Public health interventions tackling childhood obesity at European level: A literature review

Maria K. Chrissini a, Demosthenes B. Panagiotakos b,*,1

a Department of Nutrition & Dietetics, School of Health Sciences and Education, Harokopio University, Athens, Greece
b Medical Research Methods & Epidemiology, Department of Nutrition & Dietetics, School of Health Sciences and Education, Harokopio University, Athens, Greece

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ABSTRACT

Childhood obesity pandemic, a form of malnutrition including undernutrition, and other food-regime associated risks, has universally been on the rise during the chronic period of the past 4–5 decades and is now acknowledged as one of the most “toxic fuel” accounting for poor health in the majority of countries. In order to find remedies to heal this alarming issue, a corpus of European interventions have been brought to light in the recent years. Since the vague influence and effectiveness of these measures/policies is to be further identified, their evaluation screening is underlined as a pivotal necessity. Within this framework this paper aims to critically report on the development and evaluation of the implementation of the European Union, World Health Organization Regional Office for Europe, and European Union countries’ national public health policy interventions and action plans in the fight against childhood obesity. Thus, this is a narrative review synthesizing the results -following a qualitative interpretation and analysis- of recent scientific epidemiological research and review studies evidence concerning European public health interventions tackling childhood obesity, through computer-assisted literature search -via PubMed, Scopus, and Google Scholar- scientific databases. According to the literature data, it is concluded that despite the unprecedented public health challenge of addressing childhood obesity, the extent to which related European policies and programs targeting healthy nutrition, increased physical activity, and healthy lifestyle ethos are truly efficacious is still under inquiry.

1. Introduction

1.1. Problem definition

Rising rates of childhood obesity is indisputably an extremely “hot” public health debate issue due to its acknowledged burden of short- and long-term health and socioeconomic costs of non-communicable diseases (NCDs) (Williams et al., 2020; Williams and Suchdev, 2017), or mental health illness expressed with depression symptoms (Quek et al., 2017). Numerous studies, conducted all over the world (Tran et al., 2019a; Tran et al., 2019b), focus on the research landscapes in the intervention and treatment of children with overweight and obesity, such as pharmacotherapeutic, family-based, school-based, or community-based interventions.

Narrowing our spectrum in the European context, the last two decades have seen an exponential growth and a parallel intensification of European public health policy research and interventions aimed at the drain of lifestyle-related diseases (Kovacs et al., 2020; Kovacs et al., 2018). It is well documented that childhood overweight/obesity remains a key health problem unequally distributed across countries and populations in the European Union (Nittari et al., 2019), with over 398,000 children aged 6–9 years facing severe obesity in 2019 (Spinelli et al., 2021). According to recent (2017) WHO findings ((NCD-RisC, 2017) early life obesity occurrence inside the European framework is either swiftly growing or stabilizing at a very high level in almost all European countries, mostly affecting groups of low socioeconomic status, which relevantly cause huge economic and social costs for individuals and society in general (WHO, 2016).

Abbreviations: OW&OB, Overweight & Obesity; COSI, WHO European Childhood Obesity Surveillance Initiative; HFSS, High in saturated Fat, Sugar, and Salt; NCDs, Non-Communicable Diseases; SFP, School Food Policy/Policies; PA, Physical Activity.

* Corresponding author at: Medical Research Methods & Epidemiology, Department of Nutrition & Dietetics, School of Health Sciences and Education, Harokopio University, 17671 Kallithea, Attica, Greece.

E-mail address: dbpanag@hua.gr (D.B. Panagiotakos).

ORCID: 0000-0001-8583-153X.

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Therefore, strategic documents addressing child nutrition, overweight, and obesity have been published over the last 20 years. Comprehensive monitoring of the nutrition environment and assessment of relevant targeted interventions issued publicly or privately are necessary to strengthen accountability systems for reducing NCDs. The European Commission (EC), together with the World Health Organization (WHO), has been committed to monitoring and assessing the chronic development of childhood obesity, understanding its determinants, and researching and implementing appropriate nutrition and lifestyle intervention policies, in a multisectoral and multidisciplinary (international, national and regional, community, work, school and home, individual) context (Fig. 1).

According to the Joint Malnutrition Estimates (JME) report (2021) (UNICEF/WHO, 2015), deficient progress is made to meet the 2025 targets set by the World Health Assembly (WHA) to combat childhood obesity and the Sustainable Development Goals (SDGs) set for 2030. The latest analysis indicates that even less than a quarter of all countries are anticipated to encounter the 2030 goal set for 2030 of childhood obesity to reach the percentage of 3% prevalence, with only 1 in 6 countries considered ‘on track’. Since 2000, the number of overweight children under 5 worldwide has increased by nearly 6 million and now stands at 38.9 million. The pre-existing rising tide of childhood obesity has been further exacerbated by the COVID-19 pandemic. This is due to synergistic problem factors related to deteriorating home welfare, constraints in accessibility and affordability of nutritious diet, and limitations in physical activity (PA) way-out (Cuschieri and Grech, 2020).

Within this framework the critical question of whether there are indeed promising, coherent initiatives and practices in addressing childhood obesity management is arisen. This narrative review aims to shed light to this pivotal question by critically reporting on the advancement and assessment of policies, and national public health policies’ implementation in the WHO European region and the EU countries targeting childhood obesity.

2. Material and methods

2.1. Literature data sources and search

A comprehensive literature search was conducted in the MEDLINE, SCOPUS, and Google Scholar scientific databases, up to March 2022, using the following search terms: “childhood obesity”, “EU”, “WHO Europe”, “public health interventions”, “action plans”, “obesity programs”, “evaluation”, “effectiveness”. According to the eligibility criteria, the search has been restricted only to cross-sectional epidemiologic research studies, systematic reviews, and meta-analyses, published in English, without time limit, investigating the development, evaluation and implementation of central EU and WHO Regional Office for Europe, as well as EU European countries public health policy intervention, monitoring and surveillance programs and tools in the fight against childhood obesity across Europe. Relevant literature was retrieved by the authors by looking through the references in original epidemiological articles and reviews. The reference bibliographies of studies from such searches were thereafter hand-searched to identify additional eligible studies.

As presented in Fig. 2, from the conducted comprehensive literature search in the aforementioned scientific databases, 345 articles were initially retrieved, while 29 additional studies were identified through manual search from reference lists. Of the initial 374 studies, 54 studies were excluded as duplicates. From the remaining 320 studies, titles and abstracts were screened, and 125 were further excluded as irrelevant to the research aim underpinning the current review paper; Following a second criteria-based screening, from the remaining 195 full-text reviewed studies, 117 were excluded from review, as the authors agreed that they did not provide accurate information concerning the under-search issue of the development, evaluation and implementation of central EU and WHO Regional Office, as well as EU European countries public health policy interventions concerning childhood obesity. The remaining 78 studies included in this study comprise 19 representative papers and reports of the WHO European Region childhood obesity policies and action plans, 26 review papers mapping the health system response to childhood obesity in the WHO European Region and EU European countries, and 33 epidemiological studies.

**Fig. 1.** The multisectoral and multidisciplinary context of public health policies targeting childhood obesity.
reporting on the impact of WHO European Region, as well as EU countries nutritional policies, interventions and action plans for the prevention of childhood prevention.

2.2. Data analysis

Each participating author independently evaluated the results of the literature search, extracted the most relevant knowledge, decided whether the search results were too diverse or too confusing to publish a comprehensive review of the area, and both authors checked the accuracy and completeness of the retrieved data, which were analyzed following a qualitative interpretation.

2.3. Ethical statement

The authors would like to clarify that the present study, being a narrative literature review, and not epidemiological research conducted in human population, it was based on publicly available anonymized databases, and thus exempt from ethical compliance.

Availability of materials used for this narrative review paper can be obtained upon request from C.M.

3. Discussion

3.1. Unveiling the problematic narrative of successful childhood obesity 
European public policy interventions: The goals, principles and framework 
for action.

Childhood obesity could be described as a ticking time bomb, against its “explosion” various European interventions have been adopted. Multisectoral actions have been prioritized by WHO Member States in the European Region and the European Commission (Pineda et al., 2018) over the past 20 years to monitor and combat the obesity disease by means of various curricula, strategies, digital tools, and creativities. These paradigms are thoroughly presented in the descriptive Tables 1–3.

The demanding puzzle of handling childhood obesity pandemic still remains miscompleted, since better understanding this problem requires a critical reframing from a broader perspective considering childhood obesity as a systemic problem - action needed dipole symptom (Swinburn et al., 2019) in order to reach the following addressed roots of the problem and filling the following childhood obesity prevention, monitoring and implementation policy gaps. The main question concerning the pragmatic efficacy of all aforementioned adopted European -wider or at national level- policies for the prevention, treatment, and cure of childhood obesity remains a hot discussion debate.

3.2. Slow and inconsistent implementation of effective obesity-prevention 
policies by European countries.

It has been estimated that one in five children will be affected by overweight and obesity (OW & OB) by 2025 in Europe, representing more than 16 million children and if cutting-edge trends maintain, the global incidence of early-life obesity is projected to reach 254 million with the aid of 2030, an boom of a hundred million over the following decade (Breda et al., 2020). Childhood obesity prevalence is increasing; however, effective obesity prevention interventions are slow and inconsistently implemented (Roberto et al., 2015).

Evidences concerning formative years overweight & obesity problems control (Frank, 2022; Mahase, 2022) acknowledge in dark colors that while European countries may have elevated focus and lots of have launched techniques and movement plans to curb and reverse early life obesity rates in recent years, its effective control has not been accomplished by any country so far; As highlighted in the World Obesity Federation’s 2019 Global Atlas of Childhood Obesity (Federation, 2019), is expected to successfully fulfill by 2025 the WHO childhood obesity targets.

