



WHO European Childhood Obesity Surveillance Initiative (COSI)

Report on the fifth round of data collection, 2018–2020



World Health
Organization

European Region



WHO European Childhood Obesity Surveillance Initiative (COSI)

Report on the fifth round of data collection, 2018–2020



World Health
Organization

European Region

Abstract

The WHO Regional Office for Europe established the WHO European Childhood Obesity Surveillance Initiative (COSI) in 2007 in response to the need for standardized surveillance data on the prevalence of overweight and obesity among school-aged children. The availability of such information is essential to develop effective policies and strategies to tackle childhood obesity in the WHO European Region.

Since its first round of data collection, which involved 13 countries, COSI has grown dramatically and 45 countries participated in the fifth round, which took place between 2018 and 2020. Of these, 33 countries collected data in the fifth round and, in total, almost 411 000 children aged 6–9 years were measured. In addition, data were collected on school environments and – for countries that used the voluntary family questionnaire – on some dietary habits, physical activity and other health-related behaviours.

The systematic collection and analyses of these data allow intercountry comparisons and a better understanding of the progression of childhood overweight and obesity in Europe. Together, they clearly show that childhood obesity remains a major public health problem in the WHO European Region.

Keywords

EUROPE
CHILDREN
OBESITY
OVERWEIGHT
PUBLIC HEALTH SURVEILLANCE
NUTRITION

WHO/EURO:2022-6594-46360-67071

© World Health Organization 2022

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Under the terms of this licence, you may copy, redistribute and adapt the work for noncommercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition: Report on the fifth round of data collection, 2018–2020: WHO European Childhood Obesity Surveillance Initiative (COSI). Copenhagen: WHO Regional Office for Europe; 2022".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

Suggested citation. Report on the fifth round of data collection, 2018–2020: WHO European Childhood Obesity Surveillance Initiative (COSI). Copenhagen: WHO Regional Office for Europe; 2022. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

Sales, rights and licensing. To purchase WHO publications, see <http://apps.who.int/bookorders>. To submit requests for commercial use and queries on rights and licensing, see <http://www.who.int/about/licensing>.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

General disclaimers. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement. The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

This publication contains the report of the fifth round of data collection of the WHO European Childhood Obesity Surveillance Initiative (COSI) and does not necessarily represent the decisions or policies of WHO.

Contents



Acknowledgements	iv
Abbreviations	x
Executive summary	xi
Introduction	1
1. Overweight and obesity	4
1.1 Overweight	5
1.2 Obesity	8
2. Eating habits	13
2.1 Breakfast consumption	13
2.2 Consumption of fresh fruit and vegetables	15
2.3 Soft drinks consumption	20
3. Physical activity and screen time	24
3.1 Travel to and from school	24
3.2 Time spent practising sports/dancing	27
3.3 Time spent playing actively/vigorously	29
3.4 Time spent watching television or using electronic devices (screen time)	32
Conclusion	35
References	36
Annex 1. Methodology	38
Annex 2. Supplementary data tables	47

Acknowledgements

This report was made possible through the support and commitment of the Principal Investigators of the WHO European Childhood Obesity Surveillance Initiative (COSI) and their colleagues. Special thanks are also due to the data collectors, school officials, parents/caregivers and children who participated in the survey. The WHO European Office for the Prevention and Control of Noncommunicable Diseases (NCD Office) also wishes to thank the Member States of the WHO European Region for their support, leadership and commitment to this initiative.

Overall technical oversight of the initiative was provided by Kremlin Wickramasinghe, Ivo Rakovac and João Breda (WHO Regional Office for Europe, Denmark). The main authors of this report are Marta Buoncristiano and Karen McColl (WHO Regional Office for Europe, Denmark). The NCD Office acknowledges the contribution of the COSI Principal Investigators, who shared data, extensive knowledge, text and comments on the report. All of the Principal Investigators are also coauthors of this document. The NCD Office also sincerely thanks Harry Rutter (University of Bath, United Kingdom) and Wolfgang Ahrens (Leibniz Institute for Prevention Research and Epidemiology, Bremen, Germany; WHO Collaborating Centre for Obesity Prevention, Nutrition and Physical Activity) for overall advice on the design of COSI and its protocol; and Gerben Rienk (Trial Data Solutions, the Netherlands) for data management.

Contributors

Principal Investigators and collaborators of COSI

Collecting data, country-level management, contributing comments to the report, and reviewing the final draft.

Albania

Jolanda Hyska, Arjan Bregu, Genc Burazeri, Institute of Public Health

Armenia

Marina Melkumova, Yeva Movsesyan, Arabkir Medical Centre – Institute of Child and Adolescent Health
Nune Pashayan, Ministry of Health

Austria

Daniel Weghuber, Department of Pediatrics, Paracelsus Medical University
Karin Schindler, Medical University of Vienna

Belgium

Laurence Doughan, Federal Public Service of Public Health, Food Security Chain and Environment
Machtel Wauters, Flemish Agency for Care and Health



Bulgaria

Vesselka Duleva, Ekaterina Chikova-Iscener, National Center of Public Health and Analyses

Croatia

Sanja Musić Milanović, University of Zagreb; Croatian Institute of Public Health

Helena Krizan, Dora Bukal, Sanja Meštrić, Maja Lang Morović, Croatian Institute of Public Health

Cyprus

Eliza Markidou Ioannidou, Ministry of Health

Czechia

Marie Kunešová, Radka Taxová Braunerová, Hana Zamrazilová, Tereza Metelcová, Institute of Endocrinology

Bohuslav Procházka, Paediatric Clinic Kutná Hora

Denmark

Tatjana Hejgaard, Danish Health Authority

Lene Kierkegaard, National Institute of Public Health

Estonia

Eha Nurk, Merike Liivak, Natalja Glušková, National Institute for Health Development

Finland

Päivi Mäki, Esko Levälahti, Tiina Laatikainen, Finnish Institute for Health and Welfare

France

Benoît Salanave, Santé publique France

Georgia

Lela Shengelia, Lela Sturua, Natia Kakutia, National Center for Disease Control and Public Health of Georgia

Germany – City of Bremen

Stefan Rach, Ramona Siebels, Claudia Brünings-Kuppe, Leibniz Institute for Prevention Research and Epidemiology – BIPS

Wolfgang Ahrens, Leibniz Institute for Prevention Research and Epidemiology – BIPS; University of Bremen

Greece

Maria Hassapidou, Ioannis Pagkalos, Anna Kokkinopoulou, Department of Nutritional Sciences and Dietetics, International Hellenic University

Hungary

Viktória Anna Kovács, Marta Bakacs, Edit Feigl, Andrea Horvath, Kitti Susovits, Andrea Zentai, Nikolett Szilfai, Zsuzsa Sepler, National Institute of Pharmacy and Nutrition

Ireland

Cecily Kelleher, Lachlan Mitchell, Silvia Bel Serrat, Mirjam Heinen, John Mehegan, Celine Murrin, National Nutrition Surveillance Centre at University College Dublin

Israel

Ronit Endevelt, Moran Blychfeld Magnazi, Naomi Fliss Isakov, University of Haifa, Ministry of Health

Italy

Angela Spinelli, Paola Nardone, Michele Antonio Salvatore, National Centre for Disease Prevention and Health Promotion, Italian National Institute of Health [Istituto Superiore di Sanità] (WHO Collaborating Centre on Childhood Obesity)

Daniela Galeone, General Directorate of Prevention, Ministry of Health

Kazakhstan

Shynar Abdrakhmanova, Zhanar Kalmakova, Tatyana Slazhnyova, Assel Adayeva, National Center of Public Health of the Ministry of Health of the Republic of Kazakhstan

Kyrgyzstan

Zhamyila Usupova, Gulmira Aitmurzaeva, Republican Center for Health Promotion and Mass Communication, Ministry of Health of the Kyrgyz Republic

Latvia

Iveta Pudule, Biruta Velika, Centre for Disease and Prevention Control

Lithuania

Ausra Petrauskiene, Justina Vaitkeviciute, Monika Grincaite, Health Research Institute (WHO Collaborating Centre for the Prevention and Control Noncommunicable Diseases), Faculty of Public Health, Lithuanian University of Health Sciences

Malta

Victoria Farrugia Sant'Angelo, Lorraine Tabone, Primary Health Care

Montenegro

Enisa Kujundzic, Institute of Public Health of Montenegro

Boban Mugosa, Faculty of Medicine, University of Montenegro

Netherlands

Jolanda Boer, National Institute for Public Health and the Environment (RIVM)

Meriam Bouwmeester, Netherlands Centre for Youth Healthcare (NCJ)

Paula van Dommelen, Netherlands Organisation for Applied Scientific Research (TNO)

The data have been made available by the NCJ and the youth healthcare (JGZ) organizations.

**North Macedonia**

Igor Spiroski, Institute of Public Health, Faculty of Medicine, Ss. Cyril and Methodius University

Norway

Anna Biehl, Jørgen Meisfjord, Ragnhild Hovengen, Norwegian Institute of Public Health

Poland

Anna Fijalkowska, Hanna Nalecz, Anna Dzielska, Institute of Mother and Child

Portugal

Ana Rito, WHO Collaborating Centre for Nutrition and Childhood Obesity, National Institute of Health Dr Ricardo Jorge

Sofia Mendes, Centre for Studies and Research in Social Dynamics and Health (CEIDSS)

Maria João Gregório, Directorate General of Health

Republic of Moldova

Natalia Silitrari, Ion Salaru, National Agency for Public Health

Galina Obreja, University of Medicine and Pharmacy Nicolae Testemiteanu

Romania

Constanta Huidumac-Petrescu, National Institute of Public Health

Alexandra Cucu, Lacramioara Brinduse, University of Medicine and Pharmacy Carol Davila Bucharest, National Institute of Public Health

Russian Federation – Moscow

Valentina Peterkova, Elena Bogova, Institute of Pediatric Endocrinology, National Medical Research Centre for Endocrinology of the Ministry of Health of the Russian Federation

Russian Federation – Yekaterinburg

Olga Petrovna Kovtun, Elena Anufrieva, Federal State Budget Educational Institution of Higher Education "Ural State Medical University" of the Ministry of Health of the Russian Federation

San Marino

Andrea Gualtieri, Elena Sacchini, Health Authority

Serbia

Sergej Ostojic, Visnja Djordjic, Faculty of Sport and Physical Education, University of Novi Sad

Slovakia

Ľubica Tichá, Pediatric Department, Medical Faculty of Comenius University, National Institute of Children's Diseases

Daniela Kallayová, Department of Public Health, Screening and Prevention, Ministry of Health

Slovenia

Gregor Starc, Faculty of Sport, University of Ljubljana

Spain

Marta García-Solano, Enrique Gutiérrez-González, María Ángeles Dal-Re Saavedra, Spanish Agency for Food Safety and Nutrition – Ministry of Consumer Affairs

Sweden

Kenisha Russell Jonsson, Anna Jansson, Public Health Agency of Sweden

Tajikistan

Zulfiya Abdurrahmonova, Republican Centre for Nutrition, Ministry of Health and Social Protection of Population
Khadichamo Boymatova, WHO Country Office in Tajikistan

Türkiye

Nazan Yardim, Public Health General Directorate, Ministry of Health of Türkiye

Hilal Ozcebe, Tulay Bagci Bosi, Mahmut S. Yardim, Hacettepe University, Medical Faculty, Public Health Department

Turkmenistan

Maya Tanrygulyyeva, Scientific Research Institute of Maternal and Child Health

Specific technical contributions by colleagues from the WHO Regional Office for Europe**NCD Office**

Mirjam Heinen: technical support and reviewing the report

Jelena Jakovljevic: training, support with round 4 data collection

Stephen Whiting: technical support of COSI round 5 data collection

Julianne Williams: technical support of COSI round 5 data collection, contributed to drafting and reviewing the report



Data collection in participating countries was carried out with financial support from the following institutions and organizations: **Albania:** Joint Programme on Children, Food Security and Nutrition “Reducing Malnutrition in Children”, funded by the Millennium Development Goals Achievement Fund, and the Institute of Public Health; **Armenia:** World Food Programme Country Office, Arabkir Medical Centre – Institute of Child and Adolescent Health; **Austria:** Federal Ministry of Social Affairs, Health, Care and Consumer Protection, Republic of Austria; **Belgium:** Flemish Agency for Care and Health; **Bulgaria:** Ministry of Health, National Center of Public Health and Analyses; **Croatia:** Ministry of Health and Croatian Institute of Public Health; **Cyprus:** Ministry of Health Cyprus (Dietetic Department); **Czechia:** grants AZV MZČR 17-31670 A and MZČR–RVO EÚ 00023761; **Denmark:** Danish Ministry of Health; **Estonia:** Ministry of Social Affairs, Ministry of Education and Research (IUT 42-2) and National Institute for Health Development; **Finland:** Finnish Institute for Health and Welfare; **France:** Santé publique France, French Public Health Agency; **Georgia:** National Center for Disease Control and Public Health of Georgia; **Germany:** partially funded by the Senator for Science, Health, and Consumer Protection of the Free Hanseatic City of Bremen and implemented by the Leibniz Institute for Prevention Research and Epidemiology – BIPS; **Greece:** International Hellenic University; **Hungary:** Ministry of Human Capacities; **Ireland:** Health Service Executive; **Israel:** Ministry of Health; **Italy:** Italian National Institute of Health; **Kazakhstan:** Ministry of Health of the Republic of Kazakhstan and United Nations Children’s Fund (UNICEF) Kazakhstan; **Latvia:** Ministry of Health, Centre for Disease Prevention and Control; **Lithuania:** Science Foundation of Lithuanian University of Health Sciences and Lithuanian Science Council; **Malta:** Ministry of Health; **Montenegro:** Institute of Public Health of Montenegro; **Netherlands:** Ministry of Health, Welfare and Sport; **North Macedonia:** COSI in North Macedonia is funded by the Government of North Macedonia Ministry of Health, through National Annual Program of Public Health and implemented by the Institute of Public Health and Centers of Public Health in the country; **Norway:** Ministry of Health and Care Services and Norwegian Institute of Public Health; **Poland:** National Health Programme, Ministry of Health; **Portugal:** Ministry of Health Institutions, the National Institute of Health, Directorate General of Health, Regional Health Directorates, and the kind technical support of the Centre for Studies and Research in Social Dynamics and Health (CEIDSS); **Republic of Moldova:** National Agency for Public Health; **Romania:** Ministry of Health, National Institute of Public Health; **San Marino:** Health Ministry, Educational Ministry, Social Security Institute and Health Authority; **Slovakia:** Ministry of Health and National institute of Children diseases and Office of Public Health of the Slovak Republic; **Slovenia:** Ministry of Education, Science and Sport of the Republic of Slovenia within the SLOfit surveillance system; **Spain:** Spanish Agency for Food Safety and Nutrition (AESAN); Servicio Canario de la Salud del Gobierno de Canarias; Instituto Murciano de Investigación Biosanitaria Virgen de la Arrixaca; Departamento de Salud del Gobierno Vasco; Servicio Andaluz de Salud; Consejería de Sanidad del Gobierno de Cantabria; Consejería de Salud del Gobierno de La Rioja; **Sweden:** Public Health Agency of Sweden; **Tajikistan:** Ministry of Health and Social Protection of Population; **Türkiye:** Türkiye Ministry of Health and World Bank; **Turkmenistan:** Ministry of Health and medical industry of Turkmenistan.

Abbreviations

BMI	body mass index
CI	confidence interval
COSI	Childhood Obesity Surveillance Initiative
IOTF	International Obesity Task Force
NA	not available
NCD	noncommunicable disease
PSU	primary sampling unit
SDG	Sustainable Development Goal
SSU	secondary sampling unit
SU	sampling unit

Country codes of Member States of the WHO European Region for countries included in the report

Country code	Country name	Country code	Country name
ALB	Albania	LVA	Latvia
ARM	Armenia	MAT	Malta
AUT	Austria	MDA	Republic of Moldova
BEL	Belgium	MKD	North Macedonia
BUL	Bulgaria	MNE	Montenegro
CRO	Croatia	NET	Netherlands
CYP	Cyprus	NOR	Norway
CZH	Czechia	POL	Poland
DEN	Denmark	POR	Portugal
EST	Estonia	ROM	Romania
FIN	Finland	RUS-MS	Russian Federation – Moscow
FRA	France	RUS-YK	Russian Federation – Yekaterinburg
GEO	Georgia	SMR	San Marino
GER-BR	Germany – City of Bremen	SPA	Spain
GRE	Greece	SRB	Serbia
HUN	Hungary	SVK	Slovakia
IRE	Ireland	SVN	Slovenia
ISR	Israel	SWE	Sweden
ITA	Italy	TJK	Tajikistan
KAZ	Kazakhstan	TKM	Turkmenistan
KGZ	Kyrgyzstan	TUR	Türkiye
LTU	Lithuania		

Executive summary



Overweight and obesity among children remain one of the major public health challenges facing the WHO European Region. As well as affecting a child's immediate physical and mental health, educational attainment and quality of life, unhealthy bodyweight in early life can increase the risk of obesity and noncommunicable diseases (NCDs) later in life. Tackling obesity – including childhood obesity – is vital for achievement of the Sustainable Development Goals and for implementation of the WHO European Programme of Work 2020–2025 – “United Action for Better Health”.

In order to generate reliable and valid country-level data on the prevalence of overweight and obesity among primary school-aged children, the WHO European Childhood Obesity Surveillance Initiative (COSI) was established in 2007. The initiative allows systematic collection of data on the measured weight status of children aged 7–9 years and on dietary intake, physical activity, sedentary behaviour, family background and school environment. COSI has expanded from 13 countries in 2007 to 45 countries by 2020, and the first five rounds of data collection combined have yielded measured anthropometric data on a total of over 1.3 million children.

This report presents the main results of the fifth round of COSI, which took place between 2018 and 2020 and for which 33 countries collected data. In total, almost 411 000 children aged 6–9 years were measured. In addition, data were collected on school environments and – for countries that used the voluntary family questionnaire – on some dietary habits, physical activity and other health-related behaviours. For the first time, overall estimates for prevalence of overweight and obesity, in which both genders are combined, have been included.

Overall, 29% of children aged 7–9 years in the countries collecting data for COSI round 5 were found to be living with overweight (including obesity – according to WHO definitions). Prevalence was higher among boys (31%) than girls (28%). Overall prevalence of obesity among 7–9-year-old children was 12% and more common in boys (14%) than girls (10%). There continued to be large differences between countries in this round of data collection, with country-specific prevalence of overweight among 7–9-year-old children ranging from 6% in Tajikistan to 43% in Cyprus. Prevalence of obesity among children ranged from 1% in Tajikistan to 19% in Cyprus.

When the latest available data for all countries were considered (including data from previous rounds of COSI for countries that did not participate in round 5), the highest prevalence of both overweight and obesity for both genders was observed in Cyprus, Greece and Italy; the lowest prevalence in Tajikistan, Kyrgyzstan and Turkmenistan. Of 42 countries (including two study locations in the Russian Federation), there were only six where the proportion of children aged 7–9 years affected by overweight or obesity was less than one in five.

Compared with data from the fourth round of COSI data collection, the only statistically significant differences in prevalence of overweight were a decrease among boys and girls in Malta, a decrease among boys in San Marino and a decrease among girls in Italy. For prevalence of obesity, the only statistically significant changes since the last round of data collection were an increase in prevalence among boys in Georgia, a decrease among girls in Malta and among boys in San Marino, and an increase among both boys and girls in Sweden.



As with previous COSI data, gender differences in both overweight and obesity continued to be observed in the overall COSI sample and in many countries, with prevalence generally slightly higher among boys. In the 16 countries where data were collected for more than one age group, there was a tendency for the prevalence of overweight to increase with age among boys and girls and the prevalence of obesity to increase with age for boys.

Level of parental education (“parent”, in this context, includes the following: (step) mothers, (step) fathers and/or their partners) is one of the variables used by COSI to assess family socioeconomic status. A low level of parental education was associated with higher prevalence of childhood overweight and obesity in most study locations with available data, although a reverse or no relationship was reported in five countries for overweight and in four countries for obesity. These results are broadly in line with previous COSI findings which observed an inverse relationship between the prevalence of childhood overweight/obesity and parental education in high-income countries and an opposite relationship in middle-income countries.

Unhealthy diets are a key driver of overweight, obesity and diet-related NCDs and, globally, are estimated to be responsible for 11 million deaths every year. Given the importance of diet and physical activity as determinants of overweight and obesity, COSI collects data on the frequency of consumption of breakfast, fresh fruit and vegetables – all considered to be important elements of a healthy diet – as well as frequency of soft drinks consumption.

Overall, in the 29 study locations that collected data, three quarters (75%) of 6–9-year-olds ate breakfast every day and only 3% never did so. Although only a small proportion of children never ate breakfast, the results suggest that more than one in five children did not always eat or drink anything before going to school. Levels of daily breakfast consumption ranged from 94% in Portugal and Denmark to only 44% in Armenia and 49% in Greece. In most countries, the levels of boys and girls consuming breakfast every day were similar. Children whose parents had a higher level of education were generally more likely to eat breakfast on a daily basis than children of parents with a medium or low level of education.

Overall, less than half (43%) of 6–9-year-olds consumed fresh fruit daily in the 27 study locations collecting data. Fruit was consumed less than once a week or not at all by 7% of 6–9-year-olds in these countries. The proportion of children consuming fruit daily was highest in Portugal (63%), Ireland (61%) and Denmark (60%), and lowest in Georgia (23%) and Latvia (27%). Overall, only a third (34%) of children aged 6–9 years ate vegetables daily in the 27 study locations collecting data. More than one in 10 children (11%) aged 6–9 years in these countries never ate vegetables or did so less than once a week. The percentage of children eating vegetables every day varied widely between countries, ranging from 57% in Portugal and Denmark – the only countries where more than half the children ate vegetables every day – to only 13% in Georgia and Spain. In most countries, daily consumption of fresh fruit was slightly more common among girls, while consumption of vegetables was similar in both genders. Eating fruit and vegetables on a daily basis tended to be more common in children of parents with a high level of education than in children of parents with a low level of education.

Overall, almost a quarter (22%) of 6–9-year-olds consumed soft drinks on more than three days a week in the 28 study locations that collected data. Almost half (49%) never consumed soft drinks or did so less than once a week. The percentage of children consuming soft drinks frequently (more than three days a week) ranged from less than 2% in Greece to 41% in Czechia. In most countries, frequent consumption of soft drinks was similar in boys and girls, or slightly higher in boys; and in all countries, frequent consumption of soft drinks was more common in children of parents with a low level of education than in children of parents with a high level of education.

Physical activity has many health benefits and, as a key determinant of energy expenditure, is important for maintaining a healthy weight. Children have become less active as environments and opportunities for safe active play, recreation and transport have decreased. For COSI round 5, key findings are presented for data on travel to and from school and on time spent practising sports/dancing, playing actively/vigorously, and watching television and using electronic devices.

Overall, in the 28 study locations that collected data, only 41% of 6–9-year-old children travelled to and from school actively (on foot, by bicycle, skating or by non-motorized scooter), while 50% travelled by motorized vehicle (car, school bus or public transport). The percentage of children actively travelling to school ranged from 6% in San Marino to 98% in Tajikistan. In line with previous COSI data, children were most likely to actively travel to school in central Asian countries and the Russian Federation (as well as in Germany – City of Bremen). In most countries with data, the percentage actively travelling to school was similar in boys and girls, or slightly higher in boys. In the majority of study locations (21), children of parents with a low level of education were more likely to walk, ride or skate to school than those whose parents had a high level of education.

Overall, in the 27 study locations that collected data, more than half (53%) of 6–9-year-old children spent at least two hours a week doing sports or dancing. Four in 10 children (40%) did not spend any time doing sports or dancing. The percentage of children doing sports or dancing for at least two hours a week ranged from 27% in Kazakhstan to 86% in San Marino, which was followed by Ireland (80%) and Greece (77%). In most countries, the percentage of boys practising sports/dancing for at least two hours a week was higher than that of girls, and in all countries the children of parents with a high level of education were more likely to spend at least two hours a week doing sports or dancing than those whose parents had a low level of education.

Overall, in the 27 study locations that collected data, a large majority (87%) of 6–9-year-olds spent at least one hour a day on average in active or vigorous play. The figure was slightly lower on weekdays (86%) and markedly higher at weekends (96%). In most countries, the percentage of children spending at least one hour daily in active or vigorous play was very similar in boys and girls, while the relationship between active play and parental education was mixed.

The amount of time that children spend watching television or using electronic devices (screen time) increases sedentary behaviour, which has been correlated with a higher energy intake. Overall, in the 27 study locations that collected data, 43% of children aged 6–9 years spent at least two hours a day on average watching television or using electronic devices. At weekends, more than three quarters (76%)



of children had two hours or more screen time. In all cases, with the exception of Austria and Russian Federation (Moscow), boys were more likely than girls to have at least two hours a day of screen time. In most study locations, children of parents with a low level of education were more likely to watch television or use electronic devices for at least two hours than children of parents with a high level of education.

These reliable and valid data from the fifth round of COSI, encompassing over 400 000 children aged 6–9 years across 33 countries, highlight that childhood overweight and obesity remain a major public health challenge for the countries of the WHO European Region. There continues to be a wide variation between countries in the prevalence of overweight and obesity and of behaviours related to diet and physical activity, and socioeconomic differences persist, pointing to the ongoing need for bold policy action across the European Region. A comprehensive multisectoral approach is needed – one that targets unhealthy environments and their determinants, while strengthening health systems to prevent and manage obesity and overweight more effectively. In this way, countries will be able to halt or reverse the increase in childhood overweight and obesity, thus protecting the future health and well-being of European populations.

Introduction



Overweight and obesity among children remain one of the major public health challenges facing the WHO European Region. Overweight and obesity increase the risk of noncommunicable diseases (NCDs), such as cardiovascular disease, cancer and diabetes, and are estimated to be responsible for more than 1.2 million deaths across the WHO European Region every year; they are also the leading behavioural factor contributing to disability (1). In addition, excess bodyweight is associated with an increased risk of severe outcomes of COVID-19 (1,2), and the high prevalence of obesity in Europe has exacerbated the impact of the COVID-19 pandemic in the Region. Tackling obesity is vital if we are to achieve the Sustainable Development Goals (SDGs), especially SDG 3 on ensuring healthy lives and promoting well-being, and a commitment to mobilize society for the fight against obesity is included in the WHO European Programme of Work 2020–2025 – “United Action for Better Health” (3).

Prevalence of overweight and obesity has increased consistently – across the Region almost 60% of adults are now affected – and no Member State is on track to reach the agreed target of halting the rise in obesity by 2025. Overweight and obesity in children are of particular concern because unhealthy bodyweight in early life not only affects a child’s immediate physical and mental health, educational attainment and quality of life but may also increase the risk of obesity and NCDs later in life (4). Children of all ages are affected, with 8% of children under 5 years of age and one in four children aged 10–19 years living with overweight and obesity in the European Region.

In order to generate reliable and valid country-level data on the prevalence of overweight and obesity among primary school-aged children, the WHO Childhood Obesity Surveillance Initiative (COSI) was established in 2007. The initiative established a common protocol which allows systematic collection of data on children’s weight status, by routine and standardized measurement of bodyweight and height of children aged 7–9 years. Additional data on dietary intake, physical activity, sedentary behaviour, family background and school environments are also collected in many countries. COSI is now the largest childhood obesity surveillance initiative in the world, with participation increasing from 13 countries in 2007 to 45 countries in 2020 (Table 1). In total, the first five rounds of data collection have yielded measured anthropometric data on over 1.3 million children (5).

Obesity is a complex, multifactorial disease which develops across the life course through the impact of maternal nutrition, unhealthy diet and physical inactivity. Comprehensive, multisectoral policy action is needed to target unhealthy (obesogenic) environments and commercial determinants of poor diet. In order to develop appropriate policy responses, countries need regular and high-quality data on the prevalence of overweight and obesity. Since publication of the first results, COSI data have helped to inform and drive policy action on nutrition and physical activity in the WHO European Region (6,7).

In the fourth round of COSI data collection, conducted between 2015 and 2017, overall prevalence of overweight (including obesity) was 29% in boys and 27% in girls in the 36 countries collecting data; at the same time, 12% of boys and 9% of girls were living with obesity (8). Collection of COSI data between 2007 and 2017 allowed trends in the prevalence of overweight and obesity to be examined in 11 European countries (9). In general, the prevalence decreased in countries with high prevalence (Greece, Italy, Portugal, Spain) and in Slovenia, and remained stable or slightly increased in northern and eastern European countries included in the analysis. COSI data have also indicated worryingly high rates of severe obesity among primary schoolchildren in some countries of the Region (10).

Table 1. Expansion of COSI, rounds 1–5, 2007–2020^a

Round 1 (2007–2008)	Round 2 (2008–2010)	Round 3 (2012–2013)	Round 4 (2015–2017)	Round 5 (2018–2020)
1. Belgium	1. Belgium	1. Belgium	1. Albania	1. Albania
2. Bulgaria	2. Bulgaria	2. Bulgaria	2. Belgium	2. Austria
3. Cyprus	3. Cyprus	3. Cyprus	3. Bulgaria	3. Belgium
4. Czechia	4. Czechia	4. Czechia	4. Cyprus	4. Bulgaria
5. Ireland	5. Ireland	5. Greece	5. Czechia	5. Croatia
6. Italy	6. Italy	6. Hungary	6. Greece	6. Cyprus
7. Latvia	7. Latvia	7. Ireland	7. Hungary	7. Czechia
8. Lithuania	8. Lithuania	8. Italy	8. Ireland	8. Denmark
9. Malta	9. Malta	9. Latvia	9. Italy	9. Estonia
10. Norway	10. Norway	10. Lithuania	10. Latvia	10. Finland
11. Portugal	11. Portugal	11. Malta	11. Lithuania	11. France
12. Slovenia	12. Slovenia	12. North Macedonia	12. Malta	12. Georgia
13. Sweden	13. Sweden	13. Norway	13. North Macedonia	13. Greece
	14. Greece	14. Portugal	14. Norway	14. Hungary
	15. Hungary	15. Slovenia	15. Portugal	15. Ireland
	16. North Macedonia	16. Spain	16. Republic of Moldova ^b	16. Italy
	17. Spain	17. Sweden	17. Romania	17. Kazakhstan
		18. Albania	18. San Marino	18. Kyrgyzstan
		19. Republic of Moldova	19. Slovenia	19. Latvia
		20. Romania	20. Spain	20. Lithuania
		21. San Marino	21. Sweden	21. Malta
		22. Türkiye	22. Türkiye	22. Montenegro
			23. Austria	23. Netherlands
			24. Croatia	24. North Macedonia
			25. Denmark	25. Norway ^d
			26. Estonia	26. Poland
			27. Finland	27. Portugal
			28. France	28. Republic of Moldova
			29. Georgia	29. Romania
			30. Kazakhstan	30. Russian Federation ^c
			31. Kyrgyzstan	31. San Marino
			32. Montenegro	32. Serbia
			33. Poland	33. Slovakia
			34. Russian Federation ^c	34. Slovenia
			35. Serbia	35. Spain
			36. Slovakia	36. Sweden
			37. Tajikistan	37. Tajikistan
			38. Turkmenistan	38. Türkiye
			39. Netherlands ^b	39. Turkmenistan ^e
				40. Armenia
				41. Azerbaijan ^e
				42. Bosnia and Herzegovina ^e
				43. Germany ^f
				44. Israel
				45. Uzbekistan ^e



^a Countries written in red participated in COSI for the first time; only countries written in bold collected data in the relevant COSI round. ^b Data collected in the Netherlands and the Republic of Moldova were not included in the round 4 report, as they were not available at the time of writing and hence were not included in the calculation of the overall prevalences given in that report. However, national prevalences for the Netherlands and the Republic of Moldova (round 4) are included in Fig. 1 of the current report. ^c Data were collected only in Moscow (rounds 4 and 5) and Yekaterinburg (round 5). ^d Data collected in Norway are not included in the current report as they were not available at the time of writing. ^e Data collection, processing and/or analysis did not take place as a result of disruption caused by the COVID-19 pandemic. ^f Data were collected only in the City of Bremen.



This report presents the main results of the fifth round of COSI data collection, conducted between 2018 and 2020; it includes data on prevalence of overweight and obesity, eating habits, physical activity and screen time. Data were collected in 33 countries,¹ and almost 411 000 children aged 6–9 years were measured. Thirty participating countries also collected data on school environments, while 28 used the COSI family questionnaire to collect data relating to nutrition and physical activity behaviours. This report focuses on data on prevalence of overweight and obesity, eating habits, physical activity and screen time, and how these vary by country, age, gender and level of parental education.²

A summary, including the main characteristics of the study and sample in each country, is provided in Annex 1. A more detailed description of the methodology has been published elsewhere (5).

.....
¹ In most cases, data were collected on nationally representative samples. However, in Germany data collection took place only in the City of Bremen, and in the Russian Federation only in Moscow and Yekaterinburg. It should also be noted that data collection was disrupted by the COVID-19 pandemic and could not take place in several countries. Data collected in Norway are not included in the report because they were not available at the time of writing.

² Throughout the current report, the terms “parent” and “parental” includes the following: (step) mothers, (step) fathers and/or their partners.



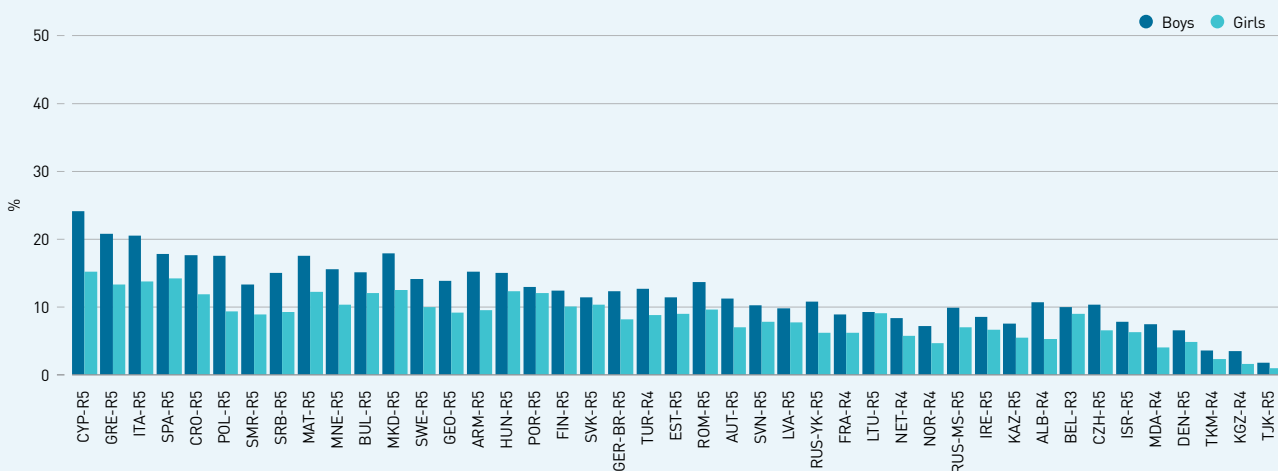
1. Overweight and obesity

Fig. 1 shows the latest available COSI data on overweight and obesity from all countries; data from previous rounds are included for those countries that did not participate in round 5.³ The prevalence of both overweight and obesity for both genders was highest in Cyprus, Greece and Italy; it was lowest in Tajikistan, Kyrgyzstan and Turkmenistan (round 4 data for the latter two). Of 42 countries (43 study locations), there were only six where the proportion of children aged 7–9 years affected by overweight or obesity was less than one in five.

Fig. 1.A Prevalence of overweight (including obesity – WHO definitions) in boys and girls aged 7–9 years, according to latest available COSI round (%)^a



Fig. 1.B Prevalence of obesity (WHO definitions) in boys and girls aged 7–9 years, according to latest available COSI round (%)^a



^a Data from the latest available COSI round were used for each country: round 3 (R3) (2012–2013); round 4 (R4) (2015–2017); or round 5 (R5) (2018–2020). Data relate to: (i) 7-year-olds in Armenia, Belgium (Flanders only), Bulgaria, Czechia, Denmark, Estonia, Finland, Germany (Bremen only), Georgia, Greece, Hungary, Ireland, Israel, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Republic of Moldova, Romania, Russian Federation (Moscow and Yekaterinburg), Serbia, Slovakia, Slovenia, Spain, Tajikistan, Türkiye and Turkmenistan; (ii) 8-year-olds in Albania, Austria, Croatia, France, Italy, Norway, Poland, San Marino and Sweden; and (iii) 9-year-olds in Cyprus and Netherlands.

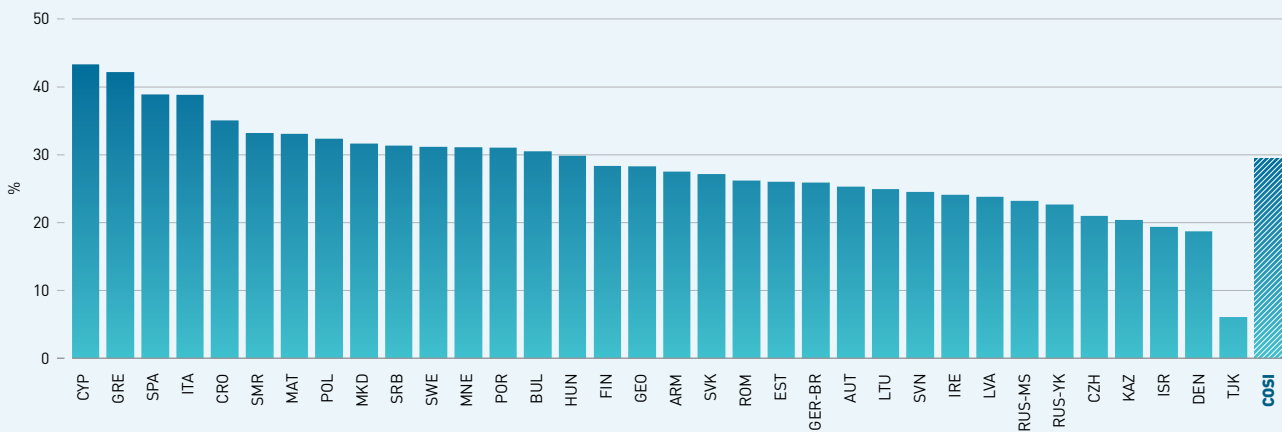
³ The classification of children’s weight status used in COSI is based on WHO definitions as provided in the 2007 WHO recommended growth reference for school-aged children and adolescents. More details are provided in Annex 1. Unless otherwise indicated, in this report overweight includes obesity.



