



Reducing childhood obesity in Poland by effective policies



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Abstract

Overweight affects about 14% of Polish girls and almost 20% of boys. Childhood obesity is a health concern, as it increases the demand for paediatric treatment. Moreover, the slow but continuous increase in the prevalence in Poland over the past 40 years and the fact that an obese child will most likely become an obese adult indicates that childhood obesity jeopardizes the sustainability of our health system. Thus, we cannot afford not to act. Obesity is a complex issue, with many social and environmental drivers; therefore, the solutions must be multidimensional, context-specific, pursued through the life-course and sustained. Fortunately, many valuable lessons can be learnt from within and outside Europe about how to approach the epidemic. The central role of policies is a crucial conclusion that should be applied in the context of Poland. The initial aim of this report is to describe the elements of a potential integrated programme for Poland. We consider, however, that it could also be a source of inspiration for other countries that are willing to start or scale-up action against childhood obesity.

Keywords

Pediatric Obesity - prevention and control
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Abbreviations

BMI	body mass index
COSI	Childhood Obesity Surveillance Initiative
HBSC	Health Behaviour in School-aged Children
HFSS	high in fat, sugar or salt
NCD	noncommunicable disease
SSB	sugar-sweetened beverage

Executive summary

Childhood obesity is a growing global health problem, and Poland is not spared. The slow increase in its prevalence is associated with the emergence of comorbid conditions previously considered to be “adult” diseases, such as type 2 diabetes and hypertension. In August 2016, the Minister of Health announced a regulation for implementation of the Polish National Health Programme 2016–2020 (1), in which, for the first time, fighting overweight and obesity was one of the strategic goals. This reflects a significant shift in the attitude towards obesity, which is considered not only a risk factor for noncommunicable diseases (NCDs) but a disease in itself. This is a major difference from previous health programmes, in which obesity was not considered so important. Interventions, monitoring and evaluation in the field of adult and child obesity are now planned, with proper budgetary allocations. The aim of this report is to facilitate the development of a complex, integrated action plan for implementing the strategy to reduce childhood obesity, which is based on the latest evidence and on the experiences of other countries, adapted to the Polish context.

A literature review was conducted to obtain an overview of the current evidence and practice on policy interventions in the six action areas identified by the Commission on Ending Childhood Obesity in 2016 (2). Further, interviews were conducted with key decision-makers to hear their experiences. The context assessment was based on a questionnaire-guided situational analysis (Annex 1) that included a review of activities and opportunities for further action, conducted by national experts.

The findings of our review, our assessment of the national context and the policy options are set out in this report. We first consider possible policy actions to create an environment that encourages a shift towards a healthy diet and physical activity through the life-course. For each area of action, specific examples are given from within and outside Europe. We then draw conclusions about the key components of effective policies and provide advice on a complex action plan that could be implemented in Poland.

The main findings from our evidence review of the key components of effective policies are summarized below.

1. Applicability to the national context: The applicability of a policy intervention should be considered when designing it. The European Region is diverse, and countries have different starting-points for implementing actions in their governance structures, cultural constructs, economic and social situations and geographical settings. Therefore, a thorough context assessment is required in order to set proper objectives. The regulatory landscape should be mapped, in order to better understand the strengths and gaps in existing legislation and other frameworks. Interventions should ideally be integrated into existing systems to ensure cost–efficiency.

2. An inclusive approach: A broad coalition of stakeholders (including children, parents, caregivers, teachers and representatives of civil society, academic institutions and the private sector) should be involved from the beginning. Incorporation of accountability and transparency dimensions will facilitate political buy-in and help in addressing challenges, particularly from and for certain stakeholders. We suggest that dialogue with stakeholders be initiated as early as possible and that they be involved throughout the process.

3. Intersectoral collaboration: Overweight is determined by numerous social, economic, environmental, political, cultural and commercial factors. Therefore, long-term collaboration and coordinated work with different policy sectors are required. Without a concerted effort and shared responsibility, interventions may have only a limited impact. To realize the full potential impact, engagement is required from as many sectors as possible. Ideally, countries should establish a formal mechanism for intersectoral cooperation (including the social, agricultural, financial, health and education sectors) to facilitate joint planning and budgeting, even if it is difficult to find shared objectives because of differences in drivers. A cross-sectoral working group, with strong governance, can ensure policy coherence and consistent communication to the general public.

4. **Equity:** Health inequalities exist among children throughout the European Region, both within and between countries. The socioeconomic situation of a family has strong direct and indirect effects on the likelihood of obesity. Therefore, during planning, implementing and evaluating an action, equitable access must be ensured, with particular attention to disadvantaged groups.

5. **Sufficient human and financial resources:** Capacity development should be an integral part of planning in order to implement policies at full scale. The lack of availability of well-educated human resources should not limit execution. Furthermore, a predictable budget that is secured for the long term is essential to sustain programme delivery, especially as preventing and tackling childhood obesity is an investment for the future.

6. **Monitoring:** Assessment of the impact of a particular policy measure should be planned at an early phase, as it will require the collection, assembly and interpretation of baseline data. Evaluation of both the outcome and the process helps to demonstrate effectiveness and offers insights for improvement.

Policy options for Poland

For each of the seven areas of action, we made context-specific suggestions for a two-step approach. Step 1 is a softer policy measure, offering solutions that require fewer resources and result in less significant changes to the current system. Step 2 is a more robust and wide-reaching intervention, the introduction of which would require more effort or investment but would most likely have a greater public health impact.

Action area	Step 1	Step 2
1. Intake of healthy foods	Restrict the availability of sugar-sweetened beverages (SSBs) on the premises of educational establishments.	Apply a tax on SSBs to disincentivise consumption, particularly among children and adolescents.
2. Physical activity	Implement schemes for active breaks between school lessons.	Install and maintain infrastructure in and around schools to promote physical activity, and encourage active travel to school.
3. Care before conception and during pregnancy	Disseminate and promote national recommendations for pregnant women.	Improve care during pregnancy by building the capacity of health professionals.
4. Early childhood	Scale up and implement programmes to support breastfeeding.	Create incentives for breastfeeding, and support workplaces that encourage working mothers to breastfeed.
5. School-age children	Build the capacity of school kitchen staff, and create a healthy school food environment.	Change the school curriculum.
6. Weight management	Ensure specific care for overweight children by training and educating paediatricians.	Set up an incentive system that covers the costs of counselling and treating obese children.
7. Monitoring and evaluation	Develop and provide standardized training for school nurses in collecting data and digitalizing records.	Maintain and integrate a national surveillance system on childhood obesity.

These policy options are complementary, and, if implemented in combination, would result in better health outcomes. As no single action can solve the complex issue of childhood obesity, measures should be combined and introduced in parallel. Success will depend on the engagement of a wide range of people and organizations. Actions can be started and continued by individuals, families and organizations as the wider debate and plans for implementation develop. There is no need to wait. The time to act is now.

Introduction

2016 was an opportune year in Poland, as it marked the issuance of the Polish National Health Programme 2016–2020 (1) in which, for the first time, fighting overweight and obesity was one of the strategic goals. This reflects a significant shift in the attitude towards obesity, which is now considered not only a risk factor for NCDs but a disease in itself. This is a major difference from previous health programmes, in which obesity was not an important issue. Interventions, monitoring and evaluation in the field of adult and childhood obesity are now being planned with a proper budgetary allocation.

The purpose of this report is to facilitate the development of an action plan and implementation of the strategy dimensions around childhood obesity by providing evidence-based policy options adapted to the national context. Simultaneously, a selection of available policy options and examples that already have proved their effectiveness within or outside Europe are also included in this report. The current report aims to be consistent with the recommendations outlined in recently published WHO reports and strategies. The structure of this document follows the action areas identified by the Commission on Ending Childhood Obesity (2), completed by a section on evaluation and monitoring. The initial intention of this guide was to propose the elements of an integrated programme for Poland. We consider, however, that it could be a source of inspiration for other countries that wish to start or scale-up actions against childhood obesity in their settings.

Why tackling childhood obesity is so important

Obesity is highly prevalent among children and adolescents in Europe, and the rate is particularly high in children of less-educated parents (3). On average, the problem – which is largely preventable – affects one in every three children aged six to nine years (4). No other chronic disease is so highly prevalent in the school-aged population.

Researchers' global estimates (5) indicate that, by 2025, if the prevalence continues its current trajectory, some 268 million children aged 5–17 years may be overweight, of whom 91 million will be obese. Investigators also anticipate that obesity-related conditions will rise among children. In 2025, up to 12 million children will have impaired glucose tolerance, 4 million will have type 2 diabetes, 27 million will have hypertension, and 38 million will have hepatic steatosis or building up of fat in the liver.

Obesity has health and psychological consequences not only during childhood and adolescence but also in adulthood. It directly increases the risks for hepatic steatosis, asthma, musculoskeletal and orthopaedic disorders, sleep apnoea, hypertension, impaired glucose tolerance and type 2 diabetes (5). Obesity in childhood can also contribute to behavioural and emotional difficulties, such as depression, and can lead to bullying and stigmatization, poor socialization and poorer educational attainment (6). Further, obese children are likely to grow into obese adults (7), with the well-known health and economic burdens for both the individual and society. Studies suggest that childhood obesity has a permanent effect on adult health even if the body mass index (BMI) in adulthood is reduced (8).

Policy responses from WHO and the European Union

In 2014, the WHO Regional Office for Europe adopted the European Food and Nutrition Action Plan 2015–2020 (9), which is intended to reduce significantly the burden of diet-related preventable diseases, including obesity. The Action Plan calls for countries to use a whole-of-government, health-in-all-policies approach, with a strong role for health ministries. The aim of the priority actions is to contribute to improving food-system governance and the overall quality of the diet and nutritional status of the European population throughout the life-course. Health ministers and other representatives of the 53 Member States in the Region gave overwhelming support to the Action Plan and its policies.

In 2015, a physical activity strategy for the WHO European Region in 2016–2025 (10) was endorsed. Its aim is to encourage governments and stakeholders to increase the level of physical activity among citizens in order to reduce the burden of NCDs associated with insufficient activity and sedentary behaviour. The strategy was prepared to meet the voluntary global targets set out in the WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020 (11), one of which is to achieve a 10% relative reduction in the prevalence of insufficient physical activity by 2025. Increased physical activity also plays an important role in attaining three other targets: a 25% relative reduction in the risk for premature mortality from cardiovascular diseases, cancer, diabetes and chronic respiratory diseases; a 25% relative reduction in the prevalence of raised blood pressure or containment of the prevalence of raised blood pressure, according to national circumstances; and a halt in the rising prevalence of diabetes and obesity.

In May 2012, the 65th World Health Assembly endorsed the Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition (12), with six nutrition targets to be achieved by 2025, which include no increase in the prevalence of childhood overweight, i.e. among infants and children up to the age of 5 years and a 50% increase in the rate of exclusive breastfeeding to six months. To reach these goals, the importance of sharing experience in lifestyle and environmental interventions gained in higher income countries was stressed.

The European Union Action Plan on Childhood Obesity, adopted in 2014, also sets out priority areas for action by EU Member States. It proposes a toolbox of measures that governments may consider when looking to address childhood obesity, and these measures are consistent with the guidance provided in WHO global and regional policy frameworks.

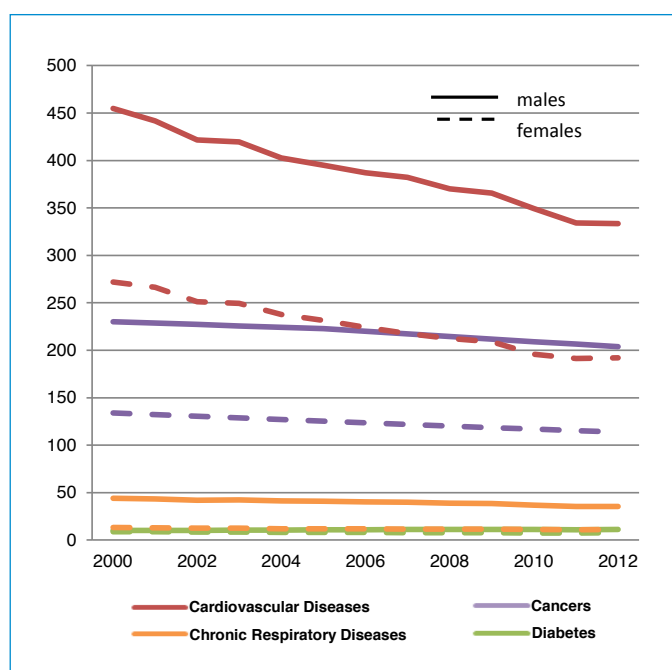
The issue of obesity in Poland

Of the six WHO regions, the European Region is the most severely affected by NCDs, and the growth in prevalence is startling (13). The impact of the major NCDs (diabetes, cardiovascular diseases, cancer, chronic respiratory diseases and mental disorders) is equally alarming: taken together, these five conditions account for an estimated 86% of deaths and 77% of the disease burden in the Region.

In Poland, although there is a slightly decreasing tendency in death rates from NCDs (Fig. 1), the probability of premature death is still 20% for both sexes, which is the sixth highest in the Region (14). Of the NCDs, cardiovascular diseases are responsible for nearly half of all deaths (49%), and cancers account for one quarter (26%).

NCDs are linked by common risk factors, underlying determinants and opportunities for intervention: high

Fig. 1. Age-standardized rates of death from NCDs in Poland, 2000–2012.



Source: Noncommunicable diseases country profiles 2014. Poland. Geneva: World Health Organizations (14)

blood pressure, tobacco use, harmful use of alcohol, high blood cholesterol, overweight, unhealthy diets and physical inactivity (13).

In Poland, the prevalence of obesity in the population aged 18 or over is slightly above the European Union average (17.2% vs 15.9%), and the rate is slightly higher among men than women (18.8% vs 15.9%) (15). There is, however, a remarkable difference between the prevalence in young adults aged 18–24 years (3.3%) and in people aged 65–74 years (28.4%). Furthermore, education clearly plays a role, as the rate of obesity is 10.7% for people with a higher level of education and 21.9% for those with little education (15).

The overall prevalence of overweight (according to the WHO definition), including obesity, in preschool-aged (2–6 years) boys and girls was 12.2% and 10.0%, respectively (16). Thus, even in this early stage of life, about one in ten children is affected. In a representative sample of elementary, middle school and secondary school students (N=17,427; age 7–18 years; 52.2% girls) obtained between 2007 to 2009 in the OLAF study (17), the overall prevalence of overweight and obesity was 16.4% (18.7% and 14.3% in boys and girls, respectively).

The results from the Health Behaviour in School-aged Children (HBSC) survey for 2013–2014 show that the percentage of Polish children of each sex who think they are too fat is the highest in Europe (3). The rate is already high among 11-year-old children (41% for girls and 31% for boys), but, while the prevalence remains stable among boys, it increases to 61% among girls by the age of 15. Accordingly, the percentage of girls who engage in weight-reduction behaviour is already 25% among 11-year-old girls and reaches 36% by the age of 15.

Socioeconomic situation (either individual or environmental) has a clear impact on the prevalence of overweight. According to the latest HBSC report (18), overweight is most prevalent among children raised by single parents and in families with a lower income. The OLAF study demonstrated that the risk for overweight and obesity corresponds to the area of residence, being high in Mazowieckie, Lubuskie, Dolnośląskie and Kujawsko-Pomorskie voivodships and low in Malopolskie, Świętokrzyskie, Lubelskie and Podkarpackie voivodships (19). The voivodships for which the analysis showed the lowest risk for overweight and obesity are characterized by a higher percentage of rural residents, with an urbanization index under 50%.

