed in teams consisting of two or three members. One of the team members was always a medical doctor.

COSI research in Croatia included all three Questionnaires foreseen by the Protocol: School Form, Family Form and the Child Form. The Questionnaires were translated into the Croatian language.

School Forms were administered, filled and collected at the school principals meeting organized by the MSE. At this meeting, the principals received detailed information on the COSI research aims and methodology. In case a principal could not attend the meeting, the School Form was administered on the day of the measurements.

Family Forms were distributed to schools in the package containing also a short printed text explaining the research methodology and a Consent Form for each parent. In addition, a PowerPoint presentation with basic data on the research was sent to each school via electronic mail. All Forms were distributed to families during parental meetings organized by schools. Filled in Forms, the Family and the Consent Form, were collected by the researchers upon their arrival to schools, when conducting measurements of children.

The Child Form was initially planned to be used in electronic version. After a testing period, the researchers have decided to develop a standardized table that was used in schools. The data from the printed versions of all three Questionnaires were subsequently entered into the Open Clinica electronic database.

Data collection in the field lasted 8 weeks from October 26th to December 18th, 2015, as foreseen in the WHO Protocol. Measurement was conducted by members of the research team in each school, exclusively in school facilities, most often gym halls or classrooms, during school hours. Taking into consideration that the anthropometric measuring set was equipped with both weight scale and height measurement, body height and mass measurements were conducted simultaneously. The height was measured on two occasions, performed by two different members of the research team. The children's waist and hip circumference were measured over the t-shirt, after measuring body height and mass. The average duration of taking anthropometric measurements was 45 minutes per class.

The data entry, as well as the communication with WHO/Europe related to incomplete documentation or irregularities in data were conducted by the CIPH research team.

The WHO AnthroPlus software (WHO 2007) was used for the calculation of the growth standard in children. This software was developed with a goal to monitor anthropometric measurements in school-aged children (aged 5-19) and includes three indicators: weight-for-age, height-for-age and BMI-for-age.

Table 1. Z-Score Classification of Anthropometric Measurements (WHO 2007)

Z-score	Weight	Height	Body Mass Index
>+3 SD		VERY TALL	OBESITY
>+2 SD		TALL	
>+1 SD	NORMAL	NORMAL	OVERWEIGHT
MEDIAN			NORMAL
<-1 SD	UNDERWEIGHT	STUNTING	THINNESS
<-2 SD			SEVERE THINNESS
<-3 SD	SEVERE UNDERWEIGHT	SEVERE STUNTING	SEVERE THINNESS

3.3. Ethical Issues

CroCOSI research was approved by the Ethics Committee of the CIPH in July 2015 (Class: 602-01/15-01/0242), and was carried out in accordance with research ethics principals, taking into account basic bioethics principles of autonomy, beneficence and non-maleficence. Data collection was conducted according to WHO Protocol. Thus, for the collection of anthropometric measures of the child, it was necessary to obtain a signed Consent from the child's parents or custodians. Although all of the measured children had Consent Forms signed by parents or custodians, the child was once again asked for active consent immediately before the measurement. The anonymity was ensured in a way that chosen schools, classes, and children, were coded according to the WHO Protocol.

When announcing their visits to schools, the researchers asked class teachers to inform the children that at the time of measurement, they would be dressed in sports or light clothing, and would not be wearing any shoes. Before conducting the measurements, the researchers have checked the Consent Forms signed by the parents to make sure which children are taking part in the research. The children were measured in silence and the results of the measurement were not communicated.

4.

Results

This research was conducted in randomly selected 182 second and 182 third grade classes from 164 main elementary schools. Out of 7150 students from those schools, a total of 5664 of children were measured. The remaining children did not have their parent's consent or were not present at school on the day the measurement was conducted. As four children have actively declined to be measured, response rate reached was 79.2%. Out of the distributed number of 7150 Forms, a total of 5903 parents/caretakers have filled in the Family Form, which makes the response rate 82.6%. Response rate data is presented in Tables 2 and 3.

Table 2. Distribution of the Numbers of School, Family and Child Forms Responded and Analyzed in the Study

	Sampling number	Analyzed	
		Number	%
Surveyor	7150	5664	79.2
Family	7150	5903	82.6
School	164	164	100.0

Table 3. Distribution of Numbers of Boys and Girls Reached and Participated in the Study

	Total	%
Boys	1369	50.0
Girls	1369	50.0
Total	2738	100.0

4.1. Children's Anthropometric Measurements

4.1. Children's Anthropometric Measurements

When taking children's measurements, the surveyors noted the time of measurements in relation to lunch, i.e. before or after lunch, and clothing that children were dressed in. Also, when

announcing the measurement taking in chosen classes, teachers were notified that the children should be dressed in sports clothing. Only one third of the schools, 35% from the total number of schools, have followed the protocol, and the children were measured in sports clothing, while the children in the remaining schools were not dressed in sports clothing. According to the internal agreement of the coordination team it was insisted that the children at least be dressed in lighter clothing (mostly a T-shirt and trousers/skirt) so that the collected data would be as representative as possible. In line with this, 35% of children wore gym clothes, 61% light clothing and only 4% were measured wearing heavier clothes including sweaters, hoodies and similar as seen in Table 4. All the children were measured wearing no shoes and with empty pockets (no mobile phones, glasses etc).

Table 4. Distribution of Measurements by Measuring Time and Clothing

Anthropometric Measurements	Total	%
Before Lunch	1997	72.9
After Lunch	741	27.1
Total	2738	100.0
Clothing		
Gym clothes (shorts and t-shirt)	959	35.0
Light clothing (t-shirt and cotton trousers or skirt)	1668	61.0
Heavy clothing (e.g. sweater and jeans)	109	4.0
Total	2736	100.0

According to the data collected within this research, 73.2% of boys and 81.7% of girls have normal body mass. Less than 1% of children were underweight or severely underweight (Table 5).

Table 5. Distribution of Weight-for-age Z-Score (WAZ-Score)

	WAZ-Score						Mean	SD
	N	<-3	<-2	>+1	>+2	>+3		
Boys	1361	0.0	0.2	48.9	20.7	5.9	1.05	1.18
Girls	1368	0.2	0.6	39.8	14.2	3.3	0.76	1.15
Total	2729	0.1	0.4	44.4	17.5	4.6	0.91	1.17

According to collected data, 82.3% of boys have normal body height for the age of 8.0-8.9 years, while 14.8% fall into the category of tall boys and 2.8% are very tall. Normal body height was found in 87.5% of girls while 12.3% were tall or very tall, while stunting and severe stunting was found in 0.1% boys and 0.2% girls (Table 5a).

Table 5a. Distribution of Height-for-age Z-Score (HAZ-Score)

	N	HAZ-Score					Mean	SD
		<-3	<-2	>+1	>+2	>+3		
Boys	1369	0.0	0.1	47.8	14.8	2.8	0.95	1.02
Girls	1369	0.1	0.1	40.5	10.8	1.5	0.81	0.99
Total	2738	0.1	0.1	44.2	12.8	2.2	0.88	1.01

Average waist and hip circumference data is presented in Table 6. Average waist circumference among girls was 60.03 cm, and hip circumference 71.58 cm. Among boys, average waist circumference was 61.94 cm and the hip circumference was 72.49 cm.

Table 6. Distribution of Waist and Hip Circumference in Centimeters

Waist and Hip Circumference	Waist circumference			Hip circumference		
	N	Mean	SD	N	Mean	SD
Boys	1369	61.94	7.67	1369	72.49	7.28
Girls	1369	60.03	7.65	1369	71.58	7.34
Total	2738	60.99	7.66	2738	72.04	7.31

As shown in Table 7, according to anthropometric measurements in CRO, every third child, i.e. 34.9%, aged 8.0-8.9 years is overweight or obese.

There are more overweight than obese boys, 21.5% in comparison to 17.2%. Among girls, 67.3% of girls have a normal body mass index, 20.3% are overweight and 10.7% obese. The share of thin children is under 1.5% overall, i.e. 0.4% of boys and 1.2% of girls.

