



**World Health
Organization**

REGIONAL OFFICE FOR **Europe**

**11th Meeting of the WHO
European Childhood Obesity
Surveillance Initiative (COSI)
Meeting Report**

**Vienna, Austria
22-23 May 2018**

ABSTRACT

On 22-23 May 2018, representatives of 37 Member States of the WHO European Region, together with experts from WHO collaborating centres, partner institutions and observers, gathered in Vienna, Austria for the 11th meeting of the WHO European Childhood Obesity Surveillance Initiative (COSI). The initiative, coordinated by the WHO Regional Office for Europe, has established a Europe-wide standardized system for routinely measuring trends in overweight and obesity in primary school children aged 6-9 years.

After 11 years of robust surveillance of childhood overweight and obesity, COSI has continuously grown, with more than 40 Member States now involved and more than 300,000 school-age children being measured and surveyed based on a common protocol and approach. At the meeting, participants discussed the results of the 4th round of COSI data collection (in which 35 countries participated), reviewed the arrangements for WHO support for data collection, analysis and reporting and discussed plans for the 5th round of data collection. The meeting also included a training workshop on the interpretation, use and presentation of COSI data.

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Introduction

The WHO Regional Office for Europe has established a European-wide standardized childhood obesity surveillance system (COSI) in several countries in the European Region.

The system routinely measures trends in overweight and obesity in primary school children aged 6-9 years, in order to fully understand the progress of the epidemic in this population group and to permit inter-country comparisons within the Region.

The first round of data collection took place during the 2007/2008 school year, the second round during the 2009/2010 school year, the third round during the 2012/2013 school year and the fourth round was completed in 2017. The fifth round of data collection will begin in late 2018.

Over 40 countries are now involved in COSI and more than 300,000 school-age children are being measured and surveyed based on a common protocol and approach.

The 11th COSI meeting took place in Vienna, Austria, on 22-23 May 2018. Thirty-seven Member States were represented at the meeting, which had the following objectives:

- Discussion of the results of the 4th round of data collection
- Provision of a training workshop on the interpretation, use and presentation of COSI data
- Discussion of ongoing WHO support for data collection, analysis and reporting
- Planning of the 5th round of data collection to begin in 2018.

Welcome note and opening speeches

On behalf of the host organization, the Austrian Federal Ministry of Labour, Health, Social Affairs and Consumer Protection, Professor Karin Schindler, welcomed all participants to Vienna. Austria is pleased to participate in COSI and the surveillance results have already helped to raise awareness of this challenge in the country. Austria is delighted to host the Initiative's 11th meeting and is very grateful to WHO for its support and particular thanks are due to the WHO team for administrative and logistical support for the meeting organization.

Dr João Breda, WHO Regional Office for Europe, welcomed participants on behalf of WHO and conveyed thanks to the Ministry for hosting the meeting. This is an excellent example of the type of Member State support and commitment that is important for COSI. There are now more than 40 countries involved in COSI, although not all of them are collecting data in the current round, and this now represents a major network for this Region of 53 Member States. This sharing of data, to which all participants are committed, is an important part of efforts to ensure that child health and children's rights are protected. The WHO Regional Office for Europe remains committed to supporting this network and is extremely grateful to the European Commission, the Russian Federation and other Member States for their support. Particular thanks are also due to those Member State representatives who have helped colleagues from newer COSI participating countries. COSI belongs to the Member States members, and all can be proud of this leading global initiative.

The introductory session concluded with a round of participant introductions and participants provided a brief summary of their past, present and future involvement with COSI.

Childhood obesity and the Sustainable Development Goals (SDGs)

João Breda presented an overview of WHO's mandate for tackling childhood obesity in the European Region, how this relates to the Sustainable Development Goals and other goals and targets, and the work of the WHO Regional Office for Europe to support Member States in their efforts in this area.

At the global level there are a number of highly relevant goals and targets, including the SDGs. In particular, SDG 3 relates to ensuring healthy lives and promoting well-being for all at all ages, and it includes a target to, by 2030, reduce by one third premature mortality from non-communicable diseases (NCDs). SDG 2, on zero hunger, includes a target to end all forms of malnutrition by 2030. These different forms of malnutrition are linked – with undernutrition in early life increasing the risk of overweight and NCDs later in life. The double burden of malnutrition, characterised by the co-existence of undernutrition along with overweight and obesity and diet-related NCDs now occurs within individuals, households and populations throughout life.

To accelerate progress towards the SDGs and previously agreed global nutrition and NCD targets, and implementation of the commitments of the Second International Conference on Nutrition Framework for Action, the UN has declared a Decade of Action on Nutrition 2016-2025. At the same time, the recommendations of the Commission on Ending Childhood Obesity need to be implemented.

In the European Region, assessment of progress towards the 2025 NCD targets, under a “business as usual” scenario, suggests that the Region is on course to exceed the target for a 25% reduction in overall mortality from NCDs and to meet the target for reducing the prevalence of raised blood pressure, but is unlikely to meet the other seven targets. Progress towards other UN and WHO targets on adult obesity, salt reduction, breastfeeding and physical activity is also off track for most or all countries, while only around 20% of countries are on track to meet the target on childhood obesity.

Good nutrition in early life is vital and the Regional Office has been very active in this area, to support Member States. This has included publication of a report on *Good Maternal Nutrition: the best start in life*, which is also available in Russian, as well as a study examining the nutritional quality and marketing of commercial foods for infants and young children in several countries.

The rise in childhood obesity in the European Region over the past decade and a half has been dramatic and this is one of the most serious health challenges of the early 21st century. In particular, there has been a sharp increase in the prevalence of obesity among children under five years of age in the Region, which has the highest prevalence of all WHO Regions. Prevalence of obesity among adolescents is also cause for concern, particularly in the Eastern part of the Region. Thus, COSI continues to be extremely important for the European Region.

It is clear what action is required. WHO's best buys for policy options to prevent and manage childhood obesity in Europe include using fiscal tools, introducing interpretive front-of-pack nutrition labelling, restricting marketing of unhealthy foods to children, improving nutrition literacy/education and providing nutrition counselling through primary care. These policy options are already reflected in the *WHO European Food and Nutrition Action Plan 2015 -2020* and the *Physical Activity Strategy for the WHO European Region 2016-2025*. And some of them are increasingly being implemented – nine countries in the Region are now reporting health-related taxes are in place or are being introduced. These measures are effective – evaluation of taxes in

Hungary and Portugal found that taxes reduced consumption of sugar-sweetened drinks. Twenty-two of the countries in the Region report implementation of measures to regulate or guide marketing or food and non-alcoholic beverages to children. Of these, 55% report that their measures clearly define which food and beverages are covered *and* clearly define the age group to which the measures apply.

The Regional Office continues its work to support Member States by producing syntheses of the evidence on important questions. A recent Health Evidence Network (HEN) report addressed the question of “*What national and sub-national interventions and policies based on Mediterranean and Nordic diets are recommended or implemented in the WHO European Region, and is there evidence of effectiveness in reducing NCDs?*”. Another area of support for Member States relates to reinforcing health systems for the promotion of healthy diets. The Regional Office has published a report on *Integrating diet, physical activity and weight management services into primary care* to address this issue.

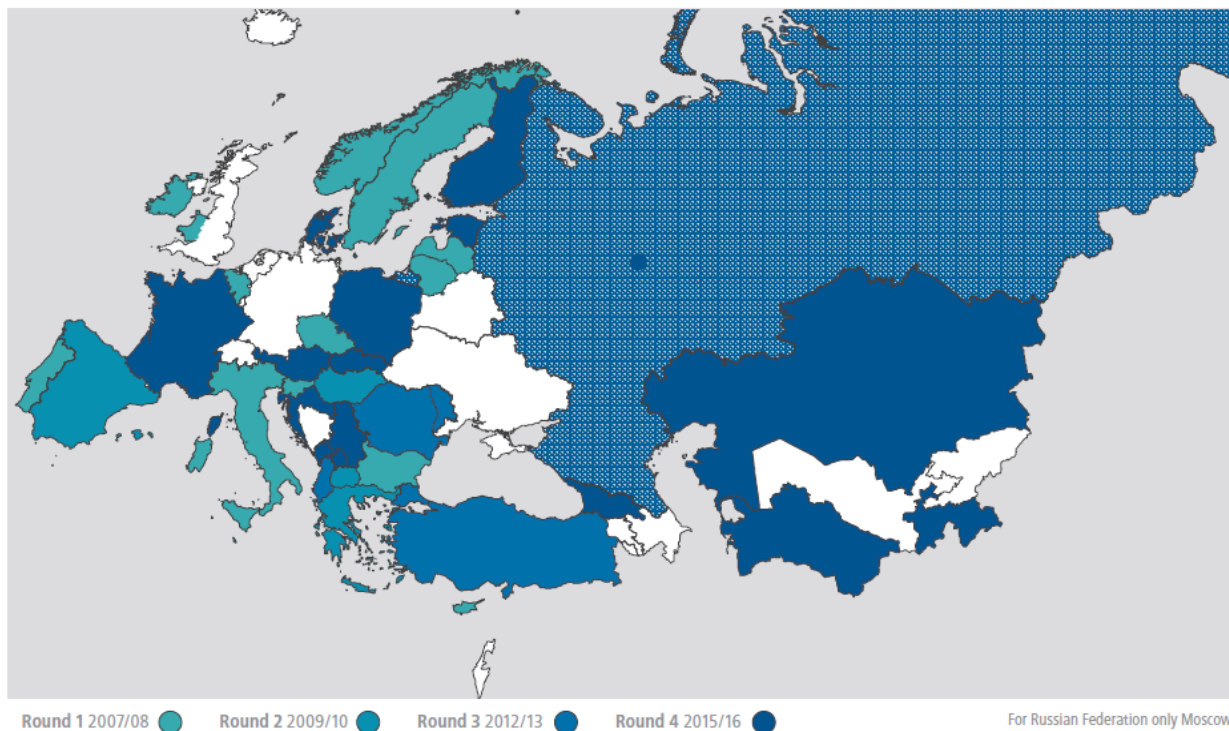
Presentation of Round 3 report and an update on COSI state of play

Dr Breda gave an update on the report of Round 3 data collection and an overall update on COSI.