A rational for this fact is that inconsistent and fluctuating progress (Roberto et al., 2015), a “hodgepodge” rather than a symphony (Lloyd-Williams et al., 2014) has been achieved covering and practicing existing nutrition policies due to “policy inertia,” a descriptive term for the inadequate impact of political management in adopting meaningful and measurable policies to address the obesity epidemic due to a wide range of robust barriers to these policies from synergistic factors and parameters.

It is a common secret that countries are developing approaches to “fuel” healthy diets that are adapted to local and cultural contexts and that ultimately involve multi-sector and multi-stakeholder priority setting and decision-making (Kickbusch et al., 2016). (Organization, 2013; Organization, 2018a; Van Dam et al., 2022; Pereira and Oliveira, 2021).
EU and WHO Europe Public Health Intervention Programmes tackling childhood obesity.

| Program | Country/ies involved | Aims & Areas of intervention | Year/s of implementation | Results |
|---------|----------------------|------------------------------|--------------------------|---------|
| WHO: First Action Plan for Food and Nutrition Policy for the WHO European Region (Organization, 2001) | Austria, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, The Netherlands | To promote healthy lifestyles in the European population by ensuring food security: improving dietary habits and PA, promoting healthy ageing, and preventing nutrition-related and food borne diseases, identify goals and actions at the European level to harmonize activities and bring synergy in the use of resources, advocate for and support a reassessment of national strategies and action plans or complete existing ones, so that detailed plans for implementation are included and plans are integrated within national public health policies, assist countries to foster the integration of nutrition, food safety and physical activity by different stakeholders in the health and other sectors. | 2000-2005 | All the participating countries had FNP strategies or action plans addressing the main areas of interest related to health and nutrition. However, in some cases these do not constitute a 'real' policy as they are not issued by a single body and actions are distributed throughout a variety of distinct documents. |
| WHO Second Action Plan for Food and Nutrition Policy for the WHO European Region (Organization, 2008) | Austria, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, The Netherlands | Emphasizes the importance of developing FNPs that protect and promote health and reduce the burden of foodborne disease, contributing to socioeconomic development and a sustainable environment. It focuses on collaboration and interrelatedness of different sectors in the formulation and implementation of such policies (obesity and nutrition-related chronic diseases, micronutrient deficiencies, food insecurity and undernutrition). | 2007-2012 | All the participating countries had FNP strategies or action plans addressing the main areas of interest related to health and nutrition. However, in some cases these do not constitute a 'real' policy as they are not issued by a single body and actions are distributed throughout a variety of distinct documents. |
| EU CHOPIN | Germany and Spain | Examined the protein content in feeding formula and complementary foods and breast milk. The aim was to identify the differences in protein and fat contents and how this may influence the total energy expenditure of formula fed and breastfed infants at six months old. | 2002-2006 | http://cordis.europa.eu/project/id/QLK1-CT-2001-00389Total fat mass was lower for the breastfed than for the low protein formula fed infants. The research report made the inference that a six-month-old infant fed on low or high protein formula from birth had, on average, experienced a 14 to 21% increase in total fat mass compared to those infants which were breastfed at least for the first three months. |
| EU Childhood Obesity Program (CHOP) (Luque et al., 2018) | Germany, Italy, Greece, Poland, UK, Belgium, France | To test the primary hypothesis that a possible causal factor for the difference in long-term obesity risk between breast and formula fed infants is the much lower protein content of breast milk compared to infant formulae. To investigate the effects of these infant feeding regimes on body composition, energy expenditure, physical activity, protein metabolism, renal function, leptin and its binding protein and on insulin like growth factor1. | 2002-2006 | http://www.metallic-programming.org/obesity/The first results of the EU Childhood Obesity program indicate that low protein content infant formulae bring metabolic and endocrine benefits, as well as body growth rates close to that of breastfed babies. The further follow-up of the children as part of the EU project EARNEST will indicate whether these changes are associated with lower risk indicators of childhood obesity at a later age. Low protein content in infant formulae did not show any untoward effects and is considered safe. |
| EU EPODE (Borys et al., 2012) | France, Spain, Belgium, the Netherlands | EPODE is a coordinated, capacity-building approach aimed at reducing childhood obesity through a societal process in which local environments, childhood settings and family norms are directed and encouraged to facilitate the adoption of healthy lifestyles in children (i.e., the enjoyment of healthy eating, active play and recreation). Primary EPODE target groups are children aged 0–12 years and their families. Local | 2004 | Community-based interventions are integral to childhood obesity prevention. EPODE provides a valuable model to address this challenge. The EPODE European Network (EEN) since 2008, has been working to enrich EPODE methodology and disseminate practical experience in the implementation of similar initiatives in other countries. |
| EPODE European Network (EEN) | | | | (continued on next page) |
### Table 1 (continued)

| Program | Country/ies involved | Aims & Areas of intervention | Year/s of implementation | Results |
|---------|----------------------|------------------------------|--------------------------|---------|
| WHO: European Childhood Obesity Surveillance Initiative (COSI) (NCD-RisC, 2017; Breda et al., 2021; Wijnhoven et al., 2015) (NCS-RisC, 2017) | Albania, Bulgaria, Czechia, Cyprus, Greece, Hungary, Ireland, Italy, Latvia, Malta, Lithuania, Norway, Portugal, Republic of Moldova, Romania, San Marino Spain, Slovenia, Sweden, The former Yugoslav Republic of Macedonia, Turkey | Eating habits, physical activity patterns, school environments. | 1st round: 2007-2008  2nd round: 2009-2010  3rd round: 2012-2013  4th round: 2015-2017  5th round: 2018-2020  6th round: 2021-2023 | 1st and 2nd round: The prevalence of childhood OW among boys varied from 19.3% and 18.0% of 6-year-olds in Belgium to 49.0% of 8-year-olds in Italy and 57.2% of 9-year-olds in Greece. In girls, the prevalence varied from 18.4% in Belgium to 42.6% of 8-year-olds in Italy and 50.0% of 9-year-olds in Greece. The highest significant decrease in the prevalence of OW was found in countries with higher absolute BMI values in round 1 (i.e., Italy, Portugal and Slovenia), and the highest significant increase was found in countries with lower BMI values in round 1 (i.e., Latvia and Norway).  3rd round: The prevalence of OW ranged from 18% to 52% in boys and from 13% to 43% in girls and that of OB from 6% to 28% among boys and from 4% to 20% among girls. The data suggest the presence of an increasing north–south gradient, with the highest prevalence of overweight and obesity in southern European countries. In the countries in which data were collected on more than one age group, there was a tendency for an increase in the prevalence of OW/OB by age. According to WHO definitions, more boys than girls OW&OB in most age groups, particularly at older ages, and in most countries  4th round: There were large differences between countries in children’s dietary habits, with around 80% of children eating breakfast every day, 45% eating fruit daily, and 25% eating vegetables daily. Most children in all countries spent at least an hour playing outside. Around 40% of children spent at least 2 hours a day watching TV or using electronic devices. Healthy habits with respect to diet, PA and screen time were more likely to be exhibited by children from families of higher socioeconomic status. These results point to important opportunities to improve the health of primary school-aged children and future generations within the WHO European Region.  5th & 6th round: Data collection has been disrupted in several locations due to the COVID-19 pandemic, which has caused many disruptions across the Region, including closure of schools, economic hardship and stress on families, which are likely to have a negative effect on children’s health behaviors (such as diet, PA, screen time and sleep), widening inequalities. The possibility of ongoing restricted access to schools, combined with the necessity of in-person contact between the examiners and the children, present particular challenges for COSI implementation during the pandemic. |
| EU: Prevention of Obesity in Europe Consortium for the prevention of obesity through effective nutrition | Bosnia and Herzegovina, Czech Republic, Denmark, France, Italy, Latvia, Russian Federation, A European Coordination Action project financed by the 6th Framework Program of the EC. It aims | stakeholder are also targeted. Through initiatives and a long-term program, stakeholders foster and promote healthy lifestyles in families in a sustainable manner. | 2007-2010 | www.europrevob.eu EUROPREVOB Community Questionnaire was found to be a | (continued on next page)
| Program | Country/ies involved | Aims & Areas of intervention | Year/s of implementation | Results |
|---------|----------------------|-----------------------------|--------------------------|---------|
| EU: Joint Action on Nutrition and Physical Activity (JANPA) | Bulgaria, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia and Spain | Economic costs of childhood obesity, nutritional information and food reformulation, integrated actions in kindergartens and schools, early interventions for pregnant women and families with young children. | 2015-2017 | Preventive Medicine Reports 30 (2022) 102068 | 6 |
### Table 1 (continued)