What should be done

Childhood obesity is a complex issue that cannot be solved by a single action (20). It requires a comprehensive approach throughout the life-course, applied by various sectors of government and of society. Although most countries in Europe have a range of policies and programmes to address childhood obesity, these often fail to have the expected effect, as they are inadequate to address the complexity of the challenge (21). It is clear that no single action is sufficient to address this growing epidemic, and commitments should be made for a longer term. Besides a comprehensive package of policy measures, a clear, robust monitoring framework should be prepared in advance in order to track progress and effects at national level. Specific targets are needed for conditions that are related to overweight, nutrition and physical activity in order to ensure accountability for the actions, resources and results. The best option is to establish a surveillance system to ensure a regular flow of information to policy-makers. The reporting time should be in line with national priorities and the requirements of governing bodies.

Childhood obesity is a complex public health issue that requires a comprehensive, sustained, transparently monitored intervention strategy.

Action area 1. Promote intake of healthy foods, and limit the intake of foods high in fats, sugar and salt (HFSS).

Healthy food environment • Fiscal policies including taxation and subsidies • Restriction on marketing and advertising • Banning of price-cutting promotions • Reduction of portion sizes • Labelling • Food-based dietary guidelines • Nutrition literacy • Awareness-raising

Governments can act in several ways to improve the availability of and access to healthy foods, to influence people's food choices and to encourage a shift towards a healthy diet. Healthy food environments should be created in various settings, particularly in preschools and schools. A tax could be imposed on SSBs. In parallel, access to healthy foods should be increased by incentives, in particular to disadvantaged groups. Marketing and advertising of unhealthy foods in all media (including digital platforms and through sponsorship) should be reduced, especially when they address children. Banning price-cutting promotions of HFSS foods in all retail outlets, such as multipacks and "buy one, get one free", and the promotion of unhealthy food to children in restaurants would also have a significant impact. Both food manufacturers and caterers should be obliged to reduce portion sizes. Standardized, consumer-friendly front-of-pack labelling could be introduced. Food-based dietary guidelines should be prepared for both adults and children, and nutrition information should be widely disseminated. Food and nutrition messages must be consistent and not contradict each other. The literacy of both parents and children (as part of their curriculum) about health and nutrition should be improved, and awareness-raising about childhood obesity should continue.

Rationale and evidence base

Frequent consumption of products high in energy, fat, saturated fat, sugar and salt is a significant contributor to overweight and obesity (22). Data suggest that the consumption of such products is increasing, especially among children and in low-income families (23). As a result, children are consuming too many calories and in particular too much sugar. For instance, drinking a single 330-mL tin of a soft drink with added sugar (which can contain as much as 35 g of sugar) can instantly supply more than the maximum recommended daily intake of sugar (24).

Food choice is determined by several factors (25). While hunger is evidently the key driver for eating, food is not chosen solely according to physiological or nutritional needs. It is influenced by economic (price or availability), physical (access or time constraints) and social factors (culture, traditions and traditional diets, peers, family) and is further modified by attitudes, beliefs and knowledge about food. Education and personal responsibility are critical elements in any programme to change behaviour, but they are not sufficient on their own. Other interventions involve changes to the environment and social norms (26).

As food choices are determined by multiple factors, the approaches to improving the diet must be diverse and multi-level.

Today's food environment is quite different from that experienced by previous generations, with a wide variety of available products. The aggressive marketing of HFSS foods makes it difficult to eat healthily. Moreover, nutrition information may be confusing and therefore poorly understood by many people, particularly those who are the least educated. Evidence shows that all forms of marketing and advertising influence food preference, choice and purchasing (27), and there is a strong scientific rationale to link commercial promotion to poor diets, also for children (28, 29).

Furthermore, parents now cook less and buy more processed, ready-to-eat food. Consumers who wish to make informed dietary choices depend on labels to choose the healthiest packaged food. Nutrition labelling can provide food guidance at the point of choice, and the consistency and familiarity of labels, with simple, easily understandable symbols are important to improve their usability (30). To increase the impact, schemes for food labelling should be accompanied by consumer education (37). As individuals and families choose their diets, they should be empowered, and nutrition literacy should be increased to ensure healthier choices.

Price has a well-established role in food choice. Thus, there is much interest in using taxes and subsidies to improve the quality of national diets. These should constitute a minimum of 10–20% of the price, the effect being greater with higher levels of taxation (32). Nutritional criteria to identify which products should be taxed and which nutrient threshold to apply must be carefully developed. Regional nutrient profiling models are available. Experience in European countries suggests that a tax on products high in sugar would result in 60–300 million € in tax revenues annually (33). Furthermore, significant savings in health care can be foreseen in the longer term. Vulnerable populations, including low-income consumers, are the most price-responsive groups and would therefore benefit most from changes in the relative prices of foods and beverages.

Relevant WHO resources, tools, publications and initiatives

- Guideline: Sugars intake for adults and children. Geneva: World Health Organization; 2015 (http://www.who.int/nutrition/publications/guidelines/sugars_intake/en/).
- Global action plan for the prevention and control of noncommunicable diseases 2013–2020. Geneva: World Health Organization; 2013 (http://www.who.int/nmh/events/ncd_action_plan/en/).
- European food and nutrition action plan 2015–2020. Copenhagen: WHO Regional Office for Europe; 2015 (<http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/publications/2015/european-food-and-nutrition-action-plan-20152020>).
- Using price policies to promote healthier diets. Copenhagen: WHO Regional Office for Europe; 2015 (<http://www.euro.who.int/en/publications/abstracts/using-price-policies-to-promote-healthier-diets-2015>).
- European action network on reducing marketing pressure on children. Copenhagen: WHO Regional Office for Europe; 2008 (<http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/policy/member-states-action-networks/reducing-marketing-pressure-on-children>).
- Set of recommendations on marketing of foods and non-alcoholic beverages to children. Geneva: World Health Organization; 2010 (<http://www.who.int/dietphysicalactivity/publications/recsmarketing/en/>).
- Framework for implementing the set of recommendations. Geneva: World Health Organization; 2012 (http://www.who.int/dietphysicalactivity/framework_marketing_food_to_children/en/).
- Marketing of foods high in fat, salt and sugar to children: update 2012–2013. Copenhagen: WHO Regional Office for Europe; 2013 (<http://www.euro.who.int/en/health-topics/noncommunicable-diseases/obesity/publications/2013/marketing-of-foods-high-in-fat,-salt-and-sugar-to-children-update-20122013>).
- WHO Regional Office for Europe nutrient profile model. Copenhagen: WHO Regional Office for Europe; 2015 (<http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/publications/2015/who-regional-office-for-europe-nutrient-profile-model-2015>).
- Tackling food marketing to children in a digital world: trans-disciplinary perspectives. Children's rights, evidence of impact, methodological challenges, regulatory options and policy implications for the WHO European Region. Copenhagen: WHO Regional Office for Europe; 2016 (<http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/publications/2016/tackling-food-marketing-to-children-in-a-digital-world-trans-disciplinary-perspectives.-childrens-rights,-evidence-of-impact,-methodological-challenges,-regulatory-options-and-policy-implications-for-the-who-european-region-2016>).
- Eliminating trans fats in Europe – a policy brief. Copenhagen: WHO Regional Office for Europe; 2015 (<http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/publications/2015/eliminating-trans-fats-in-europe-a-policy-brief-2015>).

Polish context (status and trends, surveys, relevant policies and their implementation)

Polish children's dietary habits are assessed every four years in the HBSC survey of children aged 11–15 years (3). Furthermore, the Central Statistical Office, the Institute of Mother and Child and the Food and Nutrition Institute regularly carry out targeted examinations.

Many Polish children do not eat breakfast: almost one third of 11-year-olds do not eat breakfast daily, and the proportion increases to 40% among 15-year-olds (3). Less than half of 11-year-olds eat fruit every day, and less than one third at the age of 15. Vegetable intake is even more worrying: no infants or children aged 13–36 months eat enough vegetables every day. In contrast, daily consumption of soft drinks is high and increases with age, from 18% and 24% in boys and girls at age 11 to 20% and 27% at age 15. Polish children's diets are poor in milk and other dairy products, fish and whole-grain products; however, there is no shortage of wheat bread, potatoes, highly processed foods and salty and sweet snacks (34). As a result, they have high intakes of fats, salt and simple carbohydrates.

Guidelines for the proper nutrition of children and adolescents and for a healthy lifestyle were issued by the Food and Nutrition Institute in 2008 (35). The Broadcasting Act of 29 December 1992 (amended in 2016) forbids the broadcasting of commercials that directly encourage children to buy products or services or to exert pressure on their parents or other persons to buy the advertised products and services. Moreover, in accordance with the Law, television programmes for children should not be accompanied by commercials for food products or beverages containing ingredients the presence of which in excessive quantities in the everyday diet is not advisable. As of 1 January 2015, broadcasters committed themselves not to accompany programmes for children aged 12 or less with commercials for food articles and beverages that do not meet dietary criteria accepted by the Ministry of Health. Evidence shows, however, that self-regulation is generally much less effective than statutory regulation (36), and there is currently no mechanism in Poland to assess the effectiveness or the implementation of these measures.

Examples and case studies from Europe and beyond

Denmark: Denmark's tax on saturated fat, implemented on 1 October 2011 and abolished on 1 January 2013, proved to be efficient in reducing the intake of saturated fat, in improving other dietary measures and in reducing mortality from NCDs (33). The tax was paid on the weight of saturated fat in foods and of saturated fat used in the production of foods when the content exceeded 2.3 g/100 g. The excise tax amounted to Dkr 16.00 (2.15 €) per kilogram of saturated fat, plus an additional 25% value-added tax.

Estonia: No marketing or advertising is allowed in preschools and schools, and a tax on SSBs will come into force in 2018, which is expected to raise 24 million € in revenue each year (37).

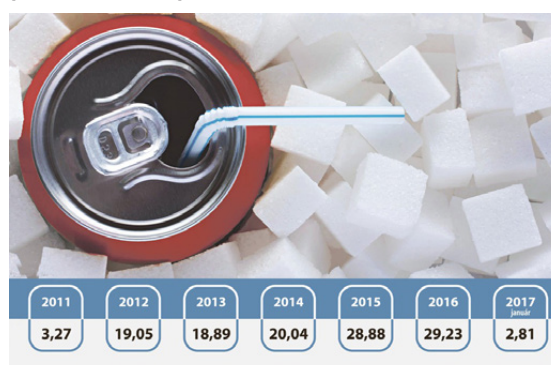
Finland: Finland has a long history of using food environment policies to influence food consumption (33). Since 1948, free school meals, paid by tax income, have been offered to all pupils at elementary schools, and university students benefit from subsidized meals if nutritional quality criteria are met (32). Moreover, since 2009, European Union school milk subsidies have not been allocated to products high in fat or salt. Since 2011, excise duties have been levied on sweets, chocolate and non-alcoholic beverages (Act 1127/2010). The taxes are levied primarily to generate revenue for government finance purposes, but the potential effects on health and consumption are acknowledged (32). The tax rates were increased in 2012 and 2014. National legislation to ensure compulsory warning labels on high-salt foods has been in place since 1993, which applies to all food categories (38). A widely used heart symbol tells consumers at a glance that the marked product is a better choice in its product group regarding the quantity and quality of fat and salt; in some product groups, sugar and fibre contents are also taken into account (39). The criteria for applying the symbol are based on Finnish nutrition recommendations and are regularly updated, if needed, by an expert group that includes seven professionals in nutrition and medicine appointed by the appropriate organizations. Food companies

must apply for the right to use the symbol on products that comply with the defined criteria for the food category. The right is granted by the organizations on the basis of the decisions of the expert group, which also continuously controls the validity of the products. Since 2000, the Finnish Heart Association and the Finnish Diabetes Association have worked to make the heart symbol known to the public by printing brochures for various target groups, home pages and multiple advertising campaigns in the media. Companies are encouraged to use the heart symbol in marketing their products, and, currently, more than 1000 products on the Finnish market have the right to carry the symbol. The right to use the symbol is subject to an annual fee of 500 € per product; however, the cost is lower the more products a company has with the symbol. Micro-enterprises receive the largest discount (60%) from the standard fee. In 2008, the heart symbol system was extended to meals served outside the home. The system is non-profit and is financed entirely by the fees collected, which are used to maintain the system, including spot checks that the nutritional content of the product with the symbol corresponds to the criteria for its use (39).

France: The National Nutrition and Health Programme, initiated in 2001, promotes health in the population with a number of policies (40). The Programme combines synergistic and complementary actions, measures, regulations and laws and strategies for education, communication, information, training of professionals, the nutritional environment and food composition, availability, accessibility and affordability. The educational policies are comprehensive; they include tools for nutritional education in schools, regulating commercial marketing in the school setting, banning vending machines in schools (since 2005), limiting snacking at school and inviting parents to participate in “meals commissions” in some schools. A national food guide based on the objectives of the Programme was created in 2002, initially targeted to the general population but later adapted for parents, health professionals and adolescents. The strategy allows adolescents to base their nutritional intake on personal preferences and their enjoyment of food while highlighting the significance of their eating choices. A logo was created for all signature campaigns within the Programme; nongovernmental bodies may apply to use it, and several nutrition educational tools devised by associations and catering companies have been evaluated on scientific and educational criteria. The Programme is administered by a steering committee consisting of representatives of several ministries (Agriculture, Education, Consumption, Social Affairs, Research, Internal Affairs) and public health agencies and is coordinated by the Ministry of Health. In 2011, France imposed a levy on beverages and liquid preparations for human consumption that contain added sugar or other sweeteners (33). The amount of the contribution was set at 7.16 € per hL and was increased to 7.5 € per hL in 2015. Since 2013, the entire contribution has been allocated to the national social health insurance. In 2014, the revenue raised by tax was approximately 300 million €. The tax appears to have had a positive effect on purchase patterns from a public health perspective and is generally well accepted by the population. In January 2017, a ban was introduced on unlimited sale of soft drinks at a fixed price and on unlimited free distribution in restaurants and other spaces open to the public (41).

Hungary: A public health product tax was introduced in 2011 on non-staple, pre-packaged food products (e.g. energy drinks, salty snacks, syrups, sugar-sweetened cocoa powder and – since 2015 – alcoholic beverages) that have been proven to be a risk to health when consumed (42). The tax is a specific excise tax per unit measure, based on the sugar, salt and methyl-xanthine content of prepackaged food products. The tax-related administrative burden for enterprises is minimal. A review of the annual estimated and realized amounts of the tax in the period 2011–2017 showed that, apart from the first year, when only 3.3 billion HUF were realized because the tax was introduced in September, nearly 20 billion HUF were paid into the State budget annually in the first 3 years, which increased to 30 billion HUF per year (Fig. 2) (43). The total revenue from the PHPT since its introduction is 122 billion HUF (393 million €). Since 2012, the revenue has been assigned a separate budget line in the health insurance fund (health care budget) and was used to increase wages in the health sector in two stages, in 2012 and 2013. The revenue was also used to facilitate reformulation of products (42). To complement the taxation policy, Hungary introduced an incentive (i.e. reduced tax) for poultry and milk and, from 2017, also for fish products.