1.1 Overweight

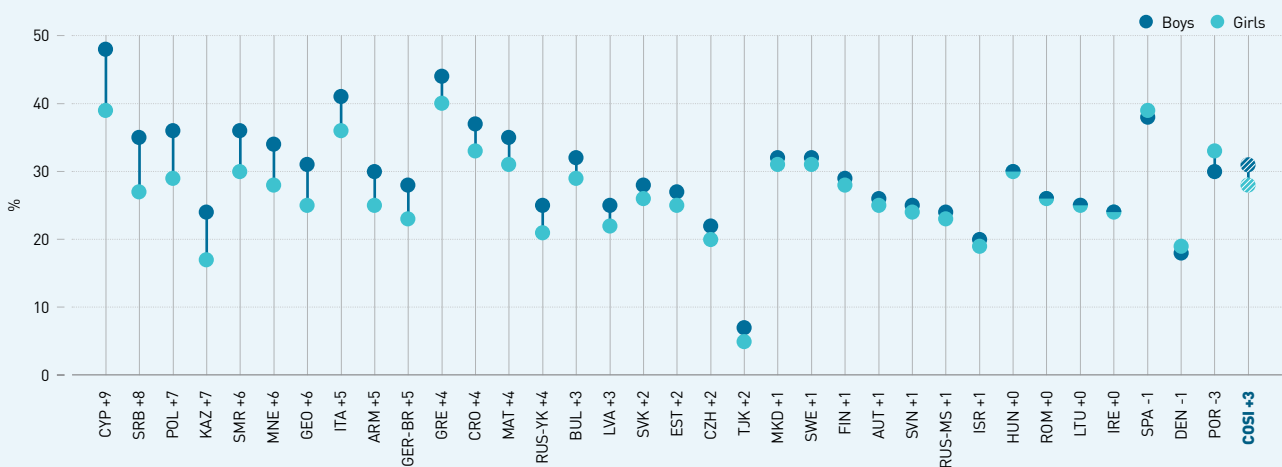
Overall, in the 33 countries of the WHO European Region that collected data in the fifth round of COSI,⁴ 29% of children aged 7–9 years were living with overweight (including obesity) according to WHO definitions (Fig. 2; Table A2.1). Prevalence among boys in this age group was 31%, while among girls it was 28% (Fig. 3; Table A2.2). As International Obesity Task Force (IOTF) cutoff points are widely used in the WHO European Region, prevalence was also calculated using these cutoffs and is presented in Annex 2.

Fig. 2. Prevalence of overweight (including obesity – WHO definitions) in children aged 7–9 years (%)^a



^a Data relate to: (i) 7-year-olds in Armenia, Bulgaria, Czechia, Denmark, Estonia, Finland, Germany [Bremen], Georgia, Greece, Hungary, Ireland, Israel, Kazakhstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Romania, Russian Federation [Moscow and Yekaterinburg], Serbia, Slovakia, Slovenia, Spain and Tajikistan; (ii) 8-year-olds in Austria, Croatia, Italy, Poland, San Marino and Sweden; and (iii) 9-year-olds in Cyprus.

Fig. 3. Prevalence of overweight (including obesity – WHO definitions) in boys and girls aged 7–9 years (%) and difference between genders (percentage points)^a



^a Differences between genders, measured in percentage points, were calculated by subtracting estimates for girls from estimates for boys. Data relate to: (i) 7-year-olds in Armenia, Bulgaria, Czechia, Denmark, Estonia, Finland, Germany [Bremen only], Georgia, Greece, Hungary, Ireland, Israel, Kazakhstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Romania, Russian Federation [Moscow and Yekaterinburg], Serbia, Slovakia, Slovenia, Spain and Tajikistan; (ii) 8-year-olds in Austria, Croatia, Italy, Poland, San Marino and Sweden; and (iii) 9-year-olds in Cyprus.

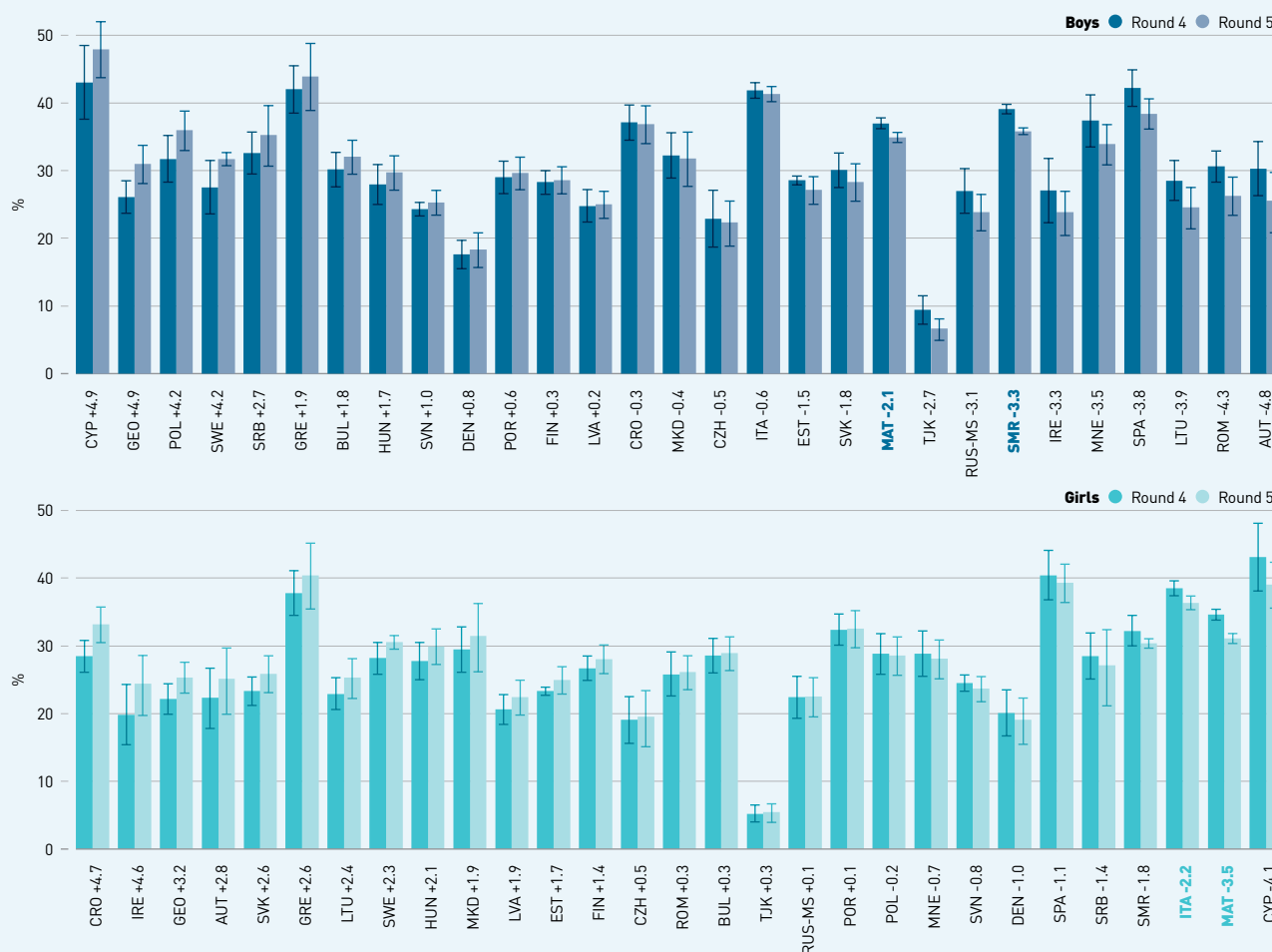
⁴ In total, there were 34 study locations, including two in the Russian Federation (Moscow and Yekaterinburg).



There continue to be large differences between countries, with country-specific prevalence of overweight among children aged 7–9 years ranging from 6% in Tajikistan to 43% in Cyprus. Among boys, prevalence ranged from 7% to 48%; in girls, from 5% to 40%. Highest prevalence of overweight among children (both genders combined) was observed in Cyprus, Greece, Spain and Italy. Prevalence was lowest in Tajikistan (which was notably lower than all others), Denmark, Israel and Kazakhstan. These results appear in line with the north–south gradient previously reported (8) and with analysis of data from the previous round of data collection which found that, on average, children of northern Europe were the tallest, those of Southern Europe had the highest weight and the children living in Central Asia had the lowest weight and were the shortest (11).

Previous reports have pointed to a decreasing trend in overweight prevalence in Greece, Italy, Portugal, Spain and Slovenia (8,9). Comparison of round 5 prevalence data with data from the fourth round of COSI data collection, which took place between 2015 and 2017, found that there were no statistically significant increases in prevalence of overweight, although some countries reported slightly higher figures (Fig. 4).

Fig. 4. Prevalence of overweight (including obesity – WHO definitions) in boys and girls aged 7–9 years, COSI round 4 (2015–2017) and round 5 (2018–2020) (%)^a



^a Variations between rounds, measured in percentage points, were calculated by subtracting round 4 estimates from round 5 estimates. Data relate to: (i) 7-year-olds in Armenia, Bulgaria, Czechia, Denmark, Estonia, Finland, Germany (Bremen only), Georgia, Greece, Hungary, Ireland, Israel, Kazakhstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Romania, Russian Federation (Moscow and Yekaterinburg), Serbia, Slovakia, Slovenia, Spain and Tajikistan; (ii) 8-year-olds in Austria, Croatia, Italy, Poland, San Marino and Sweden; and (iii) 9-year-olds in Cyprus. Countries written in bold: statistically significant difference between round 4 and round 5; error bars represent 95% confidence intervals (CI).



There was a statistically significant decrease in prevalence of overweight among boys and girls in Malta, among boys in San Marino, and among girls in Italy, although several locations reported slightly lower figures: Montenegro and Spain for both boys and girls; Austria, Estonia, Ireland, Lithuania, Romania, Russia (Moscow), Slovakia and Tajikistan for boys; Cyprus, Denmark, Italy, Malta, San Marino and Serbia for girls.

Previously, most countries have found higher prevalence of overweight in boys than girls (8). Gender differences continued to be observed in the overall COSI sample and in many countries, with prevalence generally slightly higher among boys (Fig. 3). In several countries – Austria, Denmark, Finland, Hungary, Ireland, Israel, Lithuania, North Macedonia, Romania, Russia (Moscow), Slovenia, Spain and Sweden – there was little difference in prevalence between genders.

In the 16 countries where data were collected for two or more age groups (6-,7-,8- and 9-year-olds), there was a tendency for the prevalence of overweight (including obesity) to increase with age in both boys and girls (Fig. 5; Table A2.1).

Fig. 5. Prevalence of overweight (including obesity – WHO definitions) in boys and girls in countries collecting data for two or more age groups (%)





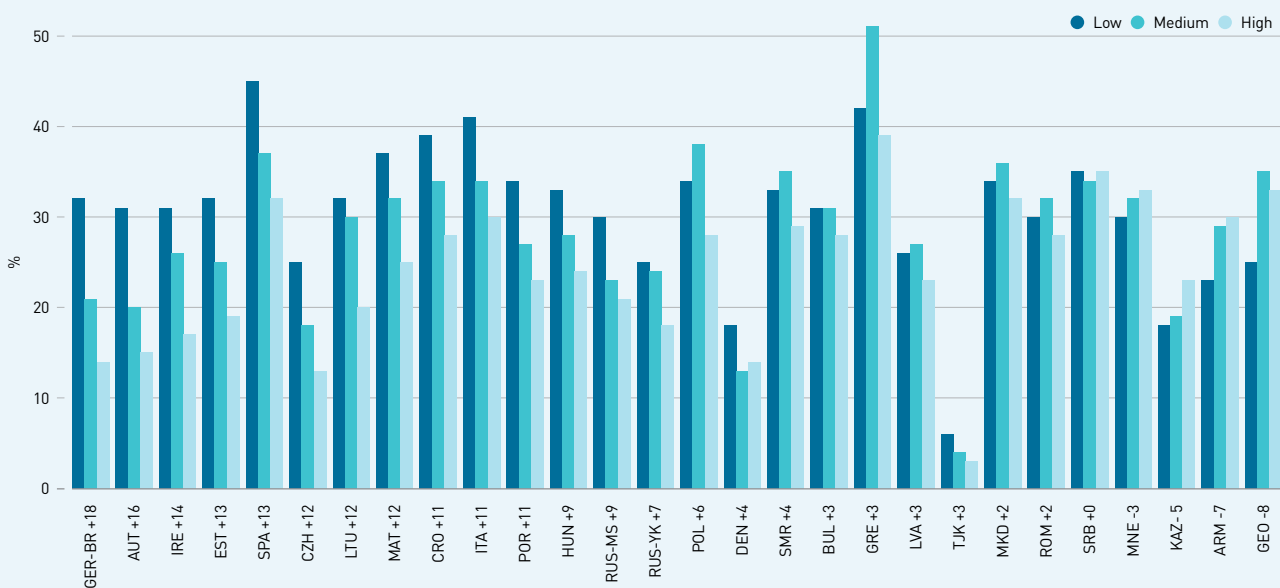
Level of parental education is one of the variables used by COSI to assess family socioeconomic status. The prevalence of overweight was higher among children whose parents had a low level of education relative to children with high parental education in 23 of the 28 study locations reporting data on parental education status (Fig. 6; Table A2.4). The largest difference in prevalence between low and high level of parental education was 18 percentage points, reported in Germany (Bremen), while the smallest was 2 percentage points (in North Macedonia and Romania). Among these study locations, only in 13 a gradual inverse association was observed. A reverse or no relationship was reported in some countries, including Armenia, Georgia, Kazakhstan, Montenegro, and Serbia.

1.2 Obesity

Overall, prevalence of obesity among children aged 7–9 years in the 33 participating countries of the WHO European Region was 12% (Fig. 7; Table A2.1). Prevalence among boys in this age group was 14%, compared to 10% among girls (Fig. 8; Table A2.3). As IOTF cutoff points are widely used in the WHO European Region, prevalence was also calculated using these cutoffs and is presented in Annex 2.

Country-specific prevalence of obesity among children ranged from 1% in Tajikistan to 19% in Cyprus. Among boys, prevalence ranged from 2% to 24%, and among girls from 1% to 15%. Prevalence among children (both genders combined) was highest in Cyprus, Italy, Greece and Spain, and lowest in Tajikistan, Denmark, Kazakhstan and Israel.

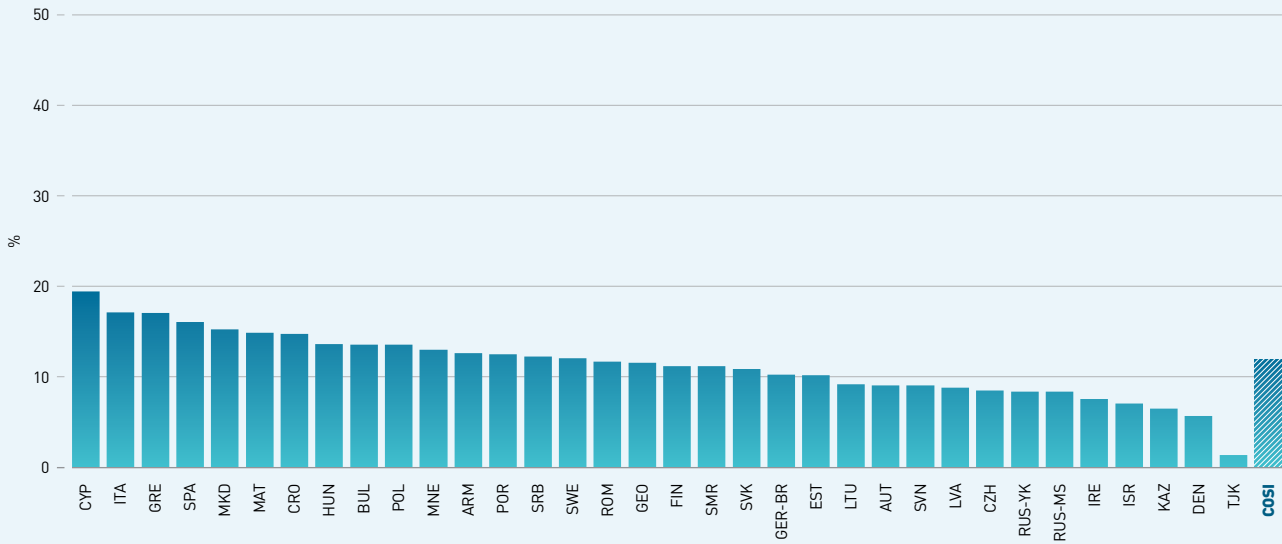
Fig. 6. Prevalence of overweight (including obesity – WHO definitions) in children aged 7–9 years, by level of parental education (low, medium or high) (%)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for children with low parental education and the estimate for children with high parental education. All children aged 7–9 years for whom data about parental education and nutritional status were available were included.

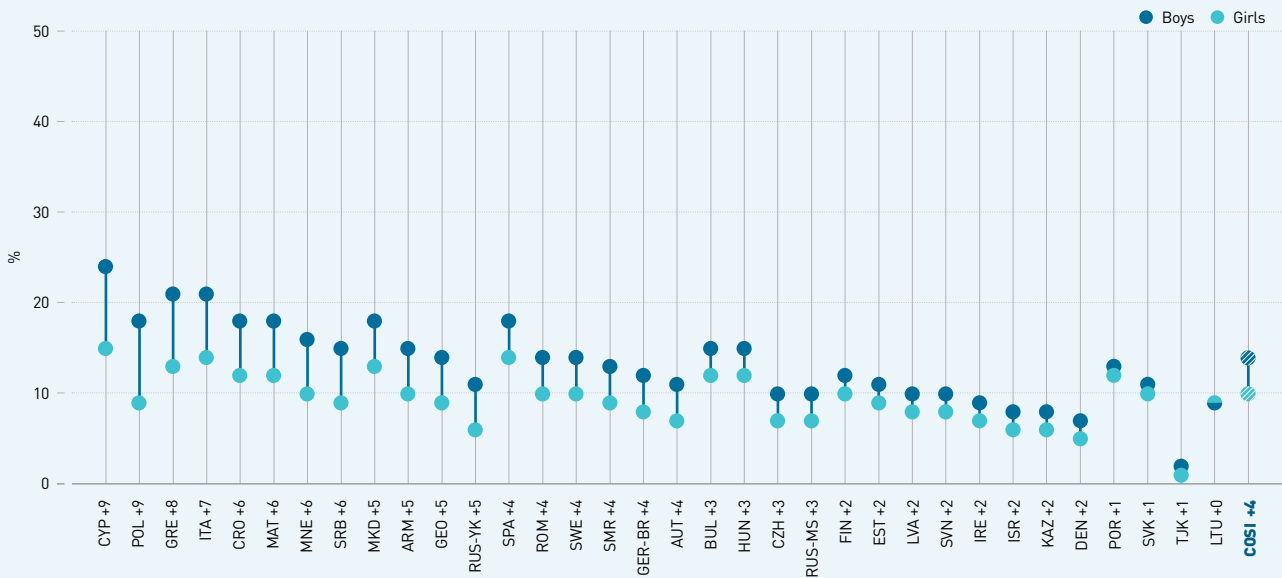


Fig. 7. Prevalence of obesity (WHO definitions) in children aged 7–9 years (%)^a



^aData relate to: (i) 7-year-olds in Armenia, Bulgaria, Czechia, Denmark, Estonia, Finland, Germany [Bremen], Georgia, Greece, Hungary, Ireland, Israel, Kazakhstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Romania, Russian Federation (Moscow and Yekaterinburg), Serbia, Slovakia, Slovenia, Spain and Tajikistan; (ii) 8-year-olds in Austria, Croatia, Italy, Poland, San Marino and Sweden; and (iii) 9-year-olds in Cyprus.

Fig. 8. Prevalence of obesity (WHO definitions) in boys and girls aged 7–9 years (%) and difference between genders (percentage points)^a



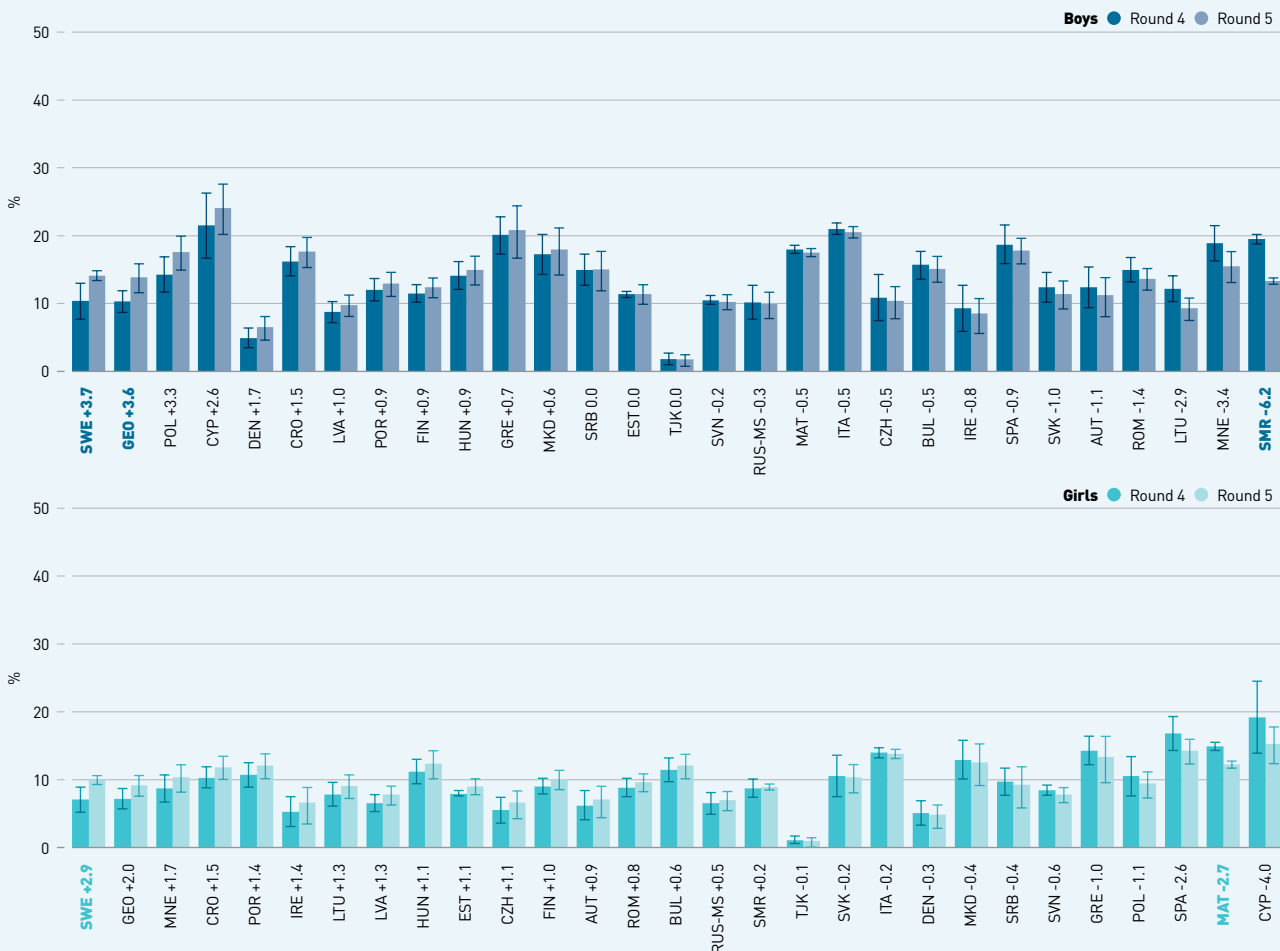
^aDifferences between genders, measured in percentage points, were calculated by subtracting estimates for girls from estimates for boys. Data relate to: (i) 7-year-olds in Armenia, Bulgaria, Czechia, Denmark, Estonia, Finland, Germany [Bremen], Georgia, Greece, Hungary, Ireland, Israel, Kazakhstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Romania, Russian Federation (Moscow and Yekaterinburg), Serbia, Slovakia, Slovenia, Spain and Tajikistan; (ii) 8-year-olds in Austria, Croatia, Italy, Poland, San Marino and Sweden; and (iii) 9-year-olds in Cyprus.



Decreases in the prevalence of obesity between the first round of COSI (2007–2008) and the fourth round (2015–2017) were observed in Italy, Slovenia, Portugal, Greece and Spain for both boys and girls, and in Ireland, Norway and Bulgaria for girls only (8). Comparison of round 5 obesity prevalence with data from the previous round (2015–2017) found that the only statistically significant changes were an increase in prevalence among boys in Georgia and a decrease among boys in San Marino and girls in Malta (Fig. 9). An increase among boys and girls was observed in Sweden.

Prevalence of obesity was higher in boys than girls in all countries except Lithuania, Portugal, Slovakia and Tajikistan, where levels were the same or similar in both genders (Fig. 8).

Fig. 9. Prevalence of obesity (WHO definitions) in boys and girls aged 7–9 years, COSI round 4 (2015–2017) and round 5 (2018–2020) (%)^a



^a Variations between rounds, measured in percentage points, were calculated by subtracting round 4 estimates from round 5 estimates. Data relate to: (i) 7-year-olds in Bulgaria, Czechia, Denmark, Estonia, Finland, Georgia, Greece, Hungary, Ireland, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Romania, Russian Federation (Moscow), Serbia, Slovakia, Slovenia, Spain and Tajikistan; (ii) 8-year-olds in Austria, Croatia, Italy, Poland, San Marino and Sweden; and (iii) 9-year-olds in Cyprus. Countries written in bold: statistically significant difference between round 4 and round 5; error bars represent 95% CI.



In the 16 countries that collected data for more than one age group, prevalence of obesity tended to increase with age among boys (except in Italy and Portugal), but there was no clear pattern for how prevalence changed with age for girls (Fig. 10; Table A2.1).

In most of the study locations, the prevalence of obesity was higher among children whose parents had a low level of education relative to children with high parental education, with differences varying from 11 percentage points, reported in Germany (Bremen) and Spain, to 1 percentage point in Montenegro (Fig. 11; Table A2.4). A gradient emerged in 18 study locations where the obesity prevalence decreased with increasing parental education level. A reverse or no relationship was reported in Armenia, Georgia, Kazakhstan and Tajikistan. These results – and those for overweight (Fig. 6) – appear broadly in line with the findings of the previous analysis of COSI data that observed an inverse relationship between the prevalence of childhood overweight/obesity and parental education in high-income countries and an opposite relationship in middle-income countries (12).

Fig. 10. Prevalence of obesity (WHO definitions) in boys and girls in countries collecting data for two or more age groups (%)

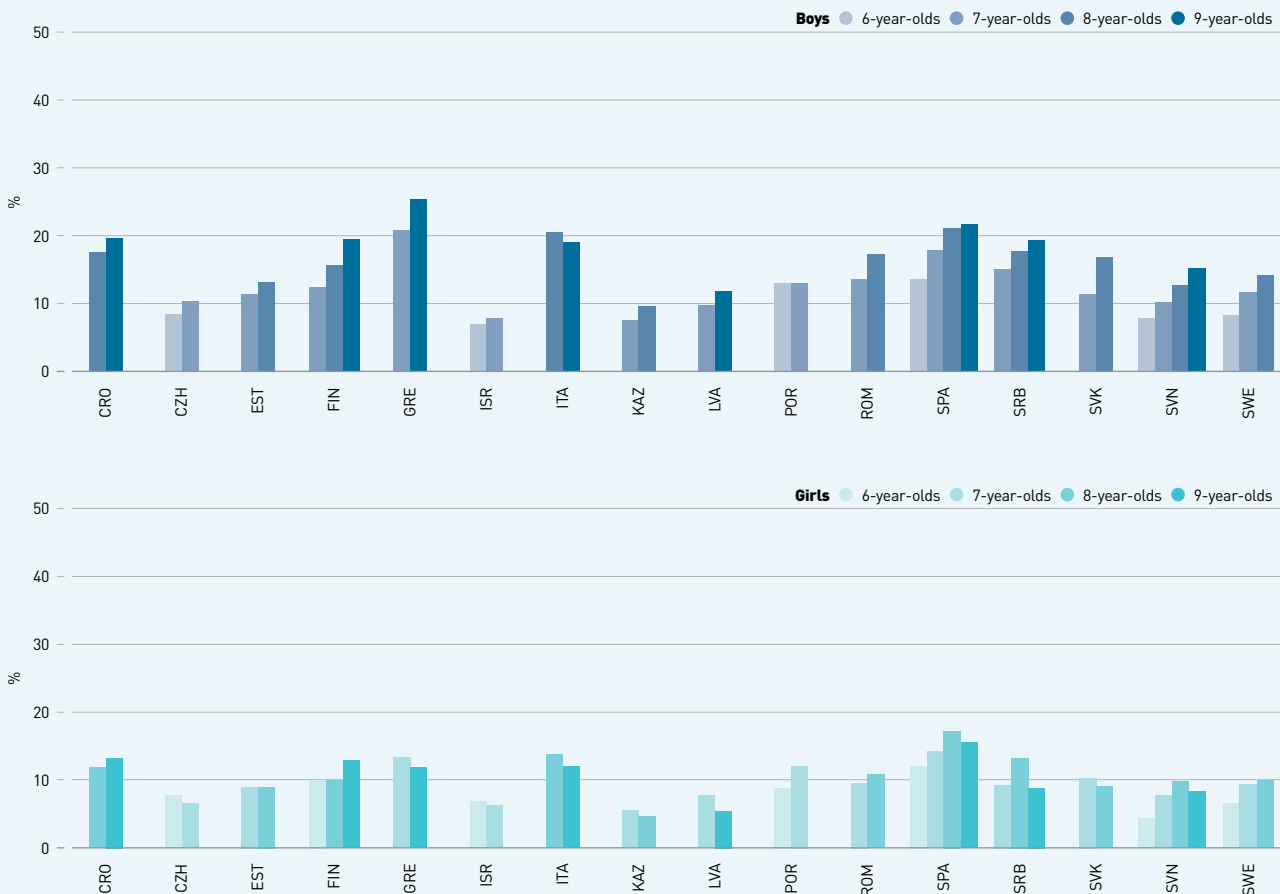
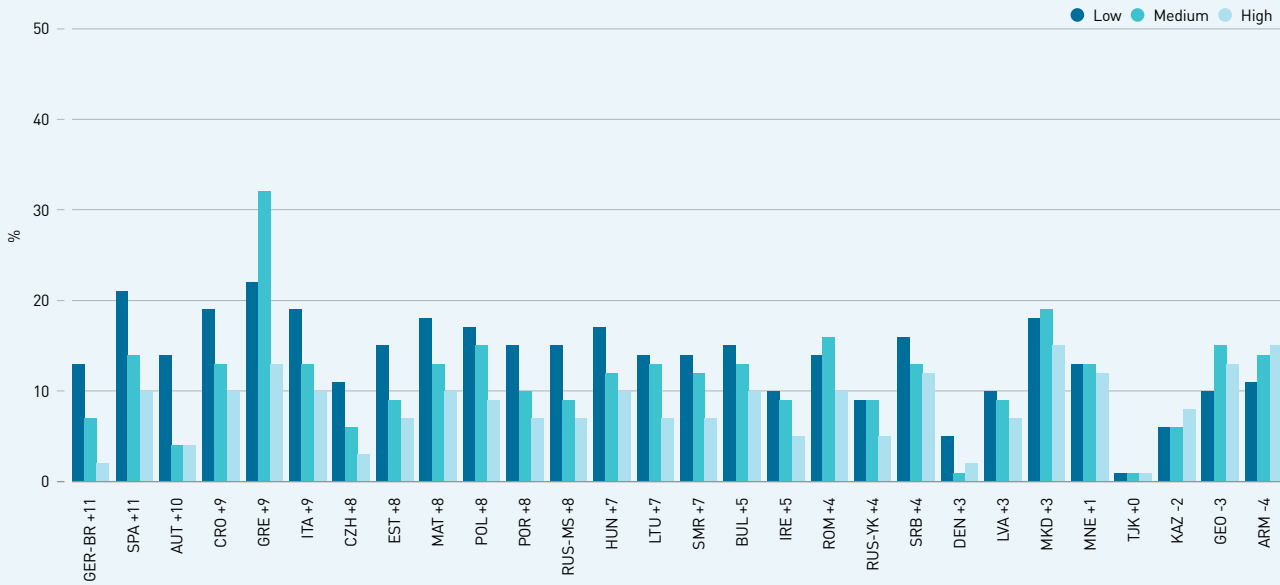




Fig. 11. Prevalence of obesity (WHO definitions) in children aged 7–9 years, by level of parental education (low, medium or high) (%)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for children with low parental education and the estimate for children with high parental education. All children aged 7–9 years for whom data about parental education and nutritional status were available were included.





2. Eating habits

Unhealthy diets are one of the key drivers of overweight, obesity and diet-related NCDs and, globally, are estimated to be responsible for 8 million deaths every year (13). Given the importance of diet and physical activity as determinants of overweight and obesity, COSI collects data on a relatively small set of eating-related behaviours of children through an additional family questionnaire, which is optional for countries and is completed by parents or caregivers. COSI data have previously found that, overall, less healthy food habits are associated with lower socioeconomic status as assessed by parental education (14).

This report focuses on the frequency of consumption of breakfast, fresh fruit and vegetables – all considered to be important elements of a healthy diet – as well as frequency of soft drinks consumption. Data were available on breakfast consumption in 29 study locations, on soft drinks in 28 locations, and on fresh fruit and vegetables in 27 locations.

2.1 Breakfast consumption

There is some evidence that skipping breakfast is associated with increased body mass index (BMI) and overweight (15,16,17). Given the importance of regular consumption of breakfast as part of healthy eating, data were collected on the frequency of having breakfast, which are presented, by country, for the healthy habit (daily consumption) versus the less healthy habit (never consumed); and on the level of daily consumption, first by gender and then by parental education level.

2.1.1 Frequency of breakfast consumption

Overall, in the 29 study locations that collected data, three quarters (75%) of 6–9-year-olds ate breakfast every day, while only 3% never did so (Fig. 12; Table A2.7). Although only a small proportion of children never ate breakfast (that is, did not consume more than just a drink such as milk or juice), the results suggest that more than one in five children did not always eat or drink anything before going to school.

Levels of daily breakfast consumption ranged from 94% in Portugal and Denmark to only 44% in Armenia and 49% in Greece. The proportion of children never eating breakfast was fairly similar across most countries, but was as high as 11% in Armenia, 9% in Greece and Slovakia, and 8% in Malta, Romania and the Russian Federation (Yekaterinburg).

2.1.2 Daily breakfast consumption according to gender

In most countries, the levels of daily breakfast consumption were similar in boys and girls, or just slightly lower in girls (Fig. 13; Table A2.8). The greatest differences were observed in Austria (9 percentage points), Russian Federation (Yekaterinburg) (7 percentage points) and Italy (5 percentage points).



Fig. 12. Frequency of breakfast consumption (daily versus never consumed) among 6–9-year-olds (%)

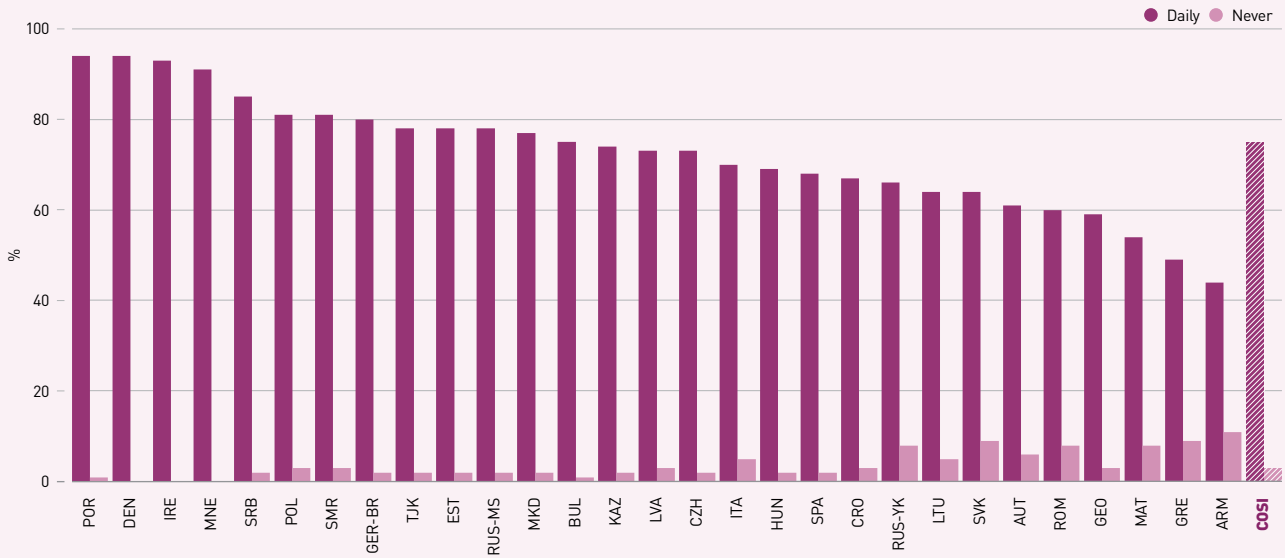
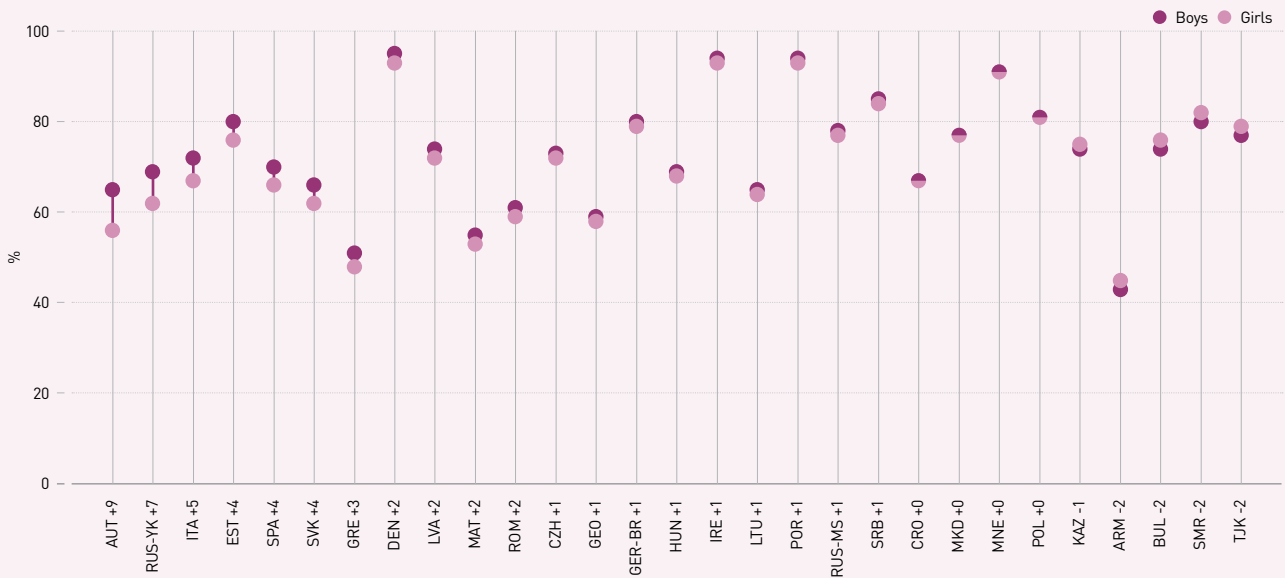


Fig. 13. Daily consumption of breakfast among boys and girls aged 6–9 years (%) and difference between genders (percentage points)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for boys and the estimate for girls.