Table 7. Distribution of BMI-for-age Z-Score (BAZ-Score)

	Severe thinness	%	Thinness	%	Normal	%	Overweight	%	Obesity	%	Total
Boys	0	0.0	6	0.4	832	60.8	295	21.5	236	17.2	1369
Girls	6	0.4	16	1.2	922	67.3	278	20.3	147	10.7	1369
Total	6	0.2	22	0.8	1754	64.1	573	20.9	383	14.0	2738

Sampling and stratification was conducted at the national level as the sample is not representative at the regional level. However, Croatia can be divided into two diverse regions, Adriatic and Continental, whose cultural and traditional, as well as hereditary characteristics differ significantly. Furthermore, the City of Zagreb, the capital of Croatia, encompasses characteristics of both regions, and can thus be observed separately. Therefore, Table 7a shows distribution of BMI-for-age Z-Score by Region.

Among children living in all three regions, as presented in Table 7a, the smallest number of children with overweight and obesity was found in the City of Zagreb with 18.8% overweight and 11% of obese children. Most concerning is the data showing that in the Continental region, almost every fourth child, 22.4%, is overweight and every sixth child, 15.6%, is obese. As seen at the national level, there are less overweight or obese girls than boys in all regions with the exception of slightly higher proportion of overweight girls in the Continental region. Among girls, body mass index tends to be lower in the Adriatic region with 18% overweight and 9.3% obese girls and in the City of Zagreb, 18.4% overweight and 7.6% obese, in comparison to the Continental region, which has 22.5% overweight and 13.1% obese girls. In boys, body mass distribution is the opposite. The smallest share of overweight boys live in the City of Zagreb, and the highest BMI data for boys can be observed in the Adriatic region where 42.2% of boys are overweight or obese.

Table 7a. Distribution of Regional BMI-for-age Z-Score Proportions (BAZ-Score)

	Thinness	%	Normal	%	Overweight	%	Obesity	%	Total
Continental									
Boys	3	0.5	385	59.1	145	22.3	118	18.1	651
Girls	11	1.6	428	62.8	153	22.5	89	13.1	681
Total	14	1.1	813	61.0	298	22.4	207	15.6	1332
Adriatic									
Boys	0	0.0	185	57.8	74	23.1	61	19.1	320
Girls	7	2.1	236	70.7	60	18.0	31	9.3	334
Total	7	1.1	421	64.3	134	20.6	92	14.2	654
City of Zagreb									
Boys	3	0.8	262	65.8	76	19.1	57	14.3	398
Girls	4	1.1	258	72.9	65	18.4	27	7.6	354
Total	7	1.0	520	69.4	141	18.8	84	11.0	752
Total									
Boys	6	0.4	832	60.8	295	21.5	236	17.2	1369
Girls	22	1.6	922	67.3	278	20.3	147	10.7	1369
Total	28	1.0	1754	64.1	573	20.9	383	14.0	2738

According to parental opinion about child's weight status, presented in Table 8, less than one in six parents think that his/her child is overweight, i.e. 14.6% of parents perceive their children as overweight and obese. This is not in line with real anthropometric results found in this study, where 34.9% of children are either overweight or obese and is concerning as children's habits are learned in the family, especially during the childhood years.

Table 8. Distribution of Parental Opinion about Child's Weight Status by Gender

Child's weight status as seen by parents	Underweight	Normal weight	Little overweight	Extremely overweight	Total
Boys (%)	1.6	83.9	13.4	1.1	100.0
Girls (%)	1.6	83.7	14.0	0.8	100.0
Total (%)	1.6	83.8	13.7	1.0	100.0
N	42	2218	362	25	2647

4.2. Families and Children's Lifestyles

4.2.1. Child's General Data

Out of the total number of surveyed parents (Table 9), the Family Form was filled by 82.8% of mothers and 13.1% of fathers. In cases where the parents were unable to fill in the Family Form, it was mostly filled by brothers/sisters, grandmothers or other caretakers, such as foster family members.

Table 9. Distribution of Interviewed Family Members

Family relationship	Total	%
Mother	2268	82.8
Father	359	13.1
Other	23	0.8
Missing	88	3.2
Total	2738	100.0

Data on the pregnancy duration of mothers of the children taking part in the research were collected in the Family Forms and are presented in Table 10. These show that 89.3% of children were born within the normal term while 9.2% of children were born outside the normal term including preterm births (before 37th week + 1 day of pregnancy) and late-term births (mothers carrying into the 41th week + 6 days of pregnancy). A total of 1.6% of respondents did not know the pregnancy week of their child's birth.

Table 10. Distribution of Birth Weeks of Children According to Families' Answers by Gender

Pregnancy week	Birth at term (37th week + 1 day of pregnancy)	%	Before 37th + 1 day or after 40th + 6 days of pregnancy	%	Don't know	%	Total
Boys	1178	90.0	118	9.0	13	1.0	1309
Girls	1170	88.5	123	9.3	29	2.2	1322
Total	2348	89.3	241	9.2	42	1.6	2631

Average birth weight of surveyed children among boys was 3487.4g (± 15.42), and it is expectedly larger in comparison with girls amounting to 3374.5g (± 15.15) (Table 11).

Table 11. Distribution of Birth Average Weights of Children According to Families' Answers

Birth Average Weights	N	X \pm SE(gram)	95% CI
Boys	1369	3487.4 \pm 15.42	3457.2 – 3517.7
Girls	1369	3374.5 \pm 15.15	3344.7 – 3404.2
Total	2738	3430.8\pm10.86	3409.5 – 3452.1

According to WHO recommendations, breastfeeding should start within the first hour of the child's birth and continue at least until 6 months of the child's life. Along with gradual adding of other foods, WHO recommends breastfeeding up to the second year of the child's life. Data obtained from the Family Form, as seen in Table 12 shows that on average 90.4% of children were breastfed at one point in life. The breastfeeding duration was similar among boys and girls, and equals high 9.89 months on average.

Table 12. Distribution and Average Time of Breastfeeding of Children According to Families' Answers

Breastfed	Yes	%	No	%	Don't know	%	Total	Mean (months)	Total
Boys	1190	90.5	125	9.5	0	0.0	1315	9.88	1163
Girls	1201	90.3	128	9.6	1	0.1	1330	9.89	1174
Total	2391	90.4	253	9.6	1	0.1	2645	9.89	2337

4.2.2. Child's Lifestyle Data

Regular physical activity is an important factor in obesity prevention. Regular physical activity habits can be fostered in school-aged children in a number of ways such as safe active transportation, active play, participation in sports/dance activities, or decreasing the time spent in sedentary activities. Another way to monitor children's physical activity levels is to keep track of time spent in sedentary activities such as watching TV or using other electronic devices.

According to Table 13, over a half of the surveyed children's parents or caregivers, 57.7% of them, find the road on the way to school unsafe. This can be related to the distance that a child needs to pass in order to get to school. As seen in Table 14, one half of family homes are located at a distance less than 1 kilometer from the school, other are a bit farther, and only 7.8% of homes are located 5 kilometers or farther.

Table 13. Distribution of Safety of School Road According to Families' Answers

Safety of School Road	Safe	%	Unsafe	%	Total
Boys	553	43.0	733	57.0	1286
Girls	544	41.6	764	58.4	1308
Total	1097	42.3	1497	57.7	2594

Table 14. Distribution of Distance between School and Home According to Families' Answers

School Distance	< 1 km	%	1-2 km	%	3-4 km	%	5-6 km	%	> 6 km	%	Total
Boys	681	52.1	352	27.0	174	13.3	54	4.1	45	3.4	1306
Girls	646	50.5	396	28.5	174	13.2	57	4.3	50	3.8	1323
Total	1327	51.3	748	27.8	348	13.3	111	4.2	95	3.6	2629

As for active transportation to school (walking or cycling), presented in Table 15, almost every third child, 31.3% of them, travel to school either by bus or is driven by parents, every fourth child combines walking or cycling with arrival to school by motorized vehicles, and almost every second child, 43.3%, goes to school by foot or using a bicycle.