COSI has continually grown since 2007/8 and continues to grow, with more than 40 countries now involved (Figure 1).

Figure 1 Evolution of COSI between 2007/8 and 2015/16

A Growing Initiative



The report of the third round of data collection, which took place between 2012 and 2013, is very near to publication. This report is more comprehensive than the report on the first two rounds of data collection, and covers more topics. The report includes:

- estimates of overweight and obesity
- physical activity
- sedentary behaviour
- eating habits
- school environment.

There have been improvements in the quality of data collection as COSI has evolved. These improvements include:

- tackling the discrepancies in sampling weights and harmonizing their calculation
- going digital with the roll out of OpenClinica and introduction of the use of Lime-survey
- calculating WHO estimates to exclude outliers (biologically implausible values)
- implementation of stricter training protocols and harmonization of equipment.

In addition to the preparation of the third-round data collection report, a factsheet with highlights of the 2015-17 preliminary data has been prepared for launch during the COSI meeting and the European Congress on Obesity. There has been a lot of media interest in the factsheet, reflecting the importance of the COSI data to help Member States tackle the challenge of childhood obesity.

COSI in Austria

Adelheid Weber, Federal Ministry of Labour, Social Affairs, Health and Consumer Protection, Vienna, presented an overview of COSI in Austria on behalf of the Principal Investigator.

COSI data collection in Austria selected a randomized selection of 200 schools with at least two third grade classes (minimum 20 pupils per class) from all nine federal states in Austria, using a two-step cluster sampling. In total 97 schools participated in the study and all children (with parental consent) in the third grade were measured, according to the COSI protocol data collection procedures and data were entered into OpenClinica. 5,135 children were registered and, due to data issues, in the end data from 2,510 children (1,230 girls and 1,280 boys) could be included. Data entry into Open Clinica went smoothly and the process went well.

About 30% of the boys and 25% of the girls are overweight or obese. There were regional differences in the distribution of BMI in girls, with clear East-West and East-South gradients, due to the high degree of urbanization.

A key challenge was that about 50% of the parents did not give their consent for their children to participate in COSI. A second school sample had to be selected, because of this low level of participation. This is part of the wider challenge of raising awareness of health promotion at both national and regional levels.

Austria will participate in the 5th round of COSI data collection. The country has a system of school doctors and it is hoped that the COSI protocol can be integrated into the annual school examination programme. This would mean that every student in Austria would be measured and longitudinal analysis would be possible. It would also have the added advantage that parents would have already given their consent.

Efforts to date on tackling childhood obesity include awareness-raising work through the media. In Austria an intersectoral national nutrition commission with different working groups (e.g., on food supply, obesity, nutrition communication and sustainability) exists. Other initiatives include a programme called “Healthy Eating from the Start”, a study on breastfeeding and infant nutrition and work on healthy snacks in schools.

Discussion

There was discussion of the potential bias that may occur when large numbers of parents do not give consent. It may be worth exploring possible ways to obtain some information about those who refuse, including their reason for not giving consent. In Austria’s case, it did appear that higher educated parents were more reluctant to participate. One aspect is that it is important to be able to answer parents’ questions and address their concerns, as well as informing them about the importance of participation. If measurement – according to the COSI protocol – can be integrated into school health systems, then additional consent *might* not be necessary, although this is not necessarily always the case. The involvement of the Ministry of Education can also be helpful, if they can write to all schools to ensure that head teachers are informed, for example, this can help facilitate school participation. Involvement of health professionals in data collection can also help to foster confidence and trust.

The issue of excluding schools with small class sizes was also discussed. Given that small schools are likely to be found in rural areas, and that living in a rural area is associated with higher prevalence of obesity, the exclusion of smaller schools could be a source of bias. This is an area where some compromise may be needed – if data collection teams have to visit many schools where data on only a few children will be collected this is problematic. On the other hand, it is important to generate unbiased data and some countries in particular might have very many small schools. This can be handled with stratification of the sample, but needs to be addressed on a country-by-country basis.

Preparation for COSI Round 5 – Timeline and update of record forms

Ideally, the fifth round of data collection should be completed in 2018/19. As in previous rounds there will be a strong emphasis on adherence to the methodology, and it is critical that investigators use the protocol and the procedural manual.

The data collection forms have been reviewed by the scientific and technical working group. After the collection and analysis of the 2016 round, it was possible to decide which questions were appropriate to obtain the information sought. Without losing comparability with previous years, a few questions have been reformulated to improve clarity.

This process started with an initial meeting of some members of the scientific and technical working group in Moscow in 2017. There was in-depth discussion of each item and a number of changes were proposed. The changes are now presented for discussion and review by the Principal Investigators before the forms are finalized.

Minor changes only are proposed for the child and school record forms.

A number of changes are proposed for the optional family form. The key changes proposed are:

- Designation of some mandatory questions if the family record form is used (strongly recommended)
- Changes to the dietary items, with the question separated into mandatory foods that have to be included and other, voluntary, items
- Changes to the education categories (according to the 2011 International Standard Classification of Education) – each country should check how their system corresponds to the ISCED classification.¹
- The breastfeeding question has been reformulated
- Addition of country of origin questions is proposed
- Deletion of questions 26 and 27 on household characteristics is proposed
- Deletion of questions on housing (Q31 and Q32) is proposed.

In addition, further work is needed to improve the validity of the physical activity questions. It is proposed to create a specific group to work on the physical activity questions. Suggestions for appropriate external experts are welcome.

The next steps are to consider any comments raised during the discussion then send a new version of the forms to the Principal Investigators for a final review, then finalization of the forms in June 2018 in time for use for Round 5 data collection beginning in September 2018.

Discussion

There was clarification that, in relation to physical activity, there is ongoing work to improve the questions and that participants are invited to nominate any key experts that they consider would be able and willing to help with that area of work. Separately, there is the EUPASMOS initiative, also under the aegis of the WHO Regional Office for Europe, working on improving measurement of physical activity. It was suggested that the special group on physical activity of the Health-related behaviour of school-aged children (HBSC) initiative might be able to help. Since COSI involves younger children, however some of the self-reported questions of HBSC may be problematic. The idea is to explore how parents can give more accurate information about their child's physical activity.

The importance of finalizing the forms quickly was emphasized. It was pointed out that timing is tight and that some countries need to obtain ethics committee approval before the summer break. Principal Investigators were urged to send comments as quickly as possible so that the timeline could be respected. Participants were reminded that the general approach is to make as few changes as possible, in order to optimize consistency over time.

There was discussion of whether a question on social media use would be included. There was no intention to include at this stage, but it was pointed out that countries are free to add as many questions as they like.

Preparations for COSI Round 5 – OpenClinica and Lime Survey

Gerben Rienk Visser, Trial Data Solutions, presented an overview of OpenClinica and Lime Survey for COSI.

¹ See <http://uis.unesco.org/en/isced-mappings>

OpenClinica is an open-source software that is designed to collect data for medical research. LimeSurvey is designed for questionnaires that participants complete by themselves. In Round 4 of COSI data collection, the data from 50,000 children, attending 1,700 schools, were entered into OpenClinica by around 300 users.

Following this exercise, a survey of COSI OpenClinica users was conducted in order to provide feedback to try and improve the interface for the fifth round of data collection. As a result, a number of changes are being introduced:

- There are less items on the screens to minimise confusion
- Fewer mouse clicks will be needed
- The general interface and the data entry screens will be multi-lingual.

In order to simplify the screens it is proposed that there will be less information in the left hand column and that the top menu will be minimized.

LimeSurvey will also be available in different languages. OpenClinica and LimeSurvey are combined by tokens – six digit codes given by field workers to families, together with a URL to access the questionnaire.