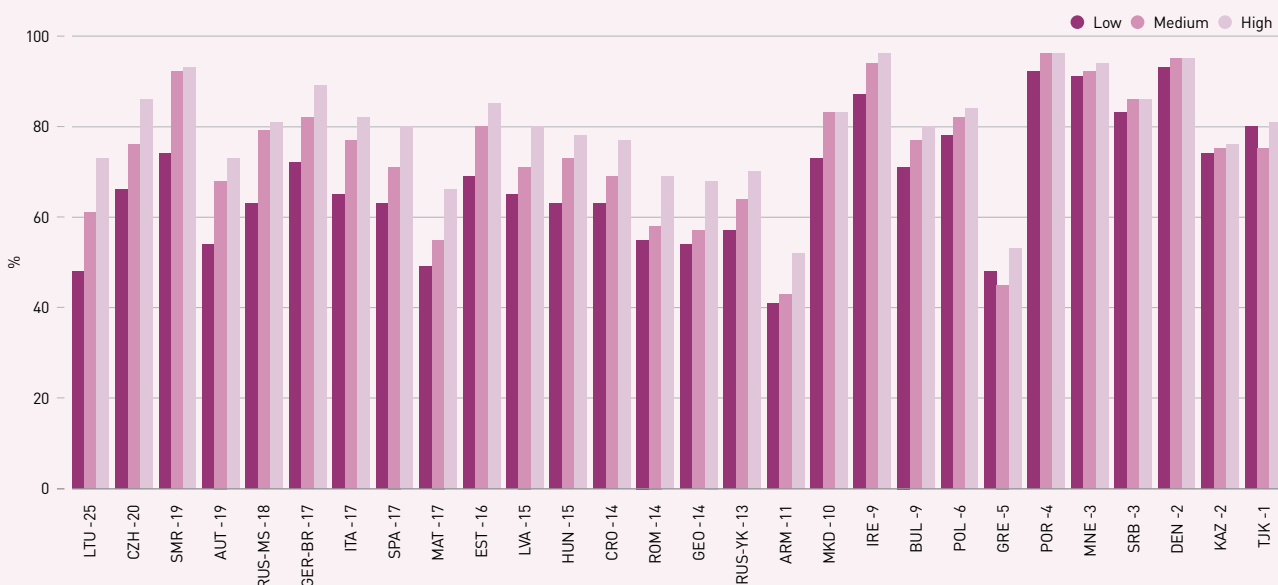
2.1.3 Daily breakfast consumption according to parental education

Children whose parents had a higher level of education were generally more likely to eat breakfast on a daily basis than children of parents with a medium or low level of education (Fig. 14; Table A2.8). The greatest differences were observed in Lithuania (25 percentage points between low and high levels of parental education), Czechia (20 percentage points), and Austria and San Marino (both 19 percentage points). The gradient was less marked or did not emerge in Denmark, Greece, Kazakhstan, Montenegro, Portugal, Serbia and Tajikistan.

2.2 Consumption of fresh fruit and vegetables

Fruit and vegetables are rich sources of essential nutrients and are important components of a healthy diet. Insufficient fruit and vegetable consumption can contribute to energy imbalance and difficulty maintaining a healthy body weight, while promoting fruit and vegetable consumption has been highlighted as important for obesity prevention (4,18). WHO recommends consumption of at least five portions of fruit and vegetables per day for the prevention of NCDs and to help ensure adequate intake of dietary fibre (19). National surveys in most countries indicate that the level of fruit and vegetable consumption in the WHO European Region is still poor (20), and all international

Fig. 14. Daily consumption of breakfast among 6–9-year-olds, by level of parental education (low, medium or high) (%)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for children with low parental education and the estimate for children with high parental education.



and national authorities advise plentiful consumption of fruit and vegetables as part of healthy diets. In the last round of COSI data collection (2015–2017), the percentage of children who did not eat fresh fruit or vegetables daily varied widely, ranging from 19% to 82% for fruit and from 26% to 91% for vegetables; and it was higher among children whose parents had a lower level of education (14).

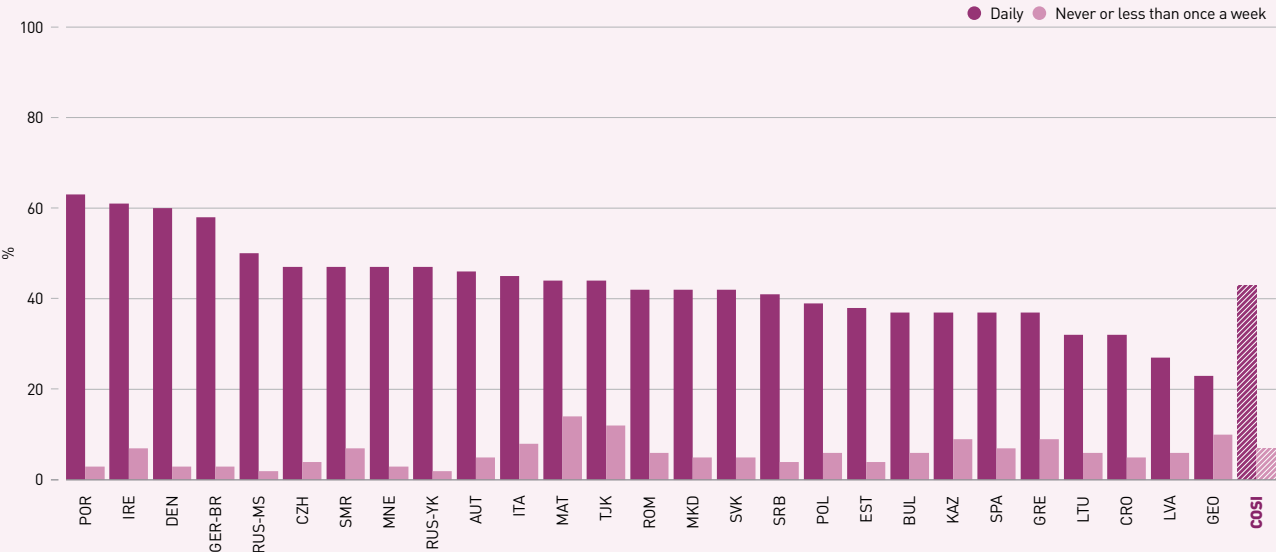
For COSI round 5, data were collected separately on frequency of fresh fruit consumption and of vegetable consumption. In both cases, country-specific analyses are presented for the healthy habit (daily consumption) versus the less healthy habit (never or less than once a week). For daily consumption, data are presented by gender and parental education.

2.2.1 Frequency of fresh fruit consumption

Overall, less than half (43%) of children aged 6–9 years consumed fresh fruit daily in the 27 study locations that collected data (Fig. 15; Table A2.9). Fruit was never consumed, or consumed less than once a week, by 7% of 6–9-year-old children in these countries.

The proportion of children consuming fruit daily was highest in Portugal (63%), Ireland (61%) and Denmark (60%), and lowest in Georgia (23%) and Latvia (27%). The highest levels of children never consuming fresh fruit, or doing so less than once a week, were seen in Malta, Tajikistan and Georgia (14%, 12% and 10%, respectively).

Fig. 15. Frequency of fresh fruit consumption (daily versus never or less than once a week) among 6–9-year-olds (%)





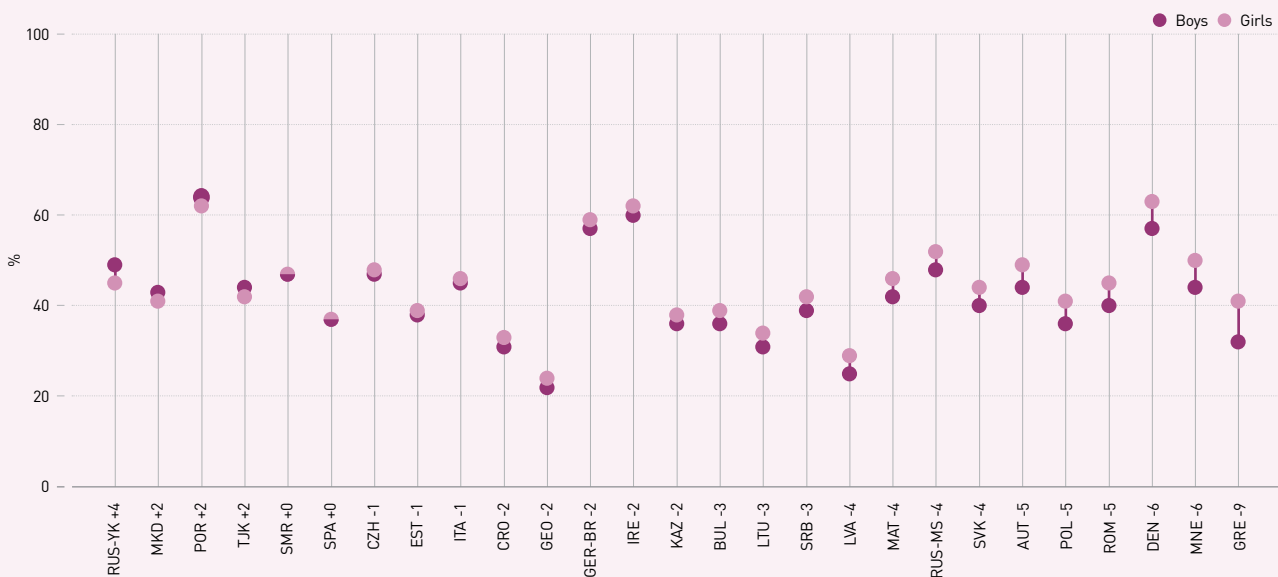
2.2.2 Daily fresh fruit consumption according to gender

In most countries, daily fresh fruit consumption was slightly more common among girls than boys, with the greatest difference observed in Greece (9 percentage points), followed by Denmark and Montenegro (both 6 percentage points) (Fig. 16; Table A2.10). In a few countries, however, the reverse was true, with daily consumption higher in boys than girls – notably, in the Russian Federation (Yekaterinburg) (4 percentage points). In five countries, the same or similar values were observed for boys and girls.

2.2.3 Daily fresh fruit consumption according to parental education

As with daily breakfast consumption, eating fresh fruit every day appeared to be associated with level of parental education (Fig. 17; Table A2.10). In all countries except Romania, daily consumption of fresh fruit was higher in children of parents with a high level of parental education than in children whose parents had a low level of educational attainment. The greatest differences were observed in Spain (26 percentage points between high and low levels of parental education) and the lowest in North Macedonia (2 percentage points). In 18 countries a gradient was observed where daily fresh fruit consumption gradually increased with increasing levels of parental education.

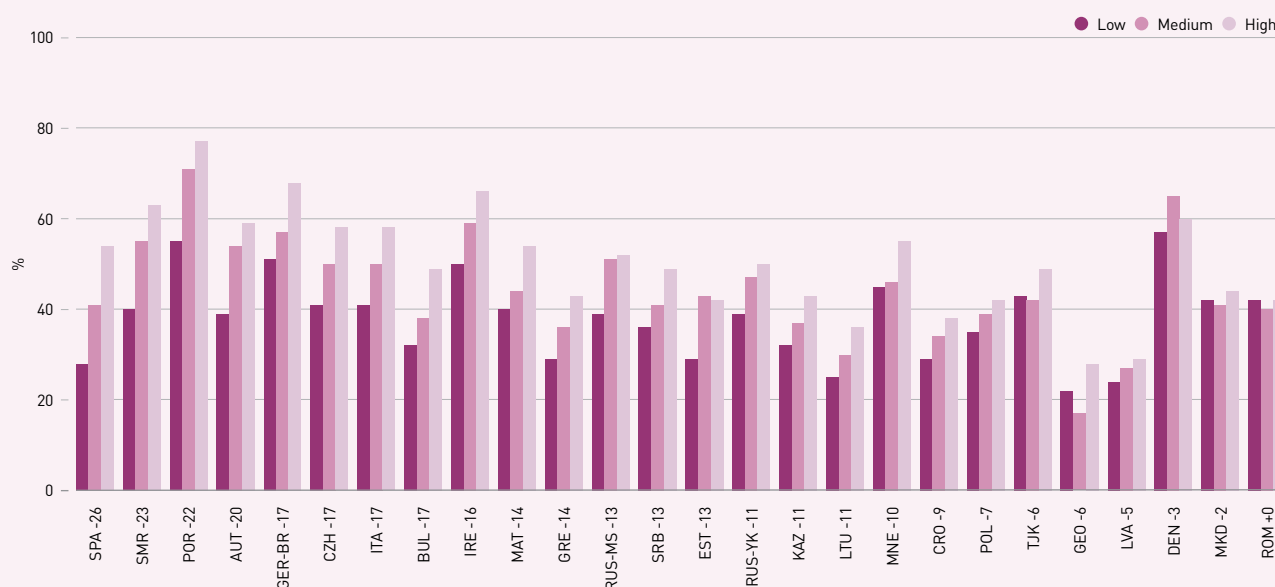
Fig. 16. Daily consumption of fresh fruit among boys and girls aged 6–9 years (%) and difference between genders (percentage points)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for boys and the estimate for girls.



Fig. 17. Daily consumption of fresh fruit among 6–9-year-olds, by level of parental education (low, medium or high) (%)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for children with low parental education and the estimate for children with high parental education.

2.2.4 Frequency of vegetable consumption

Overall, only a third (34%) of children aged 6–9 years ate vegetables daily in the 27 study locations that collected data (Fig. 18; Table A2.11). More than one in 10 children in these countries (11%) never ate vegetables or did so less than once a week.

The percentage of children eating vegetables every day varied widely between countries, ranging from 57% in Portugal and Denmark – the only countries where more than half the children ate vegetables every day – to only 13% of children in Georgia and Spain. Malta had by far the highest proportion of children who ate vegetables less than once a week or not at all (32%), followed by Georgia (17%), Greece (16%), Italy (14%), Tajikistan and Kazakhstan (both 13%), and Spain (11%). In most other countries, the percentage of children never eating vegetables, or doing so less than once a week, was below 10%.

2.2.5 Daily vegetable consumption according to gender

In most countries, daily vegetable consumption was similar in boys and girls (Fig. 19; Table A2.12). The only appreciable differences were observed in Ireland (where the percentage of girls was 6 percentage points higher than that of boys), Bulgaria (5 percentage points), and Germany (Bremen), Lithuania and North Macedonia (4 percentage points each).



Fig. 18. Frequency of vegetable consumption (daily versus never or less than once a week) among 6–9-year-olds (%)

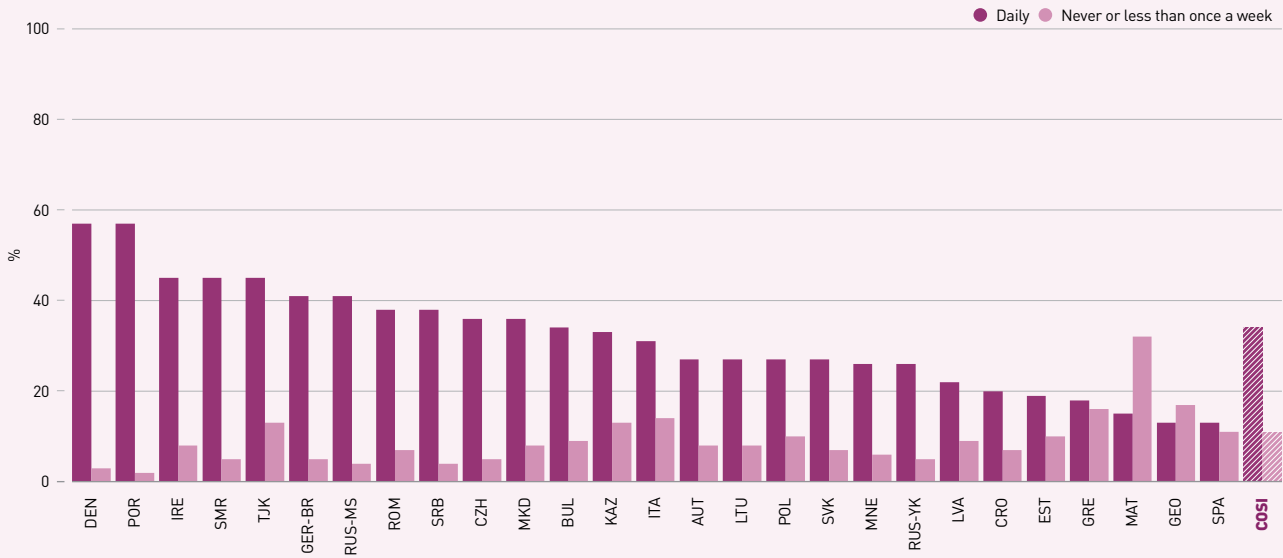
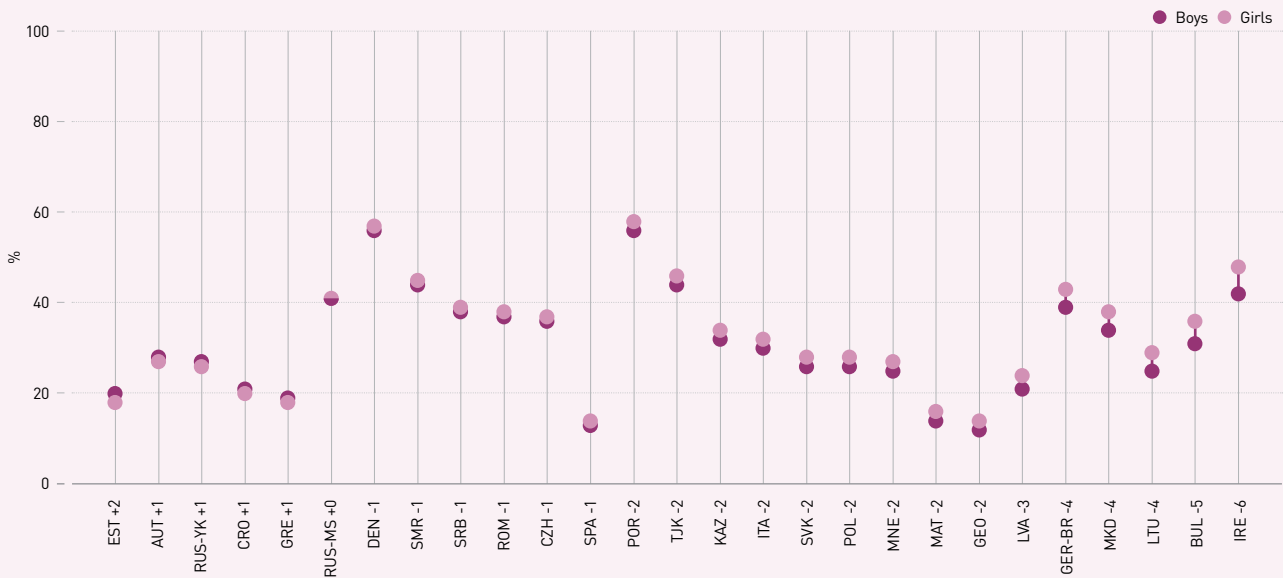


Fig. 19. Daily consumption of vegetables among boys and girls aged 6–9 years (%) and difference between genders (percentage points)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for boys and the estimate for girls.

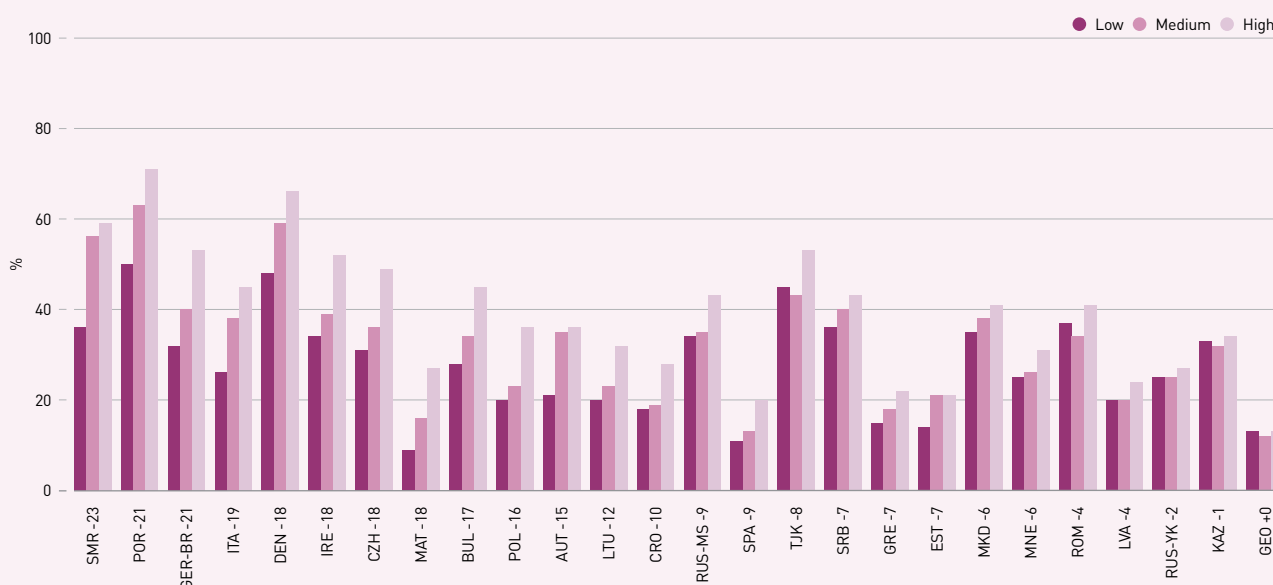
2.2.6 Daily vegetable consumption according to parental education

Children of parents with a high level of education more commonly ate vegetables daily than children of parents with low educational attainment in all countries except Georgia (where there was no difference) (Fig. 20; Table A2.12). The largest differences were seen in San Marino (difference of 23 percentage points between high and low parental education), Germany (Bremen) and the lowest in Kazakhstan (only 1 percentage point). A gradient was observed in 18 study locations where the frequency of daily consumption of vegetables gradually increased with increasing levels of parental education.

2.3 Soft drinks consumption

Across the WHO European Region, children’s sugar intake is too high, with children commonly consuming more than 10% of their daily calories from added sugars (21), and soft drinks are a major contributor. High intake of sugar-sweetened drinks is associated with a greater risk of weight gain and obesity (22,23) and has a detrimental impact on dental health (24). The last round of COSI data collection (2015–2017) found that the percentage of children consuming sugar-containing soft drinks on more than three days a week ranged from 1% to 45%, and in most countries was higher among children whose parents had a low level of education (14).

Fig. 20. Daily consumption of vegetables among 6–9-year-olds, by level of parental education (low, medium or high) (%)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for children with low parental education and the estimate for children with high parental education.



For COSI round 5, data collected on frequency of soft drinks consumption are used to present analyses, by country, for frequency of consumption (more than three days a week versus never or less than once a week) and for frequent consumption (more than three days a week) by gender and by parental education level.

2.3.1 Frequency of soft drinks consumption

Overall, almost a quarter (22%) of children aged 6–9 years consumed soft drinks on more than three days a week in the 28 study locations that collected data (Fig. 21; Table A2.13). Almost half (49%) never consumed soft drinks or did so less than once a week.

The percentage of children consuming soft drinks on more than three days a week ranged from less than 2% in Greece to 41% in Czechia. Other countries where more than a third of children reported a similarly high level of soft drinks consumption were North Macedonia (39%), Croatia (38%) and Slovakia (36%). The percentage of children who never consumed soft drinks, or did so less than once a week, ranged from 26% in Czechia to 86% in Greece.

Fig. 21. Frequency of soft drinks consumption (more than three days a week versus never or less than once a week) among 6–9-year-olds (%)





2.3.2 Frequent consumption of soft drinks according to gender

In most countries, frequent consumption of soft drinks (more than three days a week) was similar in boys and girls, or slightly higher in boys (Fig. 22; Table A2.14). The biggest differences were seen in Bulgaria (where 22% of boys consumed soft drinks on more than three days a week, as opposed to 16% of girls), Croatia (41% versus 35%), Georgia (30% versus 26%) and Montenegro (28% versus 24%).

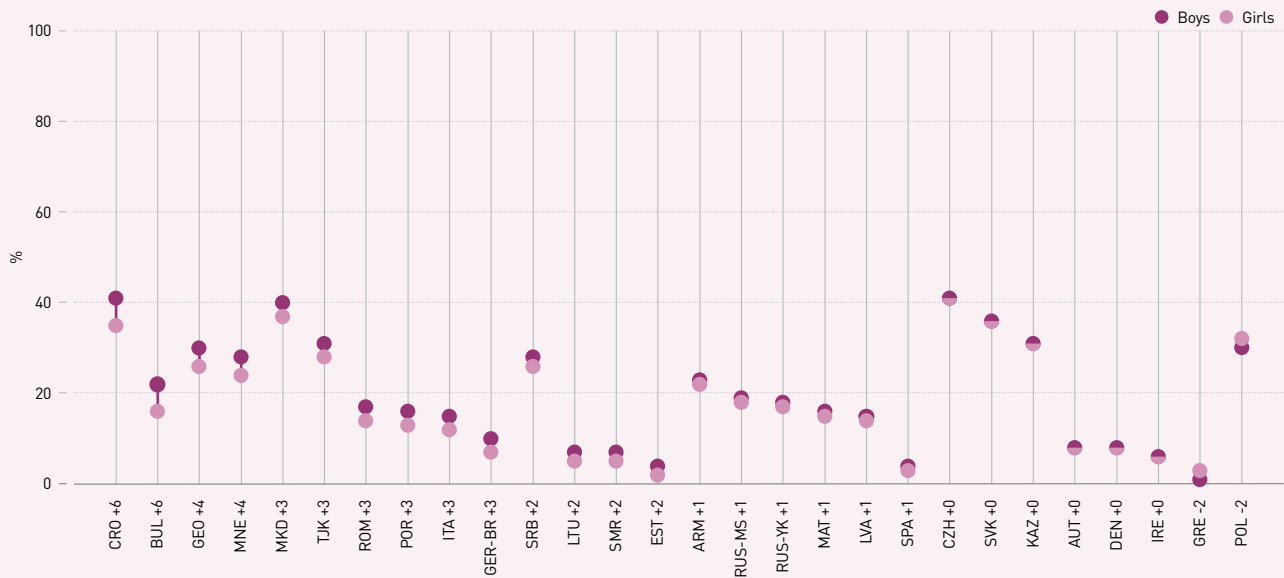
2.3.3 Frequent consumption of soft drinks according to parental education

As with consumption of breakfast, fruit and vegetables, there appears to be an association between frequent consumption of soft drinks (more than three days a week) and level of parental education (Fig. 23; Table A2.14). In all countries, frequent consumption of soft drinks was more common in children of parents with a low level of educational attainment than in children of parents with a high level of education.

The greatest differences were observed in Croatia (27 percentage points between high and low parental education) and the lowest in Denmark (3 percentage points). Data shows an inverse association between frequent consumption of soft drinks and parental education in 23 study locations.

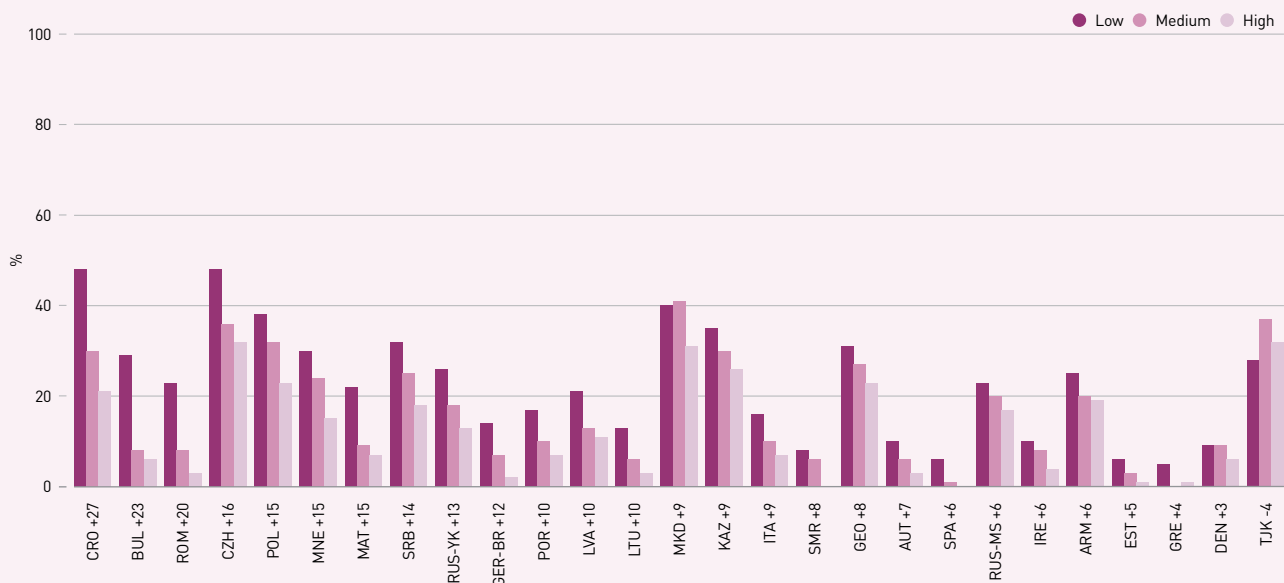


Fig. 22. Frequent consumption of soft drinks (more than three days a week) among boys and girls aged 6–9 years (%) and difference between genders (percentage points)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for boys and the estimate for girls.

Fig. 23. Frequent consumption of soft drinks (more than three days a week) among 6–9-year-olds, by level of parental education (low, medium or high) (%)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for children with low parental education and the estimate for children with high parental education.



3. Physical activity and screen time

Physical activity is a foundation of health throughout life, with multiple health benefits for physical and mental health; also, as a key determinant of energy expenditure, it is important for maintaining a healthy weight (25). Physical inactivity contributes to development of NCDs, is responsible for 6% of deaths globally (26), and is among the leading risk factors for death and disability in the WHO European Region (27). In addition, in adults infected with COVID-19, it is associated with a higher risk of severe outcomes (28). Establishing healthy physical activity patterns in childhood helps shape habits throughout adolescence and into adulthood. Physical activity levels remain low in the WHO European Region, with 30% of adults insufficiently active in 2016 and only 25% of 15-year-old boys and 15% of 15-year-old girls achieving the recommended levels of physical activity in 2014 (29).

The physical environment – including workplaces, transport systems, neighbourhoods, houses and sports grounds – provide opportunities for participation in physical activity, while schools are a key setting for encouraging physical activity. Opportunities for safe active play, recreation and transport are important. In the fifth round of COSI, data on travel to school were collected in 28 study locations; data on time spent practising sports/dancing or actively playing and on time spent watching television or using electronic devices in 27 locations. These data were analysed by country, gender and level of parental education.

3.1 Travel to and from school

Going to and from school on foot or by bicycle can contribute to physical activity. In addition, active travel has important social, environmental and economic benefits, such as reduced carbon emissions and cleaner air (1). Previous COSI data indicated that children in central Asian countries and the Russian Federation and, more generally, those with lower socioeconomic status were more likely to walk or cycle to and from school (8,30). For the fifth round, parents were asked how their child usually travelled to and from school. Data are presented on the healthy behaviour (walking, cycling, skating or non-motorized scooter) and compared with the less healthy behaviour (travel by motorized vehicle).

3.1.1 Proportion of children travelling actively to and from school

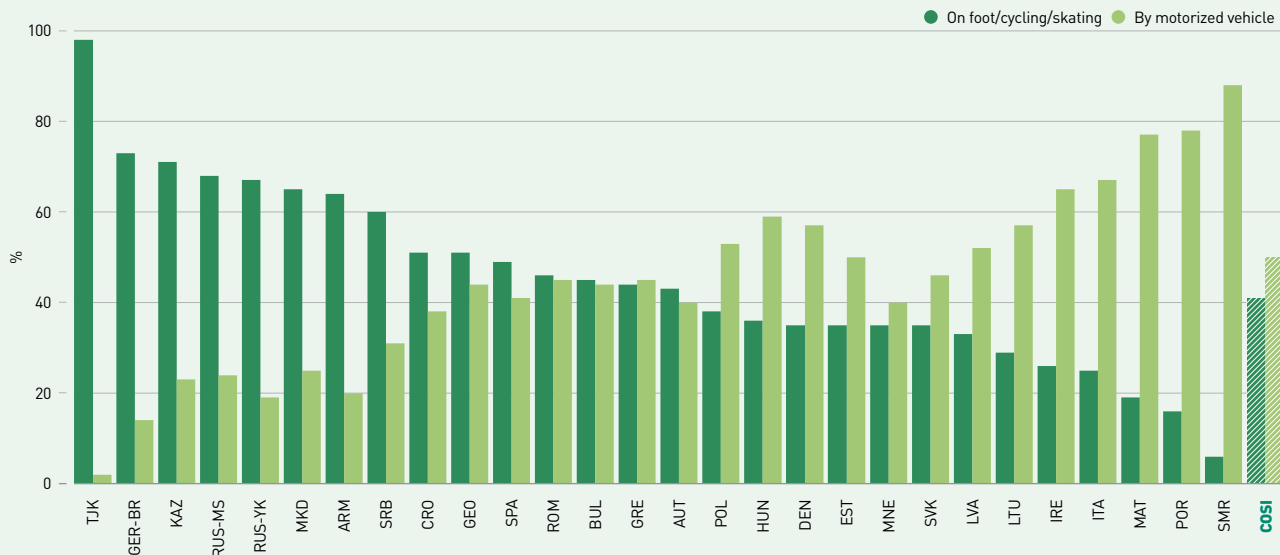
Overall, in the 28 study locations that collected data, only 41% of 6–9-year-old children travelled to and from school actively (on foot, by bicycle, skating or by non-motorized scooter), while 50% travelled by motorized vehicle (car, school bus or public transport) (Fig. 24; Table A2.15).

The percentage of children actively travelling to school ranged from 6% in San Marino to 98% in Tajikistan. More than half of children also actively travelled to school in Germany (Bremen), Kazakhstan, Russian Federation (Moscow and Yekaterinburg), North Macedonia, Armenia, Serbia, Croatia and Georgia.

The percentage of children travelling to and from school by motorized vehicle ranged from 2% in Tajikistan to 88% in San Marino. In addition San Marino, more than three quarters of children travelled to school in motorized transport in Portugal (78%) and Malta (77%). In line with previous COSI data, it appeared that children were more likely to actively travel to school in central Asian countries and the Russian Federation (as well as in Germany).



Fig. 24. Transport to and from school (on foot/cycling/skating versus going by motorized vehicle) among 6–9-year-olds (%)



3.1.2 Active travel to and from school according to gender

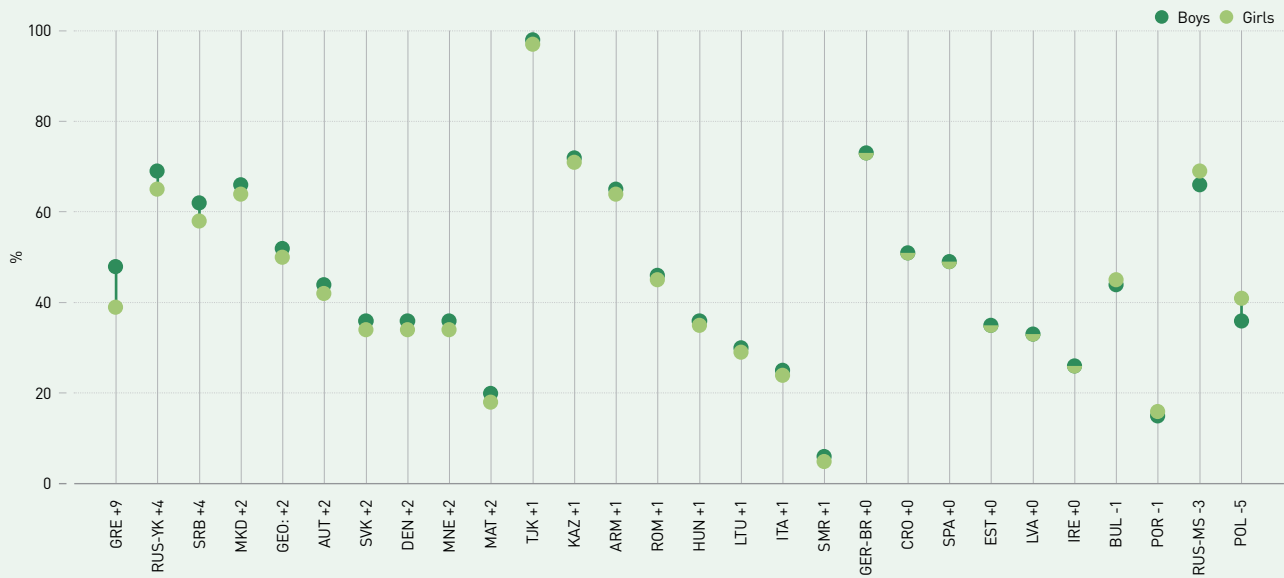
In most countries that collected data, the percentages actively travelling to school were similar in boys and girls, or slightly higher among boys (Fig. 25; Table A2.16). Sizeable differences were noted only in Greece (48% in boys versus 39% in girls) and Poland, which was unusual in reporting a higher level in girls (41% in girls versus 36% in boys).