| Program                                      | Country/ies involved                                                                 | Aims & Areas of intervention                                                                 | Year/s of implementation | Results                                                                 |
|----------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------|
| WHO: CLICK monitoring framework              | (Wickramasinghe et al., 2021)                                                        | To evaluate the extent to which children are exposed to the marketing of unhealthy products online. | 2016                     | implementation of interventions to promote nutrition and physical activity for pregnant women and families with young children (WP7). WP6 is focusing on helping Member States to identify ways to create healthier environments in kindergartens and schools. It aims to provide guidance on policy options and initiatives at different levels for facilitating more effective measures in the countries. In this regard, WP6 collects and analyses existing good practices from WP6 partner member states based on a standardized protocol. |
| Science and Technology in childhood Obesity Policy (STOP) | (Rasella et al., 2021)                                                               | The project is supported by the European Union’s Horizon 2020 research and innovation program, and is led by Imperial College of Science Technology & Medicine, UK. The project engages international partners from different policy-contexts in the United Kingdom, Italy, Estonia, Romania, Portugal, France, Belgium, Slovenia, Sweden, Croatia, Spain, Finland, Switzerland | 2018-2022                | https://cordis.europa.eu/project/id/774548 http://www.stopchildobesity.eu/On progress |
| EU I-FAMILY                                | Belgium, Cyprus, Denmark, Estonia, Finland, Germany, Hungary, Italy, The Netherlands, Spain, Sweden, United Kingdom | EC funded research project followed up the large IDEFICS children’s cohort in the stage between childhood and their teenage years. It has provided further insight into the most important influences on children group aged 2-10 years, their lifestyle behavior and their eating habits, studying the biological, behavioral, social and environmental factors that influence diet and health outcomes over time as the children transitioned into adolescence. | 2012-2017                | Girls are more likely to be overweight/obese. Children from disadvantaged families are more often overweight or obese than children from more advantaged groups. This social divide increases as children get older. The energy-density of European children’s diet is too high and increases with age. Unhealthy diets are far more common in children from poorer and less educated families. Outcomes also suggest that there is a link between shorter sleep duration and higher weight, particularly in primary school children. |
| EU HABEAT                                 | Exploiting existing data from 4 cohorts (Eden, France; ALSPAC, UK; Generation XXI, Portugal; EuroPrevall, Greece). | Based on a multidisciplinary approach (epidemiology, nutrition, behavioral science, psychology and sensory science), The Habeat project aims at Determining factors and critical periods in food habit formation and breaking in early childhood understanding better how food habits are formed and can be changed, in infants and children (< 5 years). | 2010-2013                | Habeat found evidence that breastfeeding may facilitate the consumption of vegetables and fruit and a greater variety of healthy foods in later childhood. Introduction of a variety of vegetables at the beginning of the complementary feeding period increases later acceptance of novel foods. Repeated exposure is a powerful mechanism to increase children’s intake of a novel vegetable in infants and young children. Offering energy-
| Program | Country/ies involved | Aims & Areas of intervention | Year/s of implementation | Results |
|---------|----------------------|-----------------------------|--------------------------|---------|
| EU: ToyBox INTERVENTION (Lambrinou et al., 2019) | Belgium, Bulgaria, Germany, Greece, Poland, Spain | ToyBox project aims to prevent early childhood obesity using a holistic, evidence-based approach that focuses on behavioral models to understand and promote fun, healthy food, play and policy. A kindergarten-based, family-involved intervention targeting multiple lifestyle behaviors in preschool children, their teachers and their families. | 2010-2013 | The ToyBox-intervention significantly improved parental rule setting on children’s unhealthy snack consumption (i.e., restriction of snacking while watching television and permission only at certain occasions) and parental consumption of unhealthy snacks, while it increased parental knowledge on snacking recommendations. Regarding healthy snacking, the ToyBox-intervention improved children’s attitude towards fruit and vegetables (F&V). [https://cordis.europa.eu/project/id/613979/reporting](https://cordis.europa.eu/project/id/613979/reporting) |
| EU MyNewGut Project (Wolters et al., 2019) | Italy, Ireland, Denmark, France, Belgium, Germany, Netherlands, Germany, United Kingdom, Austria, Spain, Serbia | the gut microbiome contributes to our ability to extract energy from the diet and influences development and function of the immune, endocrine and nervous systems, which regulate energy balance and behavior. Developing microbiome-based dietary interventions can be cost-effective measures to prevent diet-related and behavioral disorders obesity disease risk. | 2013-2018 | https://www.project-earlynutrition.eu CO-CREATE aims to curb the prevalence of obesity in Europe through policy actions to promote a healthier food and physical activity environment. [https://co-create.eu](https://co-create.eu) |
| EU ‘EarlyNutrition Project’ (Koletzko et al., 2011) | 12 European Countries | provide understanding at the cellular and molecular level, and refined strategies for intervention in pregnancy and early post-natal life to prevent obesity. | 2011-2017 | The project ‘EarlyNutrition’ has collated convincing evidence demonstrating that early nutrition and lifestyle before and during pregnancy, during the breastfeeding period, and during infancy and early childhood have important long-term effects on later health and the risk of common non-communicable diseases. [feel4diabetes-study.eu](http://feel4diabetes-study.eu) |
| the Feel4Diabetes Programme (Manios et al., 2018) | Finland, Belgium, Spain, Hungary, Bulgaria, and Greece | The overall aim of the Feel4Diabetes program was “developing and implementing a community-based intervention to promote behavioral changes and creating a more supportive social and physical environment to prevent diabetes in vulnerable families across Europe”. | 2016-2018 | The Feel4Diabetes-intervention is expected to provide evidence-based results and key learnings that could guide the design and scaling-up of affordable and potentially cost-effective population-based interventions for the prevention of type 2 diabetes. [https://co-create.eu](https://co-create.eu) |
| The EU Horizon 2020 project “Confronting obesity: Co-creating policy with youth” (CO-CREATE) (Neveux et al., 2019) | Norway, Netherlands, United Kingdom, Portugal, Belgium, Poland | CO-CREATE aims to curb the childhood obesity epidemic reduce the prevalence of obesity in Europe through policy actions to promote a healthier food and physical activity environment. | 2018-2023 | |
| EU: Big Data Against Childhood Obesity (BigO) (Tragomalou et al., 2020) | Greece, Sweden, Ireland, Spain and the Netherlands. | An EU-funded project that collects objective evidence on the causes of obesity in local communities and enables public health authorities to design effective interventions to prevent or combat obesity in children and adolescents aged 9-18 years. BigO aims to redefine the way those strategies are designed and deployed, to extract relationships between environment, personal behavior, obesity risk factors and obesity prevalence, and determine which particular local conditions are associated with the development of obesity in children of a specific region. Data driven analytics will then be employed to extract relationships between environment, | 2016-2021 | [https://bigoprogram.eu/big-data-against-childhood-obesity/](https://bigoprogram.eu/big-data-against-childhood-obesity/) Comprehensive models of the obesity prevalence dependence matrix will be created, allowing, for the first time the data-driven effectiveness predictions about specific policies on a community and the real-time monitoring of the population response, supported by powerful real-time data visualizations. |
According to the World Health Organization Regional Office for Europe, which has mapped the health system response to childhood obesity, participating nations have encountered and reported comparable challenges and barriers (Weghuber et al., 2019), which seem to stand up from numerous factors of governance; the shortage of included prevention and care in countrywide early life obesity techniques, loss of clear care pathways and suggestions, early life obesity management structural and organizational troubles, vulnerable vertical and horizontal integration of companies, and feeble collaboration.

Aside from sociocultural barriers in the populations most in need of treatment for childhood obesity, the lack of enough funding and personnel, along with the lack of adequate training for medical and allied health professionals (such as psychologists, dietitians, physiotherapists, etc) working with overweight or obese children, are also seen as major challenges and significant obstacles addressing childhood obesity (Weghuber et al., 2019).

### 3.3. Acknowledged gaps in surveillance and monitoring policy implementation for better food and nutrition for children under 5 years.

Monitoring and evaluating progress toward goals related to malnutrition (including childhood obesity), poverty, and disease in children under five years of age is recognized as both a vicious cycle and a central task (Organization, 2021a). According to the WHO (2018) progress report on monitoring the implementation of healthier diets interventions in the European Region (Organization, 2018a), the current status of surveillance and monitoring of children under 5 in Europe is discouraging, as both methods and data collection are highly inconsistent. The irregularity of health and nutrition surveys across many nations makes it difficult to track changes in the prevalence of childhood overweight.

In particular, there is an acknowledged problematic dearth of current primary research data on measured anthropometry of children beyond the age of 5 (Brinden and Neveux, 2021; de Onis and Blossner, 2003; Williams and Suchdev, 2017) concerning data collection, assessment, and analysis for stunting and overweight in this age-group children; for the European region WHO, availability for these indicators, concerning the age scale from 0 to 59 months exists for only 27 of the 53 countries in the region. The main source of anthropometric data for children under 5 years of age is home-based surveys; countries in the European region rely mostly on kindergarten/preschool data collection for this age-group. As a result, several of the available datasets cover only a small part of the total age range of the indicators and therefore most of them have not been included in the global JME study, although they are nationally representative and there are no major concerns about data quality (United Nations International Children’s Emergency Fund (UNICEF), 2019).