In response to questions asked by users in the survey a number of issues were clarified:

- It is possible to do double-data-entry
- The data can be exported by the country teams, or OpenClinica can help
- It is possible to export to SAS and to SPSS
- Data that is collected in another way can be imported, if that would add value to the data quality
- The data is backed up and the backups are kept
- Other countries cannot see your data
- It is still possible to include country-specific items.

The end product is a reliable data-collection instrument, capable of handling high volume of data and users, with multi-language support. The system is flexible between countries, but uniform in its results, that will be combined. Both access and storage are secure.

Dissemination of COSI findings: Update on Round 3 publications

At the 10th COSI meeting in 2017, it was agreed to work on some joint publications using data collected in the first three rounds of data collection.

Severe obesity

Dr Angela Spinelli, National Centre for Disease Prevention and Health Promotion, Italy, presented an update on a proposal for a paper on severe obesity prevalence, based on the first three rounds of data collection. Since the paper was proposed in 2017, the third round data collection report has been published and all comments received by principal investigators have been considered and included. The data have now been updated, with the prevalence of severe obesity by country estimated again pooling available data from all rounds without distinguishing by age in order to have more reliable and robust estimates. In fact, many countries have too few cases to produce age-group and round-specific estimates.

Estimates have been calculated for 21 countries with data on more than 650,000 children. There is great variability in prevalence, ranging from 1% in Sweden and Moldova to 5.5% in Malta. Prevalence estimates based on WHO cut-offs were in all countries notably higher than those based on IOTF cut-offs, especially for boys.

In addition, changes over time and between age groups have been assessed through logistic regression analysis in three countries where there were enough measured children (Belgium, Italy and Slovenia). There were no changes in Belgium, but a decrease observed in Italy and Slovenia. Differences by mothers' education level were also assessed in eight countries where information was available, suggesting that low and medium levels of education are risk factors.

One option, before finalization of the paper, is to ask Professor Paul Gately, Carnegie Professor of Exercise and Obesity and Director of MoreLife at Leeds Metropolitan University, to contribute to the paper by estimating the costs associated with these severely obese children. There was recognition that this extra step could delay the sending of the paper to a journal from September until mid-November.

Discussion

It was agreed to go ahead and ask Professor Gately if he would like to get involved and is able to contribute within the timeframe. It was pointed out that some data from a PhD student's ongoing work on severe obesity in children in Ireland is also available.

BMI and waist circumference

Marie Kunesova and Radka Taxová Braunerová, Institute of Endocrinology, Czech Republic, presented work for a paper on BMI and waist circumference.

The aims of the paper were to compare waist and waist to height ratio (WHtR) with BMI categories and characterize individual groups, to evaluate differences between countries. Socioeconomic factors, food intake, physical activity in relation with waist and WHtR in countries where the questionnaires are available should be evaluated.

Ten countries – Bulgaria, Czech Republic, Greece, Ireland, Latvia, Lithuania, Macedonia, Norway, Spain and Sweden – were measuring waist circumference in at least one of the first three rounds. In the dataset there were 77,221 children, of whom 39,358 were 7-year-olds, and 38,975 children were taken into the evaluation. Waist higher than the 90th percentile was found in 7.27% boys and 6.98% girls, WHtR higher than 0.5 was found in 13.6% of boys and 13.8% of girls.

A draft of the paper had been prepared and circulated to participating countries for comment. Preliminary results were presented and discussed. Changes to take into account the comments received would soon be integrated into a new version of the paper.

Discussion

There was discussion of the preliminary results presented and it was agreed that the paper will be an interesting addition to the literature and that there is value in using the COSI dataset to explore data beyond BMI at times. There was clarification that analysis has not yet been done to look at socioeconomic status, food intake, physical activity and waist circumference and/or waist-to-

height ratio – this would be interesting to do, but only six countries were using also family questionnaires in the current data set and therefore the numbers of children used for analysis were not sufficient.

In relation to differences between northern/central and southern Europe there was discussion on the role of the Mediterranean diet and the importance of re-educating families about what constitutes a Mediterranean diet.

COSI Round 4 Results and proposals for publications

Stephen Whiting, WHO Regional Office for Europe, presented the proposed plan for publication of the results of the fourth round of COSI data collection.

Over 35 countries have participated in COSI Round 4 data collection. It is proposed to publish an international report on the data, similar in structure to the report published on the third round. This report will include data from all countries and all three components of COSI – that is, overweight and obesity prevalence, the school environment and the family record. It is proposed to have a brief annex with data for each country.

A collaborative process is proposed for the development of the report. The first step is to finalize the data analysis as a collaboration between WHO and ISS in Italy, with input from the Leibniz Institute for Prevention Research and Epidemiology (BIPS). The data will then be sent to all Principal Investigators for review, with a view to finalizing the report in 2018.

Additional scientific publications will explore the data in more depth. The proposed process for developing COSI scientific publications is as follows:

- principal Investigator(s) propose an idea
- the idea is shared with all Principal Investigators
- a writing group is established and a confidentiality agreement signed
- a manuscript is circulated for checking, and
- publication.

There is good availability of data for Round 4 publications with 35 sets of data on physical measurements, data from completed school records in 33 countries and data from family record forms in 22 countries.

All COSI publications and news will be featured on the COSI web page: <http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/activities/who-european-childhood-obesity-surveillance-initiative-cosi>

A number of proposals for specific publications were presented.

Prevalence of overweight and obesity in all countries and trends

Dr Angela Spinelli presented a proposal for two articles:

Article on 2015-2017 data

An article on 2015-2017 data (at least 35 countries) would include: prevalence of overweight (or pre-obesity) and obesity; BMI, height and weight by gender and age in each country; Aggregation of the countries by geographic area. Data from all countries that participated in Round 4 will be included. The specific objectives proposed are:

- i. To estimate (i) the prevalence of overweight and obesity and (ii) the frequency distributions of the anthropometric indicators (i.e., weight, weight-for-age Z-scores, height, height-for-age Z-scores, BMI, BMI-for-age, BMI-for-age Z-scores) by gender, age and country;
- ii. To assess differences of overweight and obesity prevalence and anthropometric indicators (i) among countries and (ii) by sex and age;
- iii. To calculate estimates of overweight and obesity prevalence for aggregations of countries within WHO European Region (such as Southern European countries, Scandinavian countries, etc) by sex;
- iv. To assess mothers' opinion of their children's weight status

The proposed next steps are to receive and validate data from the other three countries that collected data in 2017 (Belgium, Moldova and Netherlands), then to write a draft and send this to all 35 countries by December. This should be sent to a journal by February 2019.

Article on trends

An article on trends would include data from the 12 countries that have participated in at least three rounds and have targeted the same age groups.² Of these, six show a decreasing trend, three are stable and three show no clear trend. The proposed objective of the paper is:

- To estimate changes over time in (i) prevalence of overweight and obesity (based on both WHO and IOTF definitions) and (ii) in anthropometric indicators (see above) by sex, age and country.

A proposal for nine macro areas within the WHO European Region was presented and clarification as to whether these regions can be combined to reduce the number of sub-regional areas was sought.

A variety of possible visual presentations of the data were presented for discussion. It is proposed that a draft will be sent to the 12 participating countries by April 2019 and that this will be submitted to a journal by July 2019.

Discussion

There was some discussion on whether figures for overweight (not including obesity) should be presented. It was suggested that perhaps overweight (not including obesity) and overweight (including obesity) could *both* be included in tables.

There was discussion of the proposed 'macro areas' for sub-regional groupings. In principal WHO tends to use formal political groupings (such as the European Union or the Commonwealth of Independent States) and there are some informal sub-groupings, such as the small countries and the South East European Health Network. It would be useful to look at the sub-regions proposed by the UN. It is advisable not to call these areas 'sub-regions' in the article, or to imply that these

² Belgium, Bulgaria, Czechia, Greece, Ireland, Italy, Latvia, Lithuania, Norway, Portugal, Slovenia and Spain

geographical divisions are in any way formal. It is clear that some geographical sub-division will aid presentation and comprehension of the data.

There was a reminder that COSI always uses WHO cut-offs, but that inclusion of additional data using IOTF cut-offs is also valuable.

The issue of mothers' opinions on their child's weight status was discussed at length. There may be preliminary indications that perception of children's weight status differs between regions, and that the likelihood of underestimating obesity is higher in areas where prevalence is higher. There is considerable interest in exploring this issue further and exploring, for example, the associations between parental perception and obesity prevalence as well as socioeconomic characteristics. It could also be interesting to reach out to other academic disciplines (anthropology, psychology, sociology etc) in relation to this issue and understanding trends. It was suggested to work on a specific paper exploring mothers' perceptions of obesity and overweight.

Inequalities in overweight and obesity among school-aged children

Dr Marta Buoncristiano, Consultant, WHO Regional Office for Europe, presented an overview of available data on social inequalities.