3.1.3 Active travel to and from school according to parental education

In the majority of study locations collecting data (20 of 27), children of parents with a low level of education were more likely to walk, ride or skate to school than those whose parents had a high level of education. (Fig. 26; Table A2.16). The largest differences were observed in Armenia (23 percentage points) and the lowest in Tajikistan (3 percentage points). A reverse or no relationship emerged in some countries, such as Austria, Croatia, Denmark, Germany, (Bremen), Italy, Montenegro and Serbia.

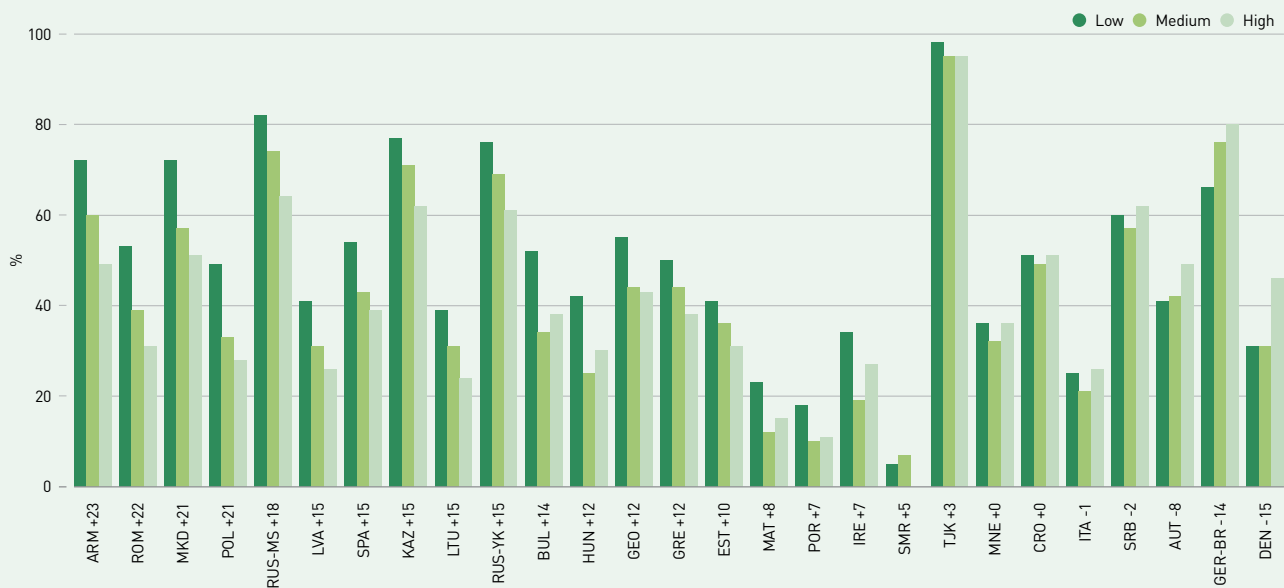


Fig. 25. Percentage of 6–9-year-old boys and girls going to and from school on foot/cycling/skating (%) and difference between genders (percentage points)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for boys and the estimate for girls.

Fig. 26. Percentage of 6–9-year-olds going to and from school on foot/cycling/skating, by level of parental education (low, medium or high) (%)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for children with low parental education and the estimate for children with high parental education.



3.2 Time spent practising sports/dancing

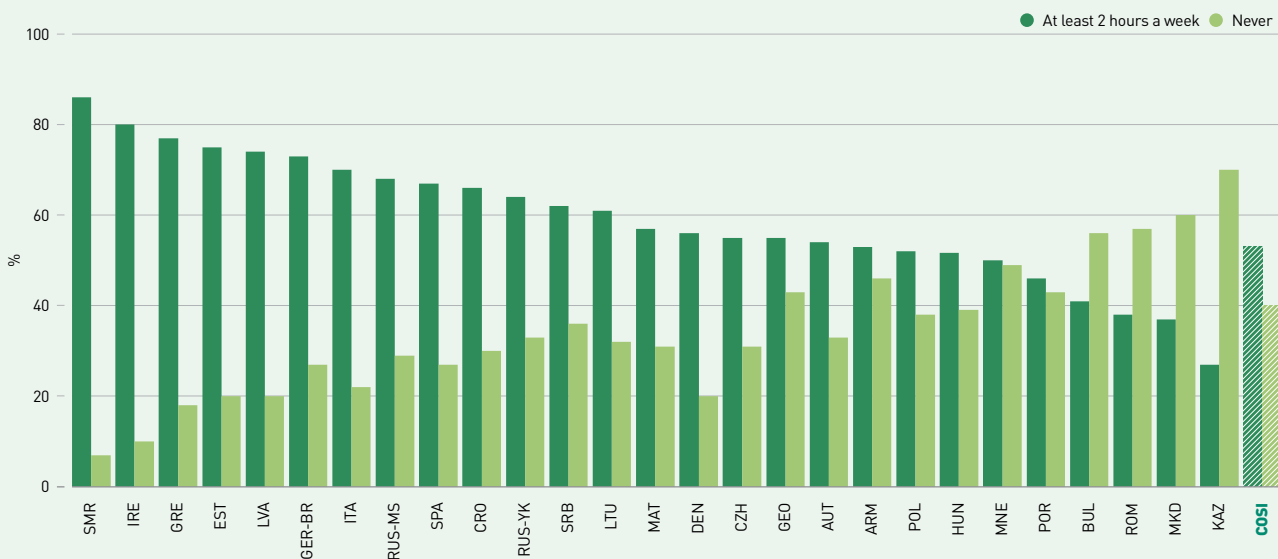
Participation in recreational physical activity – including sports, use of fitness clubs or gyms, dancing and outdoor pursuits – is important to help children meet the recommended level of at least 60 minutes per day of moderate- to vigorous-intensity physical activity (31). Previous COSI data suggested that children of parents with a low level of education were much less likely to spend two hours or more doing sports or dancing per week (30). For the fifth round of data collection, parents were asked how many hours, in a typical week, their child spent on sports and physical activities with sports clubs or on a dancing course. Data are presented for the percentage of children who spent at least two hours a week on sports/dancing and the percentage who never practised sports or dancing.

3.2.1 Proportion of children practising sports/dancing

Overall, in the 27 study locations that collected data, more than half (53%) of 6–9-year-old children spent at least two hours a week doing sports or dancing (Fig. 27; Table A2.17). Four in 10 children (40%) did not spend any time doing sports or dancing.

The percentage of children doing sports or dancing for at least two hours a week ranged from 27% in Kazakhstan to 86% in San Marino, which was followed by Ireland (80%) and Greece (77%). The percentage of children who never did sports or dancing ranged from 7% in San Marino to 70% in Kazakhstan, which was followed by North Macedonia (60%) and Romania (57%).

Fig. 27. Time spent practising sports/dancing (at least two hours a week versus never) among 6–9-year-olds (%)





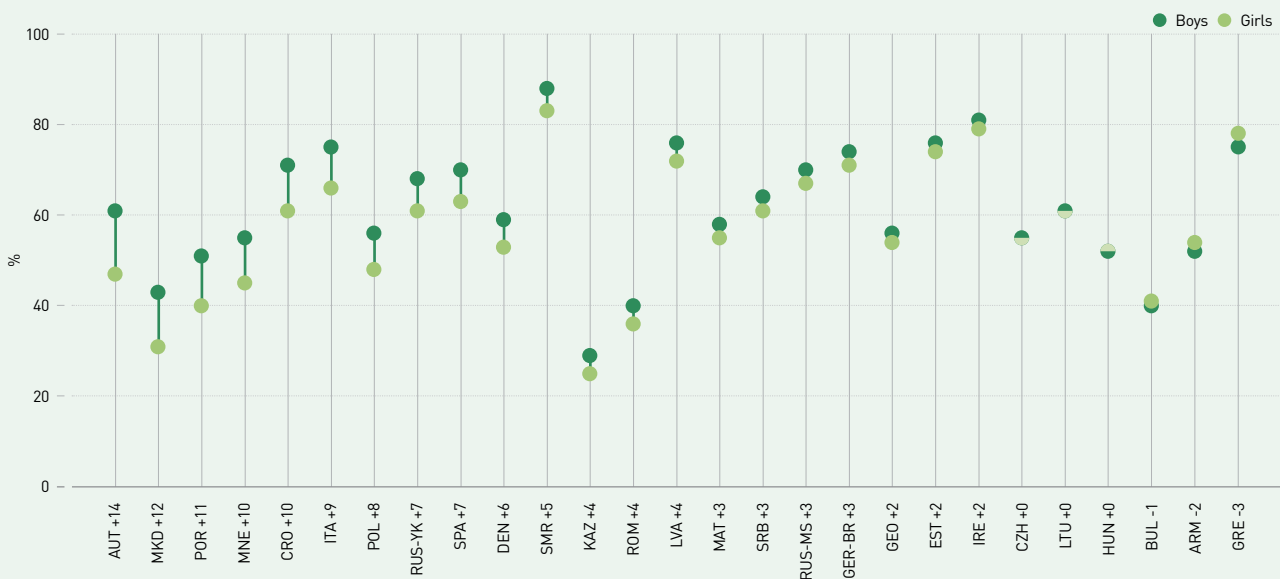
3.2.2 Practising sports/dancing at least two hours a week according to gender

In most countries, the percentage of boys practising sports/dancing for at least two hours a week was higher than that of girls (Fig. 28; Table A2.18). The greatest differences were observed in Austria (14 percentage points), North Macedonia (12 percentage points), Portugal (11 percentage points), and Montenegro and Croatia (both 10 percentage points). Only in Greece, Armenia and Bulgaria were the levels slightly higher for girls, while in Hungary, Czechia and Lithuania they were the same.

3.2.3 Practising sports/dancing at least two hours a week according to parental education

In all countries that collected data, the children of parents with a high level of education were more likely to spend at least two hours a week doing sports or dancing than those whose parents had a low level of education (Fig. 29; Table A2.18). The differences between were sizeable, reaching 43 percentage points in Bulgaria, 41 in Romania and 40 in North Macedonia. Also, in all countries except San Marino, a clear gradient can be seen, in which the levels are higher in children of parents with a high level of education than in children of parents with a medium level of education, which are, in turn, higher than in children of parents with a low level of education.

Fig. 28. Percentage of 6–9-year-old boys and girls spending at least two hours a week practising sports/dancing (%) and difference between genders (percentage points)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for boys and the estimate for girls.



3.3 Time spent playing actively/vigorously

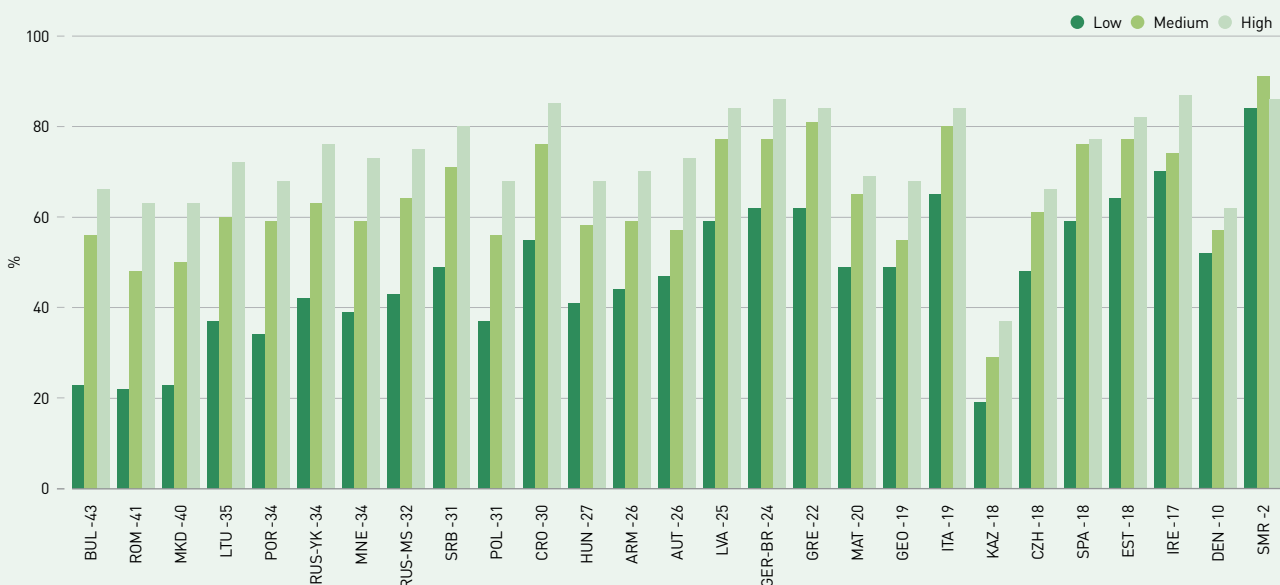
Physically active play can also be an important way for children to meet the recommended level of 60 minutes of moderate or vigorous activity daily. Parents were asked how many hours their child usually spent playing actively or vigorously outside school hours, both on weekdays and at weekends. For the fifth round of COSI, data are presented for the percentage of children usually playing actively/vigorously for at least one hour a day on average, on weekdays and on weekend days.

3.3.1 Proportion of children playing actively/vigorously

Overall, in the 27 study locations that collected data, a large majority of 6–9-year-olds (87%) spent at least one hour a day on average in active or vigorous play (Fig. 30; Tables A2.19 and A2.20). The figure was slightly lower on weekdays (86%) and markedly higher at weekends (96%).

The percentage of children spending at least one hour a day on average playing actively or vigorously ranged from 65% (Tajikistan) to 96% (Montenegro). After Montenegro, the highest values were seen in Romania, Czechia and Bulgaria (all 95%). Values above 75% were found in the majority of countries.

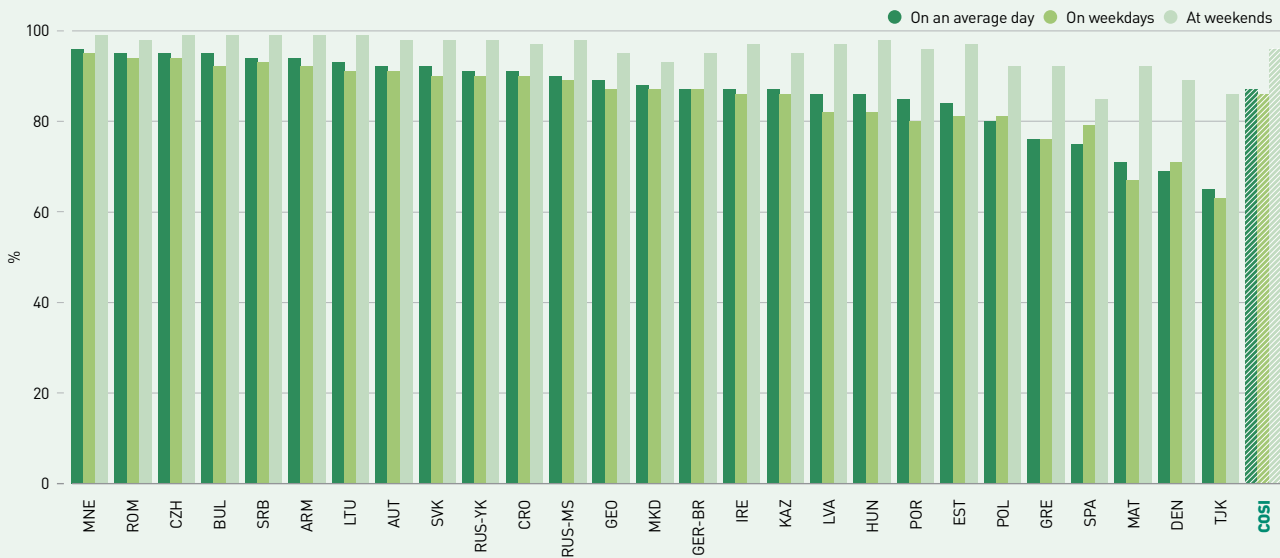
Fig. 29. Percentage of 6–9-year-olds spending at least two hours a week practising sports/dancing, by level of parental education (low, medium or high) (%)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for children with low parental education and the estimate for children with high parental education.



Fig. 30. Percentage of 6–9-year-olds spending at least one hour a day on average playing actively/vigorously, on weekdays and at weekends [%]^a



^a Time spent per day on average was calculated by weighting weekday hours (5/7) and weekend hours (2/7) spent playing actively/vigorously.

3.3.2 Playing actively/vigorously for at least one hour daily according to gender

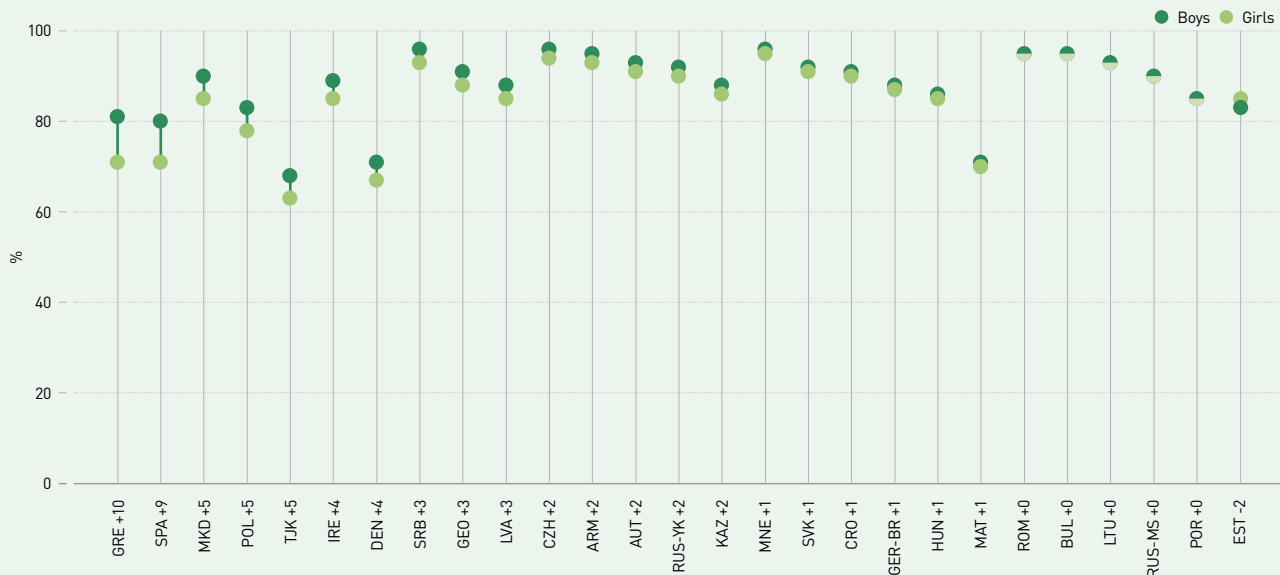
In most countries, the percentage of children spending at least one hour daily in active or vigorous play was very similar in boys and girls, with a slight tendency for boys to play more than girls (Fig. 31; Table A2.21). In a few countries, the difference was more marked, notably in Greece (where boys were 10 percentage points higher) and Spain (9 percentage points).

3.3.3 Playing actively/vigorously for at least one hour daily according to parental education

As in the previous round of COSI data collection (2015–2017), the relationship between active play and parental education was mixed (Fig. 32; Table A2.22). In 19 of the 26 study locations, children of parents with a low level of education were more likely to spend at least one hour in active or vigorous play than those with parents whose level of education was high. The largest difference was observed in Denmark, Estonia and Latvia (all 9 percentage points) and the smallest in Bulgaria, Georgia and Malta (1 percentage point). Among these study locations, only in 10 a gradual inverse association was observed. Conversely, in six locations, children of parents with a high level of education were more likely to spend at least one hour playing actively or vigorously than children of parents with a low level of education and in one country no difference was observed.

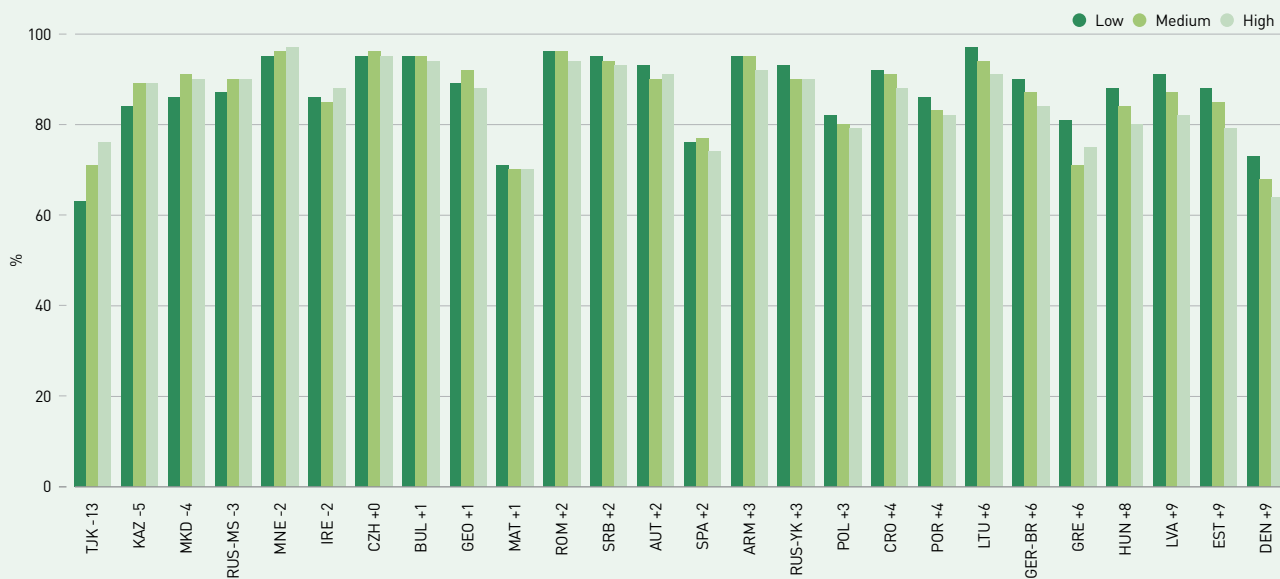


Fig. 31. Percentage of 6–9-year-old boys and girls spending at least one hour a day playing actively/vigorously (%) and difference between genders (percentage points)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for boys and the estimate for girls.

Fig. 32. Percentage of 6–9-year-olds spending at least one hour a day playing actively/vigorously, by level of parental education (low, medium or high) (%)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for children with low parental education and the estimate for children with high parental education.



3.4 Time spent watching television or using electronic devices (screen time)

The amount of time that children spend watching television or using electronic devices (screen time) increases sedentary behaviour, which has been correlated with a higher intake of energy-dense snacks, drinks and fast foods and with an overall higher energy intake (32). In the last round of COSI (2015–2017), children from families of lower socioeconomic status were found to be more likely to have more than two hours of screen time per day (30). For the fifth round, parents were asked how much time their child usually spent watching television or playing with electronic devices, either at home or outside home, on weekdays and at the weekend. Data are presented for the percentage of children spending at least two hours a day on average watching television or using electronic devices, on weekdays and on weekend days.

3.4.1 Proportion of children spending at least two hours a day watching television or using electronic devices

Overall, in the 27 study locations that collected data, 43% of children aged 6–9 years spent at least two hours a day on average watching television or using electronic devices (Fig. 33; Tables A2.22 and A2.23). At weekends, more than three quarters of children (76%) had two hours or more of screen time a day.

The percentage of children having at least two hours of screen time a day on average ranged from 18% (Austria) to 74% (San Marino), which was followed by Italy (72%) and Estonia (64%). At weekends, more than half the children in all study locations had two hours or more of screen time a day on average.

3.4.2 Spending at least two hours a day watching television or using electronic devices according to gender

In all cases except Austria and the Russian Federation (Moscow), boys were more likely than girls to have at least two hours of screen time a day (Fig. 34; Table A2.24). The biggest differences were observed in San Marino and Estonia (both with a difference of 12 percentage points between boys and girls), and Italy and Malta (both 10 percentage points).



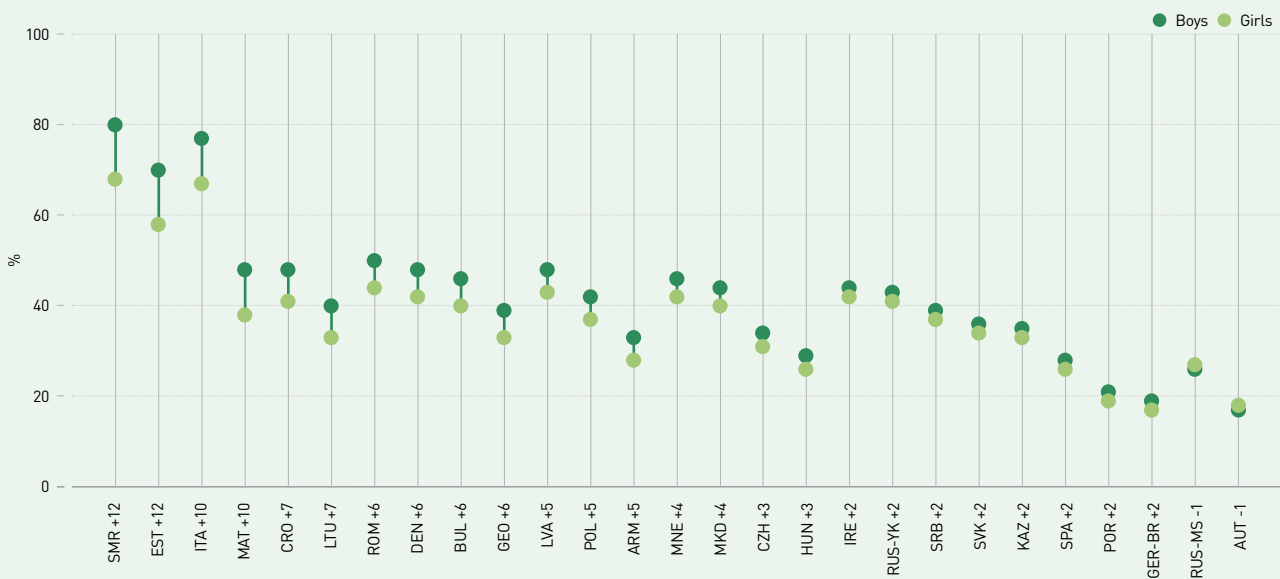


Fig. 33. Percentage of 6–9-year-olds spending at least two hours a day on average watching television or using electronic devices, on weekdays and at weekends (%)^a



^a Time spent per day on average was calculated by weighting weekday hours (5/7) and weekend hours (2/7) spent watching television or using electronic devices.

Fig. 34. Percentage of 6–9-year-old boys and girls spending at least two hours a day watching television or using electronic devices (%) and difference between genders (percentage points)^a



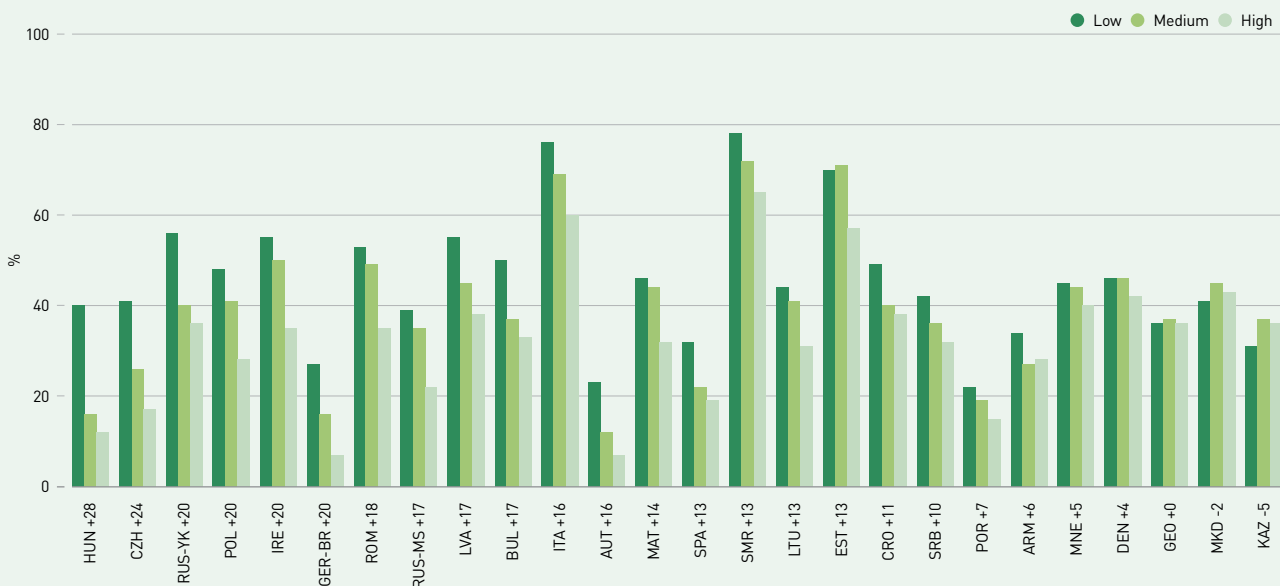
^a Variations, measured in percentage points, were calculated as the difference between the estimate for boys and the estimate for girls.



3.4.3 Spending at least two hours a day watching television or using electronic devices according to parental education

In 23 study locations, children of parents with a low level of education were more likely to watch television or use electronic devices for at least two hours a day than children of parents with a high level of education, with differences ranging from 28 percentage points, recorded in Hungary, to 4 percentage points in Denmark (Fig. 35; Table A2.24). In most countries, a clear gradient is visible, with the percentage of children having two hours screen time a day decreasing as the parental education level increased. A reverse or no relationship was observed in Georgia, Kazakhstan and North Macedonia.

Fig. 35. Percentage of 6–9-year-olds spending at least 2 hours a day watching television or using electronic devices, by level of parental education (low, medium or high) (%)^a



^a Variations, measured in percentage points, were calculated as the difference between the estimate for children with low parental education and the estimate for children with high parental education.

Conclusion



Data collected in the fifth round of COSI, conducted between 2018 and 2020 and encompassing over 400 000 children, indicate that, overall, in the 33 participating countries, 29% of children aged 7–9 years were living with overweight (including obesity) and 12% were affected by obesity. Both overweight and obesity tended to be more common in boys than girls and to increase with age. There continued to be large differences between countries, with overall prevalence of overweight ranging from 6% to 43% and of obesity from 1% to 19%. Taking into account all the latest available data, including from previous rounds of COSI for countries that did not participate in the fifth round, there were only six of 42 countries (43 study locations) where the proportion of children aged 7–9 years affected by overweight (including obesity) was less than one in five.

There have been very few statistically significant changes in country prevalence of overweight or obesity since the fourth round of data collection in 2015–2017. While it is encouraging that there were only three countries in which significant increases were seen over this period, the stark reality is that nearly one in three children in this age group was living with overweight and one in eight with obesity. It is clear that childhood overweight and obesity remain a major public health challenge in the WHO European Region.

Furthermore, there are serious concerns that the COVID-19 pandemic may have further exacerbated this problem. The pandemic – along with its attendant lockdowns, school closures and other mitigation strategies – may have increased unhealthy dietary habits and diminished physical activity levels. The impact of these factors is not yet visible in the COSI round 5 data reported here, which were predominantly collected in 2019. To investigate this issue further – taking advantage of the already established COSI network and methodology – a COSI COVID survey has been launched and will provide robust international data on the impact of COVID-19 on children’s daily routine and behaviours across the WHO European Region.

Recognizing that urgent action on this issue is needed, the WHO Regional Director for Europe’s Advisory Council on Innovation for Noncommunicable Diseases included a signature initiative to tackle childhood overweight and obesity (1).

The reliable and valid data reported here – based on standardized measurements of children’s height and weight – will contribute to these efforts, both by tracking progress and by informing and driving policy action on nutrition and physical activity. The *WHO European regional report on obesity 2022 (1)* highlighted the range of evidence-based policy tools available to Member States for the prevention and control of obesity and recommended an approach that addresses the structural drivers of obesity, along with a move away from solely individualist approaches. A comprehensive multisectoral approach is needed – one that targets unhealthy environments and their determinants while strengthening health systems to better prevent and manage obesity and overweight. In this way, countries will be able to halt or reverse the increase in childhood overweight and obesity, thus protecting the future health and well-being of European populations.

References⁵

1. WHO European regional obesity report 2022. Copenhagen: WHO Regional Office for Europe; 2022 (<https://apps.who.int/iris/handle/10665/353747>).
2. Gao M, Piernas C, Astbury NM, Hippisley-Cox J, O’Rahilly S, Aveyard P et al. Associations between body-mass index and COVID-19 severity in 6.9 million people in England: a prospective, community-based, cohort study. *Lancet Diabetes Endocrinol.* 2021;9(6):350–9. doi: 10.1016/S2213-8587(21)00089-9.
3. European programme of work, 2020–2025: united action for better health in Europe. Copenhagen: WHO Regional Office for Europe; 2021 (<https://apps.who.int/iris/handle/10665/339209>).
4. Report of the commission on ending childhood obesity. Geneva: World Health Organization; 2016 (<https://apps.who.int/iris/handle/10665/204176>).
5. Breda J, McColl K, Buoncristiano M, Williams J, Abdrakhmanova Z, Abdurrahmonova Z et al. Methodology and implementation of the WHO childhood obesity surveillance initiative (COSI). *Obes Rev.* 2021;22(S6):e13215. doi: 10.1111/obr.13215.
6. Breda J, Farrugia Sant’Angelo V, Duleva V, Galeone D, Heinen M, Kelleher CC et al. Mobilizing governments and society to combat obesity: reflections on how data from the WHO European childhood obesity surveillance initiative are helping to drive policy progress. *Obes Rev.* 2021;22(S6):e13217. doi: 10.1111/obr.13217.
7. Wickramasinghe K, Chatterjee S, Williams J, Weber MW, Rito AI, Ripplin H et al. Childhood overweight and obesity abatement policies in Europe. *Obes Rev.* 2021;22(S6):e13300. doi: 10.1111/obr.13300.
8. WHO European childhood surveillance initiative: report on the fourth round of data collection 2015–2017. Copenhagen: WHO Regional Office for Europe; 2021 (<https://apps.who.int/iris/handle/10665/341189>).
9. Buoncristiano M, Spinelli A, Williams J, Nardone P, Rito AI, Garcia-Solano M et al. Childhood overweight and obesity in Europe: changes from 2007 to 2017. *Obes Rev.* 2021;22(S6):e13226. doi: 10.1111/obr.13226.
10. Spinelli A, Buoncristiano M, Kovacs VA, Yngve A, Spiroski I, Obreja G et al. Prevalence of severe obesity among primary school children in 21 European countries. *Obes Facts.* 2019;12(2):244–58. doi: 10.1159/000500436.
11. Spinelli A, Buoncristiano M, Nardone P, Starc G, Hejgaard T, Júlíusson PB et al. Thinness, overweight and obesity in 6- to 9-year-old children from 36 countries: the World Health Organization European childhood obesity surveillance initiative: COSI 2015–2017. *Obes Rev.* 2021;22(S6):e13214. doi: 10.1111/obr.13214.
12. Buoncristiano M, Williams J, Simmonds P, Nurk E, Ahrens W, Nardone P et al. Socioeconomic inequalities in overweight and obesity among 6- to 9-year-old children in 24 countries from the World Health Organization European Region. *Obes Rev.* 2021;22(S6):e13213. doi: 10.1111/obr.13213.
13. GBD 2019 Risk Factors Collaborators. Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the global burden of disease study 2019. *Lancet.* 2020;396(10258):1223–49. doi: 10.1016/S0140-6736(20)30752-2.
14. Fismen A-S, Buoncristiano M, Williams J, Helleve A, Abdrakhmanova S, Bakacs M et al. Socioeconomic differences in food habits among 6- to 9-year-old children from 23 countries: WHO European childhood obesity surveillance initiative (COSI 2015/17). *Obes Rev.* 2021;22(S6):e13211. doi: 10.1111/obr.13211.
15. Van Lippevelde W, Te Velde SJ, Verloigne M, Van Stralen MM, Se Bourdeaudhuij I, Manios Y et al. Associations between family-related factors, breakfast consumption and BMI among 10- to 12-year old European children: the cross-sectional ENERGY-study. *PLoS ONE.* 2013;8(11):e79550. doi: 10.1371/journal.pone.0079550.
16. Monzani A, Ricotti R, Caputo M, Solito A, Archero F, Bellone S et al. A systematic review of the association of skipping breakfast with weight and cardiometabolic risk factors in children and adolescents. What should we better investigate in the future? *Nutrients.* 2019;11(2):387. doi: 10.3390/nu11020387.
17. Ma X, Chen Q, Pu Y, Guo M, Jiang Z, Huang W et al. Skipping breakfast is associated with overweight and obesity: a systematic review and meta-analysis. *Obes Res Clin Pract.* 2020;14(1):1–8. doi: 10.1016/j.orcp.2019.12.002.