Fig. 2. Annual revenue from the Hungarian public health product tax, 2011–2017



Source: Népszava, 2017 (43)

Norway: Television advertising in association with children's programming or aimed at children under 16 and advertising that the Consumer Ombudsman and the Market Court deem to be exploiting the vulnerabilities of children have been banned since 1992 (44). An updated policy to reduce the exposure of children to advertising practices relating to unhealthy foods was developed in 2012 by the government (45).

Portugal: The Government introduced a sugar tax on soft drinks early in 2017 (46). Soft drinks containing more than 80 g/L of sugar are taxed at 16.46 € per 100 L. Drinks containing fewer than 80 g/L are taxed at a rate of 8.22 € per 100 L. The tax raised the price of a standard 330-mL tin of Coca Cola, which contains 35 g of sugar, by 0.055 €. The tax was applied only to soft drinks and not to sugary drinks based on milk or fruit juice.

Sweden: The General Marketing Act includes a ban on any advertising targeted at children under the age of 12 years on national radio and TV before and during children's programmes (45). People associated with children's radio or TV programmes are not allowed to take part in advertising targeted at children under the age of 12 years. According to European legislation, the ban only covers broadcasts originating in Sweden.

United Kingdom: Advertisements for foods HFSS have been banned since 2006 in television programmes made for or of particular appeal to children aged 4–15 years (45). In 2017 the Committee of Advertising Practice (CAP) introduced new rules banning the advertising of HFSS foods and drink products in traditional non-broadcast and online children's media, from magazines and cinema, to billboards near schools, to social media, apps and advergames. The rules apply to media targeted at under-16s. A national childhood obesity strategy was launched in August 2016 (47), centred on a soft drinks levy that is due within two years. The money from the sugar tax will be used to fund breakfast clubs and sports. The strategy is based mainly on school activities, voluntary actions by the food industry, healthy food environments in public settings and physical activity. Schools are asked to give pupils an extra 30 min/day of activity, and parents and care givers are encouraged to get their children moving for a further 30 min.

In January 2014, the Government of **Mexico** added 1 peso/L on all non-alcoholic beverages with added sugar (powders, concentrates or ready-to-drink) to the country's Special Tax on Production and Services, which is paid by producers (32, 48). This represents an increase in the consumer price of about 10%. A year after introduction of the tax, an average reduction of 12% was recorded in purchases of taxed sugary drinks. Households with the fewest resources had a higher reduction (17%). The study also showed a 4% increase in purchases of untaxed beverages, particularly bottled water. Some of the revenue was invested in installing water fountains in schools. Also in 2014, Mexico restricted marketing of food to children on television during the afternoon and on weekends and in cinemas showing children's films (29).

Ecuador was the first country in Latin America to implement *mandatory* front-of-pack "traffic light" food labelling to indicate high (red), medium (orange) and low (green) levels of fat, sugar and salt. The legislation was proposed by the Ministry of Health and enacted in 2014 (49).

In 2014, **Brazil** defined all advertising directed at children up to 12 years as abusive, defining "advertising" as any direct marketing communication with the intention of persuading viewers to consume products or services (29).

A law came into force in 2015 in **Chile** that stipulates mandatory warning labels on food products containing what are considered to be "excess" levels of salt, sugar or saturated fat. Use of this kind of warning label is unprecedented (49). Promotion and advertising of products carrying these warning symbols to children under 14 will be restricted.

In the **USA**, the Supplemental Nutrition Assistance programme provides food-purchasing assistance and incentives for people with low or no income at the point of sale, with the aim of increasing purchases of fruits and vegetables. "Shop Healthy NYC" involves a set of interventions to support healthy customer choices, including encouraging food retailers to promote healthy foods by, e.g. displaying water at eye level, advertising healthy foods, not advertising unhealthy foods and giving promotion materials to customers (40).

Action area 2. Promote physical activity, and reduce sedentary behaviour.

Physical activity-promoting environment • Active commuting • Walking and bicycling lanes • Encouragement of after-school sport • Guidelines on physical activity

All levels of government have a role to play, in cooperation with other stakeholders, in creating an environment to encourage physical activity. They should ensure that adequate facilities are available both on school premises and in public spaces. Extensive, well-maintained walking and bicycling paths should be created to promote active commuting to and from school, and free or low-cost sports facilities should be established for after-school sports. The number of safe, accessible parks and playgrounds should be increased, particularly in low-income areas. The provision of guidance to children, parents and teachers on healthy body size, physical activity, sleep patterns and time spent watching on-screen entertainment should be a vital part of any obesity programme.

Rationale and evidence base

Adequate levels of physical activity are fundamental for the proper development of cognitive, motor and social skills and for musculoskeletal health in children (10). Moreover, activity habits are established at an early age, so that an active lifestyle throughout the life-course is strongly influenced by childhood experience. There is also evidence that physical activity is linked to academic performance (50). In contrast, meta-analyses have shown that the time spent watching television is associated with an increased prevalence of overweight.

WHO recommends that people in this age group accumulate at least 60 minutes of moderate-to-vigorous intensity physical activity every day, and even more physical activity is likely to have additional health benefits (51). Children should limit extended periods of sedentary behaviour, such as sitting in front of a television, as this appears to be an independent risk factor for ill health, regardless of other activity levels (52). Recent research has also suggested that people should reduce extended periods of sedentary behaviour, such as sitting at the computer or watching television, since these may constitute an independent risk factor for ill health regardless of other activity levels (10).

It is becoming more and more difficult to maintain sufficient levels of physical activity as most daily environments have changed significantly in recent years (53). Greater distances between home, school, shops and places for leisure activities have increased the use of cars and led to a decrease in walking and cycling. In many contexts, road safety is a concern. In addition, given an increasing demand for schooling, children and adolescents spend more time in school or day care than before, which may also reduce the time dedicated to physical education and active play. The increasing number of sedentary forms of entertainment, such as on screen, and technical aids such as lifts also reduce the time spent actively.

Education and personal responsibility are the critical elements for increasing levels of physical activity but are not sufficient. Additional interventions are required that involve changes to the environment to facilitate healthy behaviour, such as bicycle lanes leading to schools, secure bicycle parking facilities, organized walking groups, supervised street crossings and reduced speed limits near schools (53). They include creating more, safe outdoor facilities, restructuring urban and education environments to facilitate physical activity and fiscal incentives to promote physical activity or discourage sedentary behaviour, specifically among children in vulnerable groups or with disabilities. As girls are less physically active than boys in most countries and regions, they should be targeted with gender-sensitive approaches and interventions. Although such environmental changes do not guarantee physical activity by residents, they offer them the opportunity.

Relevant WHO resources, tools, publications and initiatives

- Physical activity strategy for the WHO European Region 2016–2025. Copenhagen: WHO Regional Office for Europe; 2016 (<http://www.euro.who.int/en/health-topics/disease-prevention/physical-activity/publications/2016/physical-activity-strategy-for-the-who-european-region-20162025>).
- Factsheets on health-enhancing physical activity in the 28 EU Member States of the WHO European Region. Copenhagen: WHO Regional Office for Europe; 2015 (<http://www.euro.who.int/en/health-topics/disease-prevention/physical-activity/country-work/factsheets-on-health-enhancing-physical-activity-in-the-28-eu-member-states-of-the-who-european-region>).
- Health-enhancing physical activity (HEPA) policy audit tool (PAT) – version 2. Copenhagen: WHO Regional Office for Europe; 2015 (<http://www.euro.who.int/en/health-topics/disease-prevention/physical-activity/publications/2015/health-enhancing-physical-activity-hepa-policy-audit-tool-pat-version-2-2015>).
- Country profiles on nutrition, physical activity and obesity in the 53 WHO European Region Member States. Copenhagen: WHO Regional Office for Europe; 2013 (<http://www.euro.who.int/en/health-topics/disease-prevention/physical-activity/publications/2013/country-profiles-on-nutrition,-physical-activity-and-obesity-in-the-53-who-european-region-member-states.-methodology-and-summary-2013>).
- Global recommendations on physical activity for health. Geneva: World Health Organization; 2010 (http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/).
- HEPA Europe (European network for the promotion of health-enhancing physical activity). Copenhagen: WHO Regional Office for Europe; 2006 (<http://www.euro.who.int/en/health-topics/disease-prevention/physical-activity/activities/hepa-europe>).
- WHO European Healthy Cities Network. Copenhagen: WHO Regional Office for Europe; 1997 (<http://www.euro.who.int/en/health-topics/environment-and-health/urban-health/activities/healthy-cities/who-european-healthy-cities-network>).
- A healthy city is an active city: a physical activity planning guide. Copenhagen: WHO Regional Office for Europe; 2008 (<http://www.euro.who.int/en/health-topics/disease-prevention/physical-activity/publications/2008/healthy-city-is-an-active-city-a-a-physical-activity-planning-guide>).
- Health economic assessment tools (HEAT) for walking and for cycling. Methodology and user guide. Economic assessment of transport infrastructure and policies (2014 update). Copenhagen: WHO Regional Office for Europe; 2014 (<http://www.euro.who.int/en/publications/abstracts/health-economic-assessment-tools-heat-for-walking-and-for-cycling.-methodology-and-user-guide.-economic-assessment-of-transport-infrastructure-and-policies.-2014-update>).

Polish context (status and trends, surveys, relevant policies and their implementation)

In the latest Polish survey of physical activity in school-aged children in 2013 (54), which is based on the HBSC method, 21.5% of adolescents reached the WHO-recommended levels of physical activity for health; boys were significantly more active (28.5%) than girls (15.2%).

The latest HBSC survey (3) reported that less than one third of 11-year-old girls (27%) and boys (34%) reached the recommended level of daily physical activity, and the rate decreased dramatically in adolescents to 11% and 25%, respectively, by the age of 15. At the same time, the proportion of children who watched television for two or more hours on weekdays reached 50% in both girls and boys at age 11 and exceeded 60% at age 15.

In Poland, the 2010 WHO global recommendations on physical activity for health are applied for both for adults and children (54). It is anticipated that national recommendations on physical activity for the general population (based on WHO and European Union recommendations) will be introduced with implementation of the sports development programme for 2020. The main objective of this programme is to create conditions for the development of sports and to promote health-enhancing physical activity. Further specific objectives include creating the conditions and ensuring the availability of opportunities for physical activity at every stage of the life-course; using sports to build social capital; improving organizational and legal conditions for the development of sports; increasing the availability of qualified human resources; and using the potential of sports at competitive level to promote physical activity in general and to promote Poland internationally.

In practice, Polish children generally have preferential access to sports infrastructure, with lower entry and participation fees. To promote physical activity a Government agenda, “Moje boisko – Orlik 2012” [My Sports Field – Orlik 2012], was conducted between 2008 and 2012 (55). The programme was successful and had a reasonable budget allocation. The objective was to construct public, free sports fields with locker rooms and social facilities in every commune of the country. As of 2010, 2479 “Orlik fields” were constructed, which are open to everybody, irrespective of age or physical fitness. In practice, most users are children and adolescents. Furthermore, local actions have created public spaces that cater for physical activities, including bicycle lanes, open-air gyms and swimming pools.



Examples and case studies from Europe and beyond

Finland: Finland has several national policies to promote and facilitate physical activity (56). The Ministry of Social Affairs and Health and the Ministry of Education and Culture have adopted a national strategy entitled “On the move”, to promote physical activity for health and well-being (projected up to the year 2020), which is the principle of a “Sports for All” policy. The aim of the strategy is to introduce physical activity throughout the life-course and particularly to target sedentary activities, changing inactive lifestyles through education and disseminating best practices. Another aim is to encourage organizations, including day-care establishments, schools and workplaces, to give more importance to physical activity. The initiative is based on multisectoral cooperation (56). The aim of the Exercise Act, passed by the Finnish Government in 2015, is to promote top-level sports as well as physical activity for all. Greater municipal responsibility is called for, with cooperation among State administrative bodies and funding

channels. Finland has made recommendations for physical activity, including for preschool-aged and school-aged children. Moreover, early in 2015, the Ministry of Social Affairs and Health launched recommendations to reduce time spent sitting in all age groups (56). National and regional schemes promote active travel to school, and the goals of the national “strategy for walking and cycling 2020” of the Ministry of Transport and Communications include a 20% increase in the number of people cycling and walking, greater motivation for these forms of transport and making transport distances manageable and journeys safer. Greater commitment and cooperation are called for to make legislative changes, with effective monitoring and evaluation to ensure that the strategic guidelines are implemented.

Germany: In certain areas of the country, no cars are allowed on the streets around schools for 30 min in the morning and in the afternoon, when the students arrive and leave, to encourage active commuting. Parents mounted huge resistance to this intervention but agreed on a “testing period” of six months. During that time, the families learnt that the initiative increased their level of daily activity and they finally accepted the intervention (personal communication).

Italy: In the Region of Abruzzo, playgrounds have been marked for free, guided outdoor physical activity for children age 6–11 years during school breaks (57). A marked playground is an area in which children can play freely, guided by colourful shapes painted on the surface. The shapes may be geometrical, symbols (e.g. letters, numbers), images (e.g. animals, maps and road signs) or hand- or footprints (of humans or animals) on which or around children can walk, run or jump.

United Kingdom: In Northern Ireland, the Belfast Healthy Cities approach to creating child-friendly places is based on the UNICEF concept of Child-friendly Cities, which seeks to fulfil children’s rights by helping them to influence decision-making in the city and participate fully in their families, communities and social lives (58). A teaching programme on place and the built environment for 5- to 7-year-old children was prepared as part of the Healthy Cities initiative in collaboration with the Education Authority. In line with the Northern Irish curriculum, the programme is designed to encourage creativity and engage children in practical application of what they have learnt by preparing a proposal for improving some aspect of their neighbourhood. Two teacher training sessions in classroom delivery were conducted by Belfast Healthy Cities staff, and the programme is being tested in 13 primary schools in Belfast. KidsSpace is an innovative, family-friendly event adapted by Belfast Healthy Cities from European initiatives, which changes how city spaces are used. Children are offered a variety of active and creative activities, including arts and crafts, dance and Parkour (an activity involving moving rapidly through an urban environment, negotiating obstacles by running, jumping and climbing). The opportunity for free play is assured by equipment such as giant construction blocks.

Barrio Adentro Deportivo is a social programme of the Government of **Venezuela**, which is facilitated by experts from **Cuba** (59). The project supports physical education in schools and promotes community participation in physical activity and sports to improve quality of life and health. The project involves cross-sectoral work and has resulted in a shift in attitudes toward physical activity by people of all ages. The programme is present in 324 municipalities in Venezuela, with more than 6200 physical education teachers and instructors, physicians, nurses and physiotherapists delivering physical education, fitness, dance, sports and recreation in the community and mass sports.

The **USA** has several good examples of successful strategies to promote use of public space. Local communities have created parks and playgrounds in previously unused areas. Nonprofit organizations, such as the Trust for Public Land, have assisted communities in tasks such as park siting and preparing funding strategies (53). Between 1971 and 2002, the Trust for Public Land acquired 532 properties in US cities, covering 16 493 ha of newly created public land. Legislation has been used to fund park development and maintenance. Proposition K, enacted in 1996 in Los Angeles, generates US\$ 25 million annually for the improvement, construction and maintenance of city parks.