Given the increasing concern and current data gaps regarding
Table 2
National – Level Public Health Intervention Programmes in European countries tackling childhood obesity
(Data provided: [https://extranet.who.int/nutrition/gina/en/policies/summary](https://extranet.who.int/nutrition/gina/en/policies/summary) & [https://globalnutritionreport.org/resources/nutrition-profiles/europe/](https://globalnutritionreport.org/resources/nutrition-profiles/europe/))

| Program                                      | Country/ies involved | Areas of intervention                                                                 | Year/s of implementation | Progress Outcomes, Results                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------|----------------------|---------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Food Dudes Program ([Upton et al., 2015](#))  | West Midlands, United Kingdom, Ireland | The ‘Food Dude Healthy Eating Program’ by the Irish Food Board aims at improving children’s long-term consumption of fruits and vegetables by providing free fruits and vegetables at school for 16 days along with videos and rewards based on the ‘Food Dude’ characters. | 2005-2008                | A significant increase in the consumption of lunchtime fruit and vegetables was found at three months for children in the intervention schools, but only for those eating school-supplied lunches. For children consuming school meals, consumption of high-fat and high-sugar foods for children in the intervention and control schools increased over time. No relationship was found between increases in fruit and vegetable consumption and decrease in consumption of high-fat and high-sugar foods following the Food Dudes intervention. The Food Dudes Program has a limited effect on decreasing consumption of high-fat and high-sugar foods at lunchtime. |
| Albanian Food and Nutrition Action Plan (AFNAP) ([Mersini et al., 2017](#)) | Albania              | Has been developed in the framework of the Joint Program on Nutrition implemented by the Ministry of Health (MoH) and the Ministry of Agriculture, Food and Consumer Protection (MoAFCP). The Plan has been developed with the inputs of five line ministries: Ministry of Health, Ministry of Agriculture, Food and Consumer Protection, Ministry of Education and Science, Ministry of Labour, Social Affairs and Equal Opportunities, Ministry of Finance and the respective local and national institutions. | 2013-2020                | The quantitative and qualitative assessment of 2003-2008 Albanian Food and Nutrition Action Plan revealed that the implementation process has faced serious barriers linked to the design of the plan, which did not accurately anticipate a theoretical framework, or structured methods for its implementation. Other impeding factors included the lack of institutional/infrastructure support, lack of intersectoral coordination and motivation, as well as insufficient capacities and know-how. Intersectoral response to the multifaceted nature of double burden of malnutrition is of key importance to improve nutritional wellbeing and health outcomes in Albania. https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/albania/Albania is ‘on course’ to meet four targets for maternal, infant and young child nutrition (MIYCN). |
|                                                |                      |                                                                                        |                          | • Albania is ‘on course’ for the low-birthweight target, with 4.6% of infants having a low weight at birth.                                                                                              |
|                                                |                      |                                                                                        |                          | • No progress has been made towards achieving the exclusive breastfeeding target, with 36.5% of infants aged 0 to 5 months exclusively breastfed.                                                                                                       |
|                                                |                      |                                                                                        |                          | • Albania is ‘on course’ to meet the target for stunting, but 11.3% of children under 5 years of age are still affected, which is higher than the average for the Europe region (4.5%). Albania is also ‘on course’ for the target for wasting, with 1.6% of children under 5 years of age affected. |
|                                                |                      |                                                                                        |                          | • The prevalence of overweight children under 5 years of age is 16.4% and Albania is ‘on course’ to prevent the figure from increasing.                                                                                                                                       |
|                                                |                      |                                                                                        |                          | • Albania has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets.                                                                                                |
| National Nutrition Action Plan                  | Austria Ministry of Health | Overweight, obesity and diet-related NCDs, Overweight in children 0-5 yrs, and school children Action areas: Maternal, infant and young child nutrition, Counselling on healthy diets and nutrition during pregnancy, Breastfeeding promotion/ counselling, Nutrition in schools | 2011-2020                | • Austria is ‘on course’ to meet one of the global nutrition targets for which there was sufficient data to assess progress.                                                                                                               |
|                                                |                      |                                                                                        |                          | • There is inadequate prevalence data to show the proportion of children under overweight, obesity and diet-related NCDs, Overweight in children 0-5 yrs, and school children Action areas: Maternal, infant and young child nutrition, Counselling on healthy diets and nutrition during pregnancy, Breastfeeding promotion/ counselling, Nutrition in schools (continued on next page) |
Table 2 (continued)

| Program                                      | Country/ies involved | Areas of intervention                                                                 | Year/s of implementation | Progress Outcomes, Results                                                                 |
|----------------------------------------------|----------------------|----------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------|
| EU school milk and fruit scheme              | Belgium              | (Regulation/guidelines on types of foods and beverages available, Provision of school meals / School feeding program, School fruit and vegetable scheme, School milk scheme). | 2011 (ongoing)           | 5 years of age who are overweight and there is insufficient data available to assess whether Austria is on course to prevent the figure from increasing. |
| National Nutrition and Health Pan           | Belgium              | It emphasizes the need to create an environment stimulating healthy eating habits and physical activity; this is to be achieved by improving education on food and nutrition and involving a number of stakeholders. Working with the private sector, the plan aims at increasing the availability of food for a healthy diet and improving the nutritional composition of food. | 2006                    | https://globalnutritionreport.org/resources/nutrition-profiles/europe/western-europe/belgium/  
• Belgium is 'on course' to meet one targets for maternal, infant and young child nutrition (MIYCN).  
• No progress has been made towards achieving the low-birth-weight target, with 7.3% of infants having a low weight at birth.  
• There is insufficient data to assess the progress that Belgium has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data.  
• Belgium is 'on course' to meet the target for stunting, with 1.6% of children under 5 years of age affected, which is lower than the average for the Europe region (4.5%).  
• Belgium has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. The country has shown no progress towards achieving the target for obesity. The prevalence of overweight children under 5 years of age is 3.9% and Belgium has made no progress against increasing the figure.  
• It has shown limited progress towards improving nutrition and the reducing the risk of foodborne and diet-related chronic diseases. The Action Plan covers the three strategic areas of nutrition, food safety and food security.  
• Efforts to tackle the increasing numbers of overweight and obese children include the Healthy Kids Project, which promotes physical activity and balanced nutrition in primary schools  
• Bulgarian Parliament passed an amendment to the Food Act which prohibits the advertisement and marketing of genetically modified and 'unhealthy' foods to children - including via television, print, and online. |
| The school in good condition program         |                      |                                                                                        |                          |                                                                                          |
| National Food and Nutrition Action Plan (NFNAP) | Bulgaria             | The strategic goal is to improve the health of the Bulgarian population by improving nutrition and the reducing the risk of foodborne and diet-related chronic diseases. The Action Plan covers the three strategic areas of nutrition, food safety and food security. Efforts to tackle the increasing numbers of overweight and obese children include the Healthy Kids Project, which promotes physical activity and balanced nutrition in primary schools.  
• Bulgarian Parliament passed an amendment to the Food Act which prohibits the advertisement and marketing of genetically modified and 'unhealthy' foods to children - including via television, print, and online.  
• An attempt to introduce a tax on foods and drinks high in salt, trans-fats, sugar and caffeine in 2015 failed to win the support of stakeholders and the Council of Ministers.  
• Overweight and obesity rates among 15-year-olds also increased substantially over the past two decades, reaching 21% in 2018. This was also slightly above the EU average of 19%.  
• The Milk Scheme is still largely ineffective today.  
• There is insufficient data available to assess whether Austria is on course to prevent the figure from increasing. |
| National NCD Prevention Program              |                      |                                                                                        | 2005–2010                |                                                                                          |
|                                             |                      |                                                                                        | 2014-2020                |                                                                                          |
Table 2 (continued)

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|---------------------------|
| National Strategy for Physical Education and Sports Development | Bulgaria | The general objective of the scheme for the provision of fruit, vegetables, milk and milk products in kindergartens, schools and special educational support centers is to provide legal and financial conditions for a long-term increase in the share of these products in children’s diets, especially at the age when their nutritional habits are formed. | 2012-2022 | adults in Bulgaria is very low (the second lowest among all EU countries). • On a positive note, Bulgarian adolescents are the most physically active among EU countries, with one in five reporting at least moderate physical activity each day in 2018. |
| Bulgarian Food Act | Bulgaria | National Strategy on the Implementation of a Kindergarten and School Fruit, Vegetables, Milk and Milk Products Scheme | 2017 | Bulgaria is ‘on course’ to meet one of the global nutrition targets for which there was sufficient data to assess progress. • There has also been no progress towards achieving the low-birthweight target, with 9.6% of infants having a low weight at birth. • There is insufficient data to assess the progress that Bulgaria has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. • Bulgaria has made some progress towards achieving the target for stunting, but 7.0% of children under 5 years of age are still affected, which is higher than the average for the Europe region (4.5%). • There is insufficient data to assess the progress that Bulgaria has made towards achieving the target for wasting; however, the latest prevalence data shows that 6.3% of children under 5 years of age are affected. • The prevalence of overweight children under 5 years of age is 6.9% and Bulgaria is ‘on course’ to prevent the figure from increasing. • Bulgaria has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. |
| National Action Plan against obesity | Czech Republic | Established as a permanent advisory body to design and implement a. The national cycling strategy of 2004 is progressively recommended to regional and local governments, businesses and NGOs to be included as a complementary part of their activities, programs and documents. | 2004 | The Czech Republic is ‘on course’ to meet two targets for maternal, infant and young child nutrition (MIYCN). • No progress has been made towards achieving the low-birth-weight target, with 7.8% of infants having a low weight at birth. • There is insufficient data to assess the progress that the Czech Republic has (continued on next page) |

The general objective of the scheme for the provision of fruit, vegetables, milk and milk products in kindergartens, schools and special educational support centers is to provide legal and financial conditions for a long-term increase in the share of these products in children’s diets, especially at the age when their nutritional habits are formed. • On a positive note, Bulgarian adolescents are the most physically active among EU countries, with one in five reporting at least moderate physical activity each day in 2018. • Bulgaria is ‘on course’ to meet one of the global nutrition targets for which there was sufficient data to assess progress. • There has also been no progress towards achieving the low-birthweight target, with 9.6% of infants having a low weight at birth. • There is insufficient data to assess the progress that Bulgaria has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. • Bulgaria has made some progress towards achieving the target for stunting, but 7.0% of children under 5 years of age are still affected, which is higher than the average for the Europe region (4.5%). • There is insufficient data to assess the progress that Bulgaria has made towards achieving the target for wasting; however, the latest prevalence data shows that 6.3% of children under 5 years of age are affected. • The prevalence of overweight children under 5 years of age is 6.9% and Bulgaria is ‘on course’ to prevent the figure from increasing. • Bulgaria has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. • The Czech Republic is ‘on course’ to meet two targets for maternal, infant and young child nutrition (MIYCN). • No progress has been made towards achieving the low-birth-weight target, with 7.8% of infants having a low weight at birth. • There is insufficient data to assess the progress that the Czech Republic has (continued on next page)
Table 2 (continued)