⁵ All references were accessed 26 September 2022 unless otherwise stated.



18. Diet, nutrition and the prevention of chronic diseases. Report of a joint WHO/FAO expert consultation. WHO technical report series 916. Geneva: World Health Organization; 2003 (<https://apps.who.int/iris/handle/10665/42665>).
19. Healthy diet: key facts [fact sheet]. 29 April 2020. Geneva: World Health Organization; 2020 (<https://www.who.int/news-room/fact-sheets/detail/healthy-diet>).
20. Better food and nutrition in Europe: progress report. Copenhagen: WHO Regional Office for Europe; 2018 (<https://apps.who.int/iris/handle/10665/345370>).
21. Incentives and disincentives for reducing sugar in manufactured foods: an exploratory supply chain analysis. Copenhagen: WHO Regional Office for Europe; 2017 (<https://apps.who.int/iris/handle/10665/345828>).
22. Malik VS, Schulze MB, Hu FB. Intake of sugar-sweetened beverages and weight gain: a systematic review. *Am J Clin Nutr.* 2006;84(2):274–88. doi: 10.1093/ajcn/84.1.274.
23. Luger M, Lafontan M, Bes-Rastrollo M, Winzer E, Yumuk V, Farpour-Lambert N. Sugar-sweetened beverages and weight gain in children and adults: a systematic review from 2013 to 2015 and a comparison with previous studies. *Obes Facts.* 2017;10:674–93. doi: 10.1159/000484566.
24. Valenzuela MJ, Waterhouse B, Aggarwal VR, Bloor K, Doran T. Effect of sugar-sweetened beverages on oral health: a systematic review and meta-analysis. *Eur J Public Health.* 2021;31(1):122–9. doi: 10.1093/eurpub/ckaa147.
25. Physical activity strategy for the WHO European Region 2016–2025. Copenhagen: WHO Regional Office for Europe; 2016 (<https://apps.who.int/iris/handle/10665/329407>).
26. Global health risks: mortality and burden of disease attributable to selected major risks. Geneva: World Health Organization; 2009 (<https://apps.who.int/iris/handle/10665/44203>).
27. GBD 2016 Risk Factors Collaborators. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2016: a systematic analysis for the global burden of disease study 2016. *Lancet.* 2017;390(10100):1345–1422. doi: 10.1016/S0140-6736(17)32366-8.
28. Sallis R, Young DR, Tartof SY, Sallis JF, Sall J, Li Qiaowu et al. Physical inactivity is associated with a higher risk for severe COVID-19 outcomes: a study in 48 440 adult patients. *Br J Sports Med.* 2021;55(19):1099–1105. doi: 10.1136/bjsports-2021-104080.
29. Physical activity: fact sheet on Sustainable Development Goals (SDGs) : health targets. World Health Organization. Regional Office for Europe; 2019 (<https://apps.who.int/iris/handle/10665/340892>).
30. Milanović SM, Buoncristiano M, Križan H, Rathmes G, Williams J, Hyska J et al. Socioeconomic disparities in physical activity, sedentary behaviour and sleep patterns among 6- to 9-year-old children from 24 countries in the WHO European Region. *Obes Rev.* 2021;22(6):e13209. doi: 10.1111/obr.13209.
31. WHO guidelines on physical activity and sedentary behaviour. Geneva: World Health Organization; 2020 (<https://apps.who.int/iris/handle/10665/336656>).
32. Whiting S, Buoncristiano M, Gelius P, Abu-Omar K, Pattison M, Hyska J et al. Physical activity, screen time, and sleep duration of children aged 6–9 years in 25 countries: an analysis within the WHO European childhood obesity surveillance initiative (COSI) 2015–2017. *Obes Facts.* 2021;14:32–44. doi: 10.1159/000511263.

Annex 1. Methodology

Data for the fifth round of the Childhood Obesity Surveillance Initiative (COSI), conducted between 2018 and 2020, were collected according to a common protocol devised by the WHO Regional Office for Europe and Member States. Originally devised in 2007 prior to the first round of data collection, the protocol has been amended slightly for subsequent rounds (1,2). Further details about COSI methodology and data collection procedures are provided elsewhere (3,4).

Setting of enrolment

Children were enrolled at primary schools in all countries except Czechia and Finland. In Czechia children were selected in paediatric clinics because COSI had been integrated into the mandatory health checks performed by paediatricians. In Finland the data source was the national register for primary health care. Integration of COSI into existing monitored measurement systems also took place in Denmark, Israel, North Macedonia, Slovenia and Sweden.

Targeted population and sampling design

Participating countries could select one or more of the following four age groups: 6.0–6.9, 7.0–7.9, 8.0–8.9 and 9.0–9.9 years. Thirteen countries targeted only 7-year-olds; five targeted only 8-year-olds; one targeted only 9-year-olds (Cyprus); and 15 targeted more than one age group (Table A1.1).

Germany, Israel, Malta, San Marino and Sweden included the entire population of a particular school grade or of particular age groups, whereas all other countries selected a nationally representative sample. In Germany and the Russian Federation, the COSI sample was representative at subnational level as data were collected only in the City of Bremen (Germany) and in Moscow and Yekaterinburg (Russian Federation).

Fifteen countries adopted a two-stage cluster sampling design with schools as the primary sampling units (PSUs) and classes as the secondary sampling units (SSUs) (Table A1.2).

Ten countries adopted a cluster design with classes, schools, municipalities or paediatric units as sampling units, while a small number of countries adopted a cluster design with more than two stages. Seven countries decided to follow a sentinel approach, in which the same schools were selected and participated in multiple rounds of data collection, but most countries selected a new sample of schools for the fifth round of COSI (Table A1.1).



Table A1.1. Main characteristics of the study design in each country collecting data in COSI round 5

Country	Targeted age group(s) (years)	Previous COSI rounds in which country participated ^a	Sentinel approach ^b	Data collection period (month/year)
ARM	7	None	–	04/2019–05/2019
AUT	8	4	Yes	09/2019–12/2019
BUL	7	1, 3, 4	Yes	04/2019–05/2019
CRO	8	4	No	02/2019–04/2019
CYP	9	4	No	01/2019–05/2019; 09/2019–12/2019
CZH	6, 7	1, 2, 3, 4	No	01/2019–12/2019
DEN	7	4	Yes	08/2019–02/2020
EST	7, 8	4	No	03/2019–06/2019
FIN	7, 8, 9	4	No	09/2019–10/2020
GEO	7	4	No	10/2019–12/2019
GER-BR	8	None	–	10/2018–02/2019
GRE	7, 9	2, 3, 4	No	03/2019–06/2019
HUN	7	2, 4	No	09/2019–11/2019
IRE	7	1, 2, 3, 4	Yes	10/2018–02/2019
ISR	6, 7	None	–	08/2018–07/2019
ITA	8, 9	1, 2, 3, 4	No	03/2019–05/2019
KAZ	7, 8	4	No	09/2020–12/2020
LTU	7	1, 2, 3, 4	No	04/2019–06/2019
LVA	7, 9	1, 2, 3, 4	No	10/2018–12/2018
MAT	7	1, 2, 3, 4	No	04/2019–06/2019
MKD	7	2, 3, 4	Yes	04/2019–06/2019
MNE	7	4	No	04/2019–06/2019
POL	8	4	No	10/2018–12/2018
POR	6, 7	1, 2, 3, 4	Yes	10/2018–03/2019
ROM	7, 8	3, 4	Yes	05/2019–06/2019
RUS-MS	7	4	No	10/2019–01/2020
RUS-YK	7	None	–	02/2020–03/2020; 12/2020
SMR	8	4	No	03/2019
SPA	6, 7, 8, 9	2, 3, 4	No	10/2019–01/2020
SRB	7, 8, 9	4	No	02/2019–04/2019
SVK	7, 8	4	No	11/2018–12/2018
SVN	6, 7, 8, 9	1, 2, 3, 4	No	02/2019–05/2019
SWE	6, 7, 8	1, 4	No	Not available
TJK	7	4	No	05/2019–06/2019

^a COSI round 1: 2007–2008; round 2: 2009–2010; round 3: 2012–2013; round 4: 2015–2017; round 5: 2018–2020.

^b Countries that participated in a previous round of data collection could choose to select a new sample of schools or follow a sentinel site approach – that is, involving the same schools that were selected previously.

Table A1.2. Main features of the sampling design used in COSI round 5, by country^a

Country	Sampling design	Sampling unit (SU) definition	Stratification variable
ARM	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 2nd and 3rd grades	Region and degree of urbanization
AUT	Three-stage stratified cluster sampling design	PSU: districts SSU: municipalities Tertiary SU: primary schools	Federal province
BUL	Three-stage sampling design	PSU: primary schools SSU: 1st grade Tertiary SU: 7-year-olds	–
CRO	Cluster sampling design	SU: 2nd and 3rd grades of primary school	Region
CYP	Cluster sampling design	SU: 1st and 4th grades of primary school	–
CZH	Stratified cluster sampling design	SU: paediatric clinics	Region and degree of urbanization
DEN	Cluster sampling design	SU: 2nd grade of primary school	Region
EST	Stratified cluster sampling design	SU: 1st grade of primary school	County
FIN	All measurements of targeted children that had been taken in September and October 2017 were extracted from the national register for primary health care	SSU: targeted children	–
GEO	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 2nd and 3rd grades	Region and degree of urbanization
GRE	Cluster sampling design	SU: 2nd and 4th grades of primary school	–
HUN	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 1st and 2nd grades	County
IRE	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 2nd and 3rd grades	Region and degree of urbanization
ITA	Stratified cluster sampling design	SU: 3rd grade of primary school	Region
KAZ	Two-stage cluster sampling design	PSU: primary schools SSU: 2nd and 3rd grades	Region and degree of urbanization
LTU	Stratified cluster sampling design	SU: 1st grade of primary school	County
LVA	Stratified cluster sampling design	SU: 1st and 3rd grades of primary school	Degree of urbanization and language of instruction
MKD	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 2nd grade	Public health authority
MNE	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 1st and 2nd grades	Region and degree of urbanization
POL	Four-stage cluster sampling design	PSU: regions SSU: subregions Tertiary SU: schools Quaternary SU: 3rd grade	–
POR	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 1st and 2nd grades	Region and school size
ROM	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 2nd and 3rd grades	County and degree of urbanization
RUS-MS	Two-stage cluster sampling design	PSU: primary schools SSU: 1st grade	–
RUS-YK	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 1st grade	City neighbourhoods
SPA	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 1st, 2nd, 3rd and 4th grades	Region and degree of urbanization
SRB	Two-stage cluster sampling design	PSU: primary schools SSU: 1st, 2nd and 3rd grades	–
SVK	Stratified cluster sampling design	SU: 1st, 2nd and 3rd grades of primary school	Public health authority
SVN	Two-stage cluster sampling design	PSU: primary schools SSU: 1st, 2nd and 3rd grades	–
TJK	Two-stage stratified cluster sampling design	PSU: primary schools SSU: 1st grade	Region and degree of urbanization

^a Germany (Bremen), Israel, Malta, San Marino and Sweden included the entire population of a particular school grade or of particular age groups; they are therefore not included in this table because they did not apply a sampling approach. Dash (–) = not applicable.



In Finland all measurements performed between 1 September and 31 October 2019 were extracted from the national register for primary health care. In Israel all available measurements taken in the period August 2018–July 2019 were extracted from the national register. In Sweden all regions and municipalities were invited to participate in COSI. This was made possible by the Swedish Education Act, which offers all students health visits during their primary school years. The first visits occur during preschool and are followed by visits in grades 1, 2 and 3. Anthropometric measurements are collected for each child at all visits. Sixteen of 21 Swedish regions agreed to participate and contributed data. Malta and San Marino included the entire population of interest (all children in third-grade primary school classes). In Germany it was planned to include second-grade and third-grade students of all primary schools in the City of Bremen and of two schools in Bremerhaven. As a result of operational constraints that emerged during the fieldwork, it was not possible to include all schools in the City of Bremen. Nevertheless, all school districts were represented in the final sample.

Sample size and participation in the study

The protocol specifies that the effective sample size – that is, the effective number of measured children – should be a minimum of 2800 children per target age group (1400 girls and 1400 boys), in order to have 80% power to detect a minimum difference of 0.10 Z-score in mean body mass index (BMI) per year at a two-sided 5% significance level, after adjusting for design effect of 1.2. In order to allow for the number of children not willing to participate in the study and/or not belonging to target age groups, the overall number of children approached should be higher than these minimum numbers. The sample size should be considerably increased in countries wishing to obtain estimates at subnational levels.

Among countries that used a sampling approach, the number of children selected to participate in COSI round 5 varied because of differences in study design and sampling strategy: from over 50 000 in Italy (where a subregional representativeness of the estimates was chosen) to around 3200 in Poland (Table A1.3). Likewise, the effective sample size differed widely between countries. The number of measured children with complete information in each targeted age group was lowest in Czechia, Germany (Bremen) and Serbia (around 1000). Three countries almost reached the minimum effective sample size and 14 went beyond it. The highest sample sizes were recorded in Israel, Italy and Sweden.

Children's participation in the study was at least 80% of selected children in 13 countries, between 70% and 79% in eight countries, and between 60% and 69% in three countries (Table A1.3). Only in five countries did less than 60% of children take part in the study, with the lowest level recorded in Germany (Bremen) (39.8%).

Twenty-seven countries used the family form in the fifth round of COSI (Table A1.3). Parent participation in the initiative was particularly high in Italy, San Marino and Tajikistan, where over 90% of the parents of selected children filled out and returned the family form. Percentages between 70% and 89% were recorded in nine countries, while in five countries parent participation was between 60% and 69%. Participation of parents was particularly low in Austria, Denmark, Germany (Bremen) and Hungary, where only around one in three parents took part in the survey. In Estonia, Greece, Ireland and the Russian Federation (Yekaterinburg) participation was even lower.

Table A1.3. Participation of children and parents in COSI round 5, by country^a

Country	Number of children invited to participate			Number of measured children with complete information in each target age group ^b			
	Total	Proportion who participated in measurements (%)	Proportion whose family form was filled in (%)	6-year-olds	7-year-olds	8-year-olds	9-year-olds
ARM	3971	91.7	52.8	-	2384	-	-
AUT	5488	45.4	34.7	-	-	1526	-
BUL	3829	80.1	79.9	-	3068	-	-
CRO	7113	80.6	79.0	-	-	2711	2746
CYP	NA	NA	-	-	-	-	1395
CZH	NA	NA	-	1011	1250	-	-
DEN	3703	70.4	30.1	-	1841	-	-
EST	7115	84.9	23.9	-	2946	3096	-
FIN	NA	NA	-	-	3622	3800	3424
GEO	4413	79.7	80.0	-	2806	-	-
GER-BR	5701	39.8	37.6	-	-	1083	-
GRE	6354	65.9	9.7	-	1202	-	1191
HUN	12 032	51.3	34.1	-	3091	-	-
IRE	7502	56.4	23.0	-	1412	-	-
ISR	NA	NA	-	101 091	46 194	-	-
ITA	53 273	93.2	94.5	-	-	29 621	16 279
KAZ	9441	72.6	67.8	-	2390	2933	-
LTU	5384	60.5	66.9	-	2113	-	-
LVA	9575	73.4	73.1	-	2768	-	2896
MAT	4478	91.7	69.2	-	2683	-	-
MKD	3589	89.8	82.4	-	2082	-	-
MNE	4373	77.1	77.4	-	1652	-	-
POL	3228	83.4	75.9	-	-	2690	-
POR	8696	83.2	73.3	3078	3495	-	-
ROM	14 651	70.9	65.2	-	4111	4055	-
RUS-MS	3435	74.6	55.5	-	2081	-	-
RUS-YK	3772	79.8	23.9	-	2686	-	-
SMR	348	93.7	96.0	-	-	232	-
SPA	24 428	68.2	68.2	4085	4280	4461	3839
SRB	4001	80.6	72.2	-	1019	1097	1085
SVK	11 802	50.9	45.4	-	2957	3023	-
SVN	15 971	98.7	-	3228	5201	5324	1936
SWE	NA	NA	-	24 504	12 658	19 707	-
TJK	3721	92.8	90.5	-	2265	-	-

^a Dash (-) = age group not targeted or family data were not collected; NA = not available.

^b The reported values include only those children with complete information on gender, age, body weight and height and who belonged to the targeted age group(s). These values are therefore lower than the total number of children who were measured in each country.



Data collection procedures

Data were collected using two record forms. The child record form was filled in by the examiner to register a child's age in months, gender, date and time of measurement, clothes worn when measured, and anthropometric measurements. The family form was completed by children's parents or caregivers as a self-administered questionnaire, either on paper or online. It gathered data on simple indicators of children's dietary intake, physical activity, sedentary behaviour and sleep patterns, as well as data on families' socioeconomic characteristics and selected health conditions associated with overweight and obesity.

Children's bodyweight and height were measured in a private room at school by trained examiners using standardized procedures. Children were measured wearing normal, light indoor clothing. Countries were required to use the same highly accurate and precise anthropometric instruments. To measure weight, portable electronic (digital) scales calibrated to 0.1 kg (100 g) and measuring up to 150 kg were used. Height was measured in centimetres and the reading taken to the last completed millimetre (0.1 cm); a height board (preferably with a digital counter) mounted at a right angle between a level floor and a straight, vertical surface was used.

Data cleaning and analysis

Data quality assurance was first applied at the country level based on guidelines specifically developed for COSI data by the WHO Regional Office for Europe. All cleaned datasets were sent to the Regional Office's COSI team, where they were first reviewed to assess completeness and identify any inconsistencies before being merged for intercountry analyses.

Sampling weights were estimated by the WHO Regional Office, which adopted a common approach that considered the sampling design applied in each country (4). These weights were used in all analyses to infer results from sample to population. For Cyprus, the analysis was unweighted.

In addition to presenting individual country prevalence for a range of indicators, overall values were estimated by pooling all countries with national representative data available at time of writing. Because of the heterogeneity in the number and type of age group(s) targeted by each country, the overall analysis included only one target age group per country in order to balance the contribution of each country to the pooled estimates and to limit, as much as possible, the differences in children's age. For the pooled analysis, 7-year-olds were selected if they were targeted; otherwise, the nearest target age group was chosen. In the pooled analysis, an adjusting factor was applied to the sampling weights to take account of differences in population size of the countries involved. The adjusting factor was calculated based on the number of children belonging to the targeted age group according to Eurostat figures or national official statistics for 2019.

Minor deviations from national results published elsewhere may occur for the following reasons: (i) data-checking procedures carried out by the WHO Regional Office; (ii) use of sampling weights to calculate estimates; (iii) differences in the inclusion criteria applied in data analysis; and (iv) differences in the way indicators were defined.

Prevalence in children of overweight (including obesity), obesity, eating habits, and duration of physical activity and screen time were estimated by child's gender and by parental education.

Three categories of parental education were then created: (i) low parental education (both parents with lower education); (ii) medium parental education (one parent with lower education, one parent with higher education); and (iii) high parental education (both parents with higher education). We described parents as having lower education if they reported their educational attainment as “primary school or less”, “lower secondary education” or “upper secondary and post-secondary non-tertiary education”. We described parents as having higher education if they reported their educational attainment as “short-cycle tertiary education or bachelor’s or equivalent level” and “master’s or doctoral or equivalent level”. In the case of single-parent families, parental education was defined as low or high based on the single parent’s educational attainment.

The classification of children’s weight status was based on the 2007 WHO-recommended growth reference for school-aged children and adolescents (5,6). According to WHO definitions, overweight and obesity are defined as a BMI-for-age value $> +1$ Z-score and $> +2$ Z-score, respectively (5). The estimated prevalence of overweight includes children with obesity (7). Children for whom a biologically implausible (or extreme) BMI-for-age value was estimated were excluded from the analysis (values below -5 or above $+5$ Z-scores relative to the 2007 WHO growth reference median) (6). As International Obesity Task Force (IOTF) cutoff points are widely used in the WHO European Region (8), prevalences were also calculated using these cutoffs and are presented in Annex 2. BMI was calculated using the formula: weight (kg) divided by height squared (m^2). The prevalence of overweight and obesity among boys and girls was calculated by age group by country and by pooling data from all countries together. Children who were not in the defined target age groups were excluded from the analysis. Pooled estimates were calculated including the following age groups for each country: (i) 7-year-olds in Armenia, Bulgaria, Czechia, Denmark, Estonia, Finland, Georgia, Greece, Hungary, Ireland, Israel, Kazakhstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain and Tajikistan; (ii) 8-year-olds in Austria, Croatia, Italy, Poland, San Marino and Sweden; and (iii) 9-year-olds in Cyprus. The report also describes country-specific values of overweight and obesity prevalence rates by parental education.

As for children’s eating habits, the report focuses on the frequency of breakfast consumption and the frequency of consumption of fresh fruit and vegetables, which are generally considered to be healthy, and of soft drinks containing sugar, which are considered less healthy. Pooled estimates were calculated including only countries with available data on all eating habits; for these countries, the following age groups were used: (i) 7-year-olds in Bulgaria, Czechia, Denmark, Estonia, Georgia, Ireland, Kazakhstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Romania, Serbia, Spain and Tajikistan; and (ii) 8-year-olds in Austria, Croatia, Italy, Poland and San Marino. With respect to the physical activity and inactivity patterns of children, the report focuses on the following: transport to and from school; time spent practising sports and actively/vigorously playing; and time spent watching television or using electronic devices. The overall analysis for these indicators included the following age groups for each country: (i) 7-year-olds in Armenia, Bulgaria, Denmark, Estonia, Georgia, Ireland, Kazakhstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Romania, Serbia, Slovakia, Spain and Tajikistan; and (ii) 8-year-olds in Austria, Croatia, Italy, Poland and San Marino.

For each of the above behaviours, an indicator of “healthy” or “less healthy” behaviour was defined to facilitate comparisons between countries and according to child’s gender and parents’ educational attainment. The indicators were calculated by aggregating answer options as reported in Table A1.4. Country-specific estimates were calculated including all children aged 6–9 years. Pooled values were estimated including only one age group for each country, as described above. In a few countries, data on some of the indicators were collected in a different way or not at all and were not included in the analysis.



Table A1.4. Questions and answer options included in the COSI family record form on children's eating habits, physical activity, screen time, and indicators of healthy and less healthy behaviour

Family record form items and related questions	Answer options	Indicator	Countries with no data
Frequency of breakfast consumption			
Over a typical or usual week, how often does your child have breakfast (more than just a beverage e.g. milk, tea or juice)?	"every day"; "most days (4–6 days)"; "some days (1–3 days)"; "never"	"healthy" behaviour: 7 days = "every day" "less healthy" behaviour: "never"	
Frequency of fresh fruit, vegetables and soft drinks consumption			
Over a typical or usual week, how often does your child eat or drink the following kinds of foods or beverages? (i) "fresh fruit"; (ii) "vegetables (including vegetable soup, excluding potatoes)"; (iii) "soft drinks containing sugar"	"every day"; "most days (4–6 days)"; "some days (1–3 days)"; "never"	"healthy" behaviour for food items (i) and (ii): 7 days = "every day" "less healthy" behaviour for food item (iii): > 3 days/week = "every day" or "most days (4–6 days)"	Armenia, Hungary
Transport to and from school			
How does your child usually get to and from school? Please tick one option that he or she uses the most.	To school: "Walking"; "Cycling, skating or non-motorized scooter"; "School bus or public transport"; "Private motorized vehicles" From school: "Walking"; "Cycling, skating or non-motorized scooter"; "School bus or public transport"; "Private motorized vehicles"	"healthy" behaviour: "Walking" or "Cycling, skating or non-motorized scooter" on both occasions (to and from school) "less healthy" behaviour: "School bus or public transport" or "Private motorized vehicles" on both occasions (to and from school)	Czechia
Time spent practising sports/dancing			
Is your child a member of one or more sport clubs or dancing courses (e.g. football, running, hockey, swimming, tennis, basketball, gymnastics, ballet, fitness, ballroom dancing, etc.)?	"yes"; "no"	"healthy" behaviour: ≥ 2 hours/week = "2 hours a week"; "3 hours a week"; "4 hours a week"; "5 hours a week"; "6 hours a week"; "7 hours a week"; "8 hours a week"; "9 hours a week"; "10 hours a week"; "11 hours a week"	Hungary, Slovakia, Tajikistan
Over a typical week (including weekends), how many hours does your child spend on sports and physical activities with these sport clubs or dancing courses?	"none"; "1 hour a week"; "2 hours a week"; "3 hours a week"; "4 hours a week"; "5 hours a week"; "6 hours a week"; "7 hours a week"; "8 hours a week"; "9 hours a week"; "10 hours a week"; "11 hours a week"	"less healthy" behaviour: "none"	
Time spent playing actively/vigorously			
Outside school hours, during a normal week, how many hours per day is your child usually playing actively/vigorously (e.g. running, jumping outside or moving and fitness games inside)? Please tick one box for weekdays and one box for weekend.	"never"; "less than 1 hour per day"; "about 1 hour per day"; "about 2 hours per day"; "about 3 or more hours per day"	"healthy" behaviour: ≥ 1 hours/day ^a	Italy, San Marino
Screen time			
Outside school lessons, how much time does your child usually spend watching television or playing with electronic devices such as computer, tablet, smartphone or other electronic device (not including moving or fitness games), either at home or outside home (e.g. Internet cafes, game centres, etc.)? Please tick one for the weekdays and one for the weekend.	"Not at all" "Number of hours and minute per day: Hours: ____ Minutes: ____"	"less healthy" behaviour: ≥ 2 hours/day ^b	Greece, Tajikistan

^a Numerical values are assigned to the items "playing actively/vigorously on a weekday" and "playing actively/vigorously on a weekend day", allowing conversion of this item to a numerical scale ("never" = 0; "less than 1 hour per day" = 0.5; "about 1 hour per day" = 1; "about 2 hours per day" = 2; "about 3 or more hours per day" = 3). Usual play time per day is calculated weighting weekday hours (5/7) and weekend hours (2/7) accordingly.

^b Number of hours per day is calculated weighting weekday hours (5/7) and weekend hours (2/7) accordingly.



References to Annex 1

1. Wijnhoven T, van Raaij J, Breda J. WHO European childhood obesity surveillance initiative: implementation of round 1 (2007/2008) and round 2 (2009/2010). Copenhagen: WHO Regional Office for Europe; 2014 (<https://apps.who.int/iris/handle/10665/344687>).
2. Childhood obesity surveillance initiative (COSI): protocol: October 2016. Copenhagen: WHO Regional Office for Europe; 2017 (<https://apps.who.int/iris/handle/10665/354793>).
3. Childhood obesity surveillance initiative (COSI): data collection procedures: October 2016. Copenhagen: WHO Regional Office for Europe; 2017 (<https://apps.who.int/iris/handle/10665/354792>).
4. Breda J, McColl K, Buoncristiano M, Williams J, Abdрахmanova Z, Abdurrahmonova Z et al. Methodology and implementation of the WHO childhood obesity surveillance initiative (COSI). *Obes Rev.* 2021;22(S6):e13215. doi: 10.1111/obr.13215.
5. de Onis M, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J. Development of a WHO growth reference for school-aged children and adolescents. *Bull World Health Organ.* 2007;85:660–7. doi: 10.2471/blt.07.043497.
6. WHO AnthroPlus for personal computers manual: software for assessing growth of the world's children and adolescents. Geneva: World Health Organization; 2009 (https://cdn.who.int/media/docs/default-source/child-growth/growth-reference-5-19-years/who-anthroplus-manual.pdf?sfvrsn=ddd24b2_1).
7. Physical status: the use and interpretation of anthropometry. Report of a WHO expert committee. Geneva: World Health Organization; 1995 (<https://apps.who.int/iris/handle/10665/37003>).
8. Cole TJ, Lobstein T. Extended international (IOTF) body mass index cut-offs for thinness, overweight and obesity. *Pediatr Obes.* 2012;7(4):284–94. doi: 10.1111/j.2047-6310.2012.00064.x.

Annex 2. Supplementary data tables

Table A2.1. Country-specific prevalence and 95% CIs of overweight (including obesity) and obesity according to WHO definitions among 6–9-year-olds, by age (%)^a

Country	6-year-olds		7-year-olds		8-year-olds		9-year-olds	
	Overweight	Obesity	Overweight	Obesity	Overweight	Obesity	Overweight	Obesity
ARM			27.5 [24.7–30.5]	12.6 [11.0–14.4]				
AUT					25.3 [22.0–29.0]	9.1 [7.3–11.3]		
BUL			30.5 [28.6–32.5]	13.6 [12.3–15.1]				
CRO					35.0 [33.0–37.0]	14.8 [13.4–16.2]	36.8 [34.8–38.8]	16.7 [15.2–18.2]
CYP							43.3 [40.3–46.3]	19.5 [17.1–22.1]
CZH	20.0 [17.1–23.2]	8.2 [6.4–10.3]	21.0 [18.1–24.3]	8.5 [6.9–10.5]				
DEN			18.7 [16.5–21.2]	5.7 [4.8–6.9]				
EST			26.0 [24.7–27.4]	10.2 [9.3–11.2]	26.9 [25.6–28.2]	11.2 [10.3–12.1]		
FIN			28.3 [26.9–29.8]	11.2 [10.3–12.3]	31.9 [30.5–33.4]	12.8 [11.8–13.8]	36.6 [35.1–38.2]	16.2 [15.1–17.5]
GEO			28.3 [26.3–30.3]	11.6 [10.4–12.9]				
GER-BR					25.9 [22.2–29.9]	10.3 [8.0–13.1]		
GRE			42.1 [38.4–46.0]	17.1 [14.5–20.0]			44.7 [40.7–48.7]	18.6 [15.8–21.7]
HUN			29.8 [27.9–31.8]	13.7 [12.2–15.3]				
IRE			24.1 [21.4–27.1]	7.6 [5.9–9.8]				
ISR	19.7 [19.6–19.9]	6.9 [6.8–7.0]	19.4 [19.1–19.7]	7.1 [6.9–7.3]				
ITA					38.8 [38.0–39.6]	17.1 [16.6–17.7]	37.4 [36.4–38.4]	15.8 [15.0–16.5]
KAZ			20.4 [17.9–23.2]	6.5 [5.2–8.2]	21.1 [18.8–23.7]	7.1 [5.9–8.5]		
LTU			24.9 [22.6–27.5]	9.2 [7.9–10.7]				
LVA			23.8 [22.0–25.6]	8.8 [7.8–9.9]			26.8 [25.2–28.5]	5.5 [4.3–7.0]
MAT			33.0 [32.5–33.6]	14.9 [14.5–15.3]				
MKD			31.6 [28.0–35.5]	15.3 [12.8–18.1]				
MNE			31.1 [28.8–33.4]	13.0 [11.6–14.6]				
POL					32.3 [30.2–34.5]	13.6 [12.2–15.2]		
POR	27.7 [25.7–29.9]	10.7 [9.5–12.0]	31.0 [29.3–32.8]	12.5 [11.3–13.9]				
ROM			26.2 [24.0–28.6]	11.7 [10.5–13.0]	31.7 [30.0–33.6]	14.2 [13.0–15.5]		
RUS-MS			23.2 [21.2–25.4]	8.4 [7.1–9.9]				
RUS-YK			22.7 [21.2–24.2]	8.4 [7.2–9.9]				
SMR					33.2 [32.8–33.6]	11.2 [10.9–11.5]		
SPA	34.7 [32.2–37.3]	12.9 [11.4–14.4]	38.8 [36.9–40.8]	16.1 [14.7–17.6]	41.7 [39.4–44.1]	19.2 [17.5–21.1]	44.2 [41.7–46.7]	18.7 [16.9–20.7]
SRB			31.3 [28.1–34.7]	12.3 [10.5–14.3]	36.2 [32.7–39.7]	15.6 [13.4–18.0]	36.4 [33.9–38.9]	14.3 [12.3–16.5]
SVK			27.1 [25.0–29.4]	10.9 [9.4–12.5]				
SVN	19.0 [17.3–20.8]	6.1 [5.2–7.1]	24.5 [23.1–26.0]	9.1 [8.3–9.9]	29.9 [28.6–31.2]	11.3 [10.4–12.3]	31.9 [29.9–34.0]	12.1 [10.5–13.8]
SWE	23.4 [22.8–23.9]	7.5 [7.1–7.8]	31.1 [30.4–31.8]	12.1 [11.6–12.6]	31.1 [30.5–31.8]	12.1 [11.6–12.6]		
TJK			6.1 [5.0–7.3]	1.4 [0.9–2.0]				

^a Calculated only for the targeted age groups.

Table A2.2. Country-specific prevalence and 95% CIs of overweight (including obesity) according to WHO definitions among 6–9-year-olds, by age and gender (%)^a

Country	6-year-olds		7-year-olds		8-year-olds		9-year-olds	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
ARM			29.9 [25.7–34.4]	24.7 [22.0–27.6]				
AUT					25.5 [21.3–30.2]	25.1 [20.5–30.3]		
BUL			32.0 [29.6–34.6]	28.9 [26.5–31.5]				
CRO					36.8 [34.1–39.7]	33.2 [30.6–35.8]	39.8 [37.3–42.4]	33.5 [31.0–36.0]
CYP							47.9 [43.8–52.0]	39.0 [35.7–42.5]
CZH	20.5 [16.4–25.3]	19.5 [16.2–23.2]	22.4 [19.2–25.9]	19.6 [15.8–24.1]				
DEN			18.4 [16.0–21.1]	19.1 [15.9–22.8]				
EST			27.1 [25.1–29.2]	25.0 [23.0–27.0]	28.3 [26.6–30.1]	25.2 [23.4–27.1]		
FIN			28.6 [26.7–30.7]	28.1 [26.0–30.2]	34.4 [32.4–36.4]	29.3 [27.3–31.4]	37.7 [35.6–39.9]	35.5 [33.3–37.9]
GEO			31.0 [28.2–33.9]	25.4 [23.1–27.7]				
GER-BR					28.2 [24.0–32.8]	23.5 [19.5–28.0]		
GRE			43.9 [39.0–48.9]	40.4 [35.6–45.3]			50.6 [45.5–55.8]	38.9 [33.8–44.4]
HUN			29.7 [27.2–32.3]	29.9 [27.4–32.6]				
IRE			23.8 [20.7–27.3]	24.4 [20.3–29.1]				
ISR	18.9 [18.7–19.2]	20.6 [20.3–20.9]	19.5 [19.2–19.9]	19.2 [18.8–19.6]				
ITA					41.3 [40.2–42.4]	36.4 [35.3–37.4]	40.1 [38.7–41.4]	34.4 [33.0–35.8]
KAZ			23.6 [20.0–27.5]	17.4 [14.7–20.5]	24.1 [21.2–27.4]	18.1 [15.5–21.2]		
LTU			24.6 [21.7–27.8]	25.3 [22.5–28.3]				
LVA			25.0 [23.0–27.0]	22.5 [20.0–25.1]			29.1 [26.8–31.4]	24.4 [21.8–27.1]
MAT			34.9 [34.2–35.7]	31.1 [30.4–31.8]				
MKD			31.8 [28.0–36.0]	31.4 [26.6–36.7]				
MNE			33.9 [31.0–36.9]	28.1 [25.3–31.0]				
POL					35.9 [33.1–38.9]	28.6 [25.8–31.5]		
POR	29.0 [26.4–31.8]	26.5 [23.8–29.3]	29.6 [27.3–32.1]	32.5 [29.8–35.3]				
ROM			26.3 [23.6–29.2]	26.1 [23.7–28.7]	32.9 [30.6–35.3]	30.5 [28.0–33.1]		
RUS-MS			23.9 [21.3–26.7]	22.5 [19.8–25.6]				
RUS-YK			24.8 [22.8–26.9]	20.6 [18.7–22.6]				
SMR					35.8 [35.3–36.3]	30.4 [29.7–31.1]		
SPA	34.2 [31.0–37.5]	35.3 [32.1–38.6]	38.4 [36.2–40.7]	39.3 [36.5–42.1]	42.0 [38.9–45.2]	41.4 [38.7–44.2]	46.8 [43.4–50.3]	41.4 [38.4–44.4]
SRB			35.3 [30.9–39.9]	27.1 [21.9–33.1]	36.1 [31.6–40.7]	36.2 [32.4–40.3]	39.6 [36.1–43.2]	32.9 [28.8–37.2]
SVK			28.3 [25.7–31.2]	25.9 [23.3–28.7]	33.2 [30.1–36.5]	27.4 [24.7–30.3]		
SVN	20.6 [18.3–23.1]	17.4 [15.5–19.4]	25.3 [23.5–27.2]	23.7 [21.9–25.6]	31.4 [29.8–33.2]	28.2 [26.5–29.9]	33.6 [30.8–36.4]	30.0 [26.8–33.3]
SWE	24.3 [23.6–25.1]	22.4 [21.6–23.2]	31.7 [30.8–32.7]	30.5 [29.5–31.6]	31.7 [30.8–32.7]	30.5 [29.6–31.5]		
TJK			6.7 [5.3–8.4]	5.5 [4.3–7.0]				

^a Calculated only for the targeted age groups.