Action area 3. Care before conception and during pregnancy

Gestational weight gain • Guidance on nutrition and sports before, during and after pregnancy • Early diagnosis and proper care of hyperglycaemia and hypertension

The care that a woman receives before, during and after pregnancy has profound implications for the health and development of her child. Therefore, each country should prepare and regularly update nutrition and physical activity guidance for pregnant women that is appropriate to the national cultural and social context. The advice should be consistent throughout the health services by providing adequate training for health professionals based on the latest scientific evidence. Moreover, governments are responsible for creating infrastructure and systems that ensure the earliest possible diagnosis and proper management of frequent complications, such as gestational hyperglycaemia and hypertension. Monitoring and management of gestational weight can reduce the risk for obesity of both the mother and the offspring. Effective measures must be in place to discourage use of tobacco, alcohol, drugs and other toxins.

Rationale and evidence base

There is increasing evidence for the importance of the early life environment in preventing childhood obesity (60). Maternal undernutrition (general or nutrient-specific), maternal obesity, excessive weight gain during pregnancy, maternal hyperglycaemia (including gestational diabetes), smoking and exposure to other toxins can increase the likelihood of obesity and NCDs throughout the life-course (61). Furthermore, poor nutrition before and during pregnancy can induce either short-term or lasting changes in the size, composition and metabolic responsiveness of offspring, and these adaptations to fetal development may become irreversible through metabolic programming and epigenetic mechanisms. Maternal overweight also increases the risk for complications during pregnancy and delivery. Therefore, recent recommendations emphasize that “all women should start pregnancy with a healthy weight”, i.e. with a BMI of 18.5–24.9 kg/m² (62, 63).

As maternal behaviour can have an intergenerational effect, supportive measures and recommendations on nutrition, physical activity and weight gain can protect public health (64). National guidelines can provide consistent information; they should be readily available (in all local languages) and understandable by the population. Governments should support such guidelines with their actions and not consider that action is the responsibility of the individual. For example, social and other policies should be priorities; they should include prenatal strategies to ensure that women start pregnancy at a healthy body weight by eating a healthy diet and being physically active.

Relevant WHO resources, tools, publications and initiatives

- Good maternal nutrition. The best start in life. Copenhagen: WHO Regional Office for Europe; 2016 (<http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/publications/2016/good-maternal-nutrition.-the-best-start-in-life-2016>).
- Global strategy for women’s and children’s health. New York: United Nations; 2010 (http://www.who.int/pmnch/activities/advocacy/fulldocument_globalstrategy/en/).
- Promoting optimal fetal development. Report of a technical consultation. Geneva: World Health Organization; 2006 (<http://www.who.int/nutrition/publications/fetoma-ternal/9241594004/en/>).
- Effective perinatal care (EPC) training package. Second edition. Copenhagen: WHO Regional Office for Europe; 2015 (<http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/activities-and-tools/effective-perinatal-care-epc-training-package>).

- European strategic approach for making pregnancy safer. Copenhagen: WHO Regional Office for Europe; 2008 (<http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/publications/2008/european-strategic-approach-for-making-pregnancy-safer-2008>).
- Making pregnancy safer – tool for assessing the performance of the health system in improving maternal, newborn, child and adolescent health. Copenhagen: WHO Regional Office for Europe; 2009 (<http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/publications/2009/making-pregnancy-safer-tool-for-assessing-the-performance-of-the-health-system-in-improving-maternal,-newborn,-child-and-adolescent-health>).
- Hospital care for mothers and newborn babies quality assessment and improvement tool. Copenhagen: WHO Regional Office for Europe; 2009 (<http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/publications/2014/hospital-care-for-mothers-and-newborn-babies-quality-assessment-and-improvement-tool>).
- Integrated management of pregnancy and childbirth (IMPAC). Copenhagen: WHO Regional Office for Europe (<http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/policy-and-tools/integrated-management-of-pregnancy-and-childbirth-impac>).
- WHO recommendations on antenatal care for a positive pregnancy experience. Geneva: World Health Organization; 2016 (http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/anc-positive-pregnancy-experience/en/).

Polish context (status and trends, surveys, relevant policies and their implementation)

According to a survey among almost 3000 pregnant women in 2013 (65), more than one fifth of Polish women were overweight or obese before conception (16.1% and 6.5%, respectively). An earlier survey showed a similar prevalence (66). It is estimated that gestational diabetes affects 4–12% of pregnant women (67) and gestational hypertension occurs in 15% of pregnancies (68).

Perinatal care and care during delivery and of the newborn are regulated by the Resolution of the Minister of Health of 20 September 2012 (69), which recommends blood pressure and body weight measurements at each visit and blood glucose measurement twice during a pregnancy. In 2015, a further regulation introduced a pregnancy chart, including mandatory recording of body weight by a physician or midwife. The recommended weight gain during pregnancy (Table 1) is in line with that published by the US Institute of Medicine in 2009 (70).

Table 1. Recommended weight gain during pregnancy

Pre-pregnancy body mass index (kg/m ²)	Recommended weight gain in pregnancy
< 18.5	12.5–18
18.5–24.9	11.5–16.0
25.0–30.0	7.0–11.5
> 30	7

Source: Reference (70).

The Polish Gynaecological Society issued dietary recommendations for pregnant women in 2011 (71). This suggests that the daily energy intake should be 2200–2500 kcal/day during pregnancy and 3000 kcal/day in puerperium. The total energy in the daily diet in relation to that before pregnancy may not have to be changed during the first trimester but should be increased by about 300 kcal/day in the second and third trimesters. It is recommended that women increase their intake of sources of complex carbohydrates (whole-grain bread, noodles, rice, vegetables), fat (mainly polyunsaturated fatty acids – linoleic acid, linolenic acid, deoxyhexanoic acid, soybean oil, corn oil, sunflower oil, olive oil, nuts, sea fish) and protein (mainly animal meat and meat products, fish, eggs and dairy products). Grain products

supply proteins of lower nutritional value. There is no justification for restricting salt intake during pregnancy for women without hypertension. Pregnant women should drink a minimum of 2 L of fluids daily, including about 1 L of milk. They should have adequate minerals and vitamins, as fetal distress may occur if the mother has insufficient supplies of folic acid, iodine, iron and zinc. Although these substances are present in common foods, their occurrence varies significantly. For example, in areas of iodine deficiency, iodized salt should be used, and pregnant women in Poland should receive 150–200 µg/day of iodine in tablets. A daily supplement of 25 mg of iron should be added from the 13th week of pregnancy. The additional requirement for calcium may be supplied by an increased intake of milk or dairy products without removal of the whey.

Folic acid preparations at 0.4 mg/day are recommended during preconception, and the dose should be 4 mg/day for women who previously delivered a child with a neural tube defect. Vitamin and mineral supplementation should be individualized and changed according to dietary habits and risk group. There is no scientific evidence that pregnant women require vitamin, mineral and microelement supplements; however, as the demand for these substances increases during the second and third trimesters of pregnancy, it is reasonable to provide multivitamin preparations, iron, iodine and minerals and microelements such as zinc, copper, magnesium, selenium and molybdenum.

The basic level of physical activity should be gradually reduced during an uncomplicated pregnancy, and undertaking new sports activities or increasing physical activity is not recommended (72). Extreme physical activity, hyperthermia (e.g. steam bath or sauna) and activities that pose a high risk for injuries (e.g. skiing, surfing, horse-riding, roller-skating, skating) are also not recommended. Physical activity can help to normalize body weight before pregnancy and to obtain the right weight gain during pregnancy; it should be performed at least three times a week but not for more than 30 min/day. Exercise may be practised longer if it is not performed every day. The main recommended activity is walking. The amount is estimated from the number of steps taken (e.g. with a pedometer). Fewer than 5000 steps per day is considered inadequate physical activity, 5000–7499 per day as little physical activity and more than 10 000 steps per day as a good amount of physical activity. The correct number of steps should not cause the heart rate to rise above 30% of the cardiac reserve. Physical activity should be started with the smallest possible loads, and the length of activity should be extended by 2 min/week (72).

Examples and case studies from Europe and beyond

Albania: The Albanian Ministry of Health has undertaken a review of their maternal, newborn and child health care programme to ensure quality and continuity of care (73). It works with communities to hear and respond to the needs of families, especially women. The approach was pilot-tested in three regions: Shkoder, Korçe and Vlore; the lessons learnt will be used in scaling up the programme in the rest of the country. A major element is improving the quality of care in maternity hospitals. Assessment of maternity and paediatric services in hospitals in the pilot regions showed that the quality of care could be improved by applying evidence-based clinical guidelines and the principles and practice of perinatal care. The approach includes improving the interpersonal aspects of care and ensuring women's satisfaction with the care they receive.

Norway: Norway has national guidelines on antenatal and perinatal care and also on infant nutrition 0–12 months (74). The Recommendation on Physical Activity in 2014 includes pregnant women, who should continue to be or become physically active for at least 150 min/week. Exercise should be moderate and should include strengthening of the pelvic floor muscles before and after delivery.

In July 2009, the European Union and WHO started a two-year project with the Ministry of Health of **Kazakhstan** to support the country's health system by providing good-quality health services for pregnant women, mothers, newborns and children (75). The aim of the project, "Support for maternal and child health in Kazakhstan", was to provide technical support to the Ministry of Health to prepare a strategy for mother and child health, to improve the quality and provision of health services to pregnant women, mothers, newborns and children, and to build capacity and improve the practices of health providers in accordance with international best practices. First, the

Ministry reviewed mother and child health care in Kazakhstan in the period 1999–2008 and prepared a report, which included an analysis of existing policies and strategies and the current state of reproductive and child health (including mortality of mothers, infants and children under five years) and the functioning of the maternal and child health system (resources, financing and service delivery). The report identified barriers (e.g. outdated clinical management of major maternal, neonatal and paediatric diseases and their prevention; irrational use of existing resources due to poor management, little public awareness and weak involvement of families and communities; and the required interventions. It also facilitated discussions among stakeholders. With the systemic measures that have been introduced, maternal mortality has decreased by 1.5 times since 2004 and infant mortality by 1.3 times. The project also had positive effects on health policies and at grassroots level. It contributed to the development and approval of a mother and child health strategy and the action plan of the new national programme on health system development “Salamatty Kazakhstan” for 2011–2015. In southern Kazakhstan, the project has engaged local communities in solving issues in mother and child health jointly with oblast authorities and health care managers.

Action area 4. Early childhood diet and physical activity

Breastfeeding for six months • International Code of Marketing of Breast-milk Substitutes • Complementary foods • Guidance on early childhood nutrition and physical activity

The first years of life ensure that children grow appropriately and develop healthy habits. Effective, feasible policies enable governments to support breastfeeding, through education (i.e. counselling of future parents), baby-friendly health facilities that promote early initiation and continued breastfeeding, and regulatory measures (e.g. paid maternity leave, job protection, return-to-work regulations and breastfeeding breaks and facilities at workplaces), and thus ensure the best start in life. Full incorporation of the International Code of Marketing of Breast-milk Substitutes into national legislation and regulation of advertising of complementary foods are essential. Evidence suggests that providing guidance to parents and caregivers about adequate portion sizes, food groups to be avoided and the availability of a wide variety of healthy foods can improve diets. The aim is to serve only of healthy foods both at home and in formal child care. Food education and physical activity should be incorporated into the curriculum as early as possible.

Rationale and evidence base

Intrauterine life, infancy and the preschool period are considered critical periods, during which the long-term regulation of energy balance may be programmed (76). Exclusive breastfeeding for the first six months of life, followed by the introduction of appropriate complementary foods, are necessary for child health (77). Breastfeeding provides essential, irreplaceable nutrition for a child’s growth and development and also provides the first immunization of the child. Exclusive breastfeeding also provides protection against both obesity and certain NCDs later in life (78). The effect of breastfeeding is dose dependent, which simply means “the more, the better”.

Several physiological mechanisms have been suggested for the link between early nutrition and later obesity (79). One hypothesis is the programming of high serum leptin concentrations relative to fat mass by formula feeding and faster growth in infancy. Another is that obesity is an inflammatory condition and that the interactions between brain growth and development and long-chain polyunsaturated fatty acids, pro-inflammatory cytokines, neurotransmitters and bone morphogenic proteins explain the relation. Better self-regulation of energy intake by breastfed infants might also play a role, as breastfed infants have a lower metabolic rate and less weight gain than formula-fed infants. An often overlooked explanation for the protective effect of breast milk on the development of overweight is the amount and type of other foods used to replace breast milk. Other foods might result in high protein intake, which is convincingly associated with growth rate and higher risks for overweight and obesity (77). Although infant formula previously had a much higher protein content than breast milk, the levels have been decreasing and are now closer to that of breast

milk. This change will probably decrease the difference in protein intake of infants fed breast milk and those fed infant formula. Nevertheless, WHO maintains that breastmilk is the best possible option for infant and young child growth.

Relevant WHO resources, tools, publications and initiatives

- Baby-friendly hospital initiative. Geneva: World Health Organization and UNICEF; 1991 (<http://www.who.int/nutrition/topics/bfhi/en/>).
- The international code of marketing of breast-milk substitutes. Geneva: World Health Organization; 1981 (http://www.who.int/nutrition/publications/code_english.pdf).
- Marketing of breast-milk substitutes: national implementation of the international code. Geneva: World Health Organization; 2016 (http://www.who.int/nutrition/publications/infantfeeding/code_report2016/en/).
- Global nutrition targets 2025: breastfeeding policy brief. Geneva: World Health Organization; 2014 (http://www.who.int/nutrition/publications/globaltargets2025_policybrief_breastfeeding/en/).
- Guiding principles for complementary feeding of the breastfed child. Geneva: World Health Organization; 2001 (http://www.who.int/nutrition/publications/guiding_principles_compfeeding_breastfed.pdf).
- Comprehensive implementation plan on maternal, infant and young child nutrition. Geneva: World Health Organization; 2014 (www.who.int/nutrition/publications/CIP_document/en/).
- Essential nutrition actions: improving maternal, newborn, infant and young child health and nutrition. Geneva: World Health Organization; 2013 (http://apps.who.int/iris/bitstream/10665/84409/1/9789241505550_eng.pdf).

Polish context (status and trends, surveys, relevant policies and their implementation)

The European perinatal health report (64) showed that 86.6% of infants in Poland received exclusive and mixed breastfeeding for the first 48 h after birth. According to results published by the Central Statistical Office in Poland (collected from primary care physicians for 360 195 children delivered in 2013), almost half of children are breastfed by the sixth week after birth (46%) and 42% between the second and the sixth month (80). The rate decreased dramatically by the ninth month (17%) and remained low at the end of the first year (11.9%). The rate of exclusive breastfeeding is approximately half the total prevalence and indicates a high rate of supplementary feeding with infant formula (87).

Breastfeeding has been recommended by public health institutions in Poland. The most up-to-date recommendations were issued in 2014 by the Institute of Mother and Child with the support of the Chief Sanitary Inspectorate (82). Poland has an active national breastfeeding committee, which is running the WHO/UNICEF Baby-friendly Hospitals initiative and its 10 steps for successful breastfeeding. In 2016, over 90 hospitals had been designated as “baby friendly”.

In areas where specific actions have been undertaken, the frequency has improved, such as in Kujawsko-Pomorskie Province (where a programme for the promotion of breastfeeding and “feeding with woman’s formula” was conducted by an “international breastfeeding certified lactation consultant”) and in the city of Gdańsk (where “karmienie naturalne dziecka jako profilaktyka niekorzystnych wpływów środowiska” [natural infant feeding to prevent unfavourable environmental influences] was funded by Pomorskie Province and conducted by a certified lactation consultant).