Relevant data collected through the child's record form include:

- Geographical inequalities: all 35 countries that participated in COSI Round 4
- Gender inequalities: all 35 countries that participated in COSI Round 4
- Age inequalities: 11 countries that targeted more than one age group³

It may also be possible to explore the differences associated with the grade of urbanization of the place of residence. Of the countries that collected fourth round data – except for Finland, Norway, San Marino and Sweden – have data. There are pros and cons to using this information. The level of missing data is almost null in all countries but Czechia and Lithuania, where the data is missing for 5% and 11% of measured children, respectively. The urbanization of child's place of residence or of the school place has been used, when possible, in the estimation phase. There is, however, no single definition in use and each country adopts its own definition of urban, semi-urban and rural.

The family form provides data on family characteristics that may provide insight into socio-economic inequalities. Twenty-two countries have collected data on family characteristics for more than 110,000 measured children, although they have not always used the common question and answer options.

The relevant variables include:

- *parents' or caregivers' level of education* – 22 countries collected data (3 of which collected data about child's mother and father instead of respondent and his/her spouse/partner and 5 countries changed the answer options). Missing data about the mother/respondent is generally below 5% (with three exceptions) and missing data about the spouse/partner ranges from 5% to 20% (41% for Moscow). Preliminary analyses

³ Cyprus, Estonia, Finland, France, Greece, Italy, Latvia, San Marino, Spain, Slovenia and Sweden.

suggest that there are countries where prevalence increases with the mother's level of education and countries where it decreases with the level of education.

- *parents' or caregivers' employment status* – 19 countries gathered this information (5 collected data about child's mother and father instead of respondent and spouse/partner and 1 country changed the answer options). The level of missing data about the respondent/mother is generally below 5% (except for Moscow and Albania) and data missing about the spouse/partner ranges from 6% to 21% (with one exception). As with educational level, the association between overweight and parental employment status varies between countries.
- *perceived family wealth based on family disposable income* – 19 countries gathered this information and the level of missing data is generally below 5% (except Moscow and Albania). Once again, the associations between the prevalence of overweight and perceived family wealth vary between countries.

The results from these three questions are quite consistent.

The suggested next steps are to finalize data validation and estimation phase for all countries then to share the results on distributions of family characteristics and urbanization grade with principal investigators of all involved countries. Information will be collected from the investigators on how urbanization has been classified and how many of years of education are needed to fulfil each level of educational status. It would be useful to draft a strategy of dissemination, and consider whether these issues should be included in the international report and which dedicated papers to publish. It was proposed to create a dedicated working group and plan activities.

Characteristics at birth, breastfeeding and overweight/obesity

Marta Buoncristiano presented an overview of available data on breastfeeding.

Data is available from the family form on characteristics at birth (weight at birth, whether child was born at full term, whether the child was breastfed/exclusively breastfed and for how long). Family form data is available for more than 110,000 measured children from 22 countries. Levels of missing data were high for exclusive breastfeeding, so this needs to be excluded from the analysis.

The percentage of children that have ever been breastfed varies from 54% to 98% and there is also wide variation in median duration of breastfeeding. Preliminary analyses suggest that there are inverse associations between breastfeeding and overweight and obesity, and that breastfeeding may be protective.

An article is proposed with the aim of investigating the association between characteristics at birth, breastfeeding and overweight/obesity in schoolchildren in 22 countries of the WHO European Region. This would be based on data from the 2015/17 data collection round, with data on more than 110,000 children. The specific objectives would be:

- To assess bivariate associations between overweight/obesity and characteristics at birth/breastfeeding;
- To assess associations between overweight/obesity and characteristics at birth/breastfeeding taking into consideration potential confounders or interaction effects by estimating country-specific and overall multilevel regression models.

It was proposed to finalize the data validation and estimation phase for all countries, then to set up a dedicated working group on this paper. The next steps would be to share the main results on distributions of the characteristics at birth and of breastfeeding with the principal investigators of all involved countries, followed by literature research and running of a preliminary statistical analysis to be discussed within the working group. A paper would then be drafted and shared with the principal investigators of all involved countries in order to get feedback, check that the analysis properly reflects the situation in the country and to get guidance on interpretation.

Discussion

It was pointed out that principal investigators are very welcome to propose other topics for publication.

The preliminary results on social inequalities are very interesting and appear to really show the nutrition transition in action. Ownership of household was highlighted as a variable that could be interesting to explore.

Impact of season on measured body mass index

Dr Silvia Bel-Serrat, National Nutrition Surveillance Centre, Ireland, presented a proposal for a paper on the impact of season on measured BMI. The paper would explore whether the time point of the year in which anthropometric measurements are taken has any influence on BMI and on the prevalence of overweight and obesity in school-aged children. The objective would be to identify and evaluate seasonal patterns in adiposity among European school-aged children participating in COSI. The National Nutrition Surveillance Centre in Ireland would be prepared to lead on this publication.

The variables to be used for this analysis would include data from the child record form (age, gender, round of data collection, country, birthdate, measurement date, school, class, weight, height, BMI and waist circumference (when available)). Data from all four rounds could be analysed, with pooled analyses for each measurement round, providing a very large sample size.

Discussion

There was discussion of how it will be possible to control for other factors that might influence the results in this particular analysis. It is clear that there could be many factors that influence any pattern is discovered. This paper should be considered as a methodology paper, that will help inform decisions on when it is most appropriate to measure children.

Clustering of multiple behavioural determinants (or energy-related behaviours) and overweight and obesity in school-aged children

Silvia Bel-Serrat presented a proposal for another publication to investigate the clustering of behavioural determinants – namely, dietary intake, physical activity, sedentary behaviours and sleep patterns – and to examine their association with obesity and socioeconomic indicators among European schoolchildren participating in COSI.

The proposed research questions are:

1. Do behavioural determinants (diet, physical activity, sedentary behaviours and sleep patterns) cluster in any specific manner among school-aged children?
2. Does the clustering of these behavioural determinants differ across measurement rounds and/or countries?
3. Are these clusters associated with BMI and with the prevalence of overweight and obesity in school-aged children?
4. Is there any interaction/association between the clusters and socioeconomic status indicators?

The variables to be used are from the child record form (age, gender, round, country, birthdate, measurement date, school, class, weight, height, BMI and waist circumference (when available)) and from the family form (diet, physical activity, sedentary behaviours, sleep and socioeconomic indicators). The intention would be to focus initially on fourth round data, with the possibility to compare the other rounds later.

Childhood obesity management questionnaire

Jo Jewell, WHO Regional Office for Europe, presented a possible opportunity for collaboration between WHO, COSI investigators and a network of researchers on the theme of childhood obesity management.

WHO is seeking to understand how childhood obesity is managed in different countries. Following literature research, a preliminary questionnaire has been developed and piloted in Hungary, then sent to Principal Investigators. This questionnaire covers, for example, arrangements for screening/diagnosis, referral processes, health coverage and financing, education and health professional involvement.

Participation is voluntary for principal investigators. For those that do wish to participate, it is suggested that they act as a focal point and reach out to other experts. The COSI investigators could then review answers and address any immediate issues (e.g., conflicting answers on closed questions). WHO will later contact the other experts to validate the responses.

Discussion

There was discussion of the value in establishing a common approach for all participating countries, rather than data collection from random experts. Establishment of a specific working group is advisable, if this is feasible within the timeframe. Alternatively, separate interviews can be conducted with different experts. Hungary would be happy to share the list of stakeholders involved in the process, and this could be a useful starting point for other countries.

Actions to halt childhood obesity

A number of participants gave short presentations on actions taken to halt childhood obesity in their countries.

Croatia

Ms Maja Lang Morovic, Croatian Institute of Public Health, presented a brief overview of the Healthy Living programme. The programme, funded by the European Social Fund, was

established in 2015 with an overarching goal of informing, educating and sensitizing Croatian citizens of all age groups about positive aspects of healthy lifestyles through community action. It encompasses physical health, mental health and sexual health.

The programme is aimed at the whole population, but there is a focus on children and a recognition of the need to tackle the whole environment. There are five components: health education; health and physical activity; health and nutrition; health and the workplace; health and the environment.

In addition, nutrition in schools is being addressed through the introduction of healthy menus, which are sent on a monthly basis to caterers. Schools are being provided with support for the provision of healthier food.

Schools are implementing a 10-minute daily workout, which teachers can start at any time when children are tired or overwhelmed during the day. A polygon toolkit – which facilitates physical activity in schools that do not have gym facilities – has been distributed to all main elementary schools without a gym. There are plans to distribute to a further 1,000 schools. In relation to mental health, teachers are provided with training to identify mental health issues early.

There are also efforts to promote walking as the easiest way for families to engage in physical activity by, for example, establishing walking paths in all 21 counties and facilitating organized walks. Other physical activities for young children will be organized on a regular basis in parks.

A ‘healthy living label’ has been developed for inclusion on labels of healthier food products. The aim is to enable parents to buy healthier products and to educate young children on healthy eating.

Ireland

Dr Mirjam Heinen, University College Dublin, gave a brief overview of recent developments in Ireland.