Table A2.3. Country-specific prevalence and 95% CIs of obesity according to WHO definitions among 6–9-year-olds, by age and gender (%)^a

Country	6-year-olds		7-year-olds		8-year-olds		9-year-olds	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
ARM			15.2 [12.7–18.1]	9.6 [7.8–11.7]				
AUT					11.3 [8.7–14.5]	7.1 [5.1–9.7]		
BUL			15.2 [13.3–17.2]	12.0 [10.4–14.0]				
CRO					17.7 [15.5–20.0]	11.8 [10.2–13.7]	19.7 [17.8–21.8]	13.3 [11.6–15.2]
CYP							24.1 [20.6–28.0]	15.3 [12.7–18.1]
CZH	8.5 [6.2–11.5]	7.8 [5.4–11.1]	10.4 [8.3–13.0]	6.6 [4.8–8.9]				
DEN			6.6 [5.0–8.5]	4.8 [3.4–6.8]				
EST			11.4 [10.1–12.9]	9.0 [7.9–10.3]	13.1 [11.7–14.6]	9.0 [8.0–10.2]		
FIN			12.4 [11.0–13.9]	10.0 [8.7–11.6]	15.7 [14.2–17.3]	9.7 [8.5–11.1]	19.5 [17.8–21.3]	12.9 [11.4–14.6]
GEO			13.9 [11.9–16.1]	9.2 [7.8–10.8]				
GER-BR					12.3 [9.3–16.2]	8.2 [5.9–11.3]		
GRE			20.8 [17.2–24.9]	13.3 [10.3–17.1]	25.4 [21.4–29.9]	11.9 [9.2–15.3]		
HUN			15.0 [13.0–17.2]	12.3 [10.4–14.6]				
IRE			8.5 [6.3–11.4]	6.7 [4.4–9.8]				
ISR	7.0 [6.8–7.1]	6.9 [6.7–7.0]	7.8 [7.6–8.1]	6.3 [6.0–6.5]				
ITA					20.5 [19.7–21.4]	13.8 [13.1–14.5]	19.1 [18.0–20.2]	12.0 [11.0–13.0]
KAZ			7.5 [5.6–10.1]	5.5 [4.0–7.6]	9.6 [7.8–11.8]	4.6 [3.5–6.0]		
LTU			9.3 [7.8–11.1]	9.1 [7.5–11.0]				
LVA			9.8 [8.3–11.5]	7.8 [6.5–9.3]	11.8 [10.2–13.6]	5.5 [4.3–7.0]		
MAT			17.5 [16.9–18.1]	12.2 [11.7–12.8]				
MKD			18.0 [14.7–21.7]	12.5 [9.8–15.9]				
MNE			15.5 [13.4–18.0]	10.4 [8.5–12.5]				
POL					17.6 [15.2–20.2]	9.4 [7.6–11.5]		
POR	12.6 [10.8–14.5]	8.8 [7.3–10.7]	12.9 [11.3–14.8]	12.1 [10.4–14.1]				
ROM			13.7 [12.1–15.3]	9.6 [8.4–11.0]	17.3 [15.3–19.4]	10.9 [9.3–12.7]		
RUS-MS			9.9 [8.1–12.0]	7.0 [5.7–8.5]				
RUS-YK			10.8 [9.0–12.8]	6.2 [4.9–7.7]				
SMR					13.3 [12.9–13.8]	8.9 [8.5–9.4]		
SPA	13.6 [11.8–15.7]	12.1 [10.3–14.1]	17.8 [16.0–19.8]	14.2 [12.5–16.1]	21.1 [18.6–23.7]	17.2 [15.4–19.3]	21.7 [19.2–24.5]	15.5 [13.3–18]
SRB			15.0 [12.4–18.2]	9.3 [6.7–12.8]	17.7 [14.7–21.2]	13.3 [10.8–16.2]	19.4 [16.1–23.1]	8.8 [6.4–12.1]
SVK			11.4 [9.5–13.7]	10.3 [8.4–12.6]	16.8 [14.1–20.0]	9.0 [7.3–11.1]		
SVN	7.9 [6.5–9.5]	4.4 [3.5–5.4]	10.3 [9.2–11.4]	7.8 [6.8–9.0]	12.8 [11.6–14.1]	9.8 [8.7–11.0]	15.2 [13.0–17.7]	8.3 [6.6–10.3]
SWE	8.4 [7.9–8.9]	6.5 [6.1–7.0]	11.7 [11.0–12.5]	9.4 [8.7–10.2]	14.1 [13.4–14.9]	10.0 [9.3–10.6]		
TJK			1.8 [1.1–2.8]	1.0 [0.5–1.9]				

^a Calculated only for the targeted age groups.

Table A2.4. Country-specific prevalence and 95% CIs of overweight (including obesity) and obesity according to WHO definitions among children aged 6–9, by parental education (%)

Country	Overweight (including obesity)			Obesity		
	Low parental education	Medium parental education	High parental education	Low parental education	Medium parental education	High parental education
ARM	22.6 [19.4–26.2]	28.7 [24.7–33.2]	30.0 [24.7–35.9]	11.0 [8.8–13.8]	14.0 [10.4–18.5]	15.4 [11.8–19.9]
AUT	31.5 [28.4–34.7]	19.7 [14.9–25.5]	15.3 [11.2–20.5]	14.2 [11.5–17.3]	4.2 [2.4–7.3]	4.4 [2.5–7.8]
BUL	31.4 [28.7–34.2]	30.7 [26.8–34.9]	27.8 [24.4–31.5]	15.4 [13.5–17.5]	12.7 [10.1–16.0]	10.4 [8.3–13.0]
CRO	38.8 [36.9–40.7]	34.3 [31.6–37.2]	28.3 [25.7–31.1]	18.6 [17.2–20.1]	13.2 [11.1–15.6]	9.7 [8.1–11.5]
CZH	24.6 [21.8–27.6]	17.7 [14.1–22.1]	13.3 [10.9–16.2]	11.5 [9.9–13.2]	5.7 [4.2–7.6]	3.3 [2.0–5.3]
DEN	18.2 [14.3–22.8]	12.5 [8.6–17.8]	13.7 [10.1–18.2]	5.1 [3.3–7.8]	1.2 [0.4–3.8]	1.7 [0.6–4.7]
EST	31.9 [28.4–35.6]	25.1 [22.2–28.2]	19.1 [16.6–22.0]	15.4 [12.9–18.2]	9.4 [7.5–11.7]	6.8 [5.4–8.6]
GEO	24.8 [22.7–27.1]	34.8 [30.1–39.9]	33.0 [29.9–36.3]	10.4 [9.0–12.1]	15.5 [12.3–19.3]	13.4 [11.4–15.7]
GER-BR	32.3 [28.8–36.0]	21.0 [17.5–25.0]	14.1 [11.5–17.2]	13.2 [11.1–15.8]	7.3 [5.1–10.5]	2.1 [1.1–3.7]
GRE	41.7 [33.3–50.6]	50.6 [39.1–62.1]	39.4 [32.5–46.7]	21.5 [15.3–29.4]	31.9 [22.2–43.5]	13.3 [7.9–21.6]
HUN	32.9 [30.4–35.6]	27.8 [24.3–31.6]	24.4 [20.9–28.1]	16.7 [14.7–18.9]	12.2 [9.9–14.8]	9.9 [8.0–12.2]
IRE	31.0 [26.0–36.6]	26.1 [20.4–32.7]	16.7 [13.7–20.2]	10.0 [6.0–16.1]	8.6 [5.3–13.9]	5.2 [3.5–7.6]
ITA	40.8 [40.0–41.5]	34.1 [32.8–35.5]	29.9 [28.4–31.5]	18.6 [18.1–19.3]	13.3 [12.4–14.2]	9.7 [8.8–10.8]
KAZ	18.3 [15.7–21.2]	19.4 [16.8–22.4]	23.2 [20.0–26.6]	5.8 [4.8–6.9]	5.8 [4.5–7.4]	7.7 [5.8–10.2]
LTU	32.3 [28.9–36.0]	29.7 [26.4–33.3]	19.8 [17.3–22.6]	13.5 [11.2–16.3]	12.5 [10.3–15.2]	6.7 [5.5–8.2]
LVA	26.4 [24.5–28.5]	26.7 [24.7–28.7]	23.1 [21.7–24.6]	10.2 [9.1–11.5]	9.2 [7.8–10.8]	7.0 [6.0–8.2]
MAT	36.8 [36.1–37.5]	32.4 [31.4–33.4]	24.6 [23.7–25.6]	18.1 [17.5–18.6]	13.4 [12.7–14.2]	9.6 [8.9–10.2]
MKD	34.3 [31.1–37.5]	36.1 [31.8–40.6]	32.4 [25.3–40.3]	18.1 [15.7–20.8]	19.0 [15.8–22.7]	15.4 [11.9–19.7]
MNE	30.3 [28.2–32.5]	31.8 [28.2–35.5]	32.7 [29.3–36.3]	13.1 [11.7–14.7]	12.6 [9.9–15.7]	11.9 [10.0–14.2]
POL	34.0 [30.7–37.5]	37.7 [33.8–41.8]	27.5 [24.1–31.2]	16.8 [14.5–19.4]	15.5 [12.6–18.9]	8.6 [6.8–10.7]
POR	33.6 [31.6–35.6]	26.8 [24.1–29.7]	22.8 [20.0–25.8]	14.6 [13.3–16.1]	9.8 [8.2–11.7]	6.8 [5.5–8.4]
ROM	29.7 [27.6–31.9]	31.8 [28.7–35.0]	28.2 [25.3–31.4]	13.6 [12.4–14.9]	15.6 [13.5–18.0]	10.4 [9.1–11.8]
RUS-MS	29.9 [23.7–37.0]	23.2 [18.5–28.5]	20.5 [18.4–22.9]	14.7 [10.8–19.7]	9.5 [6.4–13.8]	6.9 [5.5–8.5]
RUS-YK	25.2 [21.4–29.3]	24.0 [19.5–29.2]	18.3 [15.4–21.5]	8.9 [5.8–13.5]	8.7 [6.3–12.0]	5.2 [3.3–8.1]
SMR	33.1 [32.5–33.8]	35.3 [34.6–36.0]	29.3 [28.1–30.5]	14.2 [13.9–14.5]	11.8 [11.2–12.3]	7.3 [6.7–8.0]
SPA	44.5 [43.0–46.1]	37.1 [35.1–39.1]	31.7 [29.5–34.0]	20.7 [19.5–21.9]	13.8 [12.4–15.5]	10.0 [8.8–11.4]
SRB	35.4 [32.8–38.1]	34.5 [31.0–38.1]	35.1 [30.3–40.3]	16.1 [13.7–18.9]	13.2 [10.7–16.3]	12.1 [9.5–15.3]
TJK	6.3 [5.2–7.6]	4.3 [2.9–6.4]	3.0 [1.1–7.9]	1.3 [0.8–2.0]	1.0 [0.4–2.4]	1.2 [0.3–4.9]

Table A2.5. Country-specific prevalence and 95% CIs of overweight (including obesity) according to IOTF cutoffs among boys and girls, by age (%)^a

Country	6-year-olds		7-year-olds		8-year-olds		9-year-olds	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
ARM			22.1 [18.3–26.4]	21.1 [18.6–24.0]				
AUT					15.7 [12.2–19.9]	20.4 [17.0–24.3]		
BUL			22.6 [20.6–24.8]	25.5 [23.1–28.0]				
CRO					26.6 [24.1–29.2]	27.6 [25.2–30.1]	29.2 [26.8–31.8]	27.2 [24.8–29.8]
CYP							34.8 [31.1–38.7]	32.6 [29.1–36.2]
CZH	13.7 [10.7–17.5]	16.4 [13.4–19.9]	15.1 [12.3–18.4]	16.4 [12.8–20.8]				
DEN			11.8 [9.8–14.2]	15.0 [12.1–18.5]				
EST			18.9 [17.1–20.7]	20.7 [18.8–22.7]	20.0 [18.4–21.8]	20.5 [18.9–22.1]		
FIN			20.9 [19.2–22.8]	23.3 [21.3–25.3]	24.4 [22.6–26.2]	23.8 [22.0–25.8]	28.4 [26.4–30.5]	28.4 [26.3–30.6]
GEO			21.6 [19.1–24.2]	21.0 [18.9–23.3]				
GER-BR					19.6 [15.6–24.2]	18.6 [14.9–22.9]		
GRE			32.7 [28.0–37.8]	34.9 [30.4–39.8]			36.8 [32.2–41.8]	30.0 [25.5–34.8]
HUN			21.8 [19.4–24.3]	26.4 [24.1–28.9]				
IRE			15.0 [12.4–18.1]	20.7 [16.7–25.4]				
ISR	12.0 [11.8–12.3]	17.2 [16.9–17.4]	12.9 [12.6–13.2]	15.9 [15.5–16.2]				
ITA					30.7 [29.7–31.7]	30.5 [29.6–31.5]	28.6 [27.3–29.8]	28.7 [27.4–30.1]
KAZ			15.7 [12.7–19.2]	14.0 [11.6–16.9]	15.6 [13.3–18.2]	14.0 [11.6–16.7]		
LTU			16.0 [13.7–18.7]	21.3 [18.8–24.0]				
LVA			17.0 [15.2–19.1]	18.2 [16.3–20.2]			18.5 [16.7–20.5]	18.8 [16.4–21.5]
MAT			25.9 [25.2–26.6]	25.4 [24.8–26.1]				
MKD			26.6 [23.3–30.3]	25.8 [22.4–29.6]				
MNE			25.5 [22.8–28.3]	23.2 [20.6–26.1]				
POL					26.6 [23.9–29.4]	23.9 [21.3–26.7]		
POR	20.5 [18.2–23.0]	22.4 [19.8–25.3]	20.3 [18.3–22.5]	27.4 [25.0–30.0]				
ROM			20.3 [18.3–22.5]	22.0 [19.0–25.3]	25.3 [23.4–27.4]	25.5 [22.9–28.4]		
RUS-MS			16.1 [13.7–18.9]	18.8 [16.3–21.5]				
RUS-YK			16.3 [14.5–18.3]	16.7 [14.9–18.7]				
SMR					22.5 [22.1–22.9]	25.9 [25.3–26.5]		
SPA	23.8 [21.2–26.7]	29.8 [26.8–32.9]	28.3 [26.1–30.5]	34.1 [31.4–36.8]	31.0 [28.1–34.0]	35.5 [32.9–38.2]	34.2 [31.2–37.4]	35.7 [32.7–38.8]
SRB			25.1 [21.5–29.1]	22.3 [17.6–28.0]	28.3 [24.8–32.2]	30.8 [27.2–34.7]	29.3 [26.1–32.8]	25.5 [21.3–30.2]
SVK			20.1 [17.9–22.6]	22.6 [19.9–25.4]	24.9 [22.0–28.0]	23.7 [21.2–26.4]		
SVN	14.0 [12.2–16.0]	13.7 [12.1–15.4]	16.9 [15.5–18.5]	19.7 [18.0–21.5]	21.4 [20.0–22.9]	22.5 [20.9–24.2]	24.4 [21.8–27.1]	23.8 [20.9–27.0]
SWE	15.1 [14.5–15.8]	18.4 [17.7–19.2]	21.8 [20.9–22.7]	25.0 [24.1–26.0]	21.8 [20.9–22.6]	25.0 [24.1–26.0]		
TJK			3.4 [2.5–4.6]	4.5 [3.4–6.0]				

^a Calculated only for the targeted age groups.

Table A2.6. Country-specific prevalence and 95% CIs of obesity according to IOTF cutoffs among boys and girls, by age (%)^a

Country	6-year-olds		7-year-olds		8-year-olds		9-year-olds	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
ARM			7.4 [5.9–9.2]	6.8 [5.3–8.8]				
AUT					4.1 [2.4–6.9]	4.3 [2.9–6.2]		
BUL			8.7 [7.2–10.4]	9.8 [8.3–11.6]				
CRO					9.6 [8.1–11.4]	8.4 [7.1–9.9]	9.9 [8.5–11.5]	8.8 [7.5–10.4]
CYP							11.3 [9.0–14.0]	10.0 [7.6–13.1]
CZH	5.2 [3.5–7.7]	6.8 [4.6–9.9]	4.9 [3.4–6.9]	5.6 [4.0–7.8]				
DEN			3.5 [2.3–5.3]	3.5 [2.5–5.0]				
EST			5.7 [4.8–6.7]	6.5 [5.5–7.7]	6.1 [5.2–7.2]	5.9 [5.0–6.8]		
FIN			6.9 [5.9–8.1]	7.9 [6.7–9.2]	8.1 [7.0–9.4]	7.3 [6.2–8.5]	10.3 [9.0–11.7]	9.1 [7.8–10.5]
GEO			7.8 [6.4–9.4]	7.2 [6.0–8.7]				
GER-BR					6.9 [4.9–9.5]	6.2 [4.3–8.9]		
GRE			11.7 [8.9–15.2]	10.1 [7.5–13.6]			10.0 [7.3–13.7]	6.8 [4.9–9.4]
HUN			8.5 [7.0–10.4]	10.2 [8.5–12.1]				
IRE			4.9 [3.2–7.3]	4.7 [3.0–7.1]				
ISR	3.8 [3.7–4.0]	5.7 [5.5–5.8]	4.3 [4.1–4.5]	5.0 [4.7–5.2]				
ITA					10.5 [9.8–11.1]	9.4 [8.8–10.0]	8.6 [7.9–9.4]	8.0 [7.2–8.8]
KAZ			4.3 [2.7–6.7]	3.4 [2.3–4.9]	4.4 [3.3–5.9]	3.3 [2.4–4.5]		
LTU			4.2 [3.1–5.6]	6.9 [5.5–8.7]				
LVA			4.5 [3.8–5.5]	6.0 [4.8–7.3]			4.4 [3.5–5.6]	3.9 [2.9–5.1]
MAT			10.7 [10.2–11.1]	9.6 [9.2–10.1]				
MKD			10.8 [8.7–13.4]	10.2 [7.5–13.7]				
MNE			7.2 [5.5–9.4]	7.2 [5.7–9.0]				
POL					8.0 [6.4–10.0]	6.1 [4.6–8.1]		
POR	6.3 [5.1–7.8]	7.5 [6.0–9.2]	5.9 [4.8–7.2]	9.1 [7.7–10.8]				
ROM			8.1 [7.0–9.4]	7.3 [6.0–8.8]	9.1 [7.7–10.7]	8.1 [6.7–9.9]		
RUS-MS			4.4 [3.3–5.9]	5.1 [3.9–6.8]				
RUS-YK			4.9 [3.8–6.3]	5.0 [3.9–6.5]				
SMR					6.7 [6.3–7.0]	8.0 [7.6–8.5]		
SPA	7.8 [6.3–9.5]	10.2 [8.7–12.1]	8.9 [7.7–10.3]	11.1 [9.4–12.9]	11.6 [9.9–13.6]	11.9 [10.1–13.9]	9.1 [7.5–11.2]	9.4 [7.6–11.5]
SRB			8.5 [6.3–11.3]	6.4 [4.3–9.6]	9.0 [6.9–11.7]	8.5 [6.4–11.3]	9.3 [6.8–12.7]	5.4 [3.8–7.7]
SVK			6.5 [5.2–8.0]	7.4 [6.0–9.2]	8.7 [6.8–11.0]	6.6 [5.0–8.6]		
SVN	3.4 [2.7–4.4]	3.6 [2.8–4.5]	4.8 [4.1–5.6]	5.6 [4.8–6.6]	6.5 [5.6–7.5]	7.0 [6.1–8.0]	7.1 [5.9–8.5]	5.6 [4.2–7.4]
SWE	4.4 [4.0–4.7]	5.1 [4.7–5.6]	6.3 [5.8–6.8]	6.6 [6.1–7.1]	6.3 [5.8–6.8]	6.6 [6.1–7.1]		
TJK			0.7 [0.3–1.4]	0.4 [0.1–1.4]				

^a Calculated only for the targeted age groups.

Table A2.7. Frequency of consumption of breakfast among boys and girls aged 6–9 years (%)

Country	Boys				Girls				Total			
	Never	Some days (1–3 days)	Most days (4–6 days)	Every day	Never	Some days (1–3 days)	Most days (4–6 days)	Every day	Never	Some days (1–3 days)	Most days (4–6 days)	Every day
ARM	11.9	28.7	16.5	43.0	9.8	29.8	15.1	45.4	10.9	29.2	15.8	44.1
AUT	5.6	17.1	12.2	65.1	7.5	21.4	15.1	56.0	6.5	19.2	13.7	60.6
BUL	1.6	13.1	11.6	73.7	1.2	12.3	10.9	75.6	1.4	12.7	11.2	74.6
CRO	3.0	14.4	15.3	67.2	3.6	14.4	14.7	67.4	3.3	14.4	15.0	67.3
CZH	2.6	11.4	12.5	73.5	2.2	12.3	13.8	71.6	2.4	11.9	13.1	72.6
DEN	0.0	1.4	3.9	94.8	0.3	2.1	5.1	92.5	0.2	1.7	4.4	93.7
EST	1.6	8.1	10.3	80.0	1.6	6.4	16.0	76.0	1.6	7.3	13.1	78.1
GEO	3.4	19.6	18.0	59.0	2.2	24.1	15.3	58.4	2.8	21.8	16.7	58.7
GER-BR	2.4	8.6	8.9	80.1	2.4	8.8	9.6	79.2	2.4	8.7	9.2	79.6
GRE	8.6	28.6	12.0	50.8	9.2	31.1	11.9	47.9	8.9	29.8	12.0	49.3
HUN	2.4	15.8	12.9	69.0	2.3	15.9	13.8	68.0	2.3	15.8	13.3	68.5
IRE	0.2	1.9	3.8	94.1	0.0	2.1	5.1	92.7	0.1	2.0	4.4	93.5
ITA	4.7	12.6	11.1	71.6	5.7	14.7	12.2	67.4	5.2	13.6	11.6	69.6
KAZ	2.1	11.2	12.5	74.2	2.1	10.5	12.6	74.7	2.1	10.8	12.6	74.5
LTU	4.8	21.6	8.6	65.0	5.9	22.1	8.2	63.9	5.3	21.8	8.4	64.5
LVA	2.9	12.0	11.3	73.8	3.0	13.3	11.9	71.8	2.9	12.6	11.6	72.8
MAT	8.4	20.7	15.5	55.4	8.0	22.3	16.3	53.4	8.2	21.5	15.9	54.4
MKD	2.4	12.4	8.6	76.6	1.6	12.5	9.3	76.6	2.0	12.5	8.9	76.6
MNE	0.3	3.0	5.3	91.5	0.4	3.7	5.0	91.0	0.3	3.3	5.1	91.3
POL	2.2	6.6	9.8	81.4	3.3	6.8	9.3	80.6	2.7	6.7	9.5	81.0
POR	0.5	2.2	3.0	94.3	0.6	2.7	3.6	93.0	0.6	2.5	3.3	93.7
ROM	8.1	21.3	10.0	60.6	7.8	22.9	10.0	59.3	8.0	22.1	10.0	59.9
RUS-MS	1.9	9.6	10.1	78.5	3.0	9.3	10.9	76.8	2.4	9.4	10.5	77.6
RUS-YK	5.9	14.3	10.7	69.1	9.2	14.3	14.1	62.4	7.6	14.3	12.5	65.6
SMR	3.1	6.8	10.6	79.5	3.4	6.8	7.4	82.4	3.2	6.8	9.1	80.9
SPA	2.1	15.5	12.1	70.4	2.3	19.2	12.8	65.7	2.2	17.3	12.4	68.1
SRB	2.1	6.6	6.5	84.8	1.5	6.5	7.7	84.3	1.8	6.6	7.1	84.6
SVK	7.9	16.8	8.9	66.4	10.1	17.5	10.1	62.4	9.0	17.1	9.5	64.4
TJK	2.2	11.4	9.2	77.3	2.0	11.4	7.7	78.9	2.1	11.4	8.5	78.1

Table A2.8. Country-specific prevalence and 95% CIs of daily breakfast consumption by child's gender and parental education (%)

Country	No. of children included in the analysis	Child's gender			No. of children included in the analysis	Parental education		
		Boys	Girls	Total		Low	Medium	High
ARM	2041	43.0 [39.1–47.0]	45.4 [41.3–49.5]	44.1 [40.9–47.4]	1776	41.0 [37.1–45.1]	43.4 [38.2–48.8]	52.3 [45.8–58.7]
AUT	1841	65.1 [59.7–70.1]	56.0 [51.3–60.6]	60.6 [57.0–64.2]	1736	53.7 [49.5–57.9]	67.9 [60.4–74.6]	72.7 [66.9–77.7]
BUL	3040	73.7 [70.4–76.7]	75.6 [73.0–78.0]	74.6 [72.2–76.9]	3008	71.0 [67.3–74.5]	77.4 [73.7–80.8]	80.2 [76.1–83.8]
CRO	5406	67.2 [64.8–69.6]	67.4 [65.2–69.4]	67.3 [65.4–69.1]	5239	63.3 [61.0–65.5]	68.6 [65.7–71.3]	76.7 [73.9–79.3]
CZH	2074	73.5 [70.1–76.6]	71.6 [68.0–75.1]	72.6 [69.7–75.3]	1998	66.2 [63.4–68.9]	76.5 [72.6–80.0]	85.7 [79.2–90.4]
DEN	945	94.8 [92.2–96.5]	92.5 [89.2–94.9]	93.7 [91.3–95.4]	920	92.7 [89.7–94.9]	95.0 [88.8–97.9]	94.9 [92.1–96.8]
EST	1437	80.0 [77.6–82.3]	76.0 [73.1–78.7]	78.1 [75.9–80.1]	1361	69.5 [65.4–73.3]	80.0 [76.9–82.8]	84.8 [81.9–87.3]
GEO	3359	59.0 [56.0–62.0]	58.4 [55.7–61.1]	58.7 [56.4–61.1]	3081	53.7 [50.8–56.5]	56.7 [51.6–61.6]	67.7 [63.9–71.4]
GER-BR	2062	80.1 [76.8–83.0]	79.2 [75.4–82.5]	79.6 [76.7–82.3]	1713	72.0 [68.6–75.1]	81.8 [77.1–85.7]	89.3 [86.6–91.5]
GRE	513	50.8 [45.4–56.3]	47.9 [42.0–53.8]	49.3 [45.0–53.6]	498	48.2 [35.8–60.8]	44.9 [35.3–54.9]	53.0 [47.7–58.4]
HUN	4056	69.0 [66.7–71.2]	68.0 [65.1–70.8]	68.5 [66.4–70.5]	3878	62.6 [59.6–65.4]	73.3 [69.5–76.8]	77.7 [75.0–80.1]
IRE	1090	94.1 [91.5–96.0]	92.7 [89.8–94.9]	93.5 [91.5–95.0]	1017	87.0 [82.1–90.7]	93.7 [88.9–96.5]	96.2 [93.6–97.7]
ITA	44 240	71.6 [70.8–72.4]	67.4 [66.6–68.3]	69.6 [68.9–70.2]	40 224	65.2 [64.4–66.0]	77.3 [76.1–78.4]	81.9 [80.5–83.3]
KAZ	6051	74.2 [70.9–77.3]	74.7 [72.0–77.2]	74.5 [71.7–77.1]	5665	74.2 [70.3–77.7]	74.7 [71.1–77.9]	75.6 [70.9–79.8]
LTU	3199	65.0 [61.7–68.2]	63.9 [60.3–67.3]	64.5 [61.4–67.4]	3024	47.9 [44.6–51.3]	60.6 [56.4–64.8]	73.3 [70.1–76.4]
LVA	6815	73.8 [71.6–76.0]	71.8 [69.5–74.0]	72.8 [70.8–74.8]	6478	65.4 [62.8–67.8]	71.5 [69.1–73.7]	79.8 [77.5–82.0]
MAT	3045	55.4 [54.7–56.2]	53.4 [52.6–54.1]	54.4 [53.9–54.9]	2886	49.3 [48.6–50.0]	55.3 [54.2–56.4]	65.6 [64.5–66.7]
MKD	2801	76.6 [73.1–79.8]	76.6 [73.8–79.2]	76.6 [74.2–78.8]	2529	72.6 [69.9–75.1]	82.8 [78.2–86.6]	82.9 [78.6–86.5]
MNE	3142	91.5 [89.8–92.9]	91.0 [89.2–92.5]	91.3 [90.0–92.4]	2946	90.7 [89.0–92.1]	91.7 [89.5–93.5]	93.8 [91.5–95.5]
POL	2420	81.4 [79.0–83.5]	80.6 [77.8–83.1]	81.0 [79.2–82.7]	2313	77.9 [74.3–81.1]	82.2 [79.0–85.1]	83.9 [81.2–86.2]
POR	6200	94.3 [93.3–95.2]	93.0 [91.8–94.1]	93.7 [92.9–94.5]	5800	92.0 [90.8–93.1]	95.8 [94.5–96.8]	96.2 [94.5–97.4]
ROM	9305	60.6 [58.2–62.8]	59.3 [56.7–61.8]	59.9 [57.7–62.1]	8181	54.9 [52.8–57.0]	58.5 [52.5–64.2]	68.9 [65.5–72.0]
RUS-MS	1844	78.5 [74.8–81.7]	76.8 [73.6–79.7]	77.6 [74.8–80.2]	1737	62.9 [55.7–69.5]	78.9 [73.1–83.7]	80.7 [78.1–83.1]
RUS-YK	867	69.1 [64.1–73.7]	62.4 [57.8–66.9]	65.6 [61.5–69.4]	825	56.5 [51.2–61.7]	63.9 [55.1–71.8]	70.4 [65.4–75.0]
SMR	309	79.5 [78.9–80.1]	82.4 [81.9–82.9]	80.9 [80.5–81.3]	292	74.0 [73.2–74.7]	91.6 [91.2–91.9]	92.5 [91.9–93.1]
SPA	16 435	70.4 [69.0–71.7]	65.7 [64.1–67.3]	68.1 [66.9–69.3]	15 789	62.6 [61.0–64.0]	71.0 [69.2–72.8]	80.1 [78.6–81.6]
SRB	2847	84.8 [82.8–86.6]	84.3 [80.7–87.2]	84.6 [82.4–86.5]	2756	83.0 [80.2–85.5]	86.1 [83.0–88.7]	86.2 [81.9–89.6]
SVK	5070	66.4 [63.4–69.3]	62.4 [59.1–65.5]	64.4 [61.6–67.1]	NA	NA	NA	NA
TJK	3291	77.3 [72.5–81.4]	78.9 [74.8–82.5]	78.1 [73.9–81.8]	3049	79.9 [75.8–83.5]	74.7 [68.3–80.2]	80.8 [70.1–88.3]

Table A2.9. Frequency of consumption of fresh fruit among boys and girls aged 6–9 years (%)

Country	Boys					Girls					Total				
	Never	Less than once a week	Some days (1–3 days)	Most days (4–6 days)	Every day	Never	Less than once a week	Some days (1–3 days)	Most days (4–6 days)	Every day	Never	Less than once a week	Some days (1–3 days)	Most days (4–6 days)	Every day
AUT	1.1	5.0	24.1	25.3	44.4	1.6	2.5	18.6	28.7	48.6	1.4	3.8	21.4	27.0	46.5
BUL	1.0	5.4	28.0	29.8	35.9	0.8	5.3	25.5	29.2	39.1	0.9	5.3	26.8	29.5	37.5
CRO	1.6	4.6	31.3	31.8	30.6	1.5	3.2	29.3	32.6	33.5	1.6	3.9	30.3	32.2	32.0
CZH	1.5	3.1	17.4	31.4	46.7	0.4	2.2	16.1	33.6	47.6	1.0	2.6	16.8	32.5	47.1
DEN	0.8	3.6	9.7	28.4	57.5	0.2	1.5	8.6	26.8	62.9	0.5	2.6	9.2	27.6	60.1
EST	1.4	3.0	20.3	37.1	38.2	0.7	2.4	19.5	38.6	38.8	1.1	2.7	19.9	37.8	38.5
GEO	2.7	8.7	30.4	36.3	21.9	2.3	6.8	25.1	41.5	24.2	2.5	7.8	27.9	38.8	23.0
GER-BR	1.1	3.0	14.0	24.8	57.1	0.9	1.4	14.1	24.4	59.2	1.0	2.2	14.0	24.6	58.1
GRE	2.2	7.3	25.5	32.9	32.0	2.4	6.0	22.7	27.9	41.0	2.3	6.7	24.1	30.3	36.6
IRE	3.9	2.2	12.9	21.3	59.7	3.2	3.9	10.8	20.2	61.9	3.6	3.0	11.9	20.8	60.8
ITA	4.1	5.0	22.1	24.0	44.7	3.0	4.1	21.8	25.4	45.6	3.6	4.6	22.0	24.7	45.2
KAZ	1.5	7.6	26.2	29.1	35.7	1.1	8.0	24.4	28.5	38.0	1.3	7.8	25.3	28.8	36.9
LTU	1.2	5.2	30.1	33.0	30.5	1.0	4.2	25.0	35.8	34.0	1.1	4.7	27.7	34.3	32.2
LVA	0.7	7.0	36.0	30.9	25.5	0.7	4.3	33.1	33.1	28.8	0.7	5.7	34.6	32.0	27.1
MAT	8.6	7.2	21.0	21.6	41.6	5.6	5.7	18.4	24.2	46.1	7.1	6.5	19.7	22.9	43.9
MKD	1.4	4.7	27.3	23.7	42.9	1.1	3.6	24.5	29.6	41.2	1.2	4.2	26.0	26.6	42.1
MNE	0.7	2.7	21.4	30.7	44.4	0.7	1.7	17.9	30.1	49.5	0.7	2.3	19.7	30.4	46.9
POL	1.4	5.7	30.8	26.4	35.7	0.7	4.1	27.5	26.4	41.4	1.0	4.9	29.2	26.4	38.5
POR	1.3	1.5	13.6	20.0	63.6	1.1	1.8	12.6	22.1	62.3	1.2	1.7	13.1	21.1	63.0
ROM	1.5	5.7	28.7	23.9	40.2	0.7	4.5	25.8	24.5	44.6	1.1	5.1	27.3	24.2	42.3
RUS-MS	0.5	2.6	18.6	30.2	48.0	0.4	1.0	14.6	32.0	52.0	0.5	1.8	16.6	31.1	50.1
RUS-YK	0.4	1.9	16.6	32.1	49.0	0.8	1.6	16.3	36.4	45.0	0.6	1.7	16.4	34.4	46.9
SMR	1.9	5.0	17.0	28.9	47.2	5.3	1.3	15.3	31.3	46.7	3.6	3.2	16.2	30.1	46.9
SPA	2.7	4.3	26.3	29.7	37.0	2.4	3.9	25.3	31.8	36.6	2.5	4.1	25.8	30.8	36.8
SRB	1.1	4.5	23.6	31.9	39.0	0.5	2.6	22.8	31.6	42.4	0.8	3.6	23.2	31.7	40.7
SVK	1.5	5.1	25.0	28.8	39.6	0.8	3.1	24.3	28.1	43.8	1.2	4.1	24.7	28.4	41.6
TJK	4.1	7.0	23.8	20.6	44.5	3.7	8.5	22.5	22.8	42.5	3.9	7.7	23.2	21.7	43.5

Table A2.10. Country-specific prevalence and 95% CIs of daily consumption of fresh fruit by child's gender and parental education (%)

Country	No. of children included in the analysis	Child's gender			No. of children included in the analysis	Parental education		
		Boys	Girls	Total		Low	Medium	High
AUT	1841	44.4 [40.3–48.7]	48.6 [43.1–54.1]	46.5 [43.0–50.0]	1740	38.6 [34.1–43.2]	53.8 [47.2–60.2]	58.9 [52.5–64.9]
BUL	3044	35.9 [32.8–39.2]	39.1 [36.0–42.4]	37.5 [34.8–40.3]	3012	32.0 [28.2–36.1]	38.3 [34.4–42.4]	48.5 [43.5–53.5]
CRO	5435	30.6 [28.8–32.5]	33.5 [31.5–35.5]	32.0 [30.6–33.5]	5268	28.8 [27.0–30.6]	34.3 [31.8–36.9]	37.9 [34.8–41.1]
CZH	2084	46.7 [41.4–52.0]	47.6 [43.4–51.8]	47.1 [43.4–50.9]	2007	40.8 [37.0–44.7]	50.3 [44.2–56.3]	58.2 [53.8–62.4]
DEN	944	57.5 [52.4–62.5]	62.9 [57.3–68.2]	60.1 [55.7–64.3]	919	57.3 [50.0–64.4]	65.4 [58.1–72.1]	59.5 [53.4–65.3]
EST	1608	38.2 [35.2–41.2]	38.8 [36.1–41.7]	38.5 [36.5–40.5]	1530	29.1 [25.5–33.0]	42.6 [39.3–45.9]	41.6 [38.3–45.0]
GEO	3417	21.9 [19.8–24.2]	24.2 [22.0–26.6]	23.0 [21.4–24.8]	3134	22.3 [20.2–24.6]	17.2 [14.0–20.9]	28.0 [24.9–31.4]
GER-BR	2091	57.1 [53.8–60.4]	59.2 [55.3–62.9]	58.1 [55.1–61.1]	1741	51.1 [47.1–55.1]	57.3 [52.1–62.4]	68.1 [64.2–71.8]
GRE	516	32.0 [27.0–37.5]	41.0 [31.7–50.9]	36.6 [31.0–42.7]	501	29.2 [19.6–41.1]	35.8 [26.7–46.0]	43.5 [36.3–50.9]
IRE	1067	59.7 [52.7–66.3]	61.9 [56.2–67.3]	60.8 [55.6–65.7]	999	50.0 [41.5–58.6]	59.1 [51.1–66.7]	66.2 [59.3–72.4]
ITA	44 209	44.7 [43.9–45.6]	45.6 [44.8–46.5]	45.2 [44.5–45.8]	40 177	41.1 [40.3–41.9]	50.4 [49.1–51.8]	57.6 [55.9–59.2]
KAZ	6060	35.7 [33.3–38.2]	38.0 [35.4–40.8]	36.9 [34.7–39.1]	5672	32.4 [29.0–36.0]	37.1 [34.1–40.2]	42.7 [39.3–46.1]
LTU	3195	30.5 [28.4–32.7]	34.0 [31.5–36.5]	32.2 [30.3–34.1]	3021	25.1 [21.9–28.6]	30.1 [26.8–33.6]	35.6 [33.4–37.9]
LVA	6768	25.5 [23.7–27.3]	28.8 [27.0–30.7]	27.1 [25.5–28.8]	6445	24.3 [21.9–26.9]	26.6 [24.2–29.1]	28.7 [26.6–30.8]
MAT	3056	41.6 [40.9–42.3]	46.1 [45.4–46.9]	43.9 [43.4–44.4]	2894	39.6 [38.9–40.3]	43.8 [42.7–45.0]	54.4 [53.3–55.5]
MKD	2842	42.9 [38.8–47.1]	41.2 [37.9–44.5]	42.1 [39.1–45.0]	2563	41.7 [38.4–45.1]	40.6 [35.2–46.2]	44.4 [37.7–51.3]
MNE	3126	44.4 [41.9–47.0]	49.5 [46.7–52.3]	46.9 [44.9–48.9]	2934	44.5 [41.4–47.7]	46.2 [42.7–49.7]	55.0 [51.9–58.0]
POL	2422	35.7 [32.7–38.8]	41.4 [38.1–44.9]	38.5 [36.1–41.0]	2319	35.0 [31.4–38.9]	39.3 [34.9–43.8]	42.4 [38.7–46.2]
POR	6218	63.6 [61.3–65.8]	62.3 [60.0–64.6]	63.0 [61.2–64.7]	5820	54.9 [52.9–56.9]	71.1 [67.6–74.4]	77.4 [74.6–80.0]
ROM	9375	40.2 [37.5–42.9]	44.6 [42.7–46.4]	42.3 [40.7–43.9]	8248	41.8 [39.3–44.2]	40.3 [36.8–43.9]	42.3 [37.1–47.7]
RUS-MS	1869	48.0 [44.4–51.7]	52.0 [48.4–55.5]	50.1 [47.2–52.9]	1759	39.5 [32.9–46.5]	50.5 [45.1–56.0]	51.9 [48.6–55.3]
RUS-YK	871	49.0 [44.9–53.1]	45.0 [40.9–49.1]	46.9 [43.9–49.8]	829	38.7 [31.4–46.5]	46.5 [39.8–53.4]	50.3 [46.1–54.6]
SMR	309	47.2 [46.7–47.6]	46.7 [46.0–47.3]	46.9 [46.5–47.4]	292	40.0 [39.4–40.6]	54.9 [54.1–55.7]	62.5 [61.4–63.6]
SPA	16 307	37.0 [35.3–38.8]	36.6 [34.7–38.6]	36.8 [35.2–38.5]	15 677	28.2 [26.8–29.7]	41.1 [39.2–43.0]	53.7 [50.9–56.5]
SRB	2832	39.0 [34.7–43.3]	42.4 [38.2–46.8]	40.7 [37.1–44.3]	2745	35.7 [32.1–39.4]	41.3 [36.0–46.8]	49.3 [45.0–53.6]
SVK	5082	39.6 [36.9–42.4]	43.8 [40.9–46.7]	41.6 [39.3–44.0]	NA	NA	NA	NA
TJK	3334	44.5 [39.6–49.5]	42.5 [38.0–47.1]	43.5 [39.1–48.1]	3098	43.1 [38.3–48.0]	42.4 [36.4–48.5]	48.6 [37.8–59.5]