During the first six weeks after delivery, a midwife must visit newborns and their mothers at least five times, with the first visit within the first 48 h after the return home. During the visits, the midwife is responsible for assessing breastfeeding, identifying problems and potential problems and supporting the mother to breastfeed.

In Poland, regulations have set basic maternity leave to 20 weeks for a singleton birth and to 31 weeks for multiple births. The basic maternity leave is mandatory; however, after the mother has used 14 weeks of leave, she has the right

to give up the remaining 6 weeks, and the unused portion of maternity leave is awarded to the father of the child, on condition that he is employed under a contract. After the mother has used the basic (mandatory) maternity leave, she is entitled to additional leave of 6 weeks in the case of a singleton birth and 8 weeks for a multiple birth. Therefore, the standard maternity leave is up to 26 weeks. During this period, the mother is entitled to 100% of her salary.

Under regulations in force in Poland, every employer is obliged to ensure adequate conditions for breastfeeding employees, who are entitled to breaks in working hours that are included in the working time; a woman breastfeeding one child is entitled to two 30-min breaks each, and an employee breastfeeding more than one child is entitled to two 45-min breaks. A breastfeeding employee may ask to combine breaks. A woman who works no longer than 6 h/day is entitled to one 30-min break if she is breastfeeding one child and to a 45-min break if she is breastfeeding more than one child. A breastfeeding employee who works less than 4 h/day is not entitled to breastfeeding breaks.

Several parallel guidelines are in place for infant and young child feeding: Nutrition of infants and young children issued by the Institute of Mother and Child (2014) (82), Recommendations of the Polish Society of Gastroenterology, Hepatology and Child Nutrition on feeding infants (2015) (83); and the Recommendations for food caterers for the proper nutrition of children in preschools (2011). The Polish Gastroenterology Society recommends introduction of gluten during the fifth or sixth month (83), which is not in accordance with the WHO recommendation for exclusive breastfeeding for the first 6 months of age.

Examples and case studies from Europe and beyond

Austria: “Healthy eating from the start!” (84) is a health promotion programme to support women and families with young children to establish healthy nutritional habits from the start. It provides targeted groups with quality-assured, consistent expert knowledge. The information materials are easy to understand and are available to all. The materials are written in comprehensible style for each target group and translated into several languages. The information materials that can be downloaded in English, Bosnian, Serbian, Croatian and Turkish are: Food chart for pregnant women, Infant nutrition in the first year and Healthy diet for toddlers.

Croatia: Croatia has several policies, regulations and programmes to support breastfeeding (74), including a national breastfeeding promotion and protection programme (2015–2016), an ordinance on the conditions and procedures of acquiring the right to a breastfeeding break and the right to a paid pregnancy or breastfeeding leave. Another ordinance prescribes foods for infants and young children and processed cereal-based foods for infants. There is also an act on birth and parental support and several opportunities for breastfeeding counselling.

Finland: Comprehensive health examinations of families and of preschool- and schoolchildren by a public health nurse or midwife with a physician, during pregnancy and among children were introduced in 2007 (85). The aim was to widen the focus of health examinations and to introduce earlier support and empower families. A working group appointed by the Ministry of Social Affairs and Health conducted extensive family health examinations in 2007–2009, and these were pilot-tested in 2009–2010. The examinations included evaluating the mental and social aspects of the family, including living conditions, income and support networks. In many municipalities, Finland has integrated services for families and children in family centres, which are a single point for preventive services and early support for children and families. Although most of the services available are in the social and health sectors and in early childhood education, experts from other sectors (nongovernmental organizations, schools, culture and sports) also provide services in the centres. The current Government has prioritized setting up family centres across the country, ensuring funding and political commitment. Children and families, the target groups, participated in decisions on the programmes and services to be offered and the methods. Food recommendations for families with children were published in 2016.

Malta: The first national policy on breastfeeding, for the period 2015–2020, was issued in 2015 (86). Its aim is to increase the rate of initiation of breastfeeding at hospital discharge and its exclusive continuation for the first six

months of life. The policy was developed through an extensive process of consultation. The five major areas for action are legislation and policies on the marketing of breast-milk substitutes; encouragement for breastfeeding in hospitals; training of health professionals; strategies for promoting and supporting breastfeeding in the community; and setting targets and implementing and monitoring the policy.

The Municipality of Tepebaşı in **Turkey** reaches children and adolescents with projects and services in community houses and cultural facilities, most of which are located in the suburbs of the city (85). Experts in education, pedagogy, sociology, psychology, art and sports are assigned to these social centres to provide services free of charge to children aged 3–18 years. The project provides support to expectant mothers in order to eliminate inequalities in starting a good life, which is continued by the provision of diapers and milk for children aged 6 months to 2 years and of preschool education for children aged 3–4 years. Since 2009, six education units for children have been set up in the municipality, serving 15% (about 1100) of these children. The average proportion of children attending preschool is 22% in Turkey and 36% in Tepebaşı, and the target for 2019 is 50%.

United Kingdom: The Nurse Family Partnership provides prenatal health advice and support, child development education and life coaching for vulnerable first-time mothers (85). Positive effects of the Nurse Family Partnership for children include fewer injuries and improved emotional and language development. It has also been associated with improvements in health and well-being outcomes for young first-time mothers and their children.

In the **USA**, the Centers for Disease Control and Prevention regularly endorse strategies to support breastfeeding. Their latest guide, published in 2014 (87), includes suggestions for hospitals, birth centres, work sites and communities and lists several programmes, such as the AOL WellBaby Program, which was launched in 2003 and offers support during preconception, pregnancy and lactation, including consultation and rooms where mothers can breastfeed or express milk. The programme serves more than 110 families a year and has reported a return on investment that is three to five times what is spent. Another example is the Breastfeeding-friendly child care project in North Carolina that seeks to improve breastfeeding in child-care centres, especially those serving low-income families. Activities include identifying the knowledge, attitudes and practices of current child-care staff in the State and a self-appraisal tool (“10 steps for breastfeeding-friendly child care”). Plans include the creation of a Breastfeeding-friendly Child Care award.

Action area 5. Health, nutrition and physical activity for school-age children

Health-promoting school environment • Nutrition education in the curriculum • Standards for school meals • Restricting or limiting unhealthy foods and drinks in schools • School fruit schemes • High-quality physical education • Active breaks

Schools are an obvious setting for interventions, as they can reach the vast majority of school-aged children. As schools form children’s behaviour in the longer term, a health-promoting environment should be created by eliminating unhealthy foods and providing easy access to healthy options. Nutrition and health education should be included in the curriculum, if possible, with the establishment of food gardens or kitchens to ensure that schools not only teach children about a healthy lifestyle but also show them how to implement the recommendations. Setting standards for meals and foods sold in schools could reinforce what the children have learnt; nutritional criteria for food service procurement would support the process, and kitchen staff should receive mandatory nutritional education to maximize the impact. High-quality physical education should be introduced, with appropriately trained staff and facilities and preferably provided every day. Infrastructure for active breaks should be available.

Rationale and evidence base

Childhood and adolescence are critical periods, as the physiological requirement for nutrients is higher than energy requirements (88). A diet of high nutritional quality is therefore particularly important. In addition, eating habits, lifestyle and behaviour patterns are developed that may persist throughout adulthood. Increasing attention has been paid to the role of schools in promoting a healthier lifestyle (89). Furthermore, the lessons learnt at school may be taken home and influence the behaviour of the family. Although a universal school food and nutrition policy would be impracticable owing to the wide variation in European education systems, the common elements are the school community, curriculum, environment and nutrition and health services.

What creates a healthy school environment?

- few or no unhealthy options;
- no advertising, sponsorship or promotion of foods HFSS; and
- ready availability of healthy foods.

Many countries in Europe are promoting healthier school food environments (90), as there is evidence that making fruit and vegetables available in schools increases the daily intake. The programmes overcome barriers to access to fruit and vegetables and encourage children to make healthy dietary choices beyond the school gates. Most Member States of the European Union participate in the School Fruit Scheme or have a national scheme to provide free or subsidized fruit and vegetables to children. Restrictions on the availability of soft drinks can reduce consumption both during the school day and total daily consumption; access to water must be ensured. Standards for the foods that are available in schools can reduce consumption of foods HFSS and improve the daily diet of primary schoolchildren by increasing their consumption of more nutritious food. Success requires a comprehensive, whole-of-school approach; for example, the availability of foods HFSS in school shops can undermine the impact of standards for school meals. Education in good nutrition and personal health that includes economical and ecological food preparation, cooking skills and understanding of consumer rights and food labels can ensure that children develop healthy, responsible, sustainable habits.

The messages must be consistent, mutually reinforcing and reflected throughout the curriculum. Educational resources should thus be evaluated carefully by national experts for both scientific and ethical accuracy; this applies especially to materials sponsored by the food industry.

For many children, especially those with fewer advantages, physical education is the only regular form of physical activity.

Children practise progressively less physical activity as they grow older (3). Between the ages of 12 and 18 years, the average amount of regular physical activity decreases by half, although boys are consistently more active and fit than girls. Physical activity should be promoted in schools at all ages, mainly through physical education, which is the entry point for lifelong exercising habits (59). High-quality physical education consists of planned, progressive, inclusive learning as part of the curriculum throughout schooling to form the foundation for lifelong engagement in physical activity and sports. The relevance and quality of the physical education curriculum should be reviewed, especially for a sustained predisposition towards sports competition and performance. The curriculum should be developed in consultation with young people, and its provision should be personally meaningful, socially relevant and in accordance with out-of-school life. Systems and mechanisms should be developed for monitoring and assuring quality in order to promote good practice and accountability in physical education policy-making and implementation. Teacher training is important, particularly for staff responsible for physical education in primary and elementary schools.

Relevant WHO resources, tools, publications and initiatives

- Nutrition-friendly school initiative (NFSI). Geneva: World Health Organization; 2005 (http://www.who.int/nutrition/topics/nutrition_friendly_schools_initiative/en/).
- School environment: policies and current status. Copenhagen: WHO Regional Office for Europe; 2015 (http://www.euro.who.int/data/assets/pdf_file/0009/276624/School-environment-Policies-current-status-en.pdf).
- Food and nutrition policy for schools. Copenhagen: WHO Regional Office for Europe; 2006 (http://www.euro.who.int/data/assets/pdf_file/0019/152218/E89501.pdf).
- Health-promoting schools: a resource for developing indicators. International Planning Committee of the European Network of Health Promoting Schools. Copenhagen: WHO Regional Office for Europe; 2006 (http://www.euro.who.int/data/assets/pdf_file/0017/240344/E89735.pdf).
- Schools for Health in Europe network (SHE). Brussels: European Commission; 2014 (<http://www.schools-for-health.eu/she-network>).
- WHO information series on school health. Geneva: World Health Organization (http://www.who.int/school_youth_health/resources/information_series/en/).
- Improving the lives of children and young people: case studies from Europe. Volume 3. School. Copenhagen: WHO Regional Office for Europe; 2013 (http://www.euro.who.int/data/assets/pdf_file/0017/232505/e96926.pdf).
- Compendium of case studies. Partnerships for the health and well-being of our young and future generations. Working together for better health and well-being. Promoting intersectoral and interagency action for health and well-being in the WHO European Region. Copenhagen: WHO Regional Office for Europe; 2016 (http://www.euro.who.int/data/assets/pdf_file/0011/324947/Compendium-case-studies.pdf).
- Be smart, drink water. A guide for school principals in restricting the sale and marketing of sugary drinks in and around schools. Manila: WHO Regional Office for the Western Pacific; 2016 (http://iris.wpro.who.int/bitstream/handle/10665.1/13218/WPR_2016_DNH_008_eng.pdf).

Polish context (status and trends, surveys, relevant policies and their implementation)

For a number of Polish children, lunch at school is the only warm meal of the day. Therefore, for those in low socio-economic groups, lunch is subsidized by 50% or 100%, in accordance with the Regulation of the Minister of Health of 26 August 2015. However, only 59.4% of primary schools and 33.8% of junior high schools have canteens, and only a small proportion of children (37.5% in primary schools and 23.3% in junior high schools) use them;¹ so, even if a school offers warm meals, most children do not access them. The most frequent reasons given by schools for not providing lunch are lack of premises, the relatively high cost and underfunding of schools. These problems are especially common in schools in rural areas. The reason given by some smaller schools is that few children use canteens for financial reasons. Besides, some schoolchildren evaluate meals served in schools as tasteless and poorly served, with little choice, and they complain that the lunch break is too short to eat a meal properly.

Shops and vending machines are more frequent in schools than canteens (97). Schools can decide whether they wish to have such facilities; shops are found in more than 80% of urban schools and in almost half of rural schools. Beverage vending machines are found in every third school, and sweet and salty snacks can be bought from a vending machine in every sixth school. A small number of shops offer fruit (21%) and vegetables (15.6%), while 70% offer SSBs and fruit juice but no milk or dairy products. The most common foods sold from vending machines (bars, lollipops, chewing-gum and wafers) do not meet the recommendations for healthy nutrition; the least popular products are yoghurts and salads. Mineral water is offered in all school shops; however, juices are more popular. Uncarbonated sweetened beverages can be bought in 88% of schools (97).

¹ The sources of these data are the education information system on 30 September 2014 and the Central Statistical Office on 30 September 2013. The data are estimates only.

For these reasons, a regulation was drawn up on the foodstuffs that could be sold on educational premises and on food standards for caterers, which came into force on 1 September 2015 (92). Because of huge resistance, however, the regulation was amended shortly after its introduction, and the current version allows school canteens to serve sugar-sweetened breakfast cereals, low-quality meat products, white bread and highly processed products containing large amounts of salt, sugar and trans-fatty acids. The regulation forbids the advertising and promotion of foodstuffs that are banned by law on educational premises (93).

Physical education is now mandatory in Poland, so that children at all levels of schooling engage frequently in physical activity.

Four physical education lessons per week are mandatory in Polish primary schools (for pupils aged 10–13 years), each lesson lasting just under 1 h; and pupils in middle and secondary schools (aged 13–19 or 20 years) have 3–4 h of physical education per week (94). For children aged 6–10 years, physical education is integrated into the curriculum, and the balance of subjects and activities is decided by the teacher who delivers the core curriculum. A “Stop abstention from physical education classes” (Stop zwolnieniom z wf) scheme was established in 2013 by the Ministry of Sport and Tourism in order to promote physical activity among schoolchildren and adolescents and to encourage them to attend physical education classes at school (54). The scheme targets children and adolescents, their parents, physical education teachers, schools, local governments and doctors. Nutrition and healthy lifestyle education are usually part of the curriculum, and students also learn to cook and prepare meals in practical and technical classes. “Keep fit!” is a programme of the Chief Sanitary Inspectorate and the Polish Federation of Food Industry, which is part of implementation of the WHO strategy on diet, physical activity and health in Poland (95). The Federation is a member of the National Platform on Diet, Physical Activity and Health, established under the auspices of the National Food and Nutrition Institute in Warsaw. The Federation encourages public–private partnerships for operation of the Platform, to meet social expectations and implement the “Keep fit!” programme.

Poland participates in the European Union School Fruit Scheme (since 2009) and the School Milk Scheme (since 2004). Figures for the 2014–2015 school year show that 1 351 661 children in 11 338 schools benefited from the fruit scheme (96) and 2 539 367 children from the milk scheme (97). Poland is also a member of the Schools for Health in Europe network and the Healthy Eating and Physical Activity in Schools project within the network; however, these initiatives are implemented in a limited number of cities e.g. in Gdansk.