Table 15. Distribution of Child's Way of Transportation to School According to Families' Answers

Transportation to School	Walking/ Cycling	%	Motorized vehicles	%	Combination of walking/cycling and motorized vehicles	%	Total
Boys	579	44.0	399	30.3	339	25.7	1317
Girls	572	42.8	427	31.9	338	25.3	1337
Total	1151	43.4	826	31.1	677	25.5	2654

Regular physical activity, measured by participation in sports/dance activities through membership in clubs is more frequent in boys than girls, 70.5% and 65.9% respectively. Overall, the number of children participating in sport/dance activities exceeds two thirds of all 8-year-old-children (Table 16).

Table 16. Attendance of Children at Sport or Dance Club According to Families' Answers

Sport or Dance Club Attendance	Yes	%	No	%	Total
Boys	928	70.5	389	29.5	1317
Girls	878	65.9	455	34.1	1333
Total	1806	68.2	844	31.8	2650

As shown in Table 17, on average 51.5% of children spend under 3 hours per week participating in physical activities within a sports or dance club, and the percentage of girls is higher than that of boys (61.3% and 41.6%). When looking at participation in physical activities within a sports or dance club for more than four hours, boys are more physically active than girls (58.4% compared to 38.7% respectively).

Table 17. Distribution of Attendance of Children at Sport or Dance Club According to Families' Answers (attendance/ week)

Duration of activity (sport/dance)	≤3 hours/ week	%	≥4 hours/ week	%	Total
Boys	385	41.6	540	58.4	925
Girls	535	61.3	338	38.7	873
Total	920	51.5	878	48.6	1798

Active play habits are a key way for children to engage in physical activity in their free time and data are presented in Table 18, showing that half, or 54.5% of children, both boys and girls, spend between 2 and 3 hours in active play during week days. However, the frequency of active play with a duration of 3 hours or more increases during the weekends when 64.4% of children engage in free time active play for more than 3 hours.

Table 18. Distribution of Time Children Playing Outside According to Families' Answers

Playing Outside	Never	<1 hour/day	1 hour/day	2 hours/day	≥3 hours/day	N
Week Days						
Boys	0.2	8.8	35.1	39.9	16.1	1314
Girls	0.8	10.6	35.9	37.0	15.8	1331
Weekends						
Boys	0.0	1.2	6.8	26.5	65.5	1281
Girls	0.1	1.7	8.2	26.8	63.2	1300
Total						
Week Days	0.5	9.7	35.5	38.5	16.0	2645
Weekends	0.1	1.5	7.5	26.7	64.4	2581

Based on the reference values set by Iglowstein et al., children aged 8 years on average get between 9 and 11 hours of night's sleep. The average number of hours of sleep of surveyed children is in line with the advice, according to parents' statements, sleep longer than 9 hours (9.77 ± 0.013). As seen in Table 19, sleep duration in children in Croatia follows the average values of night's sleep hours.

Table 19. Distribution of Average Sleeping Time in Hours According to Families' Answers

Sleeping hours	N	X±SE(hours)
Boys	1317	9.74±0.019
Girls	1324	9.80±0.019
Total	2641	9.77±0.013

Sedentary behavior, as observed by total time spent in activities that include sitting while writing homework/reading, or watching TV or using other electronic devices are displayed in Table 20 and 21.

Out of the total number of respondents who filled in the Family Form, 81.9% stated that their children spend 1-2 hours per day writing homework or reading throughout the week. During the weekends, 73.4% of children spend as many hours engaged in homework or reading activities (Table 20).

Table 20. Distribution of Proportions of Time Children Spend Doing Homework and Reading Book According to Families' Answers by Gender

Doing Homework/ Reading	Never	<1 hour/day	1 hour/day	2 hours/day	≥3 hours/day	N
Week Days						
Boys	0.2	14.2	40.4	39.4	5.8	1316
Girls	0.1	10.7	38.7	45.2	5.2	1334
Weekends						
Boys	1.9	19.4	39.7	32.5	6.5	1287
Girls	1.2	17.8	44.0	30.5	6.5	1302
Total						
Week Days	0.2	12.5	39.6	42.3	5.5	2650
Weekends	1.6	18.6	41.9	31.5	6.5	2589

The habit of watching TV is widely spread among children and youth. The increase of availability of computers, mobile phones, tablets and other electronic devices is worrying. During the working days children spend somewhat less time in front of the screen, 79.8% of children spends 1-2 hours in front of the TV and other electronic devices. During the weekends, over a half of the surveyed children (53.6%) including both boys and girls spend 3 hours or more in front of the screen (Table 21).

Table 21. Distribution of Proportions of Time Children Spend Watching TV or Using Electronic Devices (Computer, Tablet, Smartphone or Other) According to Families' Answers

Watching TV or Using Electronic Devices	1 hour/ day	2 hours/ day	≥3 hours/day	N
Week Days				
Boys	42.9	36.5	20.6	1369
Girls	45.1	35.0	19.9	1369
Weekends				
Boys	11.6	32.4	56.0	1369
Girls	13.8	35.1	51.1	1369
Total				
Week Days	44.0	35.8	20.3	2738
Weekends	12.7	33.8	53.6	2738

Eating habits, as another determinant of obesity along with regular physical activity, are important in school-aged children and impact eating habits in adulthood. At the beginning of each measurement, the surveyors asked children whether they have had breakfast, being the most important meal of the day and having influence on daily energy levels and ability to learn.

According to children's own answers, presented in Table 22, three out of four children, 76.8% boys and 76.3% girls have had breakfast the morning of measurement.

Table 22. Distribution of Having Breakfast the Morning of Measurements According to Children's Answers

Breakfast Today	No	%	Yes	%	Total
Boys	317	23.2	1051	76.8	1368
Girls	325	23.7	1044	76.3	1369
Total	642	23.5	2095	76.6	2737

Along the same line, as seen in Table 23, parents' statements on the frequency of breakfast consumption corresponds to data collected during interviews with children. More than three out of four of parents, 77.2% of them, stated that their child eats breakfast every day, 21.5% state that their children have breakfast some or most days, while only 1.4% of parents said that their child never eats breakfast. The comparison of eating breakfast habits between boys and girls show similar results.

Table 23. Distribution of Children Having Breakfast According to Families' Answers

Frequency of having breakfast (days)	Never	Some days (1-3 days/week)	Most days (4-6 days/week)	Every day	Total
Boys (%)	1.1	9.7	11.1	78.1	100.0
Girls (%)	1.7	8.7	13.4	76.2	100.0
Total (%)	1.4	9.2	12.3	77.1	100.0
N	36	243	323	2030	2632

Children's food and beverage consumption, according to their families' answers, are presented in Table 24. It can be observed that in spite of the recommendation on daily consumption of fruit and vegetables, 51.2% of children consume vegetables four or more days a week, while 41.1% eat vegetables some days a week and 7.8% less than once a week or never. Better results are shown with consumption of fresh fruits. 65.2% of children eat fruit most of the days or every day, almost one third of the parents, 29.4% of them have stated that their children eat fresh fruit some days per week, and 5.4% of children eat fresh fruit less than once a week or never. It is not common in Croatia for children to drink freshly squeezed fruit juices every day and they are consumed by only 6.6% children. However, drinks with added sugars are consumed twice as often on a daily basis (14.3%).

Furthermore, 29.1% of parents have stated that their children drink whole milk daily, yoghurt and other dairy products are consumed on daily basis in 19% of children, while only 2.7% of children consume cheese daily. Around every fifth child never consumes whole fat milk or cheese (20.6% of boys and 20% of girls). Additionally, meat consumption is in line with the recommendations, 52.7% of the surveyed children consume meat most days, and 20.6% children consume meat on a daily basis. Only 2.3% children eat meat less than once a week or never. Results related to fish consumption are somewhat lower, 2.3% of children consume fish most or every day, while only 0.3% children consume fish every day, and 52.1% of children eat fish less than once a week or never.