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|------------------------|--------------------------|---------------------------|
| • Commission Regulation (EU) 2019/649 of 24 April 2019 as regards trans-fat, other than trans-fat naturally occurring in fat of animal origin.  
• National Health Promotion Program “Healthy Living”  
• National Strategy and Action Plan against Obesity | Croatia | Legislation relevant to nutrition, with the following action areas: Promotion of healthy diet and prevention of obesity and diet-related NCDs, Ban or virtual elimination of industrial trans fatty acids. | 2021 2015 | made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data.  
• The Czech Republic is ‘on course’ to meet the target for stunting, with 2.7% of children under 5 years of age affected, which is lower than the average for the Europe region (4.5%).  
• There is insufficient data to assess the progress that the Czech Republic has made towards achieving the target for wasting; however, the latest prevalence data shows that 4.6% of children under 5 years of age are affected.  
• The prevalence of overweight children under 5 years of age is 4.4% and the Czech Republic is ‘on course’ to prevent the figure from increasing.  
https://eurohealthobservatory.who.int/countries/czech-republic/  
• There is much more scope for stepping up preventive programs to address obesity more specifically, as Childhood obesity rates are rapidly increasing: a growing issue among children and adolescents. Overweight and obesity rates among 15-year-olds reached 18% in 2018, which is comparable to the EU average.  
• More than one fifth (22%) of all deaths can be attributed to dietary risks (including low fruit and vegetable consumption, and high sugar and salt intake), a share well above the EU average of 17%.  
• Nutrition in Croatia could be improved in multiple ways, including by reducing salt and fat (in particular trans-fat) intake, and increasing fruit and vegetable consumption. More than 70% of adolescents in 2019 did not eat at least one fruit daily, and vegetable consumption is also very low, with about 39% of adults and 77% of adolescents reporting that they did not eat one vegetable every day.  
https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/croatia/  
• Croatia is ‘off course’ to meet all targets for maternal, infant and young child nutrition (MIYCN).  
• No progress has been made towards achieving the low-birth-weight target, with 5.1% of infants having a low weight at birth.  
• There is insufficient data to assess the progress that Croatia has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data.  
• Similarly, there is insufficient prevalence data or data to assess the progress that Croatia has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Croatia has made towards achieving the target for wasting, nor is there adequate prevalence data.  
• There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to (continued on next page) |
### Table 2 (continued)

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|---------------------------|
| National Nutrition Action Plan | Cyprus | Areas of intervention: 1) Maternal, infant and young child nutrition (Breastfeeding promotion/counselling), 2) Nutrition in schools (School-based health and nutrition programs), 3) guidelines on types of foods and beverages available, 4) Nutrition in the school curriculum, 5) Provision of school meals / School feeding program, 6) School fruit and vegetable scheme, 7) Monitoring of children’s growth in school | 2005 | assess whether Croatia is on course to prevent the figure from increasing.  
- Croatia has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets.  
- Obesity rates among children are higher. In 2015-17, 20 % of children aged 6-9 years were obese - the highest rate among EU countries (WHO Regional Office for Europe, 2018). One in seven Cypriot adults (14.6 %) were obese in 2019 – a share similar to the EU average (16.0 %). Low physical activity is an important contributor to overweight and obesity. |
| National nutrition and exercise guidelines | Ministry of Health, Ministry of Education, consumer and nutrition associations, and non-governmental organizations. | Cyprus has two sets of guidelines, one directed at the general population and another at children aged 6-12 years. | 2007 (ongoing) |  |
| National Action Plan against Obesity | Denmark | To reduce social inequalities and the number of overweight children. These guidelines follow on from the National Action Plan against Obesity which included 66 recommendations for the prevention and treatment of obesity. (69) Denmark also has a set of policies to help increase PA across the nation, from the City of Cyclists environmental intervention to Get2sport, an ongoing project promoting participation in sports among children from the most deprived areas. | 2014 | https://eurohealthobservatory.who.int/countries/denmark/  
- More than 40 % of deaths in Denmark can be linked to behavioral risk factors, including tobacco smoking, unhealthy diets, alcohol consumption and low physical activity - a rate similar to the EU average. **Obesity rates among adolescents remain lower than in most other EU countries.**  
- Denmark is ‘off course’ to meet all targets for maternal, infant and young child nutrition (MIYCN).  
- No progress has been made towards achieving the low-birth-weight target, with 5.3% of infants having a low weight at birth.  
- There is insufficient data to assess the progress that Denmark has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data.  
- Similarly, there is insufficient prevalence data or data to assess the progress that Denmark has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Denmark has made towards achieving the target for wasting, nor is there adequate prevalence data.  
- **There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Denmark is on course to prevent the figure from increasing.**  
- Denmark has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. |
| The Children’s Obesity Clinic Treatment (TCOCT) | Denmark by Danish pediatrician Dr Jens Christian Holm. | A protocol aimed at helping clinically obese children achieve weight loss through personalized behavior change techniques targeted at the child and their family. Children are initially admitted to hospital for 24 hours, having a series of tests and body composition measures. | 2008 | From 2008, over 2,300 children and adolescents were enrolled and results published in 2011 found significant reductions in BMI standard deviation scores after 1.5 years, including reduction of several comorbidities. Adoption of the protocol in another Danish clinic also found a significant reduction in BMI among children aged 5-18 after one year (continued on next page) |
| Program                                                                 | Country/ies involved                  | Areas of intervention                                                                 | Year/s of implementation | Progress Outcomes, Results                                                                                                                                 |
|------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Baltic States: Nordic monitoring of diet, physical activity, and overweight (NORMO) (Stockmarr et al., 2016) | Sweden, Denmark, Finland, Iceland    | To significantly reduce mean BMI; reduce crude obesity prevalence in the Nordic countries | 2011, 2014               | Significant reductions in mean BMI and overweight and obesity (OWOB) prevalence were found in the Nordic countries between 2011 and 2014. For the Nordic region, a non-significant decrease from 17.3 to 17.1 in mean BMI was even observed in children. OWOB and OB prevalence estimates seem to have plateaued in the Nordic countries. |
| Childhood obesity: a plan for action (Griffin et al., 2021)            | England                              | To significantly reduce England’s rate of childhood obesity within the next 10 years, to review the nutrient profile model, update School Food Standards, provide guidance on reducing sugar content of foods, and set targets for product composition. | 2016, 2018, 2019        | Emphasis has been placed on collaboration with the private sector. Evaluations have revealed it to have been a failure, focusing on industry-friendly but ineffective measures: Local authorities are encouraged to focus on health inequality, but specific guidance (and support) is unclear. Another gap is related to mandatory action or legislation aimed at the early years, a key life stage for understanding the impacts of the SDH and therefore interventions to reduce health inequalities. The reference to early years consists of voluntary food and physical activity guidelines and suggests research is undertaken exploring curriculum development that supports good physical development in the early years, but with no details on the research or proposed timescales. |
| Healthy Weight, Healthy Lives                                         | England                              | A Cross Government Strategy program including increased funding for pregnancy and early years, promoting a culture of healthy eating in schools and building more cycle lanes and safe places to play. Fundamentally a prevention strategy, it sets out to change the behaviors and circumstances that lead to weight gain, rather than a weight-loss program for the already obese. | 2007 to ongoing          | www.thensmc.com                                                                                                                                               |
| Change4Life (Lamport et al., 2021)                                    | England                              | Change4Life is England’s first ever national social marketing campaign to reduce obesity. It is a three-year marketing strategy to drive, coax, encourage and support people through each stage of the behavior change journey. Change4Life focuses on prevention and aims to change the behaviors and circumstances that lead to weight gain, rather than being a weight-loss program for the already obese. | 2009 - 2012              | Intervention fidelity was low and the intervention is unlikely to have had a substantial or long-term effect on customers’ consumption of fruit and vegetables. |
| Estonia Action Plan                                                    | Estonia                               | Action areas                                                                             | 2017 - 2020              | https://eurohealthobservatory.who.int/countries/estonia/ Overweight and obesity rates in Estonia are particularly worrying because policy action on nutrition and obesity is lagging in Estonia. Overweight and obesity rates (continued on next page) |
Table 2 (continued)

| Program | Country/ies involved | Areas of intervention                                                                 | Year/s of implementation | Progress Outcomes, Results                                                                 |
|---------|----------------------|----------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------|
| • Promotion of healthy diet and prevention of obesity and diet-related NCDs | Estonia is ‘on course’ to meet three targets for maternal, infant and young child nutrition (MIYCN). |                          | 2012-2018 | are a growing issue in adolescents, as the rates have increased substantially over the last two decades, reaching 19% in 2018, up from only 7% in 2002. Nearly half of the adult population report that they do not eat any fruit (49%) or vegetables (47%) on a daily basis. The government began working on a green paper on nutrition and physical activity in 2014, but it has not yet been approved. This has delayed policy action that might tackle the rising overweight and obesity rates, although some measures are under development, including a plan for food reformulation and a voluntary code on responsible marketing. |
Table 2 (continued)

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|----------------------------|
| VIF Programme (Vanhelst et al., 2021) | France | A community-based prevention program, continuation of the previous EPODE obesity prevention scheme. Aims: promoting healthier lifestyles, improving eating and physical activity habits amongst children and their families, involving municipal services in charge of child education and care to mobilize a wide diversity of local stakeholders, especially in schools, preschools, extracurricular organizations and any social network of associations. A nutritional logo to improve nutrition and tackle rising rates of obesity which provides easy-to-understand information on the overall nutritional quality of food products to promote more healthy nutrition habits. | 2008-2015 | The results of the 7-year VIF Programme community-based intervention are promising for addressing obesity and related issues in French youngsters, regardless of sex or socio-economic environment. Thus, the VIF Program may potentially play a role in the prevention of childhood overweight and obesity. https://eurohealthobservatory.who.int/countries/france/ |
| Official “nutri-score” food label | | | 2017 | Obesity rates in France have increased but are not greater than in most EU countries. OW&OB rates among 15-year-olds also increased to 14 % in 2018, but remain lower than in most EU countries. As in other countries, poor nutrition is the main factor contributing to OW&OB. Results from the “nutri-score” food label showed that 60 % of the population reported that they had modified aspects of their food purchasing behavior with the help of the “nutri-score” food label in 2020, up from 43 % in 2019. https://globalnutritionreport.org/resources/nutrition-profiles/europe/western-europe/france/ |