Examples and case studies from Europe and beyond

Denmark: Students with ethnic backgrounds other than Danish in a deprived area of Copenhagen were invited to become involved in establishing a new school canteen (85). The project included food quality, preparation and preferences and the canteen’s aesthetic appearance. The new canteen offers four meals daily, and children participate in the kitchen (with trained professionals) as part of their home economics classes. Meals are partly paid by parents, but families with three or more children receive a discount, and a free school meal entitlement scheme is available for those who are especially disadvantaged. The City of Copenhagen partly funds the initiative and the operating costs of the kitchen.

Finland: Since 1948, free school meals, paid by tax income, have been offered to all pupils at elementary schools (32). University students benefit from subsidized meals if nutritional quality criteria are met. Education is a key element of awareness-raising on health issues in Finland, and compulsory classes in health education and home economics are part of basic education (98). Home economics includes food preparation, meal planning (taking nutritional recommendations into account), interpreting food labels and assessing the reliability of nutrition information. Every year, parents are involved in three comprehensive health check-ups at their children’s schools, where they can raise concerns about health and safety (85). The check-ups provide an opportunity for the schools to engage with parents and for parents to comment on the school setting, from the physical environment to catering. Thus, parents are made aware of the importance of a healthy setting, and the school is held directly accountable. “Finnish schools on

the move” is a national programme funded by the Ministry of Education and Culture for establishing a physically active culture in comprehensive schools (56). Schools devise and implement their own plans. The programme was pilot-tested between 2010 and 2012, and, now, 50% of municipalities and 1000 schools (about 40% of all schools) participate. The methods involve adding more physical activity to school days, for example by increasing pupils’ use of active transport and encouraging physical activity during breaks, and use of physically active learning methods during lessons. The programme includes the “cycling and walking school bus” scheme, launched by the Network of Finnish Cycling Municipalities, in which a group of parents, grandparents or teachers creates an established route to school, so that families can walk or cycle to school together by the agreed route and schedule instead of taking a bus.

France: Vending machines have been forbidden in all schools since September 2005, and Article 6 of France’s Education Law, adopted in 2013, devolves health promotion activities to educational establishments (99). The “Health pathway” programme in the curriculum is enshrined in the law and ensures that interventions are made throughout schooling (85). Interventions start as early as possible, when children begin to develop their knowledge and skills, and ensure and improve students’ well-being at school, reduce social inequalities in health and create a structuring, fulfilling environment. Health education, disease prevention and health protection are included in all school projects. This specific educational approach promotes the acquisition of skills, knowledge and behaviour. The health curriculum involves not only educational professionals but also health professionals, social workers and, more and more, parents. In some regions of France, all schools built in the past 15 years have had to install free water fountains. Gradually, water fountains will also be installed in older schools.

Greece: The ‘E.Y.Z.H.N - National Action for Children’s Health’ is an intervention programme of the Ministry of Education for preventing childhood obesity (57). It includes raising awareness about healthy eating and well-being and ensuring healthy development of children and adolescents by balanced eating habits and physical activity. Various tests and activities are conducted in primary and secondary schools (children aged 4–15 years) in order to increase knowledge and skills with regard to well-being and develop strategies for lifelong healthy behaviour. Each year, the growth rate, dietary habits, physical activity and fitness of children are recorded and evaluated by anthropometrics, sports tests and dietary and physical activity questionnaires, and parents are informed about the growth and development of their children in an annual report. Groups including children, parents, teachers and the scientific community have access to the programme’s website, which provides advice and information on child development, diet and physical activity. Supporting material for health education programmes can be downloaded from the website by teachers.

Hungary: The Act on Health Care, adopted in 2011, provides the basis for comprehensive health promotion at school (85). The aim is to ensure that all children participate in health-promoting activities to improve their physical and mental health and well-being. The elements include a healthy diet, daily physical education, physical activity, physical and mental health development, prevention of behavioural dependence and consumption of products that cause dependence, prevention of school violence, and personal hygiene. Schools design and implement the local health promotion programme in collaboration with the school health service. Adoption of the relevant legislation was the first step to achieving comprehensive health promotion. Mandatory daily physical education in schools was introduced on 1 September 2012, with the provision of funds for extending infrastructure (i.e. building a gym) (57). Since 2014, an objective assessment of physical fitness has been a mandatory part of the physical education curriculum. In September 2015, standards for school meals also became mandatory (57). The Ministry of Human Capacities, which is responsible for health, education, sports, higher education, youth and family, social integration, culture, church and civil society, provides intersectoral mechanisms for joint action, as it brings together often conflicting Government sectors.

Latvia: Two physical education classes per week are mandatory, and schools can apply to their municipality for financial support to add three more optional sports classes. Policies to create a healthier environment in schools include Cabinet regulation (2006), which prohibits the sale of certain foods in educational institutions; standards for school meals in 2012; and, in 2016, regulation of the foods that may be sold in schools and an increased tax on sweetened carbonated drinks (from 2.85€/100 L in 2004 to 7.40€/100 L in 2016) (57).

Malta: A rapid increase in childhood obesity motivated the health and education sectors in Malta to adopt a national whole-of-school policy and strategy to increase physical activity and improve nutrition in schools (85). The policy was launched in January 2015. The aims are to increase opportunities for physical activity and improve nutrition in schools, while allowing schools to propose locally appropriate actions. One initiative has been to increase physical activity among adolescents in secondary schools by offering dance sessions during breaks. The foods sold in school snack shops (“tuck shops”) have been changed. The highest levels of the Government were involved in developing policies and strategy, the education and health sectors sharing the lead, and society was also involved. Parent associations were consulted during development of the policy. The media played an active role in promoting and disseminating information. Ministers are establishing an intersectoral working group and launched events such as a lunch box campaign on television, radio and social media. School initiatives, such as classes on cooking healthy meals, were offered to children and parents. No additional funding was required for the policy and strategy, as each sector used its own budget and staff time. The commitment of people working in the field and at policy level facilitated the initiative. As schools were involved in developing the policies, they had “ownership” of the initiative.

Netherlands: The health and education sectors in the Netherlands have engaged in a long collaboration to start or improve health initiatives at schools throughout the country (85). The aim of the Healthy School Programme was to have 850 schools conducting health promotion by the end of 2016. The specific goal is to improve health literacy to reduce childhood obesity, and 26 public and private partners have formed a working group that offers healthy food in canteens at schools and sports clubs.

Slovakia: The Ministry of Health, in cooperation with the Ministry of Education, Science, Research and Sports, updates recipes for school canteens annually according to nutrition doses recommended in the latest scientific studies (100). Food products containing less salt and sugar are selected, which are produced in accordance with the Government guideline “Principles for increasing the safety and quality of foodstuffs purchased for mass catering”. Schools also provide snacks, which are prepared in the school kitchen to ensure their nutritional value for different age groups. Public health experts regularly provide education on nutrition to school employees who participate in working groups of school canteen workers. Every year, on the occasion of World Food Day, an event known as “Let’s talk about food” is organized for pupils and teachers in basic schools to create and promote collaboration and participation of schools in educating children and adolescents about good food products and good nutritional habits as part of a healthy life style and about the role of food products in protecting health.

Slovenia: The health and education sectors have joined forces to strengthen health promotion and to integrate it into the school curriculum (85). This approach obviates the creation of new modules, which would require additional human and financial resources. Slovenia adopted a School Nutrition Law in 2010 that sets standards for the food provided and available in schools, including a ban on vending machines selling food and drinks on school property. A mandatory breakfast has been established at primary schools and a mandatory lunch during secondary education.

United Kingdom: The National Healthy Schools’ Programme, with a whole-of-school approach, provides a model for partnerships between health services, local authorities and schools, with the aim of sending a coherent, holistic message about the importance of a healthier lifestyle (85). Beyond this initiative, by 2010, every state school in England was expected to offer access to a range of services, including out-of-hours activities, learning and child care, family support, adult education, community access to school facilities and partnership with services such as health care and social care. These services are sometimes openly available but often target children and adults at risk; thus, schools serving deprived communities commonly offer the richest array of services. Typically, groups of schools work together to offer services in partnership with other community groups and agencies. Although schools have considerable flexibility in deciding what is needed in their areas, their decisions form part of local strategies for providing services and tackling disadvantage. A new set of mandatory standards for all food served in schools came into force in January 2015, and a supportive website was set up, with relevant and related information for caterers and for the general public (www.schoolfoodplan.com).

Queensland's (**Australia**) "Smart choices – healthy food and drink supply strategy" was launched in 2005 and has been mandatory in all state schools since 2007 (101). "Smart choices" are school nutrition standards in which foods and drinks are classified as green, amber or red on the basis of their energy, saturated fat, sugar, sodium and fibre contents. Smart choices ensure that "red" foods and drinks (HFSS) are eliminated throughout the school environment (e.g. in tuck shops, vending machines, school events, sponsorship and advertising). More than half of tuck shops and canteens have reported increased or unchanged profits.

"Let me play" builds capacity in **China's** school system to exploit sports experiences in a structured school environment (59). The system was designed to allay the concern of parents that time spent doing sports is time spent away from studies, and the social and academic impacts are measured and reported. Physical education teachers are given a curriculum and 40 h of training in using sports and play to develop life skills, such as confidence, cooperation and creativity. The programme is integrated into classes, and daily free play and inter-school sports competitions are also organized.

In the **Republic of Korea**, a comprehensive approach has been taken to promoting healthy diets in schools (102). Since 2002, strategies have been developed to improve student health, including a national obesity prevention programme and a five-year policy for children and adolescents (2008–2012). In 2006, the School Meals Act was amended to incorporate nutritional education into school curricula. Since 2007, sugary drinks have been banned in schools, and nutrition labelling was mandated for school meals in 2008. A special act on managing the safety of children's dietary life was implemented in 2009, establishing "green food zones" within 200 m of schools, where the sale of high-calorie foods with low nutritional value is prohibited. It is currently operational at over 10 000 schools nationwide. Between 2005 and 2009, students showed an overall decrease in weekly consumption of fast food, instant noodles, confectionery and, most notably, carbonated beverages (from 77.6% to 66.5%).

In the **USA**, the State of California enacted legislation to ban the sale of SSBs on school campuses in 1999; this was fully enacted by 2005 (32). In 2014, Berkeley became the first US city to pass a tax measure, imposing a tax of US\$ 0.01 per ounce (28.3 g) on SSBs. In 2014, California was the first state to consider legislation to require warning labels on SSBs; however, opposition and strong lobbying by the beverage industry prevented implementation.

Action area 6. Weight management

Family-based, multicomponent, lifestyle weight management service • Reimbursement policies • Training and incentives

Family-based, multicomponent (including nutrition, physical activity and psychosocial support), lifestyle weight management services delivered by a multi-professional team with appropriate training and resources should be ensured for all children and young people who are overweight or obese, as part of universal health coverage. Governments should engage all relevant actors and introduce policy measures to support such services, such as reimbursement or training and incentives for health care providers.

Rationale and evidence base

The treatment goals for an overweight or obese child, beyond realistic targets for weight loss, should include prevention of obesity-related co-morbid conditions and avoidance of weight gain as the child grows (103). Multicomponent interventions result in greater weight loss, whereas single-component interventions are more effective in improving targeted behaviour, such as diet or physical activity. Weight management programmes should include behaviour change strategies to increase physical activity and/or decrease inactivity, improve eating habits and the

quality of the child's diet and reduce energy intake. The mental health needs of the child, including those caused by stigmatization and bullying, should be given special attention.

The contribution of parental eating and activity habits and obesity status to their child's overweight is well known (104). Parents may strongly influence a child's health behaviour by modelling, reinforcement and social support for eating and exercise behavior (105). Furthermore, as parents and siblings share a common environment, their personal arrangements may be conducive to an environment of overeating and physical inactivity. Parental change towards healthier habits, modifying the shared family eating and activity environment, supporting healthier behaviour and modelling new behaviour can change the weight of both the child and the parents. Thus, the family must be actively engaged in treatment.

In 2007, Dietz et al. (106) published the theoretical framework for an "obesity care" model, in which self-management is the main element of weight control in paediatric patients. For self-management, health care providers help families to make the changes necessary to manage their child's weight through decision support, self-management support and delivery system design. In the obesity care model, families and patients rather than providers define the problem and its solutions in a participatory approach. Providers, in turn, help families and patients to solve problems and give them access to resources rather than passively educating them or telling them what to do. Patients are more likely to try to control their weight if they find solutions that they consider reasonable and feasible. As long-term changes in behaviour are required, the capacity to adapt to new challenges is an essential aspect of behavioural self-management, and this skill is more likely to be obtained when providers use techniques to help families to increase children's confidence, problem-solving skills and self-directed behaviour.

Given the complexity of obesity, care should be delivered by a multiprofessional team, i.e. by at least two health care specialists collaborating with patients and their families – to the extent decided by each patient – to reach shared goals, with coordinated, high-quality care (107). Care delivered by a multiprofessional team can more effectively meet the expectations of both the health care system and the patient. The expectations are that care is safe, effective, patient centred, timely, efficient and equitable. The team should cover multiple specialties (e.g. paediatrics, endocrinology, psychiatry, diet and training) and professions (e.g. nurses, midwives and physicians).

In universal health coverage, all people and communities can use the promotive, preventive, curative, rehabilitative and palliative health services they need, which are of sufficient quality to be effective, while ensuring that use of the services does not expose the user to financial hardship. Countries can improve health outcomes by increasing coverage of health services and by reducing the burden of payment for health services.

Relevant WHO resources, tools, publications and initiatives

- Tracking universal health coverage: first global monitoring report. Joint WHO/World Bank Group report. Geneva: World Health Organization; 2015 (http://apps.who.int/iris/bitstream/10665/174536/1/978924-1564977_eng.pdf?ua=1).
- Innovative care for chronic conditions: building blocks for action. Geneva: World Health Organization; 2002 (<http://www.who.int/chp/knowledge/publications/iccreport/en/>).

Polish context (status and trends, surveys, relevant policies and their implementation)

Primary care and individual counselling should play a critical role in the management of overweight and obese children; however, in Poland, there is no standardized national system. Because of the absence of a national protocol and standards for care, there are large regional differences in the approach. Although dedicated centres for the

management of obese children would be a solution, such infrastructure is lacking. Therefore, major transformations are required in health service delivery to assist children in weight management and to integrate diet, physical activity and weight management services into primary care.

Examples and case studies from Europe and beyond

Andorra: The aim of the Nereu Programme is to promote change and maintain healthy habits among overweight and obese primary schoolchildren by offering regular opportunities for physical activity, promoting healthy eating and working with families (85). The Programme has an intersectoral approach, involving the health, sports and education sectors, and provides equal opportunities for participation, regardless of sex, income, education or fitness; participation fees are waived for financially insecure families. The Programme is led by the Ministry of Health and promoted in partnership with the Ministry of Education and the Ministry of Sports. The health sector leads and coordinates the Programme and is responsible for managing user data, monitoring and evaluating the pilot phase and making the necessary adjustments. Associació Nereu, a nongovernmental organization, coordinates, monitors and supervises implementation. Dieticians provide counselling. The Ministry of Education manages extracurricular sports activities and reports on progress to all the sectors involved. The State sports secretariat has engaged sports clubs and informed sports facilities about Nereu, and the Andorran School for Training for Sports and Mountain Professions will provide sports counsellors for extracurricular activities. The mass media were involved through a press conference in which the Programme was presented and through an interview on Andorran television. An intersectoral committee was set up involving the Ministry of Health, the Ministry of Education and the Nereu Association, which meets regularly. The Ministry of Education used their intranet to keep internal stakeholders informed, and a Nereu web-based platform was set up for coordination. Nereu offers the benefits of the primary health care system in terms of prevention to reduce obesity and increase physical activity and to reduce the long-term burden of NCDs. Although the Programme is funded primarily from the budget of the Ministry of Health, the Ministry of Education funds physical activity sessions. The involvement of primary care professionals is essential, as they are the first contact of the community with the health care system and they can identify families with children who could benefit from the Programme.