Moreover, the frequency of consuming cake is rather high as well as the consumption of other foods rich in fats and carbohydrates, 27% of children eat cakes every day or most of the days in the week and 52.1% of children eat cakes between one and three days a week. When it comes to sweets, the results are similar. 31.1% of children eat chocolate, candy and other sweets daily or on most of the days in the week and 48.9% of children between one and three days a week. Every fifth child, 20.9%, consumes cakes less than once a week or never, while 20% of children eat candies and chocolate with the same frequency.

Finally, the proportion of 11.6% of children eat salty snacks most of the days or every day, 37.6% of children between one and three days a week and 50.9% less than once a week or never. This

data is similar to data on the consumption of fast/fried foods such as pizza or French fries, e.g. 4.3% of children eat these foods most of the days or every day, 32.6% some days a week, 60% less than once a week and 3% never.

Table 24. Proportion of Distribution of Children’s Food and Beverage Consumption Frequencies According to Families’ Answers

	Never (%)	Less than once a week (%)	Some days (1-3 days/week) (%)	Most days (4-6 days/week)	Every day (%)	Total (N)
Fresh fruit	1.6	3.8	29.4	31.7	33.5	2644
Vegetables (excluding potatoes)	1.7	6.1	41.1	34.0	17.2	2626
100% Fruit juice	14.7	34.1	35.5	9.1	6.6	2583
Flavoured milk	27.0	27.7	22.5	10.2	12.6	2622
Diet or „light“ soft drinks	80.9	13.4	4.2	0.9	0.6	2589
Low fat milk	58.8	11.7	11.8	7.0	10.7	2600
Whole fat milk	20.6	9.9	20.5	19.9	29.1	2600
Cheese	20.0	27.2	40.1	9.9	2.7	2608
Yoghurt, milk pudding, cream cheese/quark or other dairy products	3.5	7.7	39.0	30.8	19.0	2636
Meat	0.6	1.7	24.4	52.7	20.6	2640
Fish	6.9	45.2	45.3	2.3	0.3	2631
Savory snacks like potato chips, corn chips, popcorn or peanuts	5.9	45.0	37.6	8.0	3.6	2634
Sweet treats like candy or chocolate bar	1.0	19.0	48.9	19.0	12.1	2636
Foods like biscuits, cake, doughnuts or pie	1.0	19.9	52.1	19.1	7.9	2643
Foods like pizza, French fries, fried potatoes, hamburger, sausage or meat pies	3.0	60.0	32.6	3.3	1.0	2637
Soft drinks containing sugar	11.2	27.5	32.2	14.8	14.3	2597

4.2.3. Family Lifestyle Data

In line with the increasing trend of NCDs, Table 25 shows that over one quarter of the families of children have a positive family history of heightened arterial blood pressure or heightened cholesterol level, 28.9% and 26.5% respectively, while the prevalence of diabetes mellitus type 2 is somewhat lower, 13.6%.

Table 25. Distribution of Chronic Diseases History among Families

Family history	Total	%
Hypertension		
Yes	764	28.9
No	1805	68.2
Don't know	78	2.9
Total	2647	100.0
Diabetes		
Yes	361	13.6
No	2264	85.2
Don't know	27	1.0
Total	2652	99.8
High Cholesterol		
Yes	701	26.5
No	1818	68.6
Don't know	130	4.9
Total	2649	100.0

Socio-economic status (SES), as measured by level of education, employment status and income, is another determinant of obesity showing that people with lower SES tend to have more weight challenges.

The average number of children younger than 18 years per household among surveyed families equaled 2.2, which is in accordance with the data from the Croatian Bureau of Statistics which states that 92.1% of Croatian families have between one and three children.

Parents' education data shows that mothers in Croatia have higher formal education than fathers. One third of mothers or 29.6% of them have completed grammar school, one third, 29.1%, have completed vocational school, while every third mother, 28.1%, holds a diploma or a higher education degree. The situation is similar with the highest achieved education level among fathers, 39.2% have completed vocational school, 27.9% have completed grammar school, whilst 21.2% hold a diploma or a higher education degree (Table 26).

Table 26. Distribution of Educational Level of Mothers and Fathers

Parental Education	Total	%
Mother		
Primary school	189	7.3
Secondary school	770	29.6
Vocational school	755	29.1
Undergraduate/bachelor degree	155	6.0
Master's degree or higher	729	28.1
Total	2598	100.0
Father		
Primary school	190	7.6
Secondary school	701	27.9
Vocational school	984	39.2
Undergraduate/bachelor degree	103	4.1
Master's degree or higher	532	21.2
Total	2510	100.0

The majority of surveyed parents, as seen in Table 27 are employed in private companies, 41.9% of mothers and 51.6% of fathers, followed by government employment for 24.2% of mothers and 20% of fathers, and self-employment for 17.1% of fathers and 11.2% of mothers. The rest of the parents, 11.2% of mothers and 7.2% of fathers are unemployed.

Table 27. Distribution of Working Status of Mothers and Fathers

Parental Employment	Total	%
Mother		
Government employed	625	24.2
Non-Government employed	1080	41.9
Self-employed	288	11.2
Student	2	0.1
Homemaker	288	11.2
Unemployed, able to work	278	10.8
Unemployed, unable to work	10	0.4
Retired	9	0.3
Total	2580	100.0
Father		
Government employed	497	20.0
Non-Government employed	1283	51.6
Self-employed	425	17.1
Student	1	0.0
Homemaker	12	0.5
Unemployed, able to work	166	6.7
Unemployed, unable to work	12	0.5
Retired	90	3.6
Total	2486	100.0

According to Table 28, showing the place of residence, children and their families, 54.4% of them, mostly live in houses that vary from detached to semi-detached/terraced, while the remaining 31.5% live in apartments. The home property the family lives in is in most cases owned by the family, 78.7%.

Table 28. Distribution of Properties of Houses

Properties Distribution	Total	%
Home Structure		
House/bungalow, detached	1254	47.4
House, semi-detached/terraced	186	7.0
Apartment	833	31.5
Shared house	356	13.5
Shared apartment	8	0.3
Other	6	0.2
Total	2643	100.0
Home Property		
Owned by family	2072	78.7
Rented by family	215	8.2
Other	346	13.1
Total	2633	100.0

As seen in Table 29, most families (75.5%) according to their own opinion have income that gets them through the month without serious financial problems. However, one out of five families struggle with finances on a monthly basis.

Table 29. Distribution of Monthly Family Earnings

Monthly Income	N	%
We easily pass the month with our earnings	767	28.0
We pass the month without serious problems with our earnings	1301	47.5
We have trouble meeting the ends the month with our earnings	316	11.5
We barely meet the ends in the month with our earnings	248	9.1
Total	2632	96.1

4.3. Schools

In answering the School Forms (Table 30) a total of 62.2% of school principals took part. In cases where the principal was unable to participate, the Forms were answered by teachers, 9.8% of them, or other employees such as pedagogues, psychologists, special education and rehabilitation professionals and speech therapists in 27.4% of schools.

Table 30. Distribution of Interviewed School Members

Interviewed School Member	N	%
Headmaster/Headmistress/Principal	102	62.2
Teacher	16	9.8
Other	45	27.4
Missing	1	0.6
Total	164	100.0

Schools, as educational facilities that support development of healthy lifestyles, and environments in which children spend almost half of their wake-time, should also be organized in a way that promotes regular physical activity and appropriate eating habits in children.

Physical education classes in lower grades of elementary school are mandatory according to the National Curriculum Framework in a total of three school hours, e.g. 135 minutes weekly. Physical education classes usually take place in an indoor sports hall/gym or at the outside sports ground. Table 31 shows that almost all elementary schools, 95.7% of them, have an outside sports ground, but during extreme weather 64% of the chosen schools do not allow children to play or have physical education class outside. On the other hand, 15.9% of schools do not have an indoor sports hall/gym, which makes physical education classes impossible during extreme weather conditions.