- Finland is ‘on course’ for the low-birth-weight target, with 4.1% of infants having a low weight at birth.
- There is insufficient data to assess the progress that Finland has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data.
- Similarly, there is insufficient prevalence data or data to assess the progress that Finland has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Finland has made towards achieving the target for wasting, nor is there adequate prevalence data.
- There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Finland is on course to prevent the figure from increasing.
- Finland has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets.
• There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether France is on course to prevent the figure from increasing.
• France has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. Focuses on PA and nutrition rather than weight. This focus on individual behaviors is favored by the food industry, neglecting evidence on the importance of tackling the upstream social, commercial, and political determinants, most notably the role of the food and agriculture industries. Obesity is still an underestimated public health problem in Germany; the policy response has so far been insufficient and obesity levels continue to increase dramatically. However, Germany is one of the countries that has an explicit state-level obesity policy, aiming to encourage healthy diets and physical activity. 
https://eurohealthobservatory.who.int/countries/germany/

Unhealthy diets are also a significant driver of mortality in Germany, and are linked to 14 % of deaths. More than one in five 15-year-olds were overweight or obese in 2018, with a higher share of boys reporting being overweight or obese. Overall, obesity rates – particularly among adolescents – are higher than in many other EU countries. They have also increased over the last decade, although national data indicate that the rate for children has stabilized somewhat since 2015. These trends are driven in part by dietary habits: Among adolescents, only 30 % consume fruit and 25 % eat vegetables daily, while only 10 % of 15-years-olds reported doing at least moderate physical activity every day in 2018.

https://globalnutritionreport.org/resources/nutrition-profiles/europe/western-europe/germany/
• Germany is ‘on course’ to meet two targets for maternal, infant and young child nutrition (MIYCN).
• There has been some progress towards achieving the low-birth-weight target with 6.6% of infants having a low weight at birth.
• There is insufficient data to assess the progress that Germany has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data.
• Germany is ‘on course’ to meet the target for stunting, with 1.7% of children under 5 years of age affected, which is lower than the average for the Europe region (4.9%). There is insufficient data to assess the progress that Germany has made towards achieving the target for wasting; however, the latest prevalence data shows that 0.3% of children under 5 years of age are affected.
• The prevalence of overweight children under 5 years of age is 3.2% and Germany is ‘on course’ to prevent the figure from increasing.

(continued on next page)
Table 2 (continued)

| Program                                               | Country/ies involved | Areas of intervention                                                                 | Year/s of implementation | Progress Outcomes, Results                                                                                                                                 |
|--------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nutrition circular on Kindergartens                   | Greece               | Evidence of Nutritional or Health Strategy/ Guidelines/Policy/Action plan for children  | 2021 (ongoing)           | • Germany has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets.                                           |
|                                                         |                      |                                                                                       |                          | https://data.worldobesity.org/country/greece-80/#data_policies                                                                                           |
| National Action Plan on Food Reformulation             | Greece               | Primary concern of the Action Plan is to reduce the following nutrients of foods: salt, industrially produced trans fatty acids, added sugars. | 2017                     | **OW&OB among adolescents are a particular public health concern in Greece.** More than one in five 15-year-olds were overweight or obese in Greece in 2018, which is a higher proportion than in most other EU countries, and a significant rise since 2001-02. Boys are more likely to be overweight or obese than girls. In Greece, as in other countries, poor nutrition is the main factor contributing to being overweight or obese. Fewer than one in three 15-year-olds reported eating vegetables daily and only about one in four 15-year-olds reported eating fruit daily in 2018. Low PA also contributes to obesity: only one in eight 15-year-olds reported doing moderate to vigorous PA each day in 2018. A dedicated national strategy is now in place to address the previously neglected areas of prevention and health promotion. |
| Legislation on food offered in School Canteens (www.moh.gov.gr) | Greece               | Evidence of Nutritional or Health Strategy/ Guidelines/Policy/Action plan               | 2013 (ongoing)           | • Greece is ‘on course’ to meet two of the global nutrition targets for which there was sufficient data to assess progress.                                      |
| Action plan for implementation of the national nutrition policy | Ministry of Health and Social Welfare | Taxation/Subsidies on Food or Beverages or law relating to public health for children | 2006                     | https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/greece/                                                               |
|                                                         |                      |                                                                                        |                          | • Greece is ‘on course’ to meet two targets for maternal, infant and young child nutrition (MILYCN).                                                           |
|                                                         |                      |                                                                                        |                          | • There has also been no progress towards achieving the low-birth-weight target, with 8.7% of infants having a low weight at birth.                         |
|                                                         |                      |                                                                                        |                          | • There is insufficient data to assess the progress that Greece has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. |
|                                                         |                      |                                                                                        |                          | • Greece is ‘on course’ to meet the target for stunting, with 1.5% of children under 5 years of age affected, which is lower than the average for the Europe region (4.5%). There is insufficient data to assess the progress that Greece has made towards achieving the target for wasting; however, the latest prevalence data shows that 0.6% of children under 5 years of age are affected. |
|                                                         |                      |                                                                                        |                          | • The prevalence of overweight children under 5 years of age is 13.6% and Greece is ‘on course’ to prevent the figure from increasing.                   |
| Public Health Product Tax                               | Hungary              | A public health product tax on non-staple, pre-packaged foods with high levels of sugar, salt and other ingredients with proven health risks. This included confectionary, salty snacks, fruit jams, soft drinks and energy drinks. | 2011                     | • Greece has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets.                                               |
|                                                         |                      |                                                                                        |                          | https://eurohealthobservatory.who.int/countries/hungary/                                                                                                 |
|                                                         |                      |                                                                                        |                          | • OW&OB are growing public health issues in Hungary. Poor nutritional habits partly explain the increasing prevalence of obesity in Hungary. OW&OB rates are also a major problem among Hungarian children and adolescents. Almost one in four 15- |
|                                                         |                      |                                                                                        |                          | (continued on next page)                                                                                                                                     |
Recent government initiatives – such as the Public Health Product Tax – have aimed to tackle childhood obesity. The Hungarian approach has been supported by WHO, as the tax has not only reduced public consumption of taxed items and impacted manufacturers, but also increased Health Literacy across the population. [436x98]https://globalnutritionreport.org/resources/nutrition-profiles/europe/eastern-europe/hungary/

- Hungary is ‘off course’ to meet all targets for maternal, infant and young child nutrition (MIYCN).
- No progress has been made towards achieving the low-birth-weight target, with 8.8% of infants having a low weight at birth.
- There is insufficient data to assess the progress that Hungary has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data.
- There is insufficient prevalence data or data to assess the progress that Hungary has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Hungary has made towards achieving the target for wasting, nor is there adequate prevalence data.
- There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Hungary is on course to prevent the figure from increasing.
- Hungary has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. [436x98]https://eurohealthobservatory.who.int/countries/iceland/

**Actions to reduce obesity have not yet had any major impact**, as behavioral risk factors account for more than one third of all deaths in Iceland: OW&OB rates are higher in Iceland than in most EU countries, have increased over the past decade in adolescents. Among 15-year-olds, OW&OB rates were 21 % in 2018 – the fifth highest rate in Europe.

- To try to reverse this trend, Iceland has introduced health promotion and disease prevention measures in schools and the community. These include nutritional standards for schools, banning food and beverage advertising on TV and radio during hours when children are the main audience and using the Nordic keyhole nutrition label, which highlights the healthier alternatives within a product group. However, these measures do not yet appear to have had any major impact in terms of reducing overweight and obesity. [436x98]https://globalnutritionreport.org/resources/nutrition-profiles/europe/northern-europe/iceland/

### Table 2 (continued)

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|----------------------------|
| Public Health Policy and Action Plan | Iceland | Health sector policy, strategy or plan with nutrition components | 2016 | Continuing to work towards reducing OW&OB rates |
| The Icelandic National Health Plan to the Year 2010 | Iceland | Setting for health: At least 95% of schoolchildren should receive systematic education and training in health promotion. Highlights the healthier alternatives within a product group. Products with the Keyhole comply with one or more of these requirements: more whole grain, less saturated fat, less salt and less sugar. | 2004-2010 | Continued efforts to improve health literacy and nutrition awareness |
| The Nordic Keyhole scheme (also adopted in Sweden, Denmark and Norway) | Iceland | | | |
| A better life through diet and physical activity: Nordic plan of action on better health and quality of life through diet and physical activity | Iceland | | | |

(continued on next page)
Table 2 (continued)