Ireland’s efforts to tackle obesity started with publication of the National Taskforce on Obesity report in 2005, which recommended development of a national growth measurement database and adoption of a multi-level and cross-sectoral approach.

Ireland joined COSI in 2008 and has collected four rounds of data and will participate in the fifth round of data collection. Prevalence rates appear to be stabilising, but schools in disadvantaged areas continue to have higher prevalence of obesity/overweight.

Other actions taken to tackle obesity include:

- Publication of the *Framework for action to improve health and wellbeing of the people in Ireland* in 2013, which aims to increase the proportion of people who are healthy, reduce inequalities, protect the public from threats to health and wellbeing and create environments where every individual and sector of society can play their part in achieving a healthy Ireland.
- Health promoting schools – involvement in the European Network of Health Promoting Schools and development of a national Schools for Health framework in 2013. Currently around 30% of schools are health promoting schools.

- School curricula include education on diet and lifestyles and a mandatory one hour per week of physical education. Schools have healthy lunch policies and the Food Dudes programme is used to increase fruit and vegetable consumption. The Department of Education and Skills has also introduced an Active School Flag accreditation scheme for schools striving to achieve a physically educated and physically active school community.
- The Royal College of Physicians in Ireland published a report *Tackling Ireland's Obesity Epidemic* with recommendations on prevention, treatment and management of obesity.
- A physical activity policy – *Get Ireland Active! – National physical activity plan for Ireland* – was published in 2016, with targets to increase the proportion of children undertaking at least 60 minutes of moderate to vigorous physical activity every day by 1% per annum and to decrease the proportion of children who do not take any weekly physical activity by 0.5% per annum.
- Obesity policy – Implementation of *A healthy weight for Ireland – Obesity policy and action plan, 2016-2025* in 2016. This policy, which incorporates COSI, includes targets for a sustained downward trend in prevalence of overweight and obesity of 0.5% per annum and for a reduction of 10% in the gap in obesity levels between the highest and lowest socioeconomic status groups.
- Dietary guidelines – a *Healthy Food for Life* pyramid and guide were issued in 2016, and healthy eating guidelines for 1-5-year olds are being revised.
- Nutrition standards for school meals – a school meals programme was launched by the Department of Health, Department of Education Skills, Department of Employment Affairs and Social Protection. An evaluation of implementation of the *Nutrition Standards for School Meals* is being conducted by the National Nutritional Surveillance Centre.
- Appointment of a clinical lead for obesity management in 2017, with the aim of developing and integrating evidence-based models of care that strengthen prevention, early intervention treatment of overweight and obesity across primary care and acute services.
- Codes for advertising – In June 2013 the *Children's Commercial Communications Code of Practice* was developed by the Broadcasting Authority of Ireland. In 2018 a voluntary Code of practice *Non-broadcast media advertising and marketing of food and non-alcoholic beverages, including sponsorship and retail product placement* was issued by the Department of Health, Health and Safety Executive, food companies and advertisers.
- Sugar tax – In May 2018 a tax was introduced on sugar-sweetened beverages (20 cents per litre on drinks with 5 – 8 g/100 ml and 30 cents per litre on drinks with more than 8 g/100 ml). Several manufacturers have reduced the sugar levels in their drinks.
- Oireachtas committees – joint committees have been set up on tackling obesity in schools and the promotion of healthy eating and on tackling childhood obesity.
- SafeFood campaigns – A three-year campaign, *Let's take on childhood obesity one step at a time* started in 2013 and targeted at parents and seeking to inform portion sizes, treat foods, physical activity and screen time, sugary drinks and sleep. Since 2017, a five-year campaign, START, has also been targeting parents to minimise foods high in fat, sugar or salt, water and milk drinks, portion sizes, healthier food choices, physical activity and screen time, sleep.
- Treatment guidelines for overweight and obesity have been issued and the family-based W82GO Healthy Lifestyles Programme.
- Planning restrictions on fast food outlets near schools – A community initiative started in 2013, with the goal of getting the County Council to incorporate a No Fry Zone objective in the County Development Plan. In November 2016, Wicklow County Council voted overwhelmingly to include the objective in their County Development 2016-2011, making it the first county in Ireland to adopt this approach.

Latvia

Dr Iveta Pudule, Centre for Disease Prevention and Control (CDCPC), Latvia, presented an update on actions to tackle childhood obesity in Latvia.

Latvia has participated in all four rounds of COSI data collection. Prevalence among 7-year-olds appears to be relatively stable, but there have been different changes in different localities (prevalence has fallen in Riga but increased in rural areas) and there are now no differences between urban and rural areas.

A health-in-all policies approach is being adopted to promote healthy nutrition in schools. This involved the Ministry of Health, Ministry of Agriculture, Ministry of Finance, Ministry of Education and Science, municipalities and non-state actors (NGOs, civil society, industry).

The *Public Health Strategy 2014-2020* includes a number of activities for the promotion of healthy nutrition. These include:

- To promote healthy nutrition habits in society (including population groups at risk of social or economic exclusion);
- To assess the possibility to restrict packaging size (volume, weight) for products high in salt, sugar and fat;
- To assess the possibility to restrict the marketing/advertising of foods high in salt, sugar and fat in educational institutions and sports halls, sports clubs;
- To provide State funded meals for elementary school pupils.

Regulation 172 introduced standards for healthy meals at kindergartens and schools in order to ensure the consumption of healthy and balanced nutrition in these premises. The Regulation defines the energy and nutrient norms for kindergartens and schools according to the age or class – these values are based on the *Recommended energy and nutrient intake for the Latvian population*, approved by the Ministry of Health in 2017. It is specified that certain foods must be included on the daily menu (e.g., cereals, lean meat, poultry, fish, eggs, legumes, fresh vegetables, fruit), while some foods are prohibited (deep fried products, mechanically separated meat, cream products, mayonnaise/ketchup/tomato sauce and confectionery containing partially hydrogenated vegetable oils) and others are limited and only permitted when they meet certain compositional requirements (meat products, processed fishery products). Marketing and distribution of soft drinks, sweets and salty snacks in schools, including in vending machines and school cafeterias, has been restricted since 2006. Daily consumption of sweetened soft drinks among adolescents appears to have dropped between 2002 and 2014. The EU-supported School Milk and School Fruit Scheme is in place, but static fruit and vegetable consumption remains a problem. Since 2015, a new Regulation defines the list of food products that could be distributed in schools in addition to school lunch, and nutritional quality criteria were developed for such foods.

There are also health promotion activities underway in cooperation with municipalities. This includes the Healthy Schools Network, the National Healthy Municipality Network, contact persons in health promotion issues and the CDPC health promotion activities.

The National Healthy Municipality Network aims to provide methodological support and to assist in development of health promoting programmes. Between 2013 and 2017, 85% of municipalities

have joined the network and all municipalities have contact persons for health promotion. Guidelines for health promotion in municipalities, approved by the Ministry of Health in 2011, provides municipalities with science-based information to implement health promotion and to improve the development of healthy behaviours and lifestyle of the local population. The Healthy Schools Network has been established to educate youth about how to promote their health by leading a healthy lifestyle and seek to ensure conditions for a healthy environment at school. Currently, more than 200 schools have joined.

A regulation passed in 2016 has set a limit for trans fatty acids in foods (including in public catering services), which came into force in June 2018. In addition, a January 2016 law prohibited the sale of energy drinks to people under the age of 19 and banned advertising of energy drinks in educational establishments.

Since January 2018, the law on value added tax has been amended to reduce the level of tax on traditional Latvian fruit and vegetables from 22% to 5% for three years (31 December 2020). This measure will be evaluated to see whether consumption increases.

Finland

Päivi Mäki, National Institute for Health and Welfare (THL), presented an overview of efforts in Finland to tackle obesity.

THL launched the *National Obesity Programme 2012-2018* to establish collaborative network to promote population health. THL coordinates the programme, promotes the targets and implementation of the programme through information, guidance and collaboration with various actors, and monitors the programme's progress and outcomes through research and health monitoring.

The Finnish programme has objectives that are consistent with WHO and EU recommendations:

1. Support the healthy growth of children so that they would not face obese adulthood
2. Reduce the differences in obesity prevalence among population groups
3. Ensure that fewer adults keep gaining weight during adulthood
4. Provide all possible support to persons at high risk of obesity-related morbidity.

A wide variety of stakeholders are involved and checklists have been developed for different stakeholder, with a list of suggested actions.

The checklist for decision-makers, for example, includes:

- Definition of objectives for promotion of health and wellbeing, and structures and measures in support of these objectives, in municipal strategic planning
- Description of obesity and other health indicators, as well as objectives/resources/measures to improve them, in municipal documents
- Taking account of physical activity promotion in early childhood education, schools, educational institutions, work places and social or healthcare institutions
- Allocating sufficient resources to preventive services.

For health clinics, the suggested actions are:

- Follow-up healthy growth, height and weight of children to identify overweight
- Provide lifestyle counselling for children and families (especially for those most needing support)
- Collaborate with early education, schools and other stakeholders.