Furthermore, in order to meet the World Health Organization's recommendations for children (a minimum of 60 minutes of moderate to vigorous physical activity every day) schools should support children by allowing them to use their indoor and outdoor sports facilities freely outside school hours. About two thirds, i.e. 63.4% of all schools offer organized physical activity to their pupils outside of school hours. However, the attendance rates are rather low, 73.8% of school have attendance rates of under 50% or even under 25%. In addition, as seen in the Table 31, only 51% of schools allow their students to use the sports hall freely outside school hours.

Table 31. Distribution of Having and Using Playground Facilities and Children's Participation in Extracurricular Sports Activities

	N	%
Playground facility		
Yes	157	95.7
No	7	4.3
Indoor gym		
Yes	138	84.1
No	26	15.9
Playground use during extreme weather		
Yes	56	34.8
No	103	64.0
Students use playground outside of school hours		
Yes	156	96.3
No	6	3.7
Students use gym outside of school hours		
Yes	80	51.0
No	67	42.7
School extracurricular physical activities		
Yes to all	104	63.4
Only to some grade levels	43	26.2
No	13	7.9
School extracurricular physical activities attendance		
Yes, more than half of the children	26	15.9
Yes, half or less than half of the children	85	51.8
No or mostly not (less than a quarter of the children)	36	22.0

According to the statements of school employees, displayed in Table 32 and obtained through the School Form, over a half of the respondents consider the roads to school safe for pupils. The results pertaining to organized transport to school correspond to the perceived safety of

roads to school. Thus, the highest share of organized transport is for pupils from rural areas and for pupils who live farther away from the school. Over one third of schools, 36.6% of them, do not have organized transport.

Table 32. Distribution of Safety of School Route and Organized School Bus Transportation According to School Employees

	N	%
School Road		
Safe	92	56.1
Unsafe	71	43.3
School Bus Transportation		
All pupils	19	11.6
Some grade levels	4	2.4
Pupils from rural areas	18	11.0
Pupils living far away	60	36.6
No	60	36.6

According to the National Curriculum Framework, nutrition as a subject should be represented throughout the entire elementary and middle school education through several subjects, such as Nature and Society, Physical Education and Head Teacher Classes. However, the education on nutrition can also be a subject of other curricular or extracurricular activities in schools. On that note, Table 33 shows the proportions of all surveyed schools that offer some kind of nutritional education to their pupils.

Table 33. Distribution of Nutritional Education at Schools

Nutrition Education at School	N	%
Yes	154	93.9
No	9	5.5
Total	164	99.4

Data on the availability of foods and drinks in schools was collected within the School Form and is presented in Table 34. Tap water is safe for drinking in most parts of CRO and data on availability of water are in line with this, 93.9% of schools have drinking water. Also, Croatia

takes part in the European project „School Fruit Scheme“, and 62.8% of elementary schools offer their pupils fresh fruit free of charge, bought from local family farms, at least once a week. Additionally, in July 2015, the program „Milk in Schools“ was launched, providing pupils with one dairy meal free of charge at least once a week, and 7.3% of schools are included in this program. Furthermore, drinks that are most often available when paid are sweetened tea or cocoa in 66.5% of schools, non-sweetened tea in 57.3% of schools, milk and yoghurt in 64.6% schools, but also juices with added sugar in 43.9% of schools. It should be emphasized that every third school (28.1%), do not offer neither paid nor free fresh or cooked vegetables to children, while paid sweet bites are offered by as many as 24.4% of schools.

Table 34. Distribution of Beverage and Food Paid or Free of Charge at Schools

Food/Beverage	Availability									
	Free		Paid		Free & Paid		Not available		Missing	
	N	%	N	%	N	%	N	%	N	%
Water	154	93.9	0	0.0	0	0.0	9	5.5	1	0.6
Tea (no sugar)	12	7.3	94	57.3	6	3.7	32	19.5	20	12.2
Fruit juices	3	1.8	33	20.1	2	1.2	95	57.9	31	18.9
Fruit juices with sugar	4	2.4	72	43.9	2	1.2	65	39.6	21	12.8
Soft drinks	2	1.2	43	26.2	1	0.6	91	55.5	27	16.5
Flavoured milk	3	1.8	72	43.9	2	1.2	63	38.4	24	14.6
Hot drinks	8	4.9	109	66.5	7	4.3	24	14.6	16	9.8
Dairy	12	7.3	106	64.6	8	4.9	23	14.0	15	9.2
Soft drinks sweeteners	3	1.8	31	18.9	1	0.6	98	59.8	31	18.9
Energy drinks	2	1.2	3	1.8	0	0.0	128	78.1	31	18.9
Fresh Fruit	103	62.8	13	7.9	36	21.9	8	4.9	4	2.4
Vegetables	13	7.9	77	46.9	7	4.3	46	28.1	21	12.8
Sweet snacks	0	0.0	40	24.4	0	0.0	97	59.2	27	16.5
Ice cream	4	2.4	22	13.4	0	0.0	109	66.5	29	17.7
Snacks	1	0.6	9	5.5	0	0.0	122	74.4	32	19.5
Other (bakery products, pudding)	0	0.0	1	0.6	0	0.0	0	0.0	163	99.4
Other (smoothie)	0	0.0	1	0.6	0	0.0	0	0.0	163	99.4

Traditionally, 69.5% of schools included in this research still have an organized school kitchen as part of school infrastructure (Table 35). It is worth mentioning that, in Croatia, school meals are partly or fully financed by the government, depending on social status of child's family. However, 9.1% of schools still have vending machines even though such machines do not offer nutritionally rich foods but mostly offer sweet and salty snacks rich in refined sugars, trans-fatty acids and higher amounts of kitchen salt.

Table 35. Distribution of Nutritional Facilities at Schools (Answered YES)

Nutritional Facilities at School	N	%
School kitchen	114	69.5
School cafeteria	6	3.7
School vending machine	15	9.1
Total	135	82.3

The Croatian Ombudsperson for Children has published a Recommendation on Advertising and Advertising Campaigns in Schools and Other Spaces Where Children Predominantly Spend Their Time. Also, based on the Education in Primary and Secondary Schools Act, Article 59, in schooling institutions any form of advertising and sales of products not in line with the goals of education is banned. As presented in Table 36, to this Act adhere 77.4% of schools, whereas 21.3% of schools depart from this law.

Table 36. Prohibition of Sales and Advertising of High Calorie/Low Nutritional Value Food and Beverages


School free from Sales and Advertising	N	%
Yes	127	77.4
No	35	21.3
Total	162	98.7

5. References

1. WHO Regional Office for Europe: WHO European Childhood Obesity Surveillance Initiative. Protocol, version August 2010. Copenhagen: 2010.
2. World Health Organization. Gaining health. The European Strategy for the Prevention and Control of Noncommunicable Diseases. Copenhagen, World Health Organization, 2006. Available from: www.euro.who.int/__data/assets/pdf_file/0008/76526/E89306.pdf
3. World Health Organization. WHO AnthroPlus for Personal Computers Manual Software for assessing growth of the world's children and adolescents. Department of Nutrition for Health and Development, Geneva, Switzerland, 2009. Available from: http://www.who.int/growthref/tools/who_anthroplus_manual.pdf
4. World Health Organization Multicentre Growth Reference Study Group. WHO child growth standards based on length/height, weight and age. *Acta Paediatrica*. Supplement, 2006, 450:76–85.
5. Primary and Secondary School Education Act (Official Gazette, Nos. 87/08, 86/09, 92/10, 105/10, 90/11, 5/12, 16/12, 86/12, 126/12, 94/13 and 152/14)
6. Iglowstein I, Jenni OG, Molinari, L, Largo, RH. Sleep duration from infancy to adolescence: reference values and generational trends. *Pediatrics*. 2003, 111(2), 302-307.
7. Kramer MS, Kakuma R. The optimal duration of exclusive breastfeeding: a systematic review. Geneva, World Health Organization, 2001 (WHO/ NHD/01.08; WHO/FCH/01.23).
8. Republic of Croatia. Ministry of Science, Education and Sport. National Framework Curriculum for pre-school education and general compulsory and secondary education. Zagreb, July 2010. Available from: http://www.ibe.unesco.org/curricula/croatia/ci_fw_2010_eng.pdf
9. Croatian Bureau of Statistics. Census of Population, Households and Dwellings in 2011. FAMILIES, BY TYPE AND NUMBER OF CHILDREN. Available from: http://www.dzs.hr/Hrv/censuses/census2011/results/htm/h02_01_05/H02_01_05_RH.html
10. Republic of Croatia. Ombudsman for Children. Recommendation on Advertising and Advertising Campaigns in Schools and Other Spaces Where Children Predominantly Spend Their Time. 2012. Available from: http://dijete.hr/websites/dijete.hr/attachments/073_Preporuka%20o%20oglasavanju%20i%20reklamnim%20kampanjama%20u%20skolama%20i%20drugim%20prostorima%20u%20kojima%20pretezito%20borave%20djeca.pdf