Table A2.11. Frequency of consumption of vegetables among boys and girls aged 6–9 years (%)

Country	Boys					Girls					Total				
	Never	Less than once a week	Some days (1–3 days)	Most days (4–6 days)	Every day	Never	Less than once a week	Some days (1–3 days)	Most days (4–6 days)	Every day	Never	Less than once a week	Some days (1–3 days)	Most days (4–6 days)	Every day
AUT	3.1	5.9	30.4	33.0	27.6	2.3	4.9	30.9	34.5	27.3	2.7	5.4	30.7	33.7	27.5
BUL	1.7	8.3	28.6	30.3	31.0	1.1	5.9	26.4	30.5	36.1	1.4	7.1	27.5	30.4	33.5
CRO	1.9	4.9	35.7	36.6	20.9	1.3	5.2	35.5	38.2	19.7	1.6	5.1	35.6	37.4	20.3
CZH	1.3	4.8	24.6	33.5	35.8	1.3	2.9	24.5	34.4	37.0	1.3	3.9	24.6	33.9	36.3
DEN	0.1	3.1	13.6	27.5	55.7	0.5	1.4	13.2	27.6	57.3	0.3	2.2	13.4	27.5	56.5
EST	1.8	8.7	38.3	31.3	19.9	0.7	8.5	37.3	35.0	18.5	1.3	8.6	37.8	33.1	19.2
GEO	4.5	14.5	35.8	33.6	11.6	2.9	12.7	35.3	35.1	14.0	3.7	13.6	35.6	34.3	12.8
GER-BR	1.6	3.2	23.6	32.9	38.6	1.0	3.4	20.3	32.7	42.6	1.3	3.3	22.0	32.8	40.5
GRE	5.5	13.7	41.6	20.6	18.6	4.0	9.7	46.0	22.3	18.1	4.7	11.7	43.8	21.5	18.3
IRE	3.8	3.9	18.0	32.0	42.3	2.2	5.6	17.5	27.2	47.5	3.0	4.7	17.8	29.7	44.8
ITA	7.1	8.4	32.4	22.0	30.1	4.9	7.1	31.2	24.3	32.4	6.0	7.8	31.8	23.2	31.3
KAZ	4.1	9.9	27.6	26.4	32.0	3.0	9.5	26.1	27.3	34.1	3.6	9.7	26.8	26.9	33.1
LTU	1.9	6.6	27.8	38.3	25.4	1.5	5.6	27.6	36.4	29.0	1.7	6.1	27.7	37.4	27.1
LVA	1.2	9.4	36.1	32.8	20.5	0.8	6.6	35.3	33.6	23.6	1.0	8.0	35.7	33.2	22.0
MAT	17.6	17.3	33.0	18.1	14.0	13.4	15.3	34.4	21.3	15.5	15.5	16.3	33.7	19.7	14.8
MKD	2.7	6.0	29.6	28.1	33.6	2.0	5.3	27.0	27.5	38.2	2.3	5.6	28.3	27.8	35.9
MNE	1.0	4.9	31.8	36.9	25.4	0.9	4.6	28.4	39.2	26.9	0.9	4.8	30.2	38.0	26.1
POL	1.8	8.9	34.6	28.8	25.9	1.4	7.6	31.1	32.3	27.7	1.6	8.2	32.9	30.5	26.8
POR	1.0	1.5	12.9	28.6	56.0	0.6	1.6	12.0	27.4	58.4	0.8	1.6	12.5	28.0	57.2
ROM	1.8	4.8	26.5	29.5	37.4	1.5	5.1	27.4	27.9	38.1	1.7	5.0	27.0	28.7	37.7
RUS-MS	1.6	3.5	21.6	32.3	41.0	0.3	3.4	21.4	34.2	40.8	0.9	3.5	21.5	33.3	40.9
RUS-YK	0.7	3.1	30.4	39.2	26.6	0.8	6.0	33.5	33.9	25.8	0.7	4.7	32.0	36.4	26.2
SMR	3.1	1.2	25.9	25.9	43.8	2.7	3.3	18.7	30.0	45.3	2.9	2.2	22.4	27.9	44.6
SPA	3.2	8.0	44.8	31.0	13.1	2.8	7.7	44.3	31.5	13.7	3.0	7.8	44.5	31.3	13.4
SRB	1.3	2.8	23.0	35.0	37.8	0.9	2.5	20.2	37.4	38.9	1.1	2.7	21.7	36.2	38.3
SVK	1.7	6.1	33.2	32.7	26.2	1.6	5.5	30.3	34.3	28.2	1.7	5.8	31.8	33.5	27.2
TJK	5.4	7.8	20.1	23.0	43.8	6.0	7.4	18.4	22.0	46.3	5.7	7.6	19.2	22.5	45.0

Table A2.12. Country-specific prevalence and 95% CIs of daily consumption of vegetables by child's gender and parental education (%)

Country	No. of children included in the analysis	Child's gender			No. of children included in the analysis	Parental education		
		Boys	Girls	Total		Low	Medium	High
AUT	1838	27.6 [24.3–31.1]	27.3 [23.6–31.5]	27.5 [24.7–30.4]	1739	21.0 [17.7–24.7]	35.0 [30.0–40.4]	36.3 [30.2–42.8]
BUL	3045	31.0 [28.2–34.0]	36.1 [32.8–39.6]	33.5 [31.0–36.2]	3013	28.0 [24.9–31.4]	34.2 [30.0–38.6]	44.5 [40.0–49.2]
CRO	5432	20.9 [19.4–22.5]	19.7 [17.9–21.7]	20.3 [19.0–21.7]	5268	17.8 [16.4–19.4]	19.1 [16.9–21.4]	27.7 [24.8–30.9]
CZH	2011	35.8 [30.8–41.0]	37.0 [33.0–41.1]	36.3 [32.4–40.5]	1940	31.4 [27.1–36.0]	35.9 [30.2–42.0]	48.7 [43.0–54.4]
DEN	940	55.7 [50.3–61.1]	57.3 [52.7–61.8]	56.5 [52.5–60.4]	915	48.1 [42.6–53.7]	59.3 [52.0–66.2]	65.9 [59.0–72.3]
EST	1611	19.9 [17.5–22.5]	18.5 [16.1–21.1]	19.2 [17.5–21.1]	1534	13.6 [11.2–16.4]	21.3 [18.4–24.6]	21.2 [18.6–24.1]
GEO	3364	11.6 [10.1–13.4]	14.0 [12.2–16.0]	12.8 [11.5–14.1]	3084	12.8 [11.2–14.5]	11.8 [9.0–15.4]	13.1 [10.6–16.1]
GER-BR	2089	38.6 [35.0–42.3]	42.6 [39.0–46.3]	40.5 [37.3–43.8]	1738	31.7 [28.6–35.0]	39.9 [35.3–44.7]	53.4 [48.9–57.8]
GRE	515	18.6 [13.8–24.6]	18.1 [13.6–23.5]	18.3 [14.6–22.7]	499	14.7 [8.1–25.3]	18.3 [12.2–26.5]	21.5 [16.7–27.2]
IRE	1071	42.3 [37.8–46.9]	47.5 [42.4–52.6]	44.8 [41.3–48.2]	1002	33.6 [27.3–40.4]	39.3 [32.7–46.4]	52.1 [47.5–56.6]
ITA	44 299	30.1 [29.3–30.9]	32.4 [31.5–33.4]	31.3 [30.6–31.9]	40 264	26.5 [25.8–27.1]	38.0 [36.6–39.5]	45.0 [43.1–46.9]
KAZ	5977	32.0 [29.3–34.8]	34.1 [31.5–36.8]	33.1 [30.7–35.5]	5600	33.0 [29.3–36.9]	31.9 [28.9–35.0]	33.7 [30.7–36.9]
LTU	3161	25.4 [23.3–27.6]	29.0 [26.2–31.8]	27.1 [25.0–29.3]	2993	19.6 [16.7–22.9]	22.5 [19.7–25.6]	31.6 [29.0–34.3]
LVA	6726	20.5 [18.4–22.8]	23.6 [21.6–25.7]	22.0 [20.1–24.1]	6402	20.4 [18.1–23.0]	20.4 [18.0–23.2]	24.3 [21.7–27.1]
MAT	3036	14.0 [13.5–14.6]	15.5 [15.0–16.1]	14.8 [14.4–15.2]	2876	9.2 [8.8–9.7]	16.2 [15.3–17.0]	26.8 [25.8–27.8]
MKD	2783	33.6 [30.5–36.9]	38.2 [34.6–41.9]	35.9 [33.3–38.5]	2519	34.6 [31.7–37.7]	37.7 [31.7–44.0]	40.6 [33.6–48.1]
MNE	3079	25.4 [23.3–27.6]	26.9 [25.1–28.8]	26.1 [24.7–27.6]	2890	24.6 [22.7–26.6]	25.8 [22.5–29.4]	31.3 [27.9–34.9]
POL	2404	25.9 [23.0–29.0]	27.7 [24.7–30.9]	26.8 [24.5–29.1]	2305	19.9 [17.2–23.0]	23.3 [20.0–26.9]	36.3 [32.8–40.0]
POR	6196	56.0 [53.4–58.6]	58.4 [56.1–60.6]	57.2 [55.3–59.0]	5802	50.5 [48.1–52.8]	63.4 [60.3–66.4]	70.8 [68.0–73.5]
ROM	9287	37.4 [35.5–39.3]	38.1 [35.2–41.1]	37.7 [35.6–39.9]	8189	37.1 [35.4–38.9]	34.4 [30.7–38.2]	41.1 [35.0–47.4]
RUS-MS	1857	41.0 [37.6–44.4]	40.8 [36.7–44.9]	40.9 [38.1–43.7]	1752	33.7 [27.3–40.8]	35.4 [30.1–41.2]	43.5 [40.4–46.6]
RUS-YK	858	26.6 [22.9–30.6]	25.8 [22.7–29.2]	26.2 [23.9–28.5]	819	25.1 [18.8–32.6]	24.9 [20.7–29.6]	27.2 [23.0–31.9]
SMR	312	43.8 [43.2–44.5]	45.3 [44.8–45.9]	44.6 [44.1–45.1]	295	36.5 [35.8–37.2]	56.0 [55.3–56.6]	58.5 [57.4–59.7]
SPA	16 154	13.1 [12.2–14.1]	13.7 [12.7–14.8]	13.4 [12.6–14.2]	15 536	10.5 [9.7–11.4]	13.3 [11.9–14.8]	19.6 [17.5–22.0]
SRB	2813	37.8 [34.4–41.3]	38.9 [36.0–41.9]	38.3 [35.8–40.9]	2729	35.6 [32.5–38.8]	39.8 [35.3–44.5]	43.4 [38.7–48.2]
SVK	5074	26.2 [23.8–28.8]	28.2 [25.8–30.7]	27.2 [25.1–29.4]	NA	NA	NA	NA
TJK	3332	43.8 [38.9–48.7]	46.3 [41.4–51.2]	45.0 [40.5–49.6]	3096	44.5 [39.7–49.4]	43.3 [37.1–49.8]	52.8 [40.4–64.8]

Table A2.13. Frequency of consumption of soft drinks among boys and girls aged 6–9 years (%)

Country	Boys					Girls					Total				
	Never	Less than once a week	Some days (1–3 days)	Most days (4–6 days)	Every day	Never	Less than once a week	Some days (1–3 days)	Most days (4–6 days)	Every day	Never	Less than once a week	Some days (1–3 days)	Most days (4–6 days)	Every day
ARM	27.1	20.2	30.0	14.6	8.2	29.4	20.5	28.2	14.3	7.5	28.2	20.4	29.2	14.5	7.9
AUT	19.5	46.4	25.9	5.6	2.7	25.6	42.7	24.2	5.4	2.1	22.5	44.5	25.1	5.5	2.4
BUL	26.8	31.6	19.8	9.3	12.5	28.6	34.6	20.6	7.5	8.7	27.7	33.1	20.2	8.4	10.6
CRO	5.9	21.3	31.7	17.5	23.5	6.9	26.5	31.4	16.1	19.1	6.4	23.8	31.6	16.8	21.3
CZH	6.2	20.8	31.8	18.9	22.4	4.8	20.9	32.9	18.9	22.5	5.5	20.9	32.3	18.9	22.4
DEN	9.4	37.5	45.1	5.8	2.2	10.9	40.2	40.7	5.6	2.5	10.1	38.8	43.0	5.7	2.4
EST	24.1	53.4	18.4	3.0	1.1	33.4	51.7	13.1	1.6	0.1	28.6	52.6	15.8	2.4	0.6
GEO	6.6	28.1	35.3	21.1	8.9	6.2	33.8	33.9	19.2	6.8	6.4	30.9	34.6	20.2	7.9
GER-BR	23.6	43.9	22.5	6.1	3.9	27.9	45.1	19.7	4.6	2.8	25.7	44.5	21.1	5.4	3.4
GRE	39.9	44.3	15.1	0.2	0.4	45.7	42.3	8.9	2.0	1.1	42.9	43.3	11.9	1.2	0.8
IRE	39.7	39.8	14.3	3.2	3.0	39.6	38.7	16.0	4.1	1.6	39.7	39.2	15.1	3.6	2.3
ITA	20.7	36.8	27.2	8.0	7.3	24.2	38.5	25.0	6.8	5.5	22.4	37.6	26.2	7.4	6.4
KAZ	12.6	28.3	28.3	14.4	16.4	13.6	28.9	26.7	13.8	17.0	13.1	28.6	27.5	14.1	16.7
LTU	14.9	55.8	22.6	5.3	1.4	18.0	53.9	22.7	4.0	1.4	16.4	54.9	22.7	4.7	1.4
LVA	6.5	43.9	34.4	8.7	6.5	8.4	45.3	32.1	8.2	6.0	7.4	44.6	33.2	8.4	6.3
MAT	30.7	33.4	19.5	8.4	8.0	32.7	33.7	19.0	7.4	7.2	31.7	33.6	19.2	7.9	7.6
MKD	12.0	16.3	31.3	14.5	25.9	15.3	16.5	31.4	15.4	21.5	13.6	16.4	31.3	15.0	23.8
MNE	13.4	26.1	32.7	15.0	12.8	14.7	29.6	31.5	14.7	9.5	14.0	27.8	32.1	14.9	11.2
POL	7.9	33.4	28.6	14.8	15.3	6.5	32.5	28.9	16.6	15.5	7.2	33.0	28.7	15.7	15.4
POR	14.2	38.4	31.8	8.6	7.0	15.0	40.7	31.6	7.4	5.4	14.6	39.5	31.7	8.0	6.2
ROM	11.8	41.1	30.1	7.3	9.6	14.2	42.6	29.2	5.7	8.3	13.0	41.9	29.7	6.5	9.0
RUS-MS	23.3	30.9	26.8	8.8	10.2	23.4	34.1	24.3	8.5	9.7	23.4	32.6	25.5	8.6	9.9
RUS-YK	21.1	33.5	27.2	7.8	10.4	21.7	34.2	27.4	8.6	8.1	21.4	33.9	27.3	8.2	9.2
SMR	21.6	50.0	21.0	3.1	4.3	36.9	36.2	21.5	3.4	2.0	28.9	43.4	21.2	3.2	3.2
SPA	48.2	35.2	12.5	2.6	1.5	53.5	32.0	11.4	2.2	0.9	50.8	33.7	12.0	2.4	1.2
SRB	10.3	25.3	36.6	15.2	12.6	11.2	28.5	34.2	13.6	12.5	10.7	26.9	35.4	14.4	12.5
SVK	7.6	23.5	32.9	16.7	19.3	7.5	24.8	32.2	17.0	18.5	7.5	24.1	32.6	16.8	18.9
TJK	9.9	22.2	36.7	18.6	12.6	9.9	24.4	38.0	15.5	12.2	9.9	23.3	37.3	17.1	12.4

Table A2.14. Country-specific prevalence and 95% CIs of consumption of soft drinks on more than 3 days a week by child's gender and parental education (%)

Country	No. of children included in the analysis	Child's gender			No. of children included in the analysis	Parental education		
		Boys	Girls	Total		Low	Medium	High
ARM	1817	22.8 [19.1–27.0]	21.8 [17.7–26.5]	22.3 [19.6–25.3]	1602	24.5 [19.9–29.8]	19.7 [14.6–25.9]	18.9 [14.8–23.9]
AUT	1838	8.3 [5.9–11.5]	7.5 [5.4–10.3]	7.9 [6.3–9.9]	1740	10.0 [7.7–13.0]	5.7 [3.5–9.2]	3.3 [1.8–6.0]
BUL	3044	21.8 [18.1–26.0]	16.2 [13.2–19.6]	19.0 [16.0–22.6]	3013	29.1 [24.7–33.9]	8.3 [6.2–11.0]	6.3 [4.5–8.9]
CRO	5439	41.1 [39.0–43.2]	35.2 [32.9–37.6]	38.2 [36.4–40.0]	5274	47.6 [45.4–49.7]	29.8 [26.9–32.8]	20.8 [18.2–23.8]
CZH	2027	41.3 [36.9–45.8]	41.3 [37.4–45.4]	41.3 [37.6–45.1]	1955	47.5 [44.0–51.1]	36.1 [30.5–42.2]	31.6 [25.2–38.8]
DEN	942	8.0 [5.8–11.1]	8.2 [6.0–11.0]	8.1 [6.4–10.2]	918	8.6 [6.2–11.8]	8.6 [5.0–14.4]	6.1 [3.7–9.8]
EST	1612	4.1 [3.2–5.2]	1.7 [1.1–2.7]	3.0 [2.3–3.8]	1536	5.7 [4.1–7.8]	2.6 [1.6–4.2]	1.0 [0.5–1.8]
GEO	3314	30.0 [27.8–32.4]	26.0 [23.9–28.3]	28.1 [26.3–30.0]	3044	30.9 [28.4–33.5]	27.2 [22.9–31.8]	23.5 [20.5–26.7]
GER-BR	2084	10.0 [7.8–12.7]	7.4 [5.6–9.6]	8.7 [6.9–10.9]	1734	13.8 [11.5–16.5]	6.5 [4.6–9.3]	2.2 [1.2–4.0]
GRE	517	0.6 [0.2–2.0]	3.1 [1.5–6.5]	1.9 [0.9–3.8]	502	4.6 [2.0–10.3]	0.4 [0.1–3.0]	0.5 [0.1–2.3]
IRE	1063	6.2 [4.3–9.0]	5.6 [3.5–9.0]	6.0 [4.4–8.1]	992	10.4 [6.6–15.9]	8.1 [4.6–13.8]	3.8 [2.3–6.1]
ITA	44 103	15.3 [14.6–15.9]	12.3 [11.6–13.0]	13.8 [13.3–14.3]	40 125	16.2 [15.6–16.9]	9.5 [8.8–10.4]	7.0 [6.2–7.9]
KAZ	5906	30.8 [28.1–33.6]	30.8 [28.3–33.5]	30.8 [28.5–33.2]	5536	34.7 [31.2–38.3]	30.1 [26.7–33.6]	25.8 [23.0–28.8]
LTU	3177	6.7 [5.5–8.2]	5.4 [4.4–6.6]	6.1 [5.1–7.2]	3010	12.8 [10.5–15.4]	5.6 [4.1–7.5]	3.5 [2.8–4.4]
LVA	6727	15.2 [13.9–16.6]	14.2 [12.9–15.6]	14.7 [13.8–15.7]	6406	21.4 [19.7–23.2]	13.1 [11.7–14.6]	10.9 [9.6–12.2]
MAT	3031	16.5 [15.9–17.0]	14.6 [14.1–15.2]	15.5 [15.2–15.9]	2870	21.5 [20.9–22.1]	9.0 [8.4–9.7]	6.7 [6.2–7.3]
MKD	2773	40.5 [37.1–43.9]	36.9 [33.7–40.2]	38.7 [36.3–41.2]	2511	40.4 [37.4–43.5]	41.1 [35.8–46.7]	30.9 [24.8–37.6]
MNE	2993	27.8 [25.1–30.6]	24.2 [22.0–26.7]	26.1 [24.2–28.0]	2810	30.3 [28.0–32.7]	24.1 [20.9–27.6]	14.9 [12.6–17.5]
POL	2387	30.0 [26.7–33.6]	32.1 [29.1–35.2]	31.0 [28.5–33.7]	2286	37.7 [33.7–42.0]	32.1 [28.0–36.5]	23.1 [19.8–26.9]
POR	6202	15.6 [14.1–17.2]	12.7 [11.4–14.2]	14.2 [13.1–15.3]	5805	17.5 [15.9–19.2]	10.3 [8.7–12.3]	7.1 [5.7–8.8]
ROM	9233	16.9 [14.9–19.2]	14.0 [12.2–15.9]	15.5 [13.8–17.4]	8150	22.9 [20.7–25.3]	8.1 [5.8–11.2]	3.4 [2.6–4.4]
RUS-MS	1854	19.0 [16.9–21.3]	18.2 [15.6–21.0]	18.6 [16.7–20.6]	1747	23.3 [18.4–29.0]	20.3 [15.8–25.8]	16.7 [14.4–19.4]
RUS-YK	851	18.2 [14.3–22.9]	16.7 [12.4–22.0]	17.4 [13.9–21.5]	813	26.1 [17.2–37.5]	17.6 [13.7–22.3]	12.7 [10.1–15.8]
SMR	311	7.4 [7.1–7.7]	5.4 [5.1–5.6]	6.4 [6.2–6.6]	294	8.3 [8.0–8.6]	6.0 [5.6–6.3]	0.0
SPA	15 803	4.1 [3.5–4.9]	3.1 [2.5–3.7]	3.6 [3.1–4.2]	15 219	5.7 [4.9–6.5]	1.3 [0.9–1.9]	0.4 [0.2–0.7]
SRB	2771	27.8 [24.2–31.7]	26.1 [22.7–29.8]	26.9 [23.9–30.3]	2688	31.9 [28.3–35.8]	25.4 [21.6–29.7]	18.1 [15.2–21.4]
SVK	4947	36.0 [33.3–38.8]	35.5 [32.1–39.1]	35.8 [33.1–38.5]	NA	NA	NA	NA
TJK	3308	31.2 [27.6–35.0]	27.7 [24.5–31.0]	29.5 [26.4–32.7]	3072	27.7 [24.6–31.0]	36.5 [31.2–42.2]	31.7 [22.4–42.8]
ARM	1817	22.8 [19.1–27.0]	21.8 [17.7–26.5]	22.3 [19.6–25.3]	1602	24.5 [19.9–29.8]	19.7 [14.6–25.9]	18.9 [14.8–23.9]

Table A2.15. Means of transport to and from school among boys and girls aged 6–9 years (%)

Country	Boys			Girls			Total		
	Walking, cycling, skating	Motorized vehicles	Combination	Walking, cycling, skating	Motorized vehicles	Combination	Walking, cycling, skating	Motorized vehicles	Combination
ARM	64.5	20.5	15.0	64.1	19.6	16.2	64.3	20.1	15.5
AUT	44.4	38.8	16.8	42.1	41.0	16.9	43.2	39.9	16.9
BUL	44.4	45.1	10.5	45.4	42.0	12.6	44.9	43.6	11.5
CRO	51.2	37.7	11.1	50.9	39.3	9.9	51.0	38.5	10.5
DEN	35.8	57.6	6.5	34.5	56.4	9.2	35.2	57.0	7.8
EST	35.1	48.1	16.8	35.1	51.6	13.4	35.1	49.8	15.2
GEO	51.5	42.2	6.3	50.0	45.1	4.9	50.8	43.6	5.6
GER-BR	72.8	14.0	13.2	72.6	14.9	12.5	72.7	14.4	12.9
GRE	48.1	45.2	6.7	39.4	45.7	14.8	43.6	45.5	10.9
HUN	35.8	59.2	5.0	35.4	58.9	5.7	35.6	59.1	5.3
IRE	26.2	63.8	10.0	26.1	67.0	6.9	26.2	65.3	8.5
ITA	24.8	66.8	8.3	24.3	67.5	8.2	24.6	67.2	8.3
KAZ	71.6	23.7	4.7	71.3	23.3	5.4	71.4	23.5	5.1
LTU	29.5	57.3	13.2	29.1	57.5	13.4	29.3	57.4	13.3
LVA	32.6	52.4	15.0	32.9	52.5	14.6	32.7	52.5	14.8
MAT	19.6	76.7	3.7	17.5	78.1	4.4	18.5	77.4	4.1
MKD	66.4	24.4	9.2	63.5	26.0	10.5	65.0	25.2	9.8
MNE	35.6	40.0	24.4	34.4	40.8	24.8	35.0	40.4	24.6
POL	35.9	55.2	8.9	40.6	50.6	8.8	38.2	53.0	8.8
POR	15.5	78.3	6.2	15.6	78.4	6.0	15.5	78.3	6.1
ROM	45.9	44.7	9.4	45.5	44.3	10.2	45.7	44.5	9.8
RUS-MS	66.4	25.2	8.4	69.2	23.7	7.1	67.8	24.4	7.7
RUS-YK	69.1	15.7	15.2	64.6	21.2	14.2	66.7	18.6	14.7
SMR	6.3	88.1	5.7	4.9	88.2	6.9	5.6	88.1	6.3
SPA	48.8	40.8	10.4	48.9	40.5	10.6	48.9	40.6	10.5
SRB	61.7	29.3	9.1	58.5	31.8	9.7	60.1	30.5	9.4
SVK	36.2	44.2	19.6	33.7	48.7	17.5	35.0	46.4	18.6
TJK	97.8	1.8	0.4	97.2	2.4	0.5	97.5	2.1	0.4

Table A2.16. Country-specific prevalence and 95% CIs of children going to and from school on foot, by bicycle or skating by child's gender and parental education (%)

Country	No. of children included in the analysis	Child's gender			No. of children included in the analysis	Parental education		
		Boys	Girls	Total		Low	Medium	High
ARM	2011	64.5 [59.7–69.0]	64.1 [59.2–68.8]	64.3 [60.3–68.2]	1748	72.2 [67.4–76.6]	59.6 [53.6–65.3]	49.1 [42.0–56.3]
AUT	1704	44.4 [38.0–51.0]	42.1 [34.9–49.6]	43.2 [37.7–49.0]	1612	40.7 [34.9–46.8]	42.4 [35.1–49.9]	48.7 [39.5–57.9]
BUL	3017	44.4 [39.4–49.4]	45.4 [41.0–49.8]	44.9 [40.6–49.3]	2985	51.8 [46.0–57.6]	34.3 [29.7–39.3]	38.5 [31.7–45.7]
CRO	5121	51.2 [47.1–55.2]	50.9 [46.8–55.0]	51.0 [47.3–54.8]	4962	51.2 [47.3–55.0]	49.5 [44.5–54.4]	51.2 [44.9–57.4]
DEN	946	35.8 [30.0–42.0]	34.5 [28.6–40.9]	35.2 [30.3–40.3]	916	31.0 [25.2–37.6]	30.5 [23.7–38.3]	45.6 [37.8–53.8]
EST	1656	35.1 [31.5–38.9]	35.1 [31.5–38.8]	35.1 [31.9–38.4]	1537	41.0 [36.8–45.4]	36.4 [32.3–40.6]	31.2 [26.5–36.3]
GEO	3281	51.5 [47.3–55.7]	50.0 [45.8–54.2]	50.8 [47.0–54.6]	3012	55.0 [51.0–58.8]	44.2 [38.4–50.2]	43.1 [37.0–49.4]
GER-BR	1991	72.8 [67.7–77.4]	72.6 [68.3–76.5]	72.7 [68.4–76.6]	1655	66.0 [61.5–70.2]	76.3 [70.2–81.5]	80.4 [74.3–85.4]
GRE	518	48.1 [37.6–58.8]	39.4 [26.6–53.9]	43.6 [33.4–54.5]	499	49.8 [36.4–63.2]	44.2 [33.8–55.2]	38.3 [23.9–55.1]
HUN	4052	35.8 [31.1–40.7]	35.4 [31.5–39.6]	35.6 [31.6–39.8]	3862	42.2 [37.8–46.7]	25.3 [20.9–30.4]	29.6 [22.9–37.4]
IRE	1047	26.2 [20.8–32.5]	26.1 [20.5–32.7]	26.2 [21.4–31.7]	953	33.5 [25.7–42.3]	18.6 [12.0–27.8]	26.9 [21.3–33.2]
ITA	40 926	24.8 [23.8–25.9]	24.3 [23.2–25.4]	24.6 [23.6–25.5]	37 339	24.8 [23.8–25.9]	21.2 [19.8–22.7]	25.9 [23.4–28.5]
KAZ	5926	71.6 [67.9–75.0]	71.3 [67.7–74.6]	71.4 [68.0–74.6]	5528	77.3 [73.4–80.7]	70.7 [66.4–74.7]	62.2 [57.5–66.7]
LTU	2918	29.5 [26.0–33.3]	29.1 [25.5–33.0]	29.3 [26.1–32.8]	2762	39.0 [33.6–44.8]	31.2 [26.8–36.1]	24.1 [20.8–27.8]
LVA	6684	32.6 [28.7–36.8]	32.9 [28.9–37.2]	32.7 [29.0–36.7]	6365	41.4 [37.0–45.9]	31.3 [27.3–35.6]	26.3 [22.4–30.6]
MAT	2774	19.6 [19.0–20.2]	17.5 [16.9–18.1]	18.5 [18.1–19.0]	2633	22.6 [22.0–23.2]	11.5 [10.8–12.3]	14.7 [13.8–15.5]
MKD	2827	66.4 [59.7–72.4]	63.5 [59.4–67.4]	65.0 [60.2–69.5]	2526	72.2 [68.2–75.9]	56.8 [49.7–63.7]	50.9 [41.1–60.6]
MNE	3143	35.6 [32.2–39.1]	34.4 [31.0–38.0]	35.0 [31.9–38.3]	2947	35.6 [31.5–40.0]	32.2 [28.2–36.4]	35.6 [31.1–40.3]
POL	2240	35.9 [31.1–41.0]	40.6 [35.9–45.5]	38.2 [34.0–42.6]	2140	49.2 [43.2–55.2]	33.1 [27.7–39.0]	28.0 [23.4–33.2]
POR	5693	15.5 [13.5–17.6]	15.6 [13.4–18.1]	15.5 [13.8–17.4]	5349	18.3 [16.1–20.8]	10.1 [8.0–12.7]	10.6 [8.4–13.3]
ROM	8944	45.9 [42.9–48.9]	45.5 [42.5–48.5]	45.7 [42.9–48.5]	7860	53.3 [49.8–56.9]	38.6 [34.1–43.4]	30.6 [26.3–35.3]
RUS-MS	1797	66.4 [61.5–70.9]	69.2 [64.8–73.3]	67.8 [63.6–71.8]	1688	81.9 [75.6–86.8]	74.2 [68.2–79.4]	63.9 [58.8–68.7]
RUS-YK	836	69.1 [61.6–75.6]	64.6 [56.3–72.1]	66.7 [59.4–73.3]	794	75.8 [68.1–82.0]	69.0 [62.1–75.1]	61.1 [50.7–70.5]
SMR	303	6.3 [6.0–6.6]	4.9 [4.6–5.1]	5.6 [5.4–5.8]	286	4.9 [4.6–5.1]	7.3 [6.7–8.0]	0.0
SPA	15 316	48.8 [45.3–52.3]	48.9 [45.6–52.2]	48.9 [45.6–52.1]	14 713	54.5 [51.4–57.5]	43.3 [39.9–46.8]	39.4 [33.6–45.4]
SRB	2721	61.7 [56.2–66.9]	58.5 [53.4–63.4]	60.1 [55.2–64.8]	2638	60.1 [53.2–66.7]	57.2 [50.9–63.3]	62.1 [55.1–68.7]
SVK	5272	36.2 [33.0–39.5]	33.7 [31.1–36.4]	35.0 [32.4–37.7]	NA	NA	NA	NA
TJK	3366	97.8 [96.6–98.6]	97.2 [95.2–98.4]	97.5 [96.2–98.4]	3117	98.3 [97.1–99.0]	94.6 [91.1–96.8]	95.1 [90.3–97.6]

Table A2.17. Hours per week spent by boys and girls aged 6–9 years in sport clubs or on dancing courses (%)

Country	Boys					Girls					Total							
	0 hours/ week	1 hour/ week	2 hours/ week	3 hours/ week	4 hours/ week	5 hours/ week or more	0 hours/ week	1 hour/ week	2 hours/ week	3 hours/ week	4 hours/ week	5 hours/ week or more	0 hours/ week	1 hour/ week	2 hours/ week	3 hours/ week	4 hours/ week	5 hours/ week or more
ARM	46.7	1.1	5.6	22.4	0.9	23.4	44.7	1.7	13.3	21.2	1.5	17.5	45.8	1.4	9.2	21.9	1.2	20.6
AUT	30.2	8.7	11.2	11.2	11.7	27.1	35.9	16.7	16.2	13.1	5.5	12.5	33.0	12.6	13.7	12.1	8.7	20.0
BUL	57.3	2.2	10.7	7.8	6.7	15.3	54.9	4.5	14.2	7.4	7.2	11.8	56.1	3.3	12.4	7.6	7.0	13.6
CRO	25.8	3.3	13.1	20.1	17.0	20.8	33.7	5.1	21.0	17.2	11.7	11.2	29.7	4.2	17.0	18.7	14.4	16.1
CZH	33.1	11.8	20.2	16.6	8.9	9.4	28.4	16.8	23.8	14.3	9.3	7.4	30.8	14.3	22.0	15.5	9.1	8.5
DEN	21.0	20.4	22.0	17.3	8.6	10.6	18.9	28.3	30.8	12.7	4.9	4.4	20.0	24.2	26.2	15.1	6.8	7.6
EST	21.0	3.1	16.1	19.3	16.4	24.0	19.7	6.0	20.1	21.4	11.5	21.3	20.4	4.5	18.1	20.3	14.0	22.7
GEO	42.2	2.3	8.2	14.2	7.7	25.5	43.5	2.6	10.3	17.4	9.6	16.7	42.8	2.4	9.2	15.7	8.6	21.2
GER-BR	24.8	0.9	9.2	17.9	14.3	32.9	29.1	0.3	16.0	22.0	13.9	18.7	26.9	0.6	12.5	19.9	14.1	26.1
GRE	19.3	5.9	9.6	18.4	16.2	30.5	16.2	5.6	13.8	25.3	16.2	22.9	17.7	5.7	11.8	22.0	16.2	26.6
IRE	9.8	8.7	16.0	18.8	16.2	30.6	10.0	10.7	20.6	20.4	16.0	22.3	9.9	9.7	18.2	19.5	16.1	26.6
ITA	19.5	6.0	21.0	19.8	14.8	18.9	24.4	9.9	27.3	18.1	10.0	10.3	21.9	7.9	24.1	19.0	12.4	14.7
KAZ	67.7	3.2	6.5	7.8	3.1	11.7	71.9	3.4	7.9	6.6	3.1	7.1	69.8	3.3	7.2	7.2	3.1	9.4
LTU	33.0	6.1	15.0	15.1	11.3	19.5	31.5	7.6	26.5	13.7	9.5	11.3	32.3	6.8	20.4	14.4	10.4	15.6
LVA	18.6	5.1	13.5	15.5	14.4	32.9	20.8	7.5	19.3	15.7	13.9	22.9	19.7	6.3	16.3	15.6	14.1	28.0
MAT	30.6	11.0	12.7	14.8	11.8	19.1	31.3	14.1	19.7	15.0	8.9	11.1	31.0	12.5	16.2	14.9	10.3	15.1
MKD	54.7	1.9	12.1	12.8	6.6	11.9	66.6	2.5	12.5	9.0	3.9	5.6	60.4	2.2	12.3	11.0	5.3	8.8
MNE	44.0	0.9	4.0	18.4	9.9	22.8	54.0	1.3	11.8	13.0	5.8	14.1	48.9	1.1	7.8	15.7	7.9	18.6
POL	36.1	7.6	13.9	15.3	10.2	16.9	39.5	12.9	13.3	12.6	8.8	12.9	37.8	10.2	13.6	14.0	9.5	14.9
POR	40.6	8.5	18.1	13.5	10.3	9.0	45.6	14.1	18.4	10.8	6.2	4.9	43.1	11.2	18.2	12.2	8.3	7.0
ROM	56.6	3.4	13.3	8.8	7.2	10.7	58.2	5.7	15.5	8.6	5.6	6.5	57.3	4.5	14.4	8.7	6.4	8.6
RUS-MS	27.1	3.2	16.8	16.7	12.1	24.0	30.4	2.7	18.9	13.0	11.3	23.8	28.8	2.9	17.9	14.8	11.7	23.9
RUS-YK	29.8	2.2	15.2	13.5	9.8	29.5	36.3	2.6	13.4	10.8	8.6	28.2	33.2	2.4	14.3	12.0	9.2	28.8
SMR	2.7	8.8	16.3	21.1	17.0	34.0	11.2	5.6	20.3	26.6	17.5	18.9	6.9	7.2	18.3	23.8	17.2	26.6
SPA	24.8	4.8	17.6	16.4	14.3	22.1	29.0	8.0	23.6	15.7	10.5	13.2	26.9	6.3	20.5	16.1	12.4	17.8
SRB	34.7	1.4	11.6	21.4	11.7	19.2	36.9	2.2	18.5	17.6	10.0	14.8	35.8	1.8	15.0	19.5	10.9	17.0
SVK	29.2	6.6	13.7	18.3	10.6	21.7	34.5	10.2	20.2	12.2	6.5	16.4	31.6	8.3	16.7	15.4	8.7	19.3