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|----------------------------|
| Nutrition Standards for School Meals Standard | Ireland Department of Health | Action areas: Nutrition in schools including: a) school-based health and nutrition programs b) regulation/guidelines on types of foods and beverages available c) provision of school meals / School feeding program, d) school meal standard | 2018 | • Iceland is ‘on course’ to meet one targets for maternal, infant and young child nutrition (MIYCN).  
• Iceland is ‘on course’ for the low-birth-weight target, with 4.2% of infants having a low weight at birth.  
• There is insufficient data to assess the progress that Iceland has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data.  
• There is insufficient prevalence data or data to assess the progress that Iceland has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Iceland has made towards achieving the target for wasting, nor is there adequate prevalence data.  
• There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Iceland is on course to prevent the figure from increasing.  
• Iceland has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. People in Ireland lead longer and healthier lives than most other Europeans, although behavioral risk factors, including smoking and obesity, remain important public health concerns. Among adolescents, 14% of 15-year-olds were overweight or obese in 2018 — a share lower than in most EU countries. https://globalnutritionreport.org/resources/nutrition-profiles/europe/northern-europe/ireland/  
• Ireland is ‘off course’ to meet all targets for maternal, infant and young child nutrition (MIYCN).  
• No progress has been made towards achieving the low-birth-weight target, with 5.9% of infants having a low weight at birth.  
• There is insufficient data to assess the progress that Ireland has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data.  
• Similarly, there is insufficient prevalence data or data to assess the progress that Ireland has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Ireland has made towards achieving the target for wasting, nor is there adequate prevalence data.  
• There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Ireland is on course to prevent the figure from increasing.  
• Ireland has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. “Gaining Health” is an important milestone in the recent history of Italian public health. Concrete projects have been undertaken towards health prevention in many areas relevant to |

“Gaining Health” | Italy National Centre for Disease Prevention and Control | To prevent and change unhealthy behaviors that promote increases in degenerative and chronic diseases. | 2006 | (continued on next page)
Table 2 (continued)

| Program                              | Country/ies involved | Areas of intervention                                                                 | Year/s of implementation | Progress Outcomes, Results |
|--------------------------------------|----------------------|---------------------------------------------------------------------------------------|--------------------------|---------------------------|
| Obesity including: environment and climate, chronic diseases, promotion of healthy lifestyles, support for vulnerable people, and information flows. However, several weaknesses need to be addressed, including the persistence of strong regional disparities in health status and in the quality of public health services. https://eurohealthobservatory.who.int/countries/italy/ |
| • Overweight and obesity rates in Italy are high among children and adolescents. Nearly one in five 15-year-olds in Italy (19%) was overweight or obese in 2018, according to the Europe-wide HBSC survey, which is a proportion similar to the EU average. A national survey, focusing on primary school children, reports even higher rates: 30% of children aged 8-9 were either overweight or obese in 2019, although this rate was down slightly from 31% in 2016 (Ministry of Health et al., 2019). |
| • Poor nutrition is the main factor contributing to overweight and obesity. Daily fruit consumption among 15-year-olds is also slightly more common in Italy than in most EU countries. However, over 70% of 15-year-olds do not eat vegetables every day – a share higher than in most EU countries. |
| • Examples of active prevention policies, coordinated by the National Centre for Disease Prevention and Control in the context of the Gaining Health Program, include schools with active health promotion programs/activities and increasing food literacy among citizens. https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/italy/ |
| • Italy is ‘off course’ to meet all targets for maternal, infant and young child nutrition (MIYCN). |
| • There has also been no progress towards achieving the low-birthweight target, with 7.0% of infants having a low weight at birth. |
| • There is insufficient data to assess the progress that Italy has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. |
| • There is insufficient prevalence data or data to assess the progress that Italy has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Italy has made towards achieving the target for wasting, nor is there adequate prevalence data. |
| • There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Italy is on course to prevent the figure from increasing. |
| • Italy has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. The existence of a National Prevention Plan was a major development in this |

National Prevention Plan Italy Obesity-related goals included 2014-2018
Table 2 (continued)

| Program                          | Country/ies involved          | Areas of intervention                                                                 | Year/s of implementation | Progress Outcomes, Results                                                                                                                                                                                                 |
|----------------------------------|-------------------------------|----------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| • Healthy Nutrition 2003–2013.   | **Latvia**                    | Action areas:                                                                           | 2003–2013                | area, as were Regional Prevention Plans, which increasingly concentrate on the prevention of NCDs and the promotion of healthy lifestyles. However, this progress threatens to be undermined by recent budget cuts to prevention, which have left fewer resources that can be allocated to tackling obesity. There are also few efforts to make the required structural and systematic changes to urban environments to encourage people to increase their PA. |
| • School Milk program.           | Concept of the Cabinet of Ministers | Infant and young child feeding                                                         |                          | • Latvia is ‘on course’ to meet one targets for maternal, infant and young child nutrition (MIYCN).                                                                                                                                   |
|                                  |                               | Breastfeeding                                                                           |                          | • Latvia is ‘on course’ for the low-birth-weight target, with 4.5% of infants having a low weight at birth.                                                                                                                                 |
|                                  |                               | Overweight, obesity and diet-related NCDs                                                |                          | • There is insufficient data to assess the progress that Latvia has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. Similarly, there is insufficient prevalence data or data to assess the progress that Latvia has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Latvia has made towards achieving the target for wasting, nor is there adequate prevalence data. |
|                                  |                               | Overweight in school children                                                           |                          | • There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Latvia is on course to prevent the figure from increasing.                                                             |
| State Food and Nutrition Strategy  | **Lithuania**                  | Dietary practice: The State program for improvement of nutrition of schoolchildren, Prohibition of sales of sweets containing sweeteners, colors and drinks containing sweeteners, colors, caffeine in pre-schools and schools. Recommendations for using of fruits and vegetables, Implementation of Baby-Friendly Hospital Initiative. | 2007                     | • Latvia has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets.                                                                                                                          |
| and Action Plan                  |                               |                                                                                        |                          | • Latvia is ‘on course’ to meet one targets for maternal, infant and young child nutrition (MIYCN).                                                                                                                                   |
|                                  |                               | a) Maternal, infant and young child nutrition: Counselling on healthy diets and nutrition during pregnancy, Breastfeeding promotion/counselling |                          | • OW & OB rates are a growing issue among adolescents in Lithuania; the rates have tripled over the last two decades, reaching 15% in 2018, although this remains below most EU countries.                                                                 |
|                                  |                               | b) Nutrition in schools: School-based health and nutrition programs, promotion of healthy diet and prevention of obesity and diet-related NCDs, Nutrition counselling on healthy diets. |                          | https://globalnutritionreport.org/resources/nutrition-profiles/europe/northern-europe/lithuania/                                                                                                                                          |
|                                  |                               | c) Vitamin and mineral nutrition: Micronutrient supplementation                           |                          | • Lithuania is ‘on course’ to meet one targets for maternal, infant and young child nutrition (MIYCN).                                                                                                                                   |
|                                  |                               | d) physical activity                                                                    |                          |                                                                                          | (continued on next page)
| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|---------------------------|
| Health literacy, improving the nutritional value of school meals and other foods, and creating an environment that enables a healthy lifestyle. | Lithuania | • Lithuania is ‘on course’ for the low-birth-weight target, with 4.5% of infants having a low weight at birth. • There is insufficient data to assess the progress that Lithuania has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. • Similarly, there is insufficient prevalence data or data to assess the progress that Lithuania has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Lithuania has made towards achieving the target for wasting, nor is there adequate prevalence data. • There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Lithuania is on course to prevent the figure from increasing. • Lithuania has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. | 2005 | https://eurohealthobservatory.who.int/countries/lithuania/ |
| National program to promote healthy nutrition and physical activity. | Luxembourg | Following the first National Health Conference in November 2005, an initiative was taken to elaborate an interdisciplinary coordination to implement the policy, to evaluate the initiatives realized, to identify further needs and regularly to adapt the program on nutrition and PA. | 2005 | https://eurohealthobservatory.who.int/countries/luxembourg/ | Poor nutrition and low PA contribute to rising obesity among adolescents in Luxembourg. More than one in five 15-year-olds were overweight or obese in Luxembourg in 2018 – a higher proportion than in most EU countries, and a significant rise since 2006. Boys are more likely to be overweight or obese than girls. In Luxembourg, as in other countries, poor nutrition is the main factor contributing to being overweight or obese. | Luxembourg is ‘off course’ to meet all targets for maternal, infant and young child nutrition (MIYCN). • There has also been some progress towards achieving the low-birth-weight target with 6.5% of infants having a low weight at birth. • There is insufficient data to assess the progress that Luxembourg has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. • Similarly, there is insufficient prevalence data or data to assess the progress that Luxembourg has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Luxembourg has made towards achieving the target for wasting, nor is there adequate prevalence data. • There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Luxembourg is on course to prevent the figure from increasing. • Luxembourg has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. | (continued on next page) |
Table 2 (continued)

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|---------------------------|
| "The Healthy Lifestyle Promotion and Care of Non-Communicable Diseases Act" | Malta | To establish and ensure an inter-ministerial life-course approach favoring PA and healthy balanced diets to achieve healthy lifestyles and reduce NCDs in all age groups. Maltese government issued subsidiary legislation to regulate the food being sold and provided by schools, implement programs for healthy eating, ban advertising or sponsorship of unhealthy foods, and ensure provision of drinking water in schools. | 2016 | https://eurohealthobservatory.who.int/countries/malta/ • Rates of obesity in Malta are the highest in the EU, with more than a quarter of children and adults classified as obese. Poor diets and physical inactivity contribute to high levels of obesity in the country. Over one in three 15-year-olds were overweight or obese in 2018 – almost double the EU average. • Tackling high rates of overweight and obesity in Malta has been recognized as a government priority over the past decade, and a number of inter-sectoral actions have been implemented to address the obesogenic environment. Recent legislation to regulate food available in schools and to restrict advertising and sponsorship of unhealthy foods has been enacted to help tackle this public health priority. In the 2021 government budget, funding was committed to support educational campaigns to address eating disorders and obesity among minors. Funding was also committed to help promote a new culture of PA by refurbishing and developing sport venues and facilities. |
| A legislative tool for schools. | 2018 |
| National Food and Nutrition Program (NFNP) and its Action Plan | Moldova | Ministry of Health | Aim: Zero increase in obesity prevalence among children and adults. The NFNP and its Action Plan provide for multisectoral actions regarding health promotion and obesity prevention via taxes, mandatory nutritional labelling, restrictions on advertising and banning the | 2014-2020 | https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/moldova/ • Malta is ‘on course’ to meet one targets for maternal, infant and young child nutrition (MIYCN). • Malta is ‘on course’ for the low-birth-weight target, with 6.3% of infants having a low weight at birth. • There is insufficient data to assess the progress that Malta has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. • Similarly, there is insufficient prevalence data or data to assess the progress that Malta has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Malta has made towards achieving the target for wasting, nor is there adequate prevalence data. • There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Malta is on course to prevent the figure from increasing. • Malta has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. • The Advisory Council developed criteria for healthy foods which were based on the WHO nutrient profiling model. Random inspections are carried out by specifically trained environmental health practitioners. • The implementation of these interventions in counteracting obesity has been minimal and subject to delay. The banning of unhealthy food was enforced within schools, but was unsuccessful in the areas surrounding schools. The advertising and promotion of unhealthy food has (continued on next page) |
Table 2 (continued)