6. Annexes

6.1. Ministry of Health Letter of Interest



REPUBLIC OF CROATIA
MINISTRY OF HEALTH
Class: 023-03/14-01/250
FileNo.: 534-01/4-14-02

Dr João Breda, PhD, MPH, MBA
Programme Manager
Nutrition, Physical Activity and Obesity,
Division of Noncommunicable Diseases and Health Promotion
WHO Regional Office for Europe
UN City, Marmorvej 51
DK-2100 Copenhagen Ø, Denmark

Zagreb, 15th July 2014

**Participation of the Republic of Croatia in the *European Childhood Obesity Surveillance Initiative (COSI)*
Letter of interest**


Dear Dr Breda,

The Ministry of Health of the Republic of Croatia hereby expresses its interest to participate in the *European Childhood Obesity Surveillance Initiative (COSI)* for the next data collection round 2015/2016.


The institution responsible for the overall coordination of the WHO-COSI in Croatia is the Croatian National Institute of Public Health. In case of a positive reply, please contact the person nominated as the Principal Investigator for any further details:

Sanja Musić Milanović, MD, PhD
Health Promotion Department, Head
Croatian National Institute of Public Health
Rockefellerova 7
10000 Zagreb, Croatia
E-mail: sanja.music@hzjz.hr
Phone: +385 1 4863 203

Yours sincerely,




MINISTER
Siniša Varga, DMD


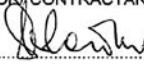



Ministry
of Health
uzdravljenost zajedno

Ksaver 200a, 10 000 Zagreb, Republic of Croatia
T + 385 1 46 07 555 F + 385 1 46 77 076
www.zdravlje.hr

6.2. COSI Signed Agreement for Performance of Work

 World Health Organization		WHO/GSC/GPL Block 3510 Jalan Teknokrat 6 Cyberjaya 63000 Malaysia		WHO Reference/ Référence OMS WHO Registration 2014/439542-0 Purchase Order 201034476 Reg. File 2014-439542 Unit Reference	
AGREEMENT FOR PERFORMANCE OF WORK ACCORD POUR EXECUTION DE TRAVAUX				Country Office, Croatia	

<p>The undersigned parties, having read the terms and General Conditions, hereby conclude the present Agreement and confirm their agreement and acceptance thereof.</p> <p>ON BEHALF OF WHO/ POUR L'OMS</p> <p>Responsible WHO Technical Officer: <i>Fonctionnaire technique responsable de l'OMS:</i></p> <p>Antoinette Kaic-Rak Head EU_CRO WHO Country Office, Croatia</p> <p>Approved by: <i>Approuvé par:</i></p> <p>Antoinette KAIC-RAK Head EU_CRO WHO Country Office, Croatia</p> <p>Authorized Signatory: <i>Signataire autorisé:</i></p>  <p>Mr. Motohiro Ogita Coordinator Global Procurement and Logistics (WHO/GMG/GSC/GPL)</p> <p>Letchumpunitha Palaniapan Procurement Assistant HQ/GSC Global Service Centre 09-JUL-2014</p>	<p>Les parties soussignées, ayant lu les modalités et les Conditions Générales, ratifient l'Accord et confirment leur acceptation.</p> <p>CONTRACTOR/ CONTRACTANT</p> <p>Signature : </p> <p>Date: Zagreb, July 15, 2014</p> <p>Name & Title/ Nom & Fonction : Sanja Musić Milanović, MD, PhD Project leader</p> <p>Signature: </p> <p>Date: Zagreb, July, 15, 2014</p> <p>Name & Title / Nom & Fonction: Tamara Poljičanin, MD, PhD Director</p> <p>Ref.No: 80-20-316/14</p>
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AGREEMENT FOR PERFORMANCE OF WORK Page 2 of 4

6.3. COSI Signed Collaboration Agreement

WHO EUROPEAN CHILDHOOD OBESITY SURVEILLANCE INITIATIVE

COLLABORATION ARRANGEMENT

INTRODUCTION

This document describes the roles of the undersigned parties in the implementation of the World Health Organization (WHO) European Childhood Obesity Surveillance Initiative at country and international level, including data release and publication policies, principles, terms and procedures.

The country's Principal Investigator or other country representatives responsible for the national implementation of the WHO European Childhood Obesity Surveillance Initiative are required to read this document and indicate their acceptance of the stated policies, principles, procedures and terms by signing the agreement section below.


GUIDING PRINCIPLES

The policy on ownership, publication and release of data is guided by the following principles:

- The country-specific data sets are owned by the official country-level agency implementing or sponsoring the surveillance system.
- The core data are collected according to a common agreed protocol.
- The privacy of the participating schools and children must be protected.
- A high data quality must be ensured.

Standard processes, procedures and guidelines for coordination, data ownership and publications have been developed as well as general terms for participation, and they are explained in the next six pages. All interested parties must agree to them.

The undersigned parties agree to the described coordination, data release and publication policies, principles, terms and procedures for the WHO European Childhood Obesity Surveillance Initiative.

For the WORLD HEALTH ORGANIZATION:		For the COUNTRY of: CROATIA	
Dr João Breda, Programme Manager, Division of Noncommunicable Diseases and Life-course; Nutrition, Physical Activity and Obesity Programme		Name and title: Croatian Institute of Public Health Director: Tamara Pajicarin, MD, Ph.D.	
Signature		Signature	
Date		Date	16.10.2014

req.no. 80-20-394/1-14

Continued on next page

6.4. Ministry of Science, Education, and Sport Support Letter



REPUBLIKA HRVATSKA
MINISTARSTVO ZNANOSTI, OBRAZOVANJA I SPORTA

KLASA: 602-02/15-03/00288
URBROJ: 533-01-15-0004

Zagreb, 30. srpnja 2015.

HRVATSKI ZAVOD ZA JAVNO ZDRAVSTVO
n/r ravnateljice, dr. sc. Tamare Poljičanin, dr. med.
Rockefellerova 7
10 000 Zagreb

Predmet: Suglasnost za provedbu SZO - European childhood obesity surveillance initiative - u Republici Hrvatskoj
- suglasnost, daje se

Poštovana,

Ministarstvo znanosti, obrazovanja i sporta zaprimilo je Vaš podnesak u kojemu tražite suglasnost za provođenje istraživanja SZO „European childhood obesity surveillance initiative“ u Republici Hrvatskoj, a koje bi se provelo na nacionalnoj razini tijekom 2015/2016. godine na uzorku od 5 600 djece nižih razreda osnovne škole, prema metodologiji SZO-a. O navedenom je Ministarstvo zatražilo stručno mišljenje Agencije za odgoj i obrazovanje.

Agencija za odgoj i obrazovanje u svom je stručnom mišljenju (KLASA: 602-01/15-01/0242; URBROJ: 561-03-01/6-15-2) koje Vam dostavljamo u privitku utvrdila kako će navedeno istraživanje pridonijeti uvidu u stvarno stanje uhranjenosti djece u Republici Hrvatskoj, a dobiveni će podatci poslužiti za osmišljavanje i provedbu preventivnih programa.