Table A2.18. Country-specific prevalence and 95% CIs of children practising sports/dancing for at least 2 hours a week by child's gender and parental education (%)

Country	No. of children included in the analysis	Child's gender			No. of children included in the analysis	Parental education		
		Boys	Girls	Total		Low	Medium	High
ARM	2000	52.3 [47.2–57.3]	53.5 [48.6–58.4]	52.8 [48.9–56.8]	1742	44.5 [39.8–49.3]	58.8 [51.2–65.9]	70.2 [64.9–75.1]
AUT	1816	61.1 [57.1–65.0]	47.4 [41.1–53.8]	54.5 [50.2–58.7]	1714	47.4 [42.2–52.7]	57.0 [49.8–63.9]	72.8 [68.1–77.1]
BUL	3035	40.5 [35.5–45.7]	40.7 [36.2–45.3]	40.6 [36.2–45.1]	3002	22.9 [19.7–26.4]	55.6 [49.6–61.5]	66.2 [61.4–70.7]
CRO	5393	71.0 [68.7–73.1]	61.2 [58.3–63.9]	66.2 [64.0–68.2]	5227	55.1 [52.6–57.7]	76.3 [73.6–78.8]	85.3 [82.6–87.6]
CZH	2073	55.1 [50.1–60.0]	54.7 [51.0–58.5]	54.9 [51.1–58.7]	1998	48.2 [43.5–53.0]	60.9 [54.5–66.9]	66.1 [59.7–72.0]
DEN	950	58.6 [53.0–64.0]	52.8 [47.3–58.3]	55.8 [51.5–60.1]	920	51.6 [46.7–56.5]	57.5 [49.5–65.1]	61.5 [53.9–68.6]
EST	1653	75.9 [73.5–78.2]	74.3 [71.6–76.8]	75.1 [73.3–76.9]	1534	64.1 [60.5–67.6]	77.1 [73.9–79.9]	81.5 [79.0–83.8]
GEO	3370	55.6 [52.7–58.4]	54.0 [50.8–57.1]	54.8 [52.4–57.1]	3085	48.6 [45.6–51.5]	54.6 [49.0–60.0]	68.4 [65.1–71.6]
GER-BR	2067	74.4 [69.9–78.3]	70.6 [65.4–75.3]	72.5 [68.2–76.5]	1719	62.4 [57.3–67.3]	77.5 [72.0–82.1]	86.3 [82.6–89.4]
GRE	520	74.8 [65.5–82.4]	78.2 [69.4–85.0]	76.6 [71.1–81.3]	502	62.0 [50.0–72.7]	81.3 [70.5–88.8]	84.5 [75.8–90.4]
IRE	1113	81.5 [76.8–85.3]	79.3 [74.0–83.8]	80.4 [76.5–83.9]	1015	70.2 [62.4–76.9]	74.2 [66.8–80.4]	87.4 [82.9–90.8]
ITA	40 218	74.6 [73.7–75.4]	65.7 [64.7–66.8]	70.2 [69.5–70.9]	36 696	65.4 [64.5–66.3]	79.7 [78.5–80.9]	83.5 [82.0–84.9]
KAZ	6005	29.1 [26.3–32.0]	24.7 [22.2–27.4]	26.9 [24.6–29.3]	5612	18.8 [16.3–21.5]	29.5 [26.5–32.6]	37.0 [33.3–40.8]
LTU	3148	60.9 [56.5–65.1]	60.9 [57.4–64.3]	60.9 [57.4–64.3]	2984	37.3 [33.8–41.0]	59.7 [55.0–64.1]	72.1 [68.4–75.6]
LVA	6788	76.3 [73.0–79.3]	71.7 [68.4–74.7]	74.0 [71.1–76.8]	6461	59.2 [55.9–62.3]	77.4 [75.0–79.6]	84.0 [81.7–86.0]
MAT	3020	58.4 [57.7–59.2]	54.6 [53.9–55.3]	56.5 [56.0–57.0]	2860	48.8 [48.0–49.5]	64.9 [63.8–66.0]	69.4 [68.3–70.4]
MKD	2638	43.4 [38.4–48.5]	30.9 [25.4–37.1]	37.4 [32.7–42.3]	2386	23.2 [19.5–27.4]	50.4 [45.9–54.8]	63.3 [55.7–70.3]
MNE	3120	55.1 [51.2–58.9]	44.7 [41.1–48.3]	50.0 [46.7–53.4]	2926	39.2 [36.3–42.3]	58.8 [54.3–63.1]	72.7 [68.3–76.8]
POL	2388	56.3 [52.2–60.4]	47.6 [43.1–52.2]	52.0 [48.7–55.3]	2284	37.4 [33.6–41.3]	55.7 [50.6–60.8]	67.8 [63.5–71.8]
POR	6166	50.9 [48.2–53.6]	40.3 [37.7–42.9]	45.7 [43.4–48.0]	5774	34.1 [31.8–36.4]	59.1 [55.7–62.4]	68.2 [64.9–71.4]
ROM	8813	40.0 [36.9–43.3]	36.1 [32.5–39.9]	38.1 [35.0–41.4]	7766	22.0 [19.7–24.6]	47.7 [43.2–52.3]	62.8 [59.2–66.2]
RUS-MS	1863	69.7 [65.1–73.9]	66.9 [62.2–71.4]	68.3 [64.3–72.0]	1750	42.7 [34.3–51.6]	64.1 [58.9–69.0]	75.3 [71.4–78.8]
RUS-YK	863	68.0 [60.2–74.9]	61.1 [52.0–69.4]	64.3 [56.3–71.6]	819	42.0 [30.5–54.4]	63.0 [53.1–71.8]	75.7 [71.7–79.3]
SMR	290	88.4 [87.9–88.9]	83.2 [82.8–83.6]	85.9 [85.5–86.2]	274	84.2 [83.6–84.7]	91.1 [90.7–91.6]	86.5 [85.6–87.3]
SPA	16 310	70.4 [68.4–72.4]	62.9 [60.9–64.9]	66.8 [65.0–68.6]	15 670	59.2 [57.3–61.2]	76.4 [74.5–78.3]	77.1 [74.6–79.4]
SRB	2818	63.9 [58.3–69.1]	60.9 [55.8–65.7]	62.4 [57.6–67.0]	2730	49.3 [44.4–54.1]	71.3 [66.6–75.7]	80.2 [75.9–83.9]

Table A2.19. Hours per day spent by boys and girls aged 6–9 years playing actively/vigorously on weekdays (%)

Country	Boys					Girls					Total				
	Never	Less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day	Never	Less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day	Never	Less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day
ARM	1.6	4.8	21.0	37.7	34.9	2.8	6.4	25.1	37.3	28.5	2.1	5.5	22.9	37.5	31.9
AUT	0.8	7.2	28.7	43.7	19.6	0.1	9.4	34.0	37.8	18.6	0.5	8.3	31.3	40.8	19.1
BUL	0.8	6.7	22.3	43.8	26.4	1.0	6.5	26.8	41.2	24.5	0.9	6.6	24.5	42.5	25.5
CRO	0.6	9.1	35.0	40.6	14.7	1.3	9.6	39.4	37.8	11.9	1.0	9.3	37.2	39.2	13.3
CZH	0.5	4.0	33.1	39.9	22.5	0.4	6.9	34.1	39.4	19.3	0.4	5.4	33.6	39.7	20.9
DEN	1.1	26.3	40.2	23.4	9.0	2.4	28.3	49.4	16.0	4.0	1.7	27.2	44.6	19.9	6.6
EST	1.8	17.6	34.3	34.2	12.0	1.2	16.8	38.3	31.5	12.2	1.5	17.3	36.2	32.9	12.1
GEO	1.4	10.3	22.3	43.3	22.7	3.0	11.2	24.7	41.6	19.5	2.2	10.7	23.4	42.5	21.2
GER-BR	0.5	11.8	34.4	37.3	16.0	1.2	12.1	36.1	35.9	14.6	0.9	11.9	35.3	36.6	15.3
GRE	3.2	15.8	44.2	24.9	11.9	1.4	27.5	43.0	23.4	4.7	2.3	21.7	43.6	24.1	8.2
HUN	2.0	15.5	42.0	28.8	11.7	2.5	16.8	40.4	30.0	10.4	2.2	16.1	41.2	29.4	11.1
IRE	0.5	11.2	43.3	31.9	13.2	0.7	15.3	38.7	31.5	13.8	0.6	13.2	41.1	31.7	13.5
KAZ	2.8	10.2	22.5	42.1	22.4	2.6	12.8	25.4	40.0	19.2	2.7	11.5	23.9	41.0	20.8
LTU	1.0	8.3	26.2	37.4	27.2	0.9	8.3	27.7	38.2	25.0	0.9	8.3	26.9	37.7	26.1
LVA	1.1	15.5	32.3	32.5	18.6	1.7	17.2	33.5	31.4	16.2	1.4	16.3	32.9	32.0	17.4
MAT	5.5	27.4	39.6	20.0	7.5	5.1	28.1	39.0	20.4	7.4	5.3	27.8	39.3	20.2	7.4
MKD	2.4	8.7	23.4	36.8	28.7	3.1	12.8	25.2	35.4	23.5	2.8	10.7	24.3	36.1	26.2
MNE	0.2	4.5	21.6	42.7	31.1	0.4	5.4	22.2	43.7	28.4	0.3	4.9	21.9	43.2	29.8
POL	2.0	15.0	39.3	29.7	14.0	3.3	17.1	38.1	30.3	11.2	2.6	16.0	38.7	30.0	12.6
POR	2.2	17.8	36.1	32.4	11.4	2.3	18.0	36.3	31.8	11.7	2.3	17.9	36.2	32.1	11.6
ROM	0.9	5.3	18.5	39.1	36.2	0.5	5.5	21.0	39.7	33.2	0.7	5.4	19.7	39.4	34.8
RUS-MS	1.0	9.1	29.0	37.0	23.8	1.6	9.8	33.0	34.5	21.1	1.3	9.5	31.0	35.7	22.4
RUS-YK	0.0	8.9	22.8	38.8	29.6	1.4	9.8	28.9	36.5	23.4	0.7	9.4	26.0	37.6	26.3
SPA	4.2	13.9	38.7	28.7	14.5	6.6	18.6	39.7	23.8	11.2	5.4	16.1	39.2	26.4	12.9
SRB	0.4	5.1	22.2	47.5	24.8	1.2	7.5	25.4	45.8	20.0	0.8	6.3	23.8	46.7	22.5
SVK	0.7	9.2	33.6	40.9	15.6	1.1	9.8	34.8	38.8	15.5	0.9	9.5	34.2	39.9	15.6
TJK	4.9	30.2	24.0	28.3	12.6	6.3	32.7	24.7	26.2	10.0	5.6	31.4	24.4	27.3	11.3

Table A2.20. Hours per day spent by boys and girls aged 6–9 years playing actively/vigorously at weekends (%)

Country	Boys					Girls					Total				
	Never	Less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day	Never	Less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day	Never	Less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day
ARM	0.5	0.5	3.2	13.9	81.9	0.3	1.0	4.2	17.0	77.4	0.4	0.7	3.7	15.4	79.9
AUT	0.4	2.3	8.0	27.8	61.5	0.1	0.9	9.6	28.8	60.7	0.3	1.6	8.8	28.3	61.1
BUL	0.5	0.8	2.1	13.6	83.0	0.4	1.0	3.0	15.2	80.5	0.4	0.9	2.5	14.4	81.7
CRO	0.5	1.9	7.8	30.6	59.2	0.7	2.2	8.7	32.9	55.5	0.6	2.1	8.3	31.7	57.4
CZH	0.5	1.0	5.1	20.0	73.3	0.3	0.9	8.0	23.0	67.8	0.4	1.0	6.5	21.4	70.6
DEN	0.2	8.8	26.9	36.2	27.9	1.1	12.8	32.8	30.4	22.9	0.6	10.7	29.7	33.4	25.5
EST	0.0	3.2	9.3	23.7	63.8	0.3	1.9	9.0	27.5	61.3	0.1	2.6	9.2	25.5	62.6
GEO	1.1	3.2	5.8	23.9	66.0	1.3	4.5	7.4	24.2	62.5	1.2	3.8	6.6	24.1	64.3
GER-BR	0.3	3.4	12.0	32.9	51.3	1.2	4.5	14.0	29.2	51.0	0.8	3.9	13.0	31.1	51.2
GRE	0.2	6.5	14.1	31.3	47.8	0.2	8.9	26.5	37.9	26.5	0.2	7.8	20.4	34.7	36.9
HUN	0.5	1.2	7.4	25.6	65.4	0.4	1.5	7.8	25.3	65.0	0.4	1.3	7.6	25.4	65.2
IRE	0.2	2.8	12.0	31.8	53.2	0.0	3.5	10.5	33.0	52.9	0.1	3.1	11.3	32.4	53.1
KAZ	1.4	4.1	9.1	22.7	62.7	0.9	4.1	10.3	25.5	59.2	1.2	4.1	9.7	24.1	60.9
LTU	0.2	1.2	3.7	17.5	77.4	0.1	0.8	4.9	18.4	75.8	0.2	1.0	4.3	17.9	76.6
LVA	0.1	2.3	6.7	25.5	65.3	0.2	2.5	10.1	26.3	60.9	0.1	2.4	8.4	25.9	63.2
MAT	1.5	7.1	20.7	31.4	39.3	1.8	6.5	19.3	30.6	41.8	1.6	6.8	20.0	31.0	40.6
MKD	2.8	3.4	4.9	20.2	68.7	2.9	5.3	7.5	26.2	58.1	2.8	4.3	6.2	23.1	63.6
MNE	0.3	0.9	2.9	15.6	80.3	0.2	1.0	2.6	16.8	79.4	0.3	1.0	2.8	16.1	79.9
POL	1.5	4.9	19.7	34.5	39.4	2.9	6.8	23.4	33.2	33.7	2.2	5.8	21.5	33.9	36.6
POR	0.4	3.4	11.3	25.5	59.5	0.8	4.0	10.7	23.5	61.0	0.6	3.7	11.0	24.5	60.2
ROM	0.8	1.2	3.0	15.3	79.7	0.4	1.4	4.6	15.7	78.0	0.6	1.3	3.8	15.5	78.9
RUS-MS	0.2	2.4	7.0	26.4	64.0	0.5	1.8	7.4	32.1	58.2	0.3	2.1	7.2	29.4	61.0
RUS-YK	0.5	1.9	7.6	27.5	62.6	0.8	1.5	9.1	24.8	63.8	0.7	1.7	8.4	26.0	63.2
SPA	3.1	8.5	23.5	34.4	30.5	5.3	13.6	24.7	31.4	24.9	4.1	11.0	24.1	33.0	27.8
SRB	0.1	0.5	3.0	16.1	80.3	0.3	1.4	3.7	18.9	75.8	0.2	0.9	3.3	17.5	78.1
SVK	0.2	2.1	8.1	25.0	64.6	0.5	1.9	9.6	27.2	60.9	0.3	2.0	8.8	26.1	62.8
TJK	3.6	8.6	17.3	32.5	37.9	4.0	10.9	19.2	33.3	32.7	3.8	9.8	18.2	32.9	35.3

Table A2.21. Country-specific prevalence and 95% CIs of children playing actively/vigorously for at least 1 hour a day by child's gender and parental education (%)

Country	No. of children included in the analysis	Child's gender			No. of children included in the analysis	Parental education		
		Boys	Girls	Total		Low	Medium	High
ARM	1947	95.1 [93.2–96.5]	93.0 [90.7–94.7]	94.1 [92.7–95.2]	1705	95.0 [92.7–96.6]	95.2 [91.4–97.4]	91.6 [88.3–94.0]
AUT	1777	92.5 [89.9–94.4]	91.0 [86.7–94.1]	91.8 [89.3–93.7]	1680	92.8 [89.8–95.0]	89.5 [83.9–93.4]	91.2 [86.8–94.2]
BUL	2988	94.9 [93.7–95.8]	95.0 [93.4–96.2]	94.9 [93.9–95.8]	2955	95.5 [94.0–96.6]	95.2 [92.9–96.8]	93.8 [90.9–95.8]
CRO	5223	91.2 [89.9–92.4]	90.3 [89.0–91.4]	90.8 [89.7–91.7]	5070	91.8 [90.6–92.9]	90.6 [88.8–92.1]	88.4 [86.0–90.5]
CZH	1936	95.9 [94.2–97.1]	94.2 [92.4–95.5]	95.0 [93.8–96.1]	1870	94.8 [92.6–96.3]	96.2 [94.0–97.6]	95.1 [92.1–97.0]
DEN	914	71.1 [66.7–75.2]	67.4 [61.7–72.7]	69.4 [66.0–72.5]	888	72.8 [68.2–77.0]	67.6 [60.8–73.7]	64.3 [58.1–70.1]
EST	1631	83.5 [81.0–85.7]	85.0 [82.7–87.0]	84.2 [82.4–85.8]	1518	87.9 [85.3–90.1]	85.3 [82.4–87.7]	79.1 [76.0–81.9]
GEO	3323	90.6 [88.7–92.2]	87.9 [85.9–89.6]	89.3 [87.9–90.5]	3056	89.0 [87.1–90.7]	92.1 [88.9–94.5]	88.5 [85.9–90.7]
GER-BR	1954	87.7 [85.5–89.7]	87.1 [84.8–89.0]	87.4 [85.5–89.1]	1639	89.7 [87.5–91.5]	86.6 [82.5–89.9]	84.2 [80.6–87.2]
GRE	512	80.7 [74.2–85.8]	71.1 [63.7–77.6]	75.8 [70.8–80.2]	495	80.5 [68.1–88.9]	71.5 [63.8–78.1]	74.6 [66.6–81.2]
HUN	3679	85.6 [83.3–87.6]	85.5 [83.3–87.4]	85.5 [84.1–86.8]	3530	88.5 [86.5–90.1]	83.8 [80.4–86.8]	80.0 [76.5–83.0]
IRE	1065	88.6 [85.1–91.4]	85.4 [81.1–88.8]	87.1 [84.4–89.3]	974	86.4 [79.8–91.0]	85.2 [78.6–90.0]	88.3 [84.9–91.0]
KAZ	5951	87.9 [86.2–89.4]	85.9 [83.9–87.6]	86.8 [85.2–88.3]	5573	84.3 [81.9–86.4]	89.4 [87.4–91.2]	89.3 [86.5–91.5]
LTU	2852	93.0 [91.3–94.4]	92.9 [91.2–94.2]	92.9 [91.6–94.0]	2696	97.0 [95.5–98.0]	93.5 [91.6–95.0]	90.8 [88.7–92.4]
LVA	6547	87.9 [86.3–89.2]	84.8 [83.2–86.3]	86.4 [85.1–87.6]	6225	90.8 [89.5–91.9]	87.2 [85.5–88.7]	82.1 [80.5–83.6]
MAT	2783	71.3 [70.6–72.0]	70.1 [69.4–70.8]	70.7 [70.2–71.2]	2644	70.8 [70.1–71.5]	70.1 [69.0–71.2]	70.0 [68.9–71.1]
MKD	2648	90.0 [87.0–92.4]	85.2 [82.1–87.8]	87.7 [85.2–89.8]	2417	85.7 [82.7–88.3]	91.2 [87.3–94.0]	90.5 [86.6–93.3]
MNE	3083	96.1 [94.9–97.1]	95.5 [94.2–96.5]	95.8 [95.0–96.5]	2893	94.9 [93.8–95.9]	96.4 [94.7–97.6]	97.3 [95.6–98.3]
POL	2231	82.6 [79.5–85.3]	78.2 [75.1–80.9]	80.4 [78.0–82.6]	2138	82.1 [78.6–85.1]	79.5 [75.8–82.8]	79.1 [74.6–83.0]
POR	5999	85.0 [83.4–86.4]	84.7 [83.1–86.1]	84.8 [83.8–85.9]	5641	86.4 [85.1–87.6]	83.1 [80.6–85.3]	81.6 [78.4–84.3]
ROM	8991	94.9 [94.2–95.5]	95.3 [94.3–96.2]	95.1 [94.5–95.6]	7937	96.3 [95.5–97.0]	95.6 [93.8–96.9]	94.0 [92.0–95.5]
RUS-MS	1822	90.5 [88.3–92.3]	89.6 [87.4–91.4]	90.0 [88.4–91.4]	1717	87.1 [80.1–91.9]	90.4 [86.8–93.1]	90.0 [88.0–91.8]
RUS-YK	847	92.0 [89.1–94.2]	90.2 [87.4–92.4]	91.0 [89.0–92.7]	809	92.7 [89.7–94.9]	90.0 [83.4–94.2]	90.3 [86.7–93.0]
SPA	14 743	79.7 [78.5–80.8]	70.9 [69.5–72.2]	75.5 [74.5–76.4]	14 179	75.9 [74.5–77.2]	76.5 [74.8–78.2]	74.4 [72.5–76.3]
SRB	2743	95.9 [94.5–97.0]	92.9 [90.7–94.6]	94.4 [93.1–95.5]	2660	95.4 [93.8–96.5]	93.8 [91.0–95.7]	93.2 [90.8–95.1]
SVK	4976	92.1 [90.8–93.3]	91.0 [89.3–92.5]	91.6 [90.4–92.7]	NA	NA	NA	NA
TJK	3179	67.6 [63.5–71.6]	62.5 [58.3–66.6]	65.1 [61.5–68.6]	2974	63.3 [59.2–67.3]	70.8 [65.7–75.5]	75.9 [67.8–82.5]

Table A2.22. Hours per day spent by boys and girls aged 6–9 years watching TV or using electronic devices on weekdays (%)

Country	Boys				Girls				Total			
	Never or less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day	Never or less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day	Never or less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day
ARM	31.7	36.5	23.1	8.6	33.5	39.8	20.5	6.3	32.6	38.0	21.9	7.5
AUT	37.2	45.8	12.9	4.2	35.6	46.6	13.6	4.2	36.4	46.2	13.2	4.2
BUL	11.6	42.1	32.3	14.0	12.4	47.1	31.2	9.2	12.0	44.6	31.8	11.7
CRO	9.9	43.2	34.4	12.5	12.7	47.0	30.2	10.2	11.3	45.0	32.3	11.4
CZH	17.5	49.2	26.7	6.6	19.0	51.3	23.3	6.4	18.2	50.2	25.0	6.5
DEN	2.1	52.6	24.7	20.6	4.5	55.7	23.2	16.6	3.2	54.1	24.0	18.7
EST	5.3	25.5	39.8	29.4	7.0	34.2	40.9	17.9	6.1	29.7	40.4	23.8
GEO	16.9	43.0	27.4	12.7	20.7	46.1	24.1	9.0	18.7	44.5	25.8	10.9
GER-BR	43.8	37.7	13.4	5.1	50.1	33.7	10.7	5.5	46.9	35.7	12.1	5.3
HUN	26.4	47.3	20.3	6.0	30.8	46.2	18.3	4.7	28.5	46.8	19.3	5.4
IRE	19.4	41.8	29.8	9.0	21.8	43.0	28.1	7.1	20.5	42.4	29.0	8.1
ITA	7.8	28.0	31.5	32.8	11.3	34.3	29.2	25.2	9.5	31.1	30.4	29.1
KAZ	24.7	39.1	24.7	11.5	27.0	38.7	24.2	10.1	25.9	38.9	24.4	10.8
LTU	16.5	43.4	30.3	9.8	19.4	47.1	26.4	7.1	17.8	45.1	28.5	8.6
LVA	13.6	39.0	32.2	15.1	16.6	41.1	29.6	12.7	15.1	40.0	30.9	13.9
MAT	11.7	41.0	30.7	16.6	14.8	46.6	28.3	10.2	13.3	43.8	29.5	13.4
MKD	16.0	38.8	31.9	13.4	17.2	43.7	30.0	9.1	16.6	41.2	30.9	11.3
MNE	5.3	45.1	35.6	13.9	6.1	49.1	33.3	11.6	5.7	47.1	34.5	12.8
POL	17.5	42.4	27.5	12.6	24.8	39.4	27.9	8.0	21.1	40.9	27.7	10.3
POR	32.8	48.7	15.4	3.2	35.9	46.9	14.5	2.7	34.3	47.8	14.9	3.0
ROM	14.2	35.4	35.1	15.2	15.3	40.1	34.0	10.6	14.7	37.7	34.6	13.0
RUS-MS	30.3	43.7	20.2	5.8	32.0	41.7	20.2	6.1	31.2	42.7	20.2	6.0
RUS-YK	18.9	36.8	27.6	16.7	20.1	37.6	32.6	9.7	19.5	37.2	30.3	13.0
SMR	2.1	32.6	39.0	26.2	7.7	35.4	35.4	21.5	4.8	33.9	37.3	24.0
SPA	26.0	46.8	20.3	6.8	26.1	48.1	19.5	6.4	26.0	47.4	19.9	6.6
SRB	15.2	45.3	29.7	9.9	17.2	44.7	28.9	9.3	16.1	45.0	29.3	9.6
SVK	11.6	52.9	27.2	8.3	13.3	52.9	25.8	8.0	12.4	52.9	26.5	8.2

Table A2.23. Hours per day spent by boys and girls aged 6–9 years watching TV or using electronic devices at weekends (%)

Country	Boys				Girls				Total			
	Never or less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day	Never or less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day	Never or less than 1 hour/day	About 1 hour/day	About 2 hours/day	About 3 or more hours/day
ARM	11.5	19.7	29.0	39.8	11.4	22.3	31.3	34.9	11.5	20.9	30.1	37.6
AUT	11.8	30.3	38.0	19.8	12.5	31.3	32.5	23.7	12.2	30.8	35.3	21.7
BUL	7.0	13.1	31.9	48.0	7.9	16.4	31.0	44.6	7.4	14.7	31.5	46.4
CRO	2.6	14.7	36.8	45.9	4.0	19.0	38.6	38.5	3.3	16.8	37.7	42.3
CZH	4.1	25.4	35.3	35.2	4.1	28.0	36.6	31.3	4.1	26.6	35.9	33.4
DEN	0.4	12.9	26.7	60.0	0.2	17.5	30.2	52.1	0.3	15.1	28.4	56.3
EST	3.1	12.3	26.9	57.8	3.7	15.7	36.2	44.4	3.4	13.9	31.4	51.3
GEO	9.0	20.7	30.9	39.4	9.9	23.5	34.2	32.4	9.4	22.1	32.5	36.0
GER-BR	12.8	32.6	30.3	24.4	18.4	35.2	25.6	20.8	15.5	33.9	28.0	22.6
HUN	4.6	20.6	32.2	42.5	5.8	22.2	33.2	38.8	5.2	21.4	32.7	40.7
IRE	2.6	12.3	31.1	53.9	1.7	11.4	38.2	48.7	2.2	11.9	34.5	51.4
ITA	2.1	5.1	11.1	81.7	3.3	7.6	16.0	73.2	2.7	6.3	13.5	77.5
KAZ	15.5	22.4	32.1	30.0	16.3	25.4	29.3	29.0	15.9	23.9	30.7	29.5
LTU	5.8	21.6	36.0	36.6	7.7	24.2	38.0	30.1	6.7	22.8	36.9	33.5
LVA	3.2	14.2	32.5	50.0	4.2	15.4	34.1	46.3	3.7	14.8	33.3	48.2
MAT	4.3	17.3	32.1	46.3	5.4	22.7	36.1	35.8	4.9	20.0	34.1	41.0
MKD	8.9	19.9	34.9	36.4	9.3	25.1	35.0	30.6	9.1	22.4	34.9	33.6
MNE	4.9	26.9	37.6	30.5	5.0	29.3	37.7	28.0	4.9	28.1	37.7	29.3
POL	3.4	14.9	34.6	47.2	4.8	20.4	36.2	38.6	4.1	17.6	35.4	42.9
POR	3.3	20.5	36.9	39.3	6.3	25.3	33.9	34.5	4.8	22.9	35.4	36.9
ROM	6.6	17.0	31.9	44.5	6.7	19.1	37.6	36.6	6.6	18.0	34.7	40.7
RUS-MS	11.6	25.6	32.1	30.7	12.6	26.0	33.4	28.1	12.1	25.8	32.7	29.4
RUS-YK	9.3	23.1	30.7	36.9	9.0	24.1	35.4	31.6	9.1	23.6	33.2	34.1
SMR	0.7	2.1	10.6	86.5	2.3	3.8	15.4	78.5	1.5	3.0	12.9	82.7
SPA	4.8	18.3	36.1	40.8	6.1	19.8	36.6	37.4	5.4	19.1	36.4	39.1
SRB	7.9	22.8	38.5	30.8	8.5	25.6	37.4	28.5	8.2	24.2	38.0	29.7
SVK	2.7	18.0	36.8	42.5	3.0	20.7	36.6	39.7	2.9	19.3	36.7	41.1

Table A2.24. Country-specific prevalence and 95% CIs of children watching TV or using electronic devices for at least 2 hours a day by child's gender and parental education (%)

Country	No. of children included in the analysis	Child's gender			No. of children included in the analysis	Parental education		
		Boys	Girls	Total		Low	Medium	High
ARM	1939	33.3 [30.2–36.5]	28.1 [23.7–32.9]	30.9 [28.1–33.8]	1698	34.3 [29.5–39.4]	26.8 [21.2–33.4]	28.3 [24.2–32.8]
AUT	1804	17.2 [14.0–21.0]	18.4 [15.0–22.3]	17.8 [15.5–20.3]	1707	23.4 [20.4–26.6]	12.1 [8.7–16.6]	7.1 [4.7–10.6]
BUL	3018	46.2 [42.4–50.0]	40.3 [36.8–44.0]	43.3 [40.2–46.5]	2986	50.3 [45.9–54.7]	37.2 [32.5–42.2]	32.8 [28.8–37.0]
CRO	5314	48.0 [45.7–50.3]	41.2 [39.2–43.2]	44.7 [43.0–46.4]	5165	49.2 [47.2–51.2]	40.0 [37.3–42.8]	37.7 [34.6–40.9]
CZH	1896	34.0 [29.9–38.3]	30.8 [27.1–34.8]	32.4 [29.2–35.9]	1837	41.3 [37.5–45.3]	26.2 [22.4–30.5]	16.7 [12.7–21.7]
DEN	826	47.9 [42.8–53.1]	42.1 [37.9–46.5]	45.2 [41.8–48.6]	804	46.3 [40.8–51.9]	46.2 [38.5–54.1]	42.1 [37.3–47.1]
EST	1557	69.7 [66.6–72.5]	58.3 [55.5–61.0]	64.1 [61.7–66.5]	1456	69.9 [66.0–73.5]	70.7 [66.9–74.3]	57.3 [53.7–60.9]
GEO	3160	39.4 [36.6–42.3]	32.6 [30.0–35.3]	36.1 [34.1–38.2]	2917	35.9 [33.3–38.6]	36.8 [31.6–42.3]	36.1 [32.5–39.8]
GER-BR	2046	19.4 [15.7–23.6]	17.5 [13.9–21.8]	18.5 [15.1–22.3]	1714	26.8 [23.2–30.7]	16.4 [12.6–21.1]	6.7 [4.8–9.3]
HUN	3761	28.8 [25.6–32.2]	25.7 [22.4–29.4]	27.3 [24.6–30.1]	3597	39.9 [36.4–43.4]	16.0 [13.3–19.1]	12.1 [9.4–15.4]
IRE	1096	44.3 [40.2–48.5]	42.2 [36.4–48.3]	43.3 [39.5–47.3]	1004	54.8 [48.1–61.3]	50.5 [43.9–57.0]	34.8 [29.5–40.5]
ITA	35 308	76.9 [76.0–77.7]	67.1 [66.1–68.0]	72.1 [71.4–72.8]	32 439	76.0 [75.2–76.8]	69.2 [67.7–70.6]	60.3 [58.2–62.3]
KAZ	5753	34.9 [32.4–37.5]	32.9 [30.6–35.3]	33.9 [31.8–36.1]	5410	31.1 [28.3–34.1]	36.6 [33.2–40.1]	36.0 [32.6–39.5]
LTU	3134	39.6 [36.2–43.1]	32.9 [29.9–36.1]	36.4 [33.7–39.2]	2968	44.3 [40.5–48.3]	41.2 [37.7–44.7]	30.7 [27.2–34.5]
LVA	6755	48.0 [45.4–50.7]	42.8 [40.3–45.4]	45.5 [43.1–47.9]	6432	55.3 [53.0–57.6]	44.8 [42.0–47.6]	38.5 [35.5–41.6]
MAT	2949	47.7 [46.9–48.4]	38.0 [37.3–38.7]	42.8 [42.3–43.3]	2800	46.5 [45.7–47.2]	43.8 [42.7–45.0]	31.5 [30.5–32.6]
MKD	2567	44.5 [40.2–48.9]	39.6 [35.0–44.4]	42.1 [38.3–46.0]	2340	40.7 [36.6–44.9]	45.2 [38.3–52.3]	43.2 [36.5–50.2]
MNE	3070	45.7 [42.6–48.9]	41.9 [39.3–44.5]	43.9 [41.5–46.3]	2888	44.8 [42.0–47.5]	44.4 [40.0–48.8]	39.8 [34.5–45.4]
POL	2389	41.8 [38.6–45.1]	36.7 [33.0–40.5]	39.3 [36.6–42.0]	2290	48.0 [44.7–51.4]	40.5 [36.2–45.0]	27.7 [24.7–30.9]
POR	6051	21.2 [19.4–23.1]	19.2 [17.5–21.0]	20.2 [18.9–21.5]	5680	22.5 [20.8–24.3]	19.0 [16.5–21.7]	15.0 [12.8–17.5]
ROM	8875	50.1 [47.7–52.6]	43.9 [41.4–46.5]	47.2 [44.9–49.5]	7881	53.4 [51.0–55.7]	48.8 [44.4–53.1]	35.1 [30.6–40.0]
RUS-MS	1816	26.4 [22.8–30.3]	26.7 [23.0–30.8]	26.5 [23.5–29.8]	1718	38.8 [32.1–46.0]	35.2 [30.0–40.9]	21.8 [19.1–24.8]
RUS-YK	853	43.3 [38.5–48.3]	41.5 [36.7–46.4]	42.3 [39.3–45.5]	814	55.5 [49.5–61.4]	40.0 [34.0–46.4]	36.4 [31.3–41.8]
SMR	271	80.1 [79.6–80.6]	67.7 [67.1–68.3]	74.2 [73.8–74.5]	256	77.6 [77.0–78.1]	72.2 [71.3–73.1]	64.9 [63.7–66.0]
SPA	16 537	28.0 [26.2–29.9]	25.7 [24.1–27.4]	26.9 [25.4–28.5]	15 857	32.1 [30.4–33.9]	22.3 [20.5–24.2]	18.8 [16.8–20.9]
SRB	2762	38.8 [35.1–42.7]	37.1 [33.8–40.4]	38.0 [35.0–41.0]	2681	42.2 [39.0–45.6]	35.9 [31.5–40.6]	31.8 [27.6–36.3]
SVK	4892	35.9 [32.7–39.3]	33.6 [30.7–36.6]	34.8 [32.1–37.6]	NA	NA	NA	NA

The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

Member States

Albania	Finland	Luxembourg	Slovakia
Andorra	France	Malta	Slovenia
Armenia	Georgia	Monaco	Spain
Austria	Germany	Montenegro	Sweden
Azerbaijan	Greece	Netherlands	Switzerland
Belarus	Hungary	North Macedonia	Tajikistan
Belgium	Iceland	Norway	Türkiye
Bosnia and Herzegovina	Ireland	Poland	Turkmenistan
Bulgaria	Israel	Portugal	Ukraine
Croatia	Italy	Republic of Moldova	United Kingdom
Cyprus	Kazakhstan	Romania	Uzbekistan
Czechia	Kyrgyzstan	Russian Federation	
Denmark	Latvia	San Marino	
Estonia	Lithuania	Serbia	

World Health Organization Regional Office for Europe

UN City, Marmorvej 51
DK-2100, Copenhagen Ø, Denmark
Tel.: +45 45 33 70 00
Fax: +45 45 33 70 01
Email: eurocontact@who.int
Website: www.who.int/europe