For early education/day care, suggested actions include:

- Promote a healthy day care environment
- Ensure all adults are role models for children
- Support children and their families in adopting physically active lifestyles
- Ensure that meals at day care centres follow the national nutrition recommendations
- Involve children in planning, making and serving meals
- Collaborate with other stakeholders working with families and children.

A series of nutritional recommendations for children have been issued and all are available in English.⁴

In addition, Finland has national physical activity recommendations for pre-school-aged children (2016) and school-aged children (2008). The Finnish *Schools on the Move* programme is a national action programme aiming to establish a physically active culture in Finnish schools. By 2017, more than 90% of municipalities and 80% of comprehensive schools were involved in the programme. In 2015 the Ministry of Social Affairs and Health launched the first set of national recommendations to reduce sitting time.

Other areas where schools can take action include:

- Provide lunch free of charge
- School curriculum – topics in physical education, health education and home economics
- Ensuring all adults in the school environment are role models for children
- Schools can also:
 - Ensure that meals follow the national nutrition recommendations
 - Eliminate the sale of unhealthy foods in the school environment
 - Take part in the Finnish *Schools on the Move* programme
 - Provide the possibility to take part in sports clubs after school hours
 - Collaborate with families and other stakeholders.

⁴ <http://urn.fi/URN:ISBN:978-952-302-626-1>; <http://urn.fi/URN:ISBN:978-952-302-599-8>; <http://urn.fi/URN:ISBN:978-952-343-033-4>

There is also a role for NGOs and for the food industry, retailers and caterers. The Nutrition Commitment issued in 2017 encourages food business operators and stakeholders to improve the nutritional quality of the Finnish diet and highlights areas where reformulation work is required.

Some municipalities have developed action plans based on the *National Obesity Programme*. Under the programme, the cooperation and networking will continue. As well as participating in COSI, THL is active in the Nordic network, Promokids (Promoting Healthy Weight in Children – Ending Childhood Obesity in the Nordic Countries) in 2018-2020, and the Science and Technology in Childhood Obesity Policy (STOP) project.

Discussion

Finland was congratulated on its extensive efforts to tackle childhood obesity.

There was discussion of the continuing challenge to increase fruit and vegetable consumption in Nordic and Baltic countries. It was pointed out that, even where increases in consumption are not observed, the ongoing efforts might be preventing a decline in fruit and vegetable consumption (as seen in some countries). The importance of building evaluation into interventions was emphasized.

Portugal

Dr Ana Rito, National Institute of Health Dr Ricardo Jorge, Lisbon, presented an overview of initiatives to tackle obesity in Portugal.

Portugal's efforts started after the WHO European Ministerial Conference on Counteracting Obesity in 2006, when the then Minister of Health was struck by the high prevalence in Portugal. Participation in COSI has been important, as it has generated the data that is so important for policymakers and has documented the recent decline in childhood obesity, with Portugal moving from having the second highest level in 2008 to being in the middle of the rankings in 2015-2017.

Initiatives undertaken included:

- *Platform Against Obesity 2007-2009* to raise awareness through, among other things, engagement of celebrities, etc.
- Targeted action in the Azores – in response to figures showing that the Azores had a very high prevalence of child obesity, the regional government invested in placement of a nutritionist in every health unit and provision of a consultation for every obese child. A significant decline has been observed
- *Together against Sugar* broadcast campaign – to alert the Portuguese to the risk associated with high consumption of sugar and explaining high sugar contents of some foods
- Tax on sugar-sweetened beverages introduced in February 2017 has led to a reduction of 5,000 tonnes in consumption of sugary drinks
- *Less Salt – Same Taste* campaign: Portuguese government intends to come to an agreement with the food industry towards the decrease of salt consumption by the end of June 2018. Proposals for a salt tax did not get through parliament
- Physical activity – National action plan, involving a wide range of Ministries, to create a broad social commitment around the importance of physical activity. This includes provision of physical activity guides for primary care and pilot projects in health centres

for physical activity prescription consultations given by a multidisciplinary team consisting of a doctor with a postgraduate degree in sports medicine and an exercise physiologist

- New nutrition policy for the first 1,000 days of life – a working group focused on promoting health, involving health professionals, UNICEF, the Ministry of Health and NGOs.
- New intersectoral strategy for food and nutrition policy (EIPAS) – to promote healthy diets to improve nutritional status and to tackle NCDs was launched in 2017. Involves agriculture, municipalities, education, economy, finance, sea and health ministries. 52 measures have been launched
- Public funding, through CEIDSS, for a number of large projects with children and adolescents, including MUN-SI (municipalities working with children and families), AMEA Kids (promoting healthy lifestyles among overweight children and their families in 5 Portuguese regions) and COSI.

Discussion

Portugal was congratulated on the extent of intersectoral collaboration. There was clarification that the Ministry of Health continues to take the lead, but it is not giving the platform to other Ministries to fulfil their role.

There was discussion of the specific challenges facing island communities. Notwithstanding that the island situation is somewhat different in Italy, where the situation in Sardinia resembles northern and central Italy while Sicily is more like southern Italy. The isolation facing island communities is recognized. This is an issue that merits further exploration and provides opportunities for collaboration at the global level.

Japanese surveillance of childhood obesity

Professor Takeo Fujiwara, Tokyo Medical and Dental University, presented an overview of childhood obesity in Japan.

The Japanese definition of obesity differs from the definition used in COSI and body mass index is not used. Obesity is defined as a weight-for-height score (measured weight/standard weight for health x 100 (%)) of 120% or greater and/or a significant increase in body fat for 6 to 18-year-olds. Standard weight-for-height is obtained from school health statistics for each sex and age.

Prevalence of childhood obesity in Japan has started to decline in recent years, after a dramatic increase since the 1980s for both boys and girls.

Child poverty in Japan increased between 1985 and 2012 and is higher than the OECD average. A decrease has been observed since then, but in 2015 14% of Japanese children were still living in poverty.

Using a life-course approach, Professor Fujiwara and colleagues investigated the impact of the global economic crisis and household income on pre-adolescent overweight and underweight in Japan. This nationwide cohort study set out to examine the relationship between household income and trajectories in weight status throughout the period of the economic crisis and to evaluate trajectories of underweight prevalence as underweight may be associated with socioeconomic factors. Data from the *Longitudinal Survey of Newborns in the 21st Century* (2001- 2011) were used. The study found that both boys and girls from lower income households were at a higher

risk of being overweight after the onset of the 2008 economic downturn, but not underweight after the crisis onset. Girls from households experiencing an income reduction in connection to the economic downturn had a higher risk of overweight after the crisis onset. It is possible that the relationship between hardship in life and overweight risk may be more pronounced among girls and that the eating response to stress is more frequent among females. Girls in the highest income groups had a higher risk of underweight after the crisis onset. It is suggested that preference of thinness among girls and underpinned by body shape ideals and that girls from higher-income households may be aware of body ideals.

These findings point to the need for policy measures to support households going through financial and social hardships. To help understand how research evidence can be applied to policy, the *Adachi Child Health Impact by Living Difficulty Study (A-Child)* has been set up in Adachi-city, a deprived area of Tokyo, with data on 4,291 children. This aims to help identify the modifiable mediators to break the cycle of poverty to make health policy affordable for the municipality.

One of the papers emerging from the A-Child study examined the hypothesis that eating vegetables first at meals may increase vegetable intake, which aids in the prevention of overweight. The study examined the association between the order of food consumption at a meal in primary school children and their weight status. The study found that children who habitually eat meat or fish first at meals are more likely to be overweight than those who eat vegetables first. Possible explanations are that eating vegetables first increases satiety and therefore reduces energy intake and that eating vegetables first increases vegetable intakes. This strategy may be useful for the “non-course-meal” culture in Japan.

In conclusion, the prevalence of childhood obesity in Japan is gradually increasing, but recent data show a decline. Child obesity may be more prevalence among those families facing financial strain. Local municipalities could tackle this issue with health promotion strategies, such as an “Eat Vegetables First” campaign. Finally, a proposal for a comparative study between COSI and A-CHILD could be interesting to consider, particularly to explore how cultural environments contribute to differences in overweight prevalence.

Discussion

There was considerable interest in exploring further the idea of collaboration between COSI and A-Child.

There was clarification that the recently observed decline in obesity prevalence does, in fact, consist of a decline in less deprived groups and that the rate is still increasing in the most deprived groups. In relation to a question about the trend in morbid obesity among children, there was clarification that the numbers are too small to be able to calculate temporal differences.

In relation to the findings on eating vegetables first, it was noted that this is the first study to suggest such an association. This is an area that merits further exploration.

The Science and Technology in Obesity Prevention (STOP) pilot project for under fives

João Breda introduced the EU-funded STOP programme. WHO is involved in this project, through headquarters, and is leading the package on guidance and guidelines.