Finland: The KiVa programme is a school-wide approach to decreasing the incidence of bullying and its effects on students' well-being (85). It is based on the idea that the way in which peer bystanders behave when they witness bullying can either perpetuate or end the incident. KiVa is a popular programme: 90% of all public secondary schools in the country implement it. It includes both universal actions, such as lessons and online games mainly to prevent bullying, and indicated actions, to be used when bullying occurs. The actions are targeted to children and adolescents who have been involved in bullying, as either perpetrators or victims, and to classmates who are challenged to support the victim. The aim is to end bullying.

France: A dual action plan, as part of the National Nutrition and Health Programme, was designed to halt the increasing prevalence of obesity among young people (108). Nutritional preventive measures were introduced for the whole population and for specific groups, and screening of children for nutritional problems and obesity management during school medical examinations was improved. A multidisciplinary obesity management approach was recommended with the cooperation of medical and non-medical professionals, which was promoted by the Ministry of Health in the public and private sectors with training, research and monitoring.

Ireland: The Irish Government is pilot-testing a school programme to measure the weight and height of children periodically and to give feedback to overweight children and their parents with leaflets and online resources to promote healthy lifestyle practices; obese children are invited to a supervised lifestyle programme (personal communication).

United Kingdom: The focus of the School Nursing Development Programme is to improve the health of children and adolescents with preventive services and early intervention and support (85). The Programme is part of the Healthy Child Programme for children aged 5–19 years, in recognition of the importance of health and well-being for children

and adolescents and the role of school nurses in providing support during these developing years. The vision of the team was to provide a model of an integrated service that understands and promotes dynamic interactions between children, their families, schools and the community. The new role of the school nurses includes raising awareness about the effect of caring on children and young people, using early identification tools and public health profiling to determine needs, providing expertise with integrated packages of care and working with schools to improve attendance and educational attainment. School nurses also worked in partnership with other agencies and as part of a wider multidisciplinary team to support the health and well-being of school-aged children.

Brazil is a world leader in preventing and managing obesity through policy (109). The main initiatives are regulation of food marketing, the national school meal programme and a remarkably successful breastfeeding programme. The Ministry of Health introduced several programmes for the prevention of obesity and helped municipal governments to implement the policy, providing funding and teams of primary care physicians, nurses and health care workers through the family health programme. The programme provides home visits and obesity prevention services to families in hard-to-reach rural areas and schools, as many poor people, especially in rural areas, often do not have the time or finances to travel to reach preventive services; the programme thus helps families avoid out-of-pocket expenses for travel. The aim is to increase the number of nutritionists and dieticians working outside hospitals in order to ensure that people who cannot get to a hospital receive the necessary information.

In the **USA**, Blue Cross Blue Shield of Massachusetts has partnered with WebMD and the Centers for Disease Control and Prevention to offer continuing medical education for physicians and nurses nationwide to increase their knowledge of the clinical tools and methods available for treating childhood overweight and to teach communication strategies for prevention in at-risk patients (109). WellPoint's Blue Cross of California has collaborated with the Department of Pediatrics in the University of California at Los Angeles to produce a desktop reference tool that gives physicians quick access to the current literature and expert guidelines for evaluating and managing child and adolescent obesity. Kaiser Permanente of northern California has a paediatric physician training programme to make clinicians more effective in assessing and managing childhood overweight. The programme includes use of BMI to assess overweight and prepares health professionals to discuss the results with parents, assess their readiness to change and promote goal-setting through motivational interviews. A number of US health plans have created obesity tool kits for use in clinics. Highmark, the largest health plan in Pennsylvania, distributed such a tool kit to 3500 physicians in the state, providing recommended protocols for the early identification and treatment of overweight. The kit also includes a BMI calculator and growth charts for physicians and clinical staff, nutrition and physical activity self-education materials for parents and children and posters to raise parents' awareness of childhood overweight. Blue Cross of California disseminates a tool kit to clinicians and supplements it with statewide training and certification workshops for paediatric and primary care centres. The workshops are designed to increase awareness of the growing obesity epidemic, teach calculation of BMI and encourage use of evidence-based materials for educating patients and parents. Some plans have initiated reimbursement strategies and other types of financial incentives. For example, in 2005, Blue Cross and Blue Shield of North Carolina began to pay providers with a distinct billing code for up to four obesity-related visits per year for children and adults. The allowable services include assessment and treatment of overweight with referral to community weight-loss programmes and nutritional counselling by registered dieticians. In Pennsylvania, Highmark added the determination of BMI and screening for diseases related to overweight to its reimbursement schedule (at a cost of a few cents per member per year), and both Minneapolis HealthPartners and Blue Cross Blue Shield of Massachusetts have initiated programmes to reward clinical groups for determining the BMI of paediatric and adult patients and for counselling and care of overweight.

Action area 7. Monitoring and evaluation

Monitor the nutritional status and dietary and physical activity behaviour of children in every age group • Monitor the nutritional quality of foods and meals provided in preschools and schools • Increase screening in schools to identify overweight and obese children • Establish annual monitoring of objectively measured physical fitness and physical activity of students as a part of sports curricula • Ensure process and impact evaluation of policy actions • Establish a national surveillance system

Data on the nutritional status and dietary and physical activity of children in every age group are crucial for designing targeted actions and for monitoring progress in counteracting unhealthy diets, physical inactivity and obesity. Regular assessments should thus be a priority. Monitoring and evaluation of policy actions is useful to assess impact and inform future steps. A national surveillance system should be established, with recommended indicators, disaggregated by socioeconomic status and other variables, reported routinely. Social inequality in obesity should be assessed and the effects of actions evaluated. Monitoring systems should address specific needs, and monitoring methods should promote high-quality data, validity and reliability and be standardized to allow international and national comparisons. National participation in international networks should be supported, with standardized monitoring and data collection methods.

Rationale and evidence base

Reliable, timely information is required as a basis for national and regional policy-making (110). The Action plan for implementation of the European strategy for the prevention and control of noncommunicable diseases 2012–2016 (111) notes that “surveillance data are crucial for developing targeted action, monitoring progress and success in counteracting NCDs, and informing and evaluating strategies and policies” and “action to this end should be tailored to the needs of countries and coordinated at the international level through common protocols, indicator definitions, analytical tools and databases that allow for international trend comparisons”. It also states that “the monitoring and evaluation of NCDs and [their] risk factors have to be integrated into general health information systems to support linkages and sustainability and to allow longer-term measurement of impact of the impact, and distribution of the impact, of interventions on NCDs”.

Relevant WHO resources, tools, publications and initiatives

- Childhood obesity surveillance initiative (COSI). Copenhagen: WHO Regional Office for Europe (<http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/activities/monitoring-and-surveillance/who-european-childhood-obesity-surveillance-initiative-cosi>).
- Nutrition, obesity and physical activity database (NOPA). Copenhagen: WHO Regional Office for Europe (<http://data.euro.who.int/nopa/>).
- Health behaviour in school-aged children (HBSC). Fife (<http://www.hbsc.org/>).
- Global school-based student health survey (GSHS). Geneva: World Health Organization (<http://www.who.int/chp/gshs/en/>).
- Integrated surveillance of noncommunicable diseases (iNCD). A European Union–WHO project. Copenhagen: WHO Regional Office for Europe; 2015 (http://ec.europa.eu/health/sites/health/files/indicators/docs/incd_en.pdf).

Polish context (status and trends, surveys, relevant policies and their implementation)

Before 2016, there were no national surveys in which objective measures were used to assess weight, height or the prevalence of obesity. At the end of 2015, Poland decided to join the fourth round of the WHO COSI, coordinated by the Institute of Mother and Child. After pilot-testing in two schools in Warsaw in February and March 2016, data on children aged 8.0–8.9 years were collected from 135 schools in nine regions. Height and weight were measured, and data were collected on blood pressure, the lifestyle of the children and families and environmental determinants of obesity. The results will be available in the second half of 2017.

The Polish health monitoring and surveillance system for adults, established under the leadership of the Ministry of Sport and Tourism in 2014, includes population-based measurements of physical activity (based on the international physical activity questionnaire) (54). Information is collected twice a year on the frequency, duration and intensity of physical activity, including cycling and walking. The data can be disaggregated by age and socioeconomic status. The current monitoring system includes only physical activity during leisure time and transport; other measures of activity and inactivity, such as physical activity during working hours and sedentary behaviour, will be introduced in future research.

Examples and case studies from Europe and beyond

Finland: In 2010, the Ministry of Education and Culture and the Finnish National Board of Education commissioned the Faculty of Sports at the University of Jyväskylä to develop a national monitoring system for physical functional capacity (56). The “Move!” monitoring system was designed in cooperation with the Ministry of Social Affairs and Health, the National Institute for Health and Welfare and the Trade Union of Education in Finland. The system reports on children and adolescents together, targeting pupils in grades 5 and 8 (children aged 11–12 and 14–15 years), comprising eight types of measurement that provide information on pupils’ physical functional capacity, including endurance, strength, speed, mobility, balance and basic motor skills. Pupils, their guardians, school health care professionals and teachers receive feedback on the pupils’ physical functional capacity, its association with their well-being and advice on improving it.

Italy: In 2008, the Italian Ministry of Health established the surveillance system “OKkio alla salute” to monitor childhood obesity and associated risk factors, which guides health promotion and disease prevention interventions, including at the local level (112). The system is coordinated by the National Institute of Health, in close collaboration with the Ministry of Education, University and Research, the National Research Institute for Food and Nutrition and the Italian regions. Data are collected regularly in primary schools by local health units, resulting in nationally and regionally representative data on more than 45 000 children in third grade (aged 8–9 years) and on their parents. The information collected includes the children’s weight and height (measured according to the WHO protocol and with standardized equipment), dietary habits and physical activity. The results and general advice are communicated through a leaflet for parents, a kit for teachers and a poster for paediatricians, which are produced and distributed regularly.

Slovenia: The SLOfit system, organized and managed by the Faculty of Sports, University of Ljubljana, is a monitoring system embedded in the education system (713). The data collected, which include the results of eight physical fitness tests and measurements of body height, body weight and skin folds, provide an integrated database on body weight, body height and physical fitness in children and adolescents in Slovenia.

United Kingdom: In 2010, the Government evaluated the effect of restricting food advertising to children. The Government agency responsible for broadcast communications, Ofcom, monitored pre- and post-regulation exposure to television advertising of foods HFSS during the times at which the restrictions were applicable and found that children saw 37% less advertising for food HFSS in 2009 than in 2005 (114). England has three main sources of data on child obesity: the annual Health Survey for England (115), which has covered children aged 2–15 years since 1995 and children under 2 since 2002; the annual National Child Measurement Programme (116), for children in reception year and year 6 in maintained schools since 2005, providing the most robust source of data on childhood obesity in England; and the Quality and Outcomes Framework (117), a voluntary annual reward and incentive programme for all general practitioner surgeries in England, which started a clinical register on obesity in 2006–2007 for patients aged 16 years and over with a BMI ≥ 30 kg/m².

WHO Europe Childhood Obesity Surveillance Initiative: The establishment of COSI in 2007 initiated regular population-based monitoring of overweight and obesity in primary-school children in the WHO European Region (4); it is currently now applied in 36 Member States of the WHO European Region, with financial support from the European Commission to participating EU Member States. The aim of the Initiative is to measure routinely trends in overweight and obesity in primary-school children (6–9 years) in order to determine the progress of the epidemic in this population group and to permit inter-country comparisons. COSI is an example of good inter-country practice in the European Region. The monitoring system is integrated (it includes several countries, and participation is increasing), allows disaggregation (by sex), is standardized and is applicable to relevant policy. The monitoring results have been disseminated through publications in peer-reviewed journals.

In the School Nutrition Dietary Assessment study in the **USA**, data are collected at district, school and sometimes student levels on the nutritional quality of meals offered, served and consumed in public schools that participate in the national school lunch programme and the school breakfast programme (118). The study also collects data on school policies and the characteristics of programme operations. Data collection began in 1991–1992 with data at student level. Data have since been collected for the school years 1998–1999, 2004–2005 (with student data) and 2009–2010. Data files for the last two rounds are publicly available from the study sponsor. Data for school year 2014–2015 will be collected within the School Nutrition and Meal Cost Study, which includes data on school food authorities, schools and students and will combine the goals of the School Nutrition Dietary Assessments with those of studies of school meal costs. The Study will allow researchers to assess the relations among meal quality, meal costs, student participation and students' dietary intake in a national sample.

Suggested policy options for addressing childhood obesity in Poland

Key components of effective policies

1. Applicability to the national context

In designing a policy intervention, not only its effectiveness and cost-effectiveness but also its applicability should be considered. The European Region is diverse, and countries have different starting-points for implementing actions in their governance structures, cultural constructs, economic and social situations and geographical settings. Therefore, a thorough context assessment, based on all relevant country-specific information, should precede objective-setting. The first activity should be to map the regulatory landscape, so that the strengths and gaps in existing legislation and other frameworks are clear. Interventions should ideally be integrated into existing systems in order to improve cost-efficiency.

A problem must be well studied before a solution can be found.

2. Inclusive approach

A broad coalition of stakeholders (children, parents, caregivers, teachers, civil society, academic institutions and the private sector) should be involved from the beginning of the process. Ensuring accountability and transparency will increase political “buy-in” and help in counteracting and dealing with challenges from certain stakeholders. We suggest that dialogue be initiated with stakeholders as soon as possible and that they be involved throughout the process.

3. Intersectoral collaboration

The prevalence of obesity cannot be reduced without addressing the underlying social determinants of health and therefore engaging sectors beyond health. Overweight has numerous social, economic, environmental, political, cultural and commercial determinants. Therefore, long-term collaboration and coordination with different policy sectors is required. Without concerted effort and shared responsibility, interventions will have only a limited impact. Capturing the full potential requires the engagement of as many sectors as possible. Ideally, countries should establish a formal mechanism for intersectoral cooperation among the social, agricultural, financial, health and education sectors. This will facilitate joint planning and budgeting, even if shared objectives are difficult to find. A cross-sectoral working group, with strong governance, can ensure policy coherence and consistent communication to the general public.

4. Equity

Children’s health inequalities exist throughout the European Region, both within and between countries. In planning, implementing and evaluating an action, equitable access should be ensured, with particular attention to disadvantaged groups.

5. Sufficient human and financial resources

For full implementation of policies, capacity development should be an integral part of planning. Lack of availability of well-educated human resources should not be a limitation. Furthermore, a secure, predictable budget over the long term is essential to sustain programme delivery. Preventing and tackling childhood obesity is an investment for the future.

6. Monitoring

Assessment of the impact any policy measure should be planned early, as baseline data collection, assembling and interpretation will be required. Evaluating not only the outcome but also the process helps to demonstrate the effectiveness and offers insights for improvement.