Slijedom navedenoga Ministarstvo je suglasno da se navedeno istraživanje tijekom 2015./2016. godine provede u osnovnim školama.

S poštovanjem,




Privitak: kao u tekstu

- Dostaviti:
1. Naslovu
2. Pismohrani, ovdje.



6.5. Ethics Committee Approval



HRVATSKI ZAVOD
ZA JAVNO ZDRAVSTVO
Rockefellerova 7
HR-10000 Zagreb
T: +385 1 4863 222
F: +385 1 4863 366
p.p. 161
www.hzjz.hr

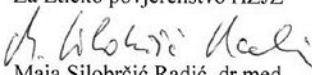
ETIČKO POVJERENSTVO

Ur.broj: 80-2660/1-15
U Zagrebu, 25. rujna 2015.

N/p
Doc.dr.sc. Sanja Musić Milanović, dr.med.
Voditeljica istraživanja COSI u Hrvatskoj
Voditeljica Službe za promicanje zdravlja
Hrvatski zavod za javno zdravstvo

1. Etičko povjerenstvo Hrvatskog zavoda za javno zdravstvo na sastanku održanom 25. rujna 2015. godine ponovno je raspravljalo o etičkoj prihvatljivosti istraživanja „European childhood obesity surveillance initiative (COSI)“ u Republici Hrvatskoj“, a za koje je 18. veljače 2015. godine dalo etičku dopusnicu za provedbu (Ur.broj: 80-440/1-15).
2. Etičko povjerenstvo utvrdilo je da se radi o istraživanju pod vodstvom Svjetske zdravstvene organizacije (SZO) koja je kao koodinator provedbe istraživanja donijela izmjene u metodologiji. Istraživanje je do sada provedeno u 22 europske zemlje, a za Republiku Hrvatsku provoditelj istraživanja je Hrvatski zavod za javno zdravstvo. Istraživanje se planira provesti tijekom školske godine 2015/2016. na uzorku od 7000 djece drugih i trećih razreda osnovne škole. U sklopu istraživanja provela bi se antropometrijska mjerenja (tjelesna visina, tjelesna masa, opseg struka i bokova) te ispunjavanje upitnika za provoditelje istraživanja u koji se upisuju i podatci obavljenih mjerenja, upitnika za obitelj djeteta te upitnika za škole. Metodologija provođenja mjerenja i upitnika određeni su od strane SZO. Zamolbi su priloženi opis istraživanja prema novoj metodologiji, upitnici s naznačenim izmjenama, obrazac obavijesti o istraživanju, predložak izjave o sudjelovanju za ispitanika/roditelja/staratelja i izjave o povjerljivosti i zaštiti podataka za osobe koje sudjeluju u provođenju istraživanja, preslika suglasnosti Ministarstva znanosti, obrazovanja i sporta za provedbu istraživanja te preslika pozitivnog stručnog mišljenja Agencije za odgoj i obrazovanje. Svi prikupljeni podatci smatrat će se strogo povjerljivima te će se obrađivati bez mogućnosti identifikacije pojedinih osoba.
3. Etičko povjerenstvo je, prema priloženoj dokumentaciji i dodatnim informacijama dobivenim od voditeljice istraživanja doc.dr.sc. Sanje Musić Milanović, dr. med., utvrdilo da je predloženo istraživanje u skladu s etičkim načelima te je odlučilo da se odobri.



Za Etičko povjerenstvo HZJZ

Maja Silobričić Radić, dr.med.

6.6. Croatian Institute of Public Health Working Committee

Institution	Name
Croatian Institute of Public Health	Assistant Professor, Sanja Musić Milanović , MD, MPH, PhD
Croatian Institute of Public Health	Marija Delaš Aždajić , MD
Croatian Institute of Public Health	Martina Markelić , prof.
Croatian Institute of Public Health	Maja Lang Morović , prof.

6.6.1. Central Working Group (According to Ethical Committee Approval)

Institution	Name	Occupation
Croatian Institute of Public Health	Assistant Professor, Sanja Musić Milanović , MD, MPH, PhD	Principal Investigator
Croatian Institute of Public Health	Juanette Budimilić Mikolaci , mag.antr.	
Croatian Institute of Public Health	Marija Delaš Aždajić , MD	
Croatian Institute of Public Health	Sanja Glamočanin , back.san.ing.	
Croatian Institute of Public Health	Diana Jovičić Burić , MD	
Croatian Institute of Public Health	Lana Kasumović , back.san.ing.	
Croatian Institute of Public Health	Slaven Krtalić , prof., PhD	
Croatian Institute of Public Health	Zvezdana Lovrić , MD	
Croatian Institute of Public Health	Martina Markelić , prof.	
Croatian Institute of Public Health	Ljiljana Muslić , prof., PhD	
Croatian Institute of Public Health	Ivana Pavić Šimetin , MD, PhD	
Croatian Institute of Public Health	Jasmina Pavlić , prof.	
Croatian Institute of Public Health	Iva Pejnović Franelić , MD, PhD	
Croatian Institute of Public Health	Davor Plažanin , MD	

6.6.2. List of Fieldwork Examiners

County of Work	Name	Occupation	Code
Croatian Institute of Public Health	Juanette Budimilić Mikolaci	Anthropologist	023
Dubrovnik-Neretva County	Slavica Čelić	Nurse	024
Croatian Institute of Public Health	Marija Delaš Aždajić	Medical Doctor	014
Primorje-Gorski Kotar County	Dužanka Dragić Bradić	Medical Doctor	002
Primorje-Gorski Kotar County	Višnja Gogić	Medical Doctor	011
Istria County	Iva Janković	Medical Doctor	015
Split-Dalmatia County	Meri Jonjić	Nurse	026
Croatian Institute of Public Health	Diana Jovičić Burić	Medical Doctor	012
Croatian Institute of Public Health	Lana Kasumović	Sanitary Engineer	020
Croatian Institute of Public Health	Slaven Krtalić	Kinesiology Professor	021
Croatian Institute of Public Health	Maja Lang Morović	Special Education and Rehabilitation Specialist	022
Vukovar-Srijem County	Vedrana Lanc Čurđinjaković	Medical Doctor	005
Croatian Institute of Public Health	Zvezdana Lovrić	Medical Doctor	007
The City of Zagreb	Milkica Majić	Medical Doctor	003
The City of Zagreb	Nika Lazić	Medical Doctor	018
Krapina-Zagorje County	Bojana Mahmutović	Medical Doctor	019
Croatian Institute of Public Health	Davor Plažanin	Medical Doctor	008
Istria County	Željko Pušelja	Medical Doctor	016
Split-Dalmatia County	Meri Rožić	Nurse	025

County of Work	Name	Occupation	Code
Karlovac County	Kristina Sekulić	Medical Doctor	009
Lika-Senj County	Ivan Stanić	Medical Doctor	004
Osijek-Baranja County	Tihana Šlezak	Medical Doctor	017
Brod-Posavina County	Ivan Štivić	Medical Doctor	006
Primorje-Gorski Kotar County	Andrea Šuran	Medical Doctor	010
Primorje-Gorski Kotar County	Mario Sušanj	Medical Doctor	001
Primorje-Gorski Kotar County	Morana Tomljenović	Medical Doctor	013

6.7. List of Schools

County	School Name	Code
Zagreb County	Josip Zorić Elementary School	0001
	Stjepan Basariček Elementary School	0002
	Josip Badalić Elementary School	0003
	Juraj Habelić Elementary School	0004
	1st Elementary School Vrbovec	0005
	Antun Augustinčić Elementary School	0006
	Ivan Perkovac Elementary School	0007
	Ivana Brlić-Mažuranić Elementary School	0008
	Jakovlje Elementary School	0009
	Bistra Elementary School	0010
Virovitica-Podravina County	Eugen Kumičić Elementary School	0011
	Josip Kozarac Elementary School	0012
	Gradina Elementary School	0013
	Davorin Trstenjak Elementary School	0014
	Voćin Elementary School	0015
	Suhopolje Elementary School	0016
	Petar Preradović Elementary School	0017
Požega-Slavonia County	Radić Brothers Elementary School	0018
Brod-Posavina County	Đuro Pilar Elementary School	0019
	Vladimir Nazor Elementary School, Slavonski Brod	0020