There is a proposal for WHO to collaborate with 25 partners and three Member States in the European Region to implement a pilot project to look at children under the age of five. This pilot project presents a relatively modest opportunity to explore the issues around possible expansion of COSI to children under five.

Participants were asked to get in touch if they were interested in exploring further collaboration.

Discussion

There was clarification that the project target age is 3-5-year-olds. Further work is needed to identify the best methodology for measuring this age group. This could be a good opportunity to standardize methods.

Armenia, Bosnia, Croatia, Czechia, Italy, Lithuania, Montenegro, Norway, Poland and Serbia expressed interested in participating, with several countries indicating that they already collect data through their health systems. Austria indicated that it is hosting a conference, with WHO, on prevention in preschool children on 26-28 September.

Update on surveillance of NCDs in Europe

Dr Ivo Rakovac, WHO Regional Office for Europe, presented an overview of NCD surveillance in Europe.

The breakdown of the burden of disease in the European Region highlights why surveillance of NCDs is so important – with NCDs accounting for 89% of deaths and 85% of the years lived with disability in 2015. In addition, in contrast to the other disease groups, the proportion of the burden attributed to NCDs is increasing.

Within the framework of the SDGs there is now a clear vision of how to build national NCD responses, with a view to making progress towards the 2018, 2025 and 2030 milestones and targets.

In relation to the 2018 time-bound commitments, the first four progress monitoring indicators (time-bound targets set; functioning system for mortality data; regular STEPS or comprehensive health examination survey; operational multisectoral national strategy integrating NCDs and their shared risk factors) generally show progress between 2015 and 2017. A decrease was seen, however, in relation to surveillance. This may also be related to the WHO recommendation that surveillance of weight, height and blood pressure should not rely on self-reported data.

For indicator 5, in relation to tobacco, there has been an increase in countries fully implementing all measures (increasing excise taxes; mandating smoke-free workplaces and public places; implementing health warnings and mass media campaigns; banning all tobacco advertising; awareness-raising campaigns).

In relation to indicator 6, which relates to alcohol, there has been progress in relation to restrictions or bans on alcohol advertising and promotions, but little progress on regulating availability of alcohol and retrograde steps in relation to excise taxes and pricing of alcoholic beverages.

Indicator 7 relates to healthy diet and some progress can be seen in relation to partial or full implementation of action on saturated and trans fatty acids, the *WHO set of recommendations on marketing of foods and non-alcoholic beverages to children*, national policies to reduce salt

consumption and legislation to implement the *International Code of Marketing of Breast-milk Substitutes*.

Indicators 8-10, show that there has been no progress on implementation of national awareness campaigns on physical activity, but there has been progress on implementation of national guidelines/protocols for the management of NCDs and provision of drug therapy in primary care.

Every Member State in the European Region has implemented less than half of WHO's recommendations, demonstrating that there remains a great deal of work to be done.

The Region as a whole is on course to meet, or rather exceed, the SDG target 3.4 of reducing premature mortality from NCDs by 25% by 2025, and 45% of the Region's Member States have already met the target. A huge difference between high-income and low-income countries remains, even though there has been some convergence since 2005.

The probability of dying between ages 30 and 69 years from the four major NCDs is much higher for men than women. Examination of the data reveals considerable scope for progress through strategies targeting premature mortality from cardiovascular disease in males.

The *Global Monitoring Framework Scorecard for Europe* summarises the Region's progress towards the NCD targets. This suggests that the Region is on track to meet the mortality target but there is a great need to intensify efforts and accelerate achievement towards the other targets (except prevalence of hypertension).

The WHO NCD office in Moscow is now trying to introduce a number of innovations to improve NCD surveillance in the European Region (e.g., introduction of objective reporting of smoking prevalence, improving physical activity measurement, and identification of clustered risk factors through projects such as Fit Cities). The Moscow team is very open to discussion about ways to extend collaboration and cooperation.

Data cleaning and input to OpenClinica

Sofia Mendes and Rita Cruz de Souza, Portugal, provided an overview of Portugal's experience with data cleaning and input to OpenClinica.

For the 2016 data collection, supporting material on entering data was produced to aid the process. A common guide *Quick-Start data-entry COSI* was provided to all COSI participating countries, in order to obtain a standard procedure. In addition, a video showing all the steps was produced and made available through YouTube.⁵

According to the Portuguese experience, the main characteristics of OpenClinica were that it provides easier and faster access to data, enables compilation of child and family data into a single database and the fields have data entry barriers which reduces the probability of examiner error. This means that the final database has fewer errors to correct, resulting in a shorter data validation phase.

⁵ <https://www.youtube.com/watch?v=0sizr65rt2M>

The main obstacles were that Portugal had almost 200 examiners working with OpenClinica in 2016. This necessitated close follow up of the data entry process, with constant contact with examiners. The most common errors were that the form was not exported to SPSS because the examiner did not close the form entry process. This was solved by asking the examiner to conclude the form process and checking with OpenClinica support (Gerben Rienk Visser) whether the form was successfully exported. Another common error was accidental deletion of forms. This could be dealt with by asking for the deletion to be undone and checking whether the form was returned to the platform. Weekly or fortnightly updated datasets were provided, and this enabled checks to ensure whether any forms were missing.

To overcome these obstacles a number of possible solutions were proposed at the 10th COSI meeting in Malta:

- Creation of a LimeSurvey form for entry of the child record form, similar to the one that already existed for the family record form;
- Allowing OpenClinica access only to the national team and regional coordinators, preventing the most common examiner errors from the previous rounds.

A number of other suggestions are proposed:

- For countries not interested in using OpenClinica, the LimeSurvey platform could be a very interesting option because of its simplicity and the speed and ease of access to data;
- If this is not an option, countries are recommended to use the templates provided by Marta Buoncristiano for data entry in SPSS or Excel format. These are ready for data entry, and their use can aid the data cleaning and analysis steps.
- If countries change any of the answer options, they should inform Marta before sending their dataset.

The Portuguese approach to data cleaning involved the following steps:

1. Perform procedures to check for out of range or extreme/implausible values of some specific variables such as date of birth, date of measurement, weight and height
2. Check the level of missing data for variables, such as date of birth, date of measurement, weight, clothes worn, height and sex
3. Carry out procedures to check consistency between variables (e.g., if the child's consent variable is equal to No, then all child's anthropometric measurements are blank)
4. Handle inconsistencies between variables – (i) double check the answer on the paper form and (ii) assess if it is possible to establish which variable value is more reasonable, based on principal investigator experience, and correct data accordingly.

Following their experience with data entry, the Portuguese team strongly recommends use of OpenClinica. This does require an investment of time in following up the data with examiners. It can take, therefore, considerable time to do the set-up but once the process is started it runs smoothly.

Discussion

The WHO Regional Office for Europe also has some experience with OpenClinica in relation to STEPS surveys. The system had the advantage of providing weekly reports for each data collection form, this enables the national coordination to obtain weekly feedback and review this. The STEPS

process also includes a quality control measure whereby 10% of the sample is randomly selected for telephone contact to verify results.

There was discussion about the training for examiners. In Portugal the principal investigator and the data manager trained all 200 examiners with help of the Guide, the YouTube video and provision of a 24-hour help line. In general, after examiners have entered the first questionnaire they do not need any more help.

Interpretation, use and presentation of data workshop

Professor Iris Pigeot and Professor Wolfgang Ahrens, Leibniz Institute for Prevention Research and Epidemiology, Bremen, Germany presented a half-day workshop on interpretation, use and presentation of data. The workshop was designed to help principal investigators in their work presenting their national data within their countries and for the preparation of national publications.

The workshop provided sessions on operationalization of research questions, descriptive measures, graphical representation of data and statistical thinking. The presentation handouts are available to Principal Investigators and their teams.

In discussion, following the workshop presentations it was suggested that this workshop – which may be a refresher for some, but cover new material for others – had provided a useful overview. It was suggested that future needs might include a more detailed look at calculation of sample size and more targeted, practical support to help Principal Investigators/Data Managers to look at their own country data and how to interpret and present their findings. If future workshops are organized on this theme, it would be useful to organize as a separate meeting, but run back-to-back with the main COSI meeting to minimise costs and ease logistics.

Concluding remarks

João Breda closed the meeting with some concluding remarks. Presentations and discussions throughout the meeting demonstrate clearly that COSI is progressing well. There are increasing numbers of Member States participating, more reports and papers are being published and the awareness of the initiative has grown. For WHO this is a flagship project, which may eventually be adopted in other sectors and other Regions.

The strong attendance at the meeting shows how the network is improving and, crucially, delivering results. There is great media interest in the fourth round data. WHO congratulates all the teams for everything that has been achieved. The Regional Office for Europe is committed to continuing to support this thriving initiative so that good quality data will continue to be collected and increasing numbers of reports and scientific papers will be published. WHO looks forward to continued fruitful collaboration with Member States and other partners, and will provide all necessary support.