Policy options for Poland

For each of the seven areas of action, we have made context-specific suggestions, in a two-step approach (Table 2). Step 1 is a “softer” policy measure, offering solutions that will require fewer resources and less significant changes to the current system. The Step 2 options involve introduction of a much stricter intervention, which will require more effort and/or investment but would probably have a greater effect on public health. The policy options listed complement each other and, if implemented in combination, would result in better health outcomes. No single action can solve the complex issue of childhood obesity, and measures should be introduced in parallel.

Table 2. Policy options for reducing the prevalence of childhood obesity

Action area	Step 1	Step 2
1. Intake of healthy foods	Restrict the availability of SSBs on the premises of educational establishments.	Apply a tax on SSBs to disincentivise consumption, particularly among children and adolescents.
2. Physical activity	Develop schemes for active breaks between school lessons.	Install and maintain infrastructure in and around schools to promote physical activity, and encourage active travel to school.
3. Care before conception and during pregnancy	Disseminate and promote national recommendations for pregnant women.	Improve care during pregnancy by building the capacity of health professionals.
4. Early childhood	Scale up and implement programmes to support breastfeeding.	Create incentives for breastfeeding, and support workplaces that encourage working mothers to breastfeed.
5. School-age children	Build the capacity of school kitchen staff, and create a healthy school food environment.	Change the school curriculum.
6. Weight management	Ensure specific care for overweight children by providing training and educating paediatricians.	Set up an incentive system that covers the costs of counselling and treatment of obese children.
7. Monitoring and evaluation	Develop and provide standardized training for school nurses in collecting data and digitalizing records.	Maintain and integrate a national surveillance system on childhood obesity.

The main policy options identified from the synthesis of evidence and within the national context are listed below.

Action area 1

Step 1. Restrict the availability of SSBs on the premises of educational establishments.

The intake of soft drinks by children and adolescents is a matter of concern in Poland (3). One fifth of 11-year-old girls and one fourth of 11-year-old boys drink soft drinks daily. Regular intake is associated with greater risks for obesity and chronic diseases and directly affects dental health by providing excessive sugar. Consumption is correlated with the availability of the products, and the prevalence of childhood obesity cannot be reduced without modifying the obesogenic environment.

A comprehensive, preferably statutory, restriction should be imposed on the availability of SSBs in preschools and schools, with Government-led, transparent monitoring of compliance and adequate sanctions for noncompliance. For a better outcome, the marketing of SSBs in schools and at school events should be banned (including advertising, promotion and sponsorship).

Step 2. Tax SSBs.

Increase the price of SSBs by a minimum of 10–20% by applying a tax or levy. There is emerging evidence from other countries that this measure is effective (33). Collectively, the evidence suggests that taxes applied to SSBs influence what consumers buy and shifts consumption patterns in the desired direction, thus supporting healthier diets and potentially improving health outcomes in the longer run.

Action area 2

Step 1. Implement schemes for active breaks between school lessons.

The proportion of Polish children who practise physical activity at the recommended level is very low, while the time spent in sedentary behaviour is worryingly high. As both a low level of physical activity and a high level of sedentary behaviour are independent risk factors for chronic diseases, intervention in this area should be a high priority. Furthermore, healthy, active students have better academic performance.

Students need access to physical activity throughout the school day in order to fulfil the recommendations. Schools can integrate physical activity into the school day by scheduling active breaks, including physical activities during academic classes and creating opportunities for students to be active between classes.

To increase the physical activity of children, mandatory 3–5-min active breaks could be introduced between school lessons.

Step 2. Install and maintain infrastructure in and around schools to promote physical activity, and encourage active travel to school.

The greatest opportunity for incidental physical activity by children is active commuting to and from school. In order to achieve more active commuting, the safety concerns of parents and caregivers and of children should be addressed carefully. Other risks that limit bicycling or walking to and from school should also be evaluated and addressed appropriately.

Create and maintain playgrounds, parks and other green spaces in communities and also the means of access, particularly near schools, to encourage after-school activity. Prioritize resources for low-income neighbourhoods to ensure that all children and adolescents have access to safe, desirable opportunities for play and active lifestyles. Funding should also be prioritized for specific evidence-based goals, such as building sidewalks in new and existing neighbourhoods to create safe corridors to schools.

Action area 3

Step 1. Disseminate and promote national recommendations for pregnant women.

Overweight affects a relatively high percentage of Polish women before conception and during and after pregnancy. As recommendations have been made about both weight gain and proper nutrition and physical activity during pregnancy, the problem is likely to be inadequate dissemination of this information to the target group in a timely, consistent manner.

Prepare consistent online and printed materials that are easy to read and understood by pregnant women regardless of their socioeconomic status and (health) literacy, and disseminate them widely.

Step 2. Improve care during pregnancy by building the capacity of health professionals.

Counselling on healthy eating and keeping physically active from the beginning of pregnancy is recommended so that the women stay healthy and prevent excessive weight gain. Many pregnant women do not, however, receive comprehensive, personalized information at their first visit for routine care, due partly to lack of training of health professionals. Building capacity is of growing importance.

The development of training materials for medical professionals involved in pregnancy management is a low-cost initiative that can improve care. Capacity-building should be led by the relevant professional associations, as it is most successful when associations take full ownership and responsibility for their evolution and integrate organizational capacity development within an overall strategy.

Action area 4

Step 1. Scale up and implement programmes to support breastfeeding.

The aim of breastfeeding policies is to create supportive environments and enhance the appropriate culture to facilitate individual women's decisions to breastfeed. Although breastfeeding is frequently initiated within the first 48 h after birth in Poland and the rate is almost 90%, the rate falls significantly by the sixth week and decreases further over time. In areas in which initiatives were designed and implemented to promote breastfeeding, the programmes were found to improve the situation.

Collect, study and choose evidence-based, cost-effective interventions to increase the rate of breastfeeding, and allocate reasonable resources for scaling up. Scaling up will require systematic planning, taking into account the capacity of the implementing organizations, the characteristics of the environment in which scaling up is done and the available resources.

Step 2. Create incentives for breastfeeding, and support workplaces that encourage working mothers to breastfeed.

Mothers are one of the fastest growing segments of the labour force. Working outside the home is associated with a shorter duration of breastfeeding, and the intention to work full time is significantly associated with a lower rate of initiation and a shorter duration of breastfeeding. Women with low incomes are more likely to return to work earlier, further increasing the inequity in childhood obesity. In view of the substantial presence of mothers in the work force, lactation support should be provided in workplaces.

Support for breastfeeding in the workplace can have several types of benefit and services for employees, including teaching employees about breastfeeding. It should include providing a designated, private space for breastfeeding or expressing milk; allowing flexible scheduling to permit milk expression during work; giving mothers options for returning to work, such as teleworking, part-time work and extended maternity leave; providing on-site or near-site child care; providing high-quality breast pumps; and offering professional lactation management services and support.

Action area 5

Step 1. Build the capacity of school kitchen staff, and create a healthy school food environment.

A compulsory course should be designed for all staff working in all aspects of school meals (from preparation to serving). It should cover school food standards and their implementation in practice (e.g. menu planning, recipes), with particular attention to age-specific portion sizes.

A supportive website should be set up with all relevant and related information (e.g. recipe hub, sample weekly menus for each season, course materials).

Step 2. Change the school curriculum.

Although children in some classes learn about healthy nutrition and lifestyle, there is no standard curriculum, and not all students are covered. Education should also address healthy body weight and body image, as this is a particular concern among Polish adolescents.

Prepare legislation to ensure that nutrition and health education are mandatory in curricula for all levels of schooling and to ensure access for all pupils, including those with disabilities and those in minority groups.

Provide teachers with the necessary resources and training to adapt curricula.

Action area 6

Step 1. Ensure specific care for overweight children by training and educating paediatricians.

Existing guidelines and national protocols should be updated, as the absence of clear algorithms has been identified as one of the greatest obstacles to implementation. Conduct standardized training programmes and courses for building skills and provide up-to-date knowledge in obesity management and care for paediatricians. Courses for specialist certification in obesity professional education could serve as models. Professional associations in the fields of nutrition, physical activity and obesity are potential sources of knowledge and work in this area and could assist in implementation and dissemination, as long as due attention is given to managing and avoiding conflicts of interest (e.g. from industry funding).

As a first step, a module on obesity management and care should be developed that can be integrated into existing university courses.

Step 2. Set up an incentive system that covers the costs of counselling and treating obese children.

In a health system with universal public insurance, as in Poland, a well-planned incentive system can help to reduce the rate of obesity by improving access to high-quality care in order to reach a healthy weight. Lack of reimbursement should not be a barrier to adequate weight management in primary care.

Action area 7

Step 1. Develop and provide standardized training for school nurses in collecting data and digitalizing records.

Set criteria for school nurses that include the expectations, professional responsibilities, knowledge and skills required for high-quality data collection.

Ensure that accredited training programmes are delivered to all those who participate in data collection. Review the current curriculum for school nurses.

Step 2. Maintain and integrate a national surveillance system on childhood obesity.

A surveillance system to monitor the prevalence of childhood obesity and its determinants that is based on objectively measured data is the cornerstone of adequate decision-making and programme planning.

Building a surveillance system requires investment of financial, material and human resources. To ensure efficient use of resources, careful planning is essential. Needs and priorities are best identified in a transparent assessment of existing systems and capacities.

Joining the WHO COSI ensures international comparability and high-quality data collection. To sustain the surveillance system, consider integrating it into existing structures, such as the data collection system coordinated by the Central Statistical Office (i.e. Regulation of the Ministry of Health of 9 November 2015 regarding types, scope and templates of medical documentation and method of processing).

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Annex 1. Guiding questions for evaluating the country context in order to implement the proposed policy options

Action area 1. Promote intake of healthy foods, and limit the intake of foods HFSS.

- Are there data about the dietary habits of children (under 5 years, school age, adolescents)? Particularly about the known risk factors for childhood obesity, such as skipping breakfast, number of meals, fruit and vegetable intake and consumption of SSBs?
- Are there data about the energy and nutrient intake of children (under 5 years, school age, adolescents)? Particularly about intake of fat, saturated fat, salt and sugar?
- Are dietary habits or nutrient intake assessed regularly for any of the three age groups? If yes, is there any interesting trend?
- Are there data about nutrition literacy in children? Or in adults?
- Is there a national dietary guideline for children? Is it aggregated by age? If yes, please list the main recommendations.
- Is marketing or advertising of HFSS foods to children regulated? Is it mandatory or voluntary? What is the targeted age range?
- Do you have any plans to address digital marketing?
- Is there a price policy (taxation or subsidies) targeting HFSS foods, particularly SSBs?
- Please specify the regulation on labelling!
- Is there a national or regional "sign-posting" scheme to help consumers identify healthier choices (like the "keyhole" and "traffic light" systems)?
- Is there a national intervention to increase the access of disadvantaged groups to healthy foods (e.g. European Union school fruit scheme or school milk scheme)?

Action area 2. Promote physical activity, and reduce sedentary behaviour.

- Are there data about physical activity in children (under 5 years, school age, adolescents)? Is it measured regularly? If yes, is there any trend?
- Are there data from objectively measured physical fitness in children (under 5 years, school age, adolescents)? Is it regularly measured? If yes, do you see any trend?
- Are there data about the time children (under 5 years, school age, adolescents) spend looking at screens?
- Are there data about the time children (under 5 years, school age, adolescents) spend sleeping?
- Is there any guidance about the physical activity and sedentary behaviour of children? What is the recommended level of physical activity for children (under 5 years, school age, adolescents)? Are there data about the percentage of children who attain the recommended level of physical activity?
- Is physical education mandatory in schools? If yes, how many hours are required per week?
- Is there a policy to facilitate physical activity in childhood (e.g. urban planning, bicycle lanes, free or low-cost entrance to sport clubs, outside parks, playgrounds or fitness equipment)?

Action area 3. Care before conception and during pregnancy

- Are there data about the prevalence of overweight and obesity at the time of conception? Are there data about the prevalence of overweight and obesity during pregnancy?
- Are there data about the prevalence of gestational diabetes and hypertension? Are there recommendations for a healthy weight before conception?
- Is there a recommendation for gestational weight gain?
- Are weight, blood pressure and blood glucose measured regularly as part of pregnancy care? What are the main dietary recommendations for pregnant women (e.g. additional energy intake, fruit and vegetables, cereals, meat, fish, water, vitamin supplementation)? Is there guidance about physical activity during pregnancy?

Action area 4. Diet and physical activity during early childhood

- What is the average length of breastfeeding? What proportion of mothers breastfeed for 4–6 months and for 1 year?
- How long is the maternity leave? How much money do mothers receive during maternity leave (as a percentage of their salary)?
- Can mothers breastfeed in the workplace? Is this provided for by law?
- Is there a recommendation for breastfeeding? If yes, is it about initiation? Is there any regulation of the marketing of complementary foods or breast-milk substitutes?
- Is there a regular survey of breastfeeding?
- Is there a survey of the prevalence of obesity in children under 5 years? If yes, what is the prevalence in this age group? Is there a trend over the past 10 years?
- Is there a recommendation for early childhood nutrition? Is there guidance for physical activity in early childhood?
- Are there data about the dietary habits, nutritional intake, physical activity, screen time or sleeping time of children under 5 years? If yes, please summarize the main findings.
- Are there quality standards for foods sold and meals served in preschools? Are they mandatory?

Action area 5. Health, nutrition and physical activity for school-age children

- Are there data about the nutritional environment in schools (i.e. vending machines, canteens, availability of free water, advertising of foods, partnerships with the private sector, quality of meals served, sufficient time for eating)? Is it assessed regularly? If yes, please summarize the main findings and trends.
- Are free meals provided in schools (snacks, breakfast, lunch)?
- Are there quality standards for foods sold and meals served in schools? Are they mandatory?
- Is there mandatory nutrition education for school kitchen staff?
- Are there vending machines on school premises? If yes, is the food sold regulated? Are there shops on school premises? If yes, is the food sold regulated?
- Is there a regulatory measure to restrict marketing of unhealthy foods in schools?
- Is education on nutrition or a healthy lifestyle part of the school curriculum? Is a class in food preparation part of the curriculum?
- Are there school gardens or children's kitchens?
- Do schools participate in a fruit or milk programme? Are there similar programmes regionally or nationally?

Action area 6. Weight management

- Is there infrastructure for the diagnosis of childhood obesity? Are there approaches for early identification of overweight or obesity (including severe) in children?
- Is there infrastructure for the referral and treatment of childhood obesity? Who covers the costs of treatment? Is universal access ensured?
- Is there a national guideline for the diagnosis and treatment of childhood obesity?
- Is the prevention and treatment of childhood obesity addressed or incorporated in a national policy or strategy? If yes, please elaborate.

Action area 7. Monitoring and evaluation

- What is the prevalence of overweight and obesity in children (under 5 years, school age, adolescents)?
- Is there a regular survey of the prevalence of childhood obesity? If yes, is there any trend?
- Is there a system for monitoring the prevalence of obesity, nutrition, physical activity and sedentary behaviour in children?
- Is there a system for monitoring the implementation and impact of relevant policies or interventions?
- Is there a repository for the composition of unpackaged foods? Is there a food composition table showing the levels of nutritional risk factors such as *trans*-fatty acids, salt or sugar, particularly for foods frequently consumed by children?

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