County	School Name	Code
	Dragutin Tadijanović Elementary School	0021
	Ivan Mažuranić Elementary School	0022
	Vladimir Nazor Elementary School, Zapolje	0023
Zadar County	Stanovi Elementary School	0024
	Ribar Brothers Elementary School	0025
	Starigrad Elementary School	0026
	"Petar Zoranić" Elementary School	0027
Osijek-Baranja County	Hrvatski sokol Elementary School	0028
	Josip Antun Čolnić Elementary School	0029
	Kralj Tomislav Elementary School	0030
	Franjo Krežme Elementary School	0031
	Vladimir Becić Elementary School	0032
	Mladost Elementary School	0033
	Ljudevit Gaj Elementary School	0034
	Ivan Filipović Elementary School	0035
	Ladimirevci Elementary School	0036
	Darda Elementary School	0037
Šibenik-Knin County	Petar Krešimir 4th Elementary School	0038
	Rogoznica Elementary School	0039
	Murterski Škoji Elementary School	0040
Vukovar-Srijem County	Ivan Kozarac Elementary School	0042

County	School Name	Code
	Siniša Glavašević Elementary School	0043
	Blago Zadro Elementary School	0044
	Borovo Elementary School	0045
	Gradište Elementary School	0046
	August Cesarec Elementary School	0047
	Čakovci Elementary School	0048
Split-Dalmatia County	Ivan Lovrić Elementary School	0049
	Marko Marulić Elementary School	0050
	Majstor Radovan Elementary School	0051
	Vrgorac Elementary School	0052
	prof. Filip Lukas Elementary School	0053
	Marjan Elementary School	0054
	Pojišan Elementary School	0055
	Ravne Njive Elementary School	0056
	Mejaši Elementary School	0057
	Pujanki Elementary School	0058
	Žrnovnica Elementary School	0059
	"Strožanac" Elementary School	0060
	Jesenice Dugi Rat Elementary School	0061
	Ivan Mažuranić Elementary School	0062
	Ante Starčević Elementary School	0063
	Milna Elementary School	0064

County	School Name	Code
	Petar Hektorović Elementary School	0065
	Trilj Elementary School	0066
	Milan Begović Elementary School	0067
	Tučepi Elementary School	0068
Istria County	"Vazmoslav Gržalja" Elementary School	0069
	Matija Vlačić Elementary School	0070
	Tar - Vabriga Elementary School - Scuola elementare Torre - Abrega	0071
	Elementary School - Scuola elementare Giuseppina Martinuzzi Pula-Pola	0072
	Kaštanjer Elementary School	0073
	Vidikovac Elementary School	0074
	Veruda Elementary School	0075
	dr Mate Demarina Elementary School	0076
	Vladimir Gortan Elementary School	0077
Krapina-Zagorje County	Ksaver Šandor Gjalski Elementary School	0078
	Ljudevit Gaj Elementary School	0079
Dubrovnik-Neretva County	Lapad Elementary School	0080
	Don Mihovil Pavlinović Elementary School	0081
	Kuna Elementary School	0082
	Opuzen Elementary School	0083
	Smokvica Elementary School	0084

County	School Name	Code
Međimurje County	2nd Elementary School Čakovec	0085
	3rd Elementary School Čakovec	0086
	Ivanovec Elementary School	0087
	Goričan Elementary School	0088
	Tomaš Goričanc Elementary School	0089
	St. Martin on Mura Elementary School	0090
	Joža Horvat Elementary School	0091
	The City of Zagreb	Jabukovac Elementary School - Zagreb
Miroslav Krleža Elementary School	0093	
dr. Ante Starčević Elementary School	0094	
Mate Lovrak Elementary School	0095	
Antun Branko Šimić Elementary School	0096	
Antun Gustav Matoš Elementary School	0097	
August Harambašić Elementary School	0098	
Ivan Goran Kovačić Elementary School	0099	
Fran Krsto Frankopan Elementary School	0100	
Lovro pl. Matačić Elementary School	0101	
Ante Kovačić Elementary School	0102	
Dragutin Domjanić Elementary School	0103	

County	School Name	Code
	Dragutin Tadijanović Elementary School	0104
	ban Josip Jelačić Elementary School	0105
	grof Jank Drašković Elementary School	0106
	Malešnica Elementary School	0107
	August Šenoa Elementary School	0108
	Horvati Elementary School	0109
	Josip Račić Elementary School	0110
	Matija Gubac Elementary School	0111
	Alojzije Stepinac Elementary School	0112
	Vrbani Elementary School	0113
	Cvjetno naselje Elementary School	0114
	Marin Držić Elementary School	0115
	Savski Gaj Elementary School	0116
	Gustav Krklec Elementary School	0117
	1st Elementary School Dugave	0118
	Sveta Klara Elementary School	0119
	Mladost Elementary School	0120
	Sesvete Elementary School	0121
	Sesvetski Kraljevec Elementary School	0122
	Borovje Elementary School	0123
	Sesvetska Sela Elementary School	0124

County	School Name	Code
	Luka Elementary School	0125
	Bartol Kašić Elementary School	0126
Sisak-Moslavina County	1st Elementary School Petrinja	0127
	Ribar Brothers Elementary School	0128
	Budaševo-Topolovac-Gušće Elementary School	0129
Karlovac County	"Vladimir Nazor" Elementary School	0130
	Turanj Elementary School	0131
	Vojnić Elementary School	0132
	"Antun Klasić" Elementary School	0133
Varaždin County	Ludbreg Elementary School	0134
	Novi Marof Elementary School	0135
	"Podrute" Elementary School	0136
	2nd Elementary School Varaždin	0137
	3rd Elementary School Varaždin	0138
	Cestica Elementary School	0139
	Gustav Krklec Elementary School	0140
	Ante Starčević Elementary School	0141
Koprivnica-Križevci County	Grgur Karlovčan Elementary School	0142
	Koprivnički Bregi Elementary School	0143
	"Prof. Blaž Mađer" Elementary School	0144
	Kloštar Podravski Elementary School	0145
	Kalnik Elementary School	0146

County	School Name	Code
Bjelovar-Bilogora County	3rd Elementary School Bjelovar	0147
	Trnovitički Popovac Elementary School	0148
	Sirač Elementary School	0149
	Elementary School in Đulovac	0150
	Berek Elementary School	0151
	Trnovitica Elementary School	0152
Primorje-Gorski Kotar County	Ivan Goran Kovačić Elementary School	0153
	Fran Krsto Frankopan Elementary School	0154
	Elementary School - Scuola elementare Gelsi	0155
	"Kantrida" Elementary School	0156
	Podmurvice Elementary School	0157
	Vežica Elementary School	0158
	Gornja Vežica Elementary School	0159
	Pehlin Elementary School	0160
	Sveti Matej Elementary School	0161
	Mario Martinolić Elementary School	0162
Mrkopalj Elementary School	0163	
Lika-Senj County	Dr. Jure Turić Elementary School	0164

6.8. Standardized Table Used in the Field Research

Number	Sex	Date of birth	Place of residence (urban, semi-urban, rural)	Breakfast (yes/no)	Date of measurement	Time of measurement	Accepts measurement (yes/no)	Body height (cm)	Body height II (cm)	Body weight (kg)	Waist ratio (cm)	Hip ratio (cm)
01												
02												
03												
04												
05												
06												
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21												
22												
23												
24												
25												
26												
27												
28												
29												
30												

Name of school, class and grade:

School code:

Children are dressed (underwear only, gym clothes, light clothes, heavy clothes):



MINISTRY OF SCIENCE AND EDUCATION
OF THE REPUBLIC OF CROATIA



Ministry
of Health



CIPH