Annex 1: List of Participants

ALBANIA

Dr Gazmend Bejtja
National Professional Officer
WHO Country Office

ARMENIA

Dr Marina Melkumova
Adolescent Health Program Coordinator
Arabkir Medical Centre- Institute of Child and Adolescent Health

AUSTRIA

Professor Karin Schindler
Head of Division
Mother, Child, Gender Health and Nutrition
Federal Ministry of Labour, Social Affairs, Health and Consumer Protection

Ms Adelheid Weber
Nutrition Officer
Mother, Child, Gender Health and Nutrition
Federal Ministry of Labour, Social Affairs, Health and Consumer Protection

Dr Daniel Weghuber
Department of Pediatrics (Haus E, Entrance Pediatric Emergency Department)
Division of Pediatric Gastroenterology, Hepatology and Nutrition

BOSNIA AND HERZEGOVINA

Dr Aida Filipovic Hadziomeragic
Head of Hygiene and Nutrition Unit
Institute of Public Health of the Federation of Bosnia and Herzegovina

Professor Dragana Stojisavljevic
Specialist of nutrition
Public Health Institute of Republic of Srpska

BULGARIA

Dr Ekaterina Chikova-Iscener
Foods and Nutrition
National Center of Public Health and Analyses (NCPHA)

CROATIA

Professor Sanja Musić Milanović
Health Promotion Division
Croatian Institute of Public Health

CZECH REPUBLIC

Professor Marie Kunešová
Endocrinologist
Obesity Management Centre
Institute of Endocrinology

Dr Radka Taxová Braunerová
Endocrinologist
Obesity Management Centre
Institute of Endocrinology

DENMARK

Ms Tatjana Hejgaard
Senior Adviser
Health Promotion
Danish Health Authority

ESTONIA

Dr Eha Nurk
Senior Researcher/Head of Department
National Institute for Health Development

FINLAND

Ms Päivi Mäki
Development manager
National Institute for Health and Welfare

GEORGIA

Dr Lela Shengelia
Head of Maternal and Child Health Division
Department of Non-Communicable Disease
National Center for Disease Control and Public Health

GREECE

Professor Maria Chasapidou
Head of department
Nutrition and Dietetics
Alexander Technological Educational
Institute of Thessaloniki

HUNGARY

Dr Viktoria Anna Kovacs
Senior Nutrition Consultant
National Institute of Pharmacy and Nutrition

IRELAND

Dr Silvia Bel-Serrat
Postdoctoral research fellow
National Nutrition Surveillance Centre
University College Dublin

Dr Mirjam Heinen
Assistant professor
School of Public Health, Physiotherapy and Sports Science
University College Dublin

ITALY

Dr Angela Spinelli
Director
National Centre for Disease Prevention and Health Promotion
National Institute of Health

KAZAKHSTAN

Dr Shynar Abdrakhmanova
Head of Research Management Department
The National Centre for healthy lifestyle development

Dr Zhamilya Battakova
Director
The National Centre for healthy
lifestyle development

KYRGYZSTAN

Dr Zhamyila Usupova
Deputy Director
Public Health
Republican Center for Health Promotion

LATVIA

Dr Iveta Pudule
Senior Public Health Analyst
Research and Health Statistics
Centre for Disease Prevention and Control

LITHUANIA

Professor Ausra Petrauskiene
Department of Preventive Medicine
Faculty of Public Health
Academy of Medicine

Lithuanian University of Health Sciences

MALTA

Ms Michelle Cilia
Acting charge nurse
Primary Child Health, school Health services

MONACO

Ms Julie Malherbe
Administrator
Department of Health Affairs
Ministry of Health and Social Affairs

Mr Stephane Palmari
Direction adjoint
Department of Health Affairs
Ministry of Health and Social Affairs

MONTENEGRO

Dr Enisa Kujundzic
Head of School Hygiene
Center for Health Ecology
Institute of Public Health of Montenegro

NETHERLANDS

Dr Jolanda Boer
Senior Epidemiologist
National Institute for Public Health and the Environment

NORTH MACEDONIA

Dr Igor Spiroski
Head of Department of Physiology and Monitoring of Nutrition
Institute of Public Health of the Republic of North Macedonia

NORWAY

Ms Therese Bakke
Senior Adviser
Norwegian Institute of Public Health

Ms Ingunn Holden Bergh
Children's Health and Development
Norwegian Institute of Public Health

Prof Knut-Inge Klepp
Executive Director
Division of Mental and Physical Health
Norwegian Institute of Public Health

POLAND

Ms Anna Fijałkowska

Scientific Director, Head of Cardiology Department
Institute of Mother and Child

Mrs Magdalena Korzycka
Assistant-specialist
Department of Children and Adolescents Health
Institute of Mother and Child

PORTUGAL

Professor Antonio Pedro Graça
Director
National Programme on Healthy Eating
Directorate General of Health
Ministry of Health

Professor Ana Rito
Researcher
National Institute of Health Dr Ricardo Jorge
Av. Padre Cruz
1649-016 Lisbon

REPUBLIC OF MOLDOVA

Ms Natalia Silitrari
Head of health promotion department
National Agency for Public Health

ROMANIA

Dr Constanta Huidumac- Petrescu
Head of Children and Teenagers Health Department
The National Institute of Public Health

RUSSIAN FEDERATION

Professor Valentina Peterkova
Director
Institute of Pediatric Endocrinology
Endocrine Research Centre

Dr Elena Bogova
Pediatric Endocrinologist
Institute of Pediatric Endocrinology
Endocrine Research Centre

SAN MARINO

Dr Elena Sacchini

Statistician Expert

Health Authority

SERBIA

Dr Jelena Gudelj Rakic
Head of Centre for Health Promotion

Institute of Public Health of Serbia

Professor Višnja Đorđić
Faculty of Sport and Physical Education
University of Novi Sad

SLOVAKIA

Dr Ľubica Tichá
MUDr (medicine doctor) , PhD.
Paediatric Department
Medical School Hospital, Comenius University

SPAIN

Ms Carmen Villar
Head of service
NAOS Strategy, Spanish Agency of Consumer Affairs,
Ministry of Health, Social Services and Equality

SWEDEN

Ms Kajsa Mickelsson
Analyst
Department of Living Conditions and Lifestyles
Public Health Agency of Sweden

TAJIKISTAN

Dr Sanavbar Rakhmatulloeva
Senior Specialist
Organization of Health Services to Mothers,
children and Family Planning
Ministry of Health and Social Protection of Population

TURKMENISTAN

Ms Maya Tanrygullyyeva
Head of department
Scientific clinical
Centre of Mother and child Health

TEMPORARY ADVISERS/SPEAKERS

Professor Wolfgang Ahrens
Scientific deputy director, Head of department
Leibniz Institute for Prevention Research and Epidemiology – BIPS

Profesor Takeo Fujiwara
Department of Global Health Promotion
Tokyo Medical and Dental University

Ms Sofia Mendes
CEIDSS

Professor Iris Pigeot
Professor of Statistics
Biometry and Data Management
Leibniz Institute for Prevention Research and Epidemiology – BIPS

Professor Harry Rutter
Senior Clinical Research Fellow
London School of Hygiene and Tropical Medicine

Ms Ana Sousa
CEIDSS

Ms Agneta Sjöberg
Department of Food and Nutrition, and Sport Science
University of Gothenburg

Mr Gerben Rienk Visser
Datamanager
TrialDataSolutions

OBSERVERS

Ms Dora Bukal
Epidemiology resident
Health Promotion Division
Croatian Institute of Public Health

Ms Ondine Engelse
Advisor of youth health
Dutch center of youth health

Mr Yoshifumi Fukuya
PhD student
Global Health Promotion
Tokyo Medical and Dental University

Ms Csilla Kaposvari
Senior Consultant
National Public Health Institute

Mr Beka Khurtsidze
Public Health
Lithuanian University of Health Sciences

Ms Yuna Koyama
PhD student
Tokyo Medical and Dental University

Ms Maja Lang Morovic

Head of the Unit for Coordination
of National Project Activities
Health Promotion Division
Croatian Institute of Public Health

Dr Paola Nardone
Researcher
National Centre for Disease Prevention and Health Promotion
National Institute of Health

Ms Meruyert Saberbekova
Master Student
Public Health
Lithuanian University of Health Sciences

Mr Arsenios Tselengidis
Cyprus

Dr Ximena Ramos Salas
Managing Director
Canadian Obesity Network

WORLD HEALTH ORGANIZATION

Regional Office for Europe

Dr João Breda
Head
WHO European Office for Prevention and
Control of Noncommunicable Diseases

Dr Kremlin Wickramasinghe
Technical Officer

Dr Ivo Rakovac
Technical Officer

Ms Tina Kiaer
Communications Officer

Mr Jo Jewell
Technical Officer

Mr Steve Whiting
Technical Officer

Ms Marta Buoncristiano
Consultant

Ms Anna Mezentseva
Programme Assistant

Ms Liza Jane Villas
Programme Assistant

Rapporteur
Karen McColl

Interpreters
[Ms Natalia Petrova](#)
Mr Aleksandr Reshetov