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|----------------------------|
| Law on Public Health | Moldova | involvement of children in food advertising, elimination of trans-fats, reformulation of food to reduce the content of sugar, fat and salt, health education and establishing a national obesity surveillance system. | 2009 | neither been properly regulated nor enforced. |
| National Prevention Plan (NPP) | The Netherlands | The NPP covers five domains: school, work, living environment, healthcare, and health protection. It encompasses a wide range of activities in these domains, from promoting health and preventing illness at home, school and work, and making prevention more prominent in health care, to maintaining the current, high level of health protection. Overweight is one of the strategic areas of action of the Plan. | 2014-2020 | • There is no clear delineation of responsibilities between central and local authorities, including for public health issues such as obesity. National health programs are not mandatory for local authorities, even though they are responsible for protecting and promoting health and preventing disease. |
| | | | | • In Moldova, the obesity surveillance system has been strengthened with technical support by WHO and financial support by development partners such as the EU and the Swiss Development Agency. In 2013, the Republic of Moldova became part of the COIN and STEPS surveys. The Food Law was amended and preparation, selling and distribution of unhealthy food on school premises and within 100 meters of schools was banned. |
| | | | | • Moldova is ‘on course’ to meet two targets for maternal, infant and young child nutrition (MIYCN). No progress has been made towards achieving the target of achieving the low-birthweight target, with 5.0% of infants having a low weight at birth. |
| | | | | • There is insufficient data to assess the progress that Moldova has made towards achieving the exclusive breastfeeding target; however, the latest prevalence data shows that 36.4% of infants aged 0 to 5 months are exclusively breastfed. |
| | | | | • Moldova is ‘on course’ to meet the target for stunting, but 6.4% of children under 5 years of age are still affected, which is higher than the average for the Europe region (4.5%). |
| | | | | • There is insufficient data to assess the progress that Moldova has made towards achieving the target for wasting; however, the latest prevalence data shows that 1.9% of children under 5 years of age are affected. |
| | | | | • The prevalence of overweight children under 5 years of age is 4.9% and Moldova is ‘on course’ to prevent the figure from increasing. |
| | | | | • Moldova has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. |
| | | | | • The overweight and obesity rate among Dutch teenagers is lower than in most EU countries. |
| | | | | • The process indicators on the health programs showed that many of the health programs have reached their goals, with notable progress in schools. The indicators showed for instance, that at the end of 2018, 1065 schools have become a ‘Healthy School’ overreaching the target of 850, and 70 ‘Healthy School Squares’ (continued on next page)


| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|---------------------------|
| Young People at a Healthy Weight (JOGG) | The Netherlands | A program coordinated at national level targeting maintenance of healthy weight for children and adolescents aged 0-19. JOGG encourages healthy eating and exercise within cities, town and neighborhoods. The local approach targets health professionals, shopkeepers, schools, companies and local authorities to help children and families attain and maintain a healthy weight. Over 84 municipalities in the Netherlands are now using JOGG. The program is based on the French EPODE program, with five main pillars which each town and city plans activities around: | 2010-2014 | have been developed. Progress has also been made in other settings. Nearly 1,000 sports clubs are currently working on a 'Healthy Sport Canteen', exceeding the target of 600. By the end of 2016, 116 municipalities were affiliated with Youth at a Healthy Weight (JOGG), a program to prevent obesity among young people. This means that potentially, around 832,000 children could be reached. https://globalnutritionreport.org/resources/nutrition-profiles/europe/western-europe/netherlands/ |
| | | | | • The Netherlands is 'on course' to meet one targets for maternal, infant and young child nutrition (MIYCN). |
| | | | | • There has been no progress towards achieving the low-birth-weight target, with 6.2% of infants having a low weight at birth. |
| | | | | • There is insufficient data to assess the progress that the Netherlands has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. |
| | | | | • The Netherlands is 'on course' to meet the target for stunting, with 1.5% of children under 5 years of age affected, which is lower than the average for the Europe region (4.5%). There is insufficient data to assess the progress that the Netherlands has made towards achieving the target for wasting; however, the latest prevalence data shows that 1.0% of children under 5 years of age are affected. |
| | | | | • The prevalence of overweight children under 5 years of age is 3.8% and the Netherlands has made no progress against increasing the figure. |
| | | | | • The Netherlands has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. Between 2012 and 2015, the program reported a decrease in obesity from 8% to 6% among all children 0-18 years, with an 11% decline among low and 9% very low socioeconomic groups. The combined prevalence of overweight and obesity fell from 21% to 18.5%. Alongside Dutch children, there were significant reductions in obesity among children from other ethnic groups, including Turkish and Moroccan. Of the 11 heaviest neighborhoods, 9 are now lighter. Sugar sweetened beverage consumption among children decreased and the proportion of children exercising increased. Exclusive breastfeeding rates also increased by 4% at 3 months and 5% at 6 months. Though there have been improvements amongst most age groups, there have been mixed results in younger children 2-4 years, with no clear reason as to why. Much can be learnt from this multi-level intervention, in particular as regards the focus and impact on lower socioeconomic groups. https://eurohealthobservatory.who.int/countries/norway/Obesity levels are lower than the EU average |
| Amsterdam Healthy Weight Program (AAGG) | The Netherlands: Amsterdam | Established by the Amsterdam Municipality. The objective of AAGG is to “give every child a healthy childhood and future, regardless of their start in life”. The Rainbow Model on Childhood Obesity program outlines the numerous factors influential to children’s health and development, and thus the need to engage all sectors to achieve healthy weight children. | 2013 | 2015-2018 |
| The Amsterdam Rainbow Model on Childhood Obesity | | | | • Norwegian National Action Plan for a Healthier Diet | Norway | Aims & intervention areas: Promotion of healthy diet and prevention of obesity and diet-related NCDs | 2017-2021 | | (continued on next page) |
| Program                      | Country/ies involved | Areas of intervention                                                                                                                                                                                                 | Year/s of implementation | Progress Outcomes, Results                                                                                     |
|------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------|
| National Health Program       | Poland               | Obesity-related goals included in strategic health policy documents: the strategic focus of the National Health Program from the treatment of common diseases to the promotion of healthier lifestyles and the reduction of important risk factors. The new edition of the Program for 2021–25 includes operational goals on prevention of overweight and obesity, healthy ageing, mental health promotion, addiction prevention and reduction of health risks arising from environmental factors and infectious diseases. Four editions of the Program have been adopted: 1995–2005, 2007–2015, 2016–2020, 2021–2025 | 1995–2005, 2007–2015, 2016–2020, 2021–2025 | Despite the growing burden of overweight and obesity, Poland had no specific national program to tackle these concerns until 2007. In Poland, systematic evaluation of program is still lacking. Systematic monitoring of obesity prevalence in the population and evaluation of implemented programs are still missing. However, the 2015 Public Health Act states that at least 10% of resources allocated to the implementation of the National Health Programs (NHP) will be dedicated to monitoring, evaluation and scientific research in the field of public health. The three editions of the Program have provided strategic direction for the Polish health system, identifying key health challenges and ways of addressing them. The first two editions of the program focused rather narrowly on cardiovascular disease and cancer treatment and prevention strategies. The increasing prevalence of obesity in Poland has traditionally been underestimated as a public health issue, but this appears to be changing: new policies to address the issue are being developed. Recent initiatives introduced include the launch of a website dedicated to healthy eating, a cyclical health education campaign called “Prevention Wednesdays” and setting up a special team to review existing preventive programs. From January 2021, a new “sugar tax” has been levied on sugar-sweetened beverages that contain caffeine or taurine. Improving diet, nutrition and physical activity has also been included as the first operational target. (continued on next page) |
Table 2 (continued)

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|-----------------------------|
| • The Platform against Obesity (Graça et al., 2018) | Portugal | An important first response, which included a major media campaign as one of six national strategies, a comprehensive national program from the Ministry of Health, disseminated by all channels, implemented through campaigns, programs, and activities in several settings including schools throughout the country, crucial to creating awareness, engaging the community in the discussion, and raising literacy about the disease of childhood obesity. | 2007–2009 | object of the new National Health Program for 2021-25. |
| • Program Obesity Zero (POZ) (Rito et al., 2013) | Portugal | A multicomponent, community, family- and school-based childhood obesity intervention. It engaged families in the process of childhood obesity management by addressing components necessary for individual level behavioral change. The goal was then to target low-income families with overweight children (6-10 years old) through a set of activities in order to reverse the trend. This project was the first in Portugal to put forward an approach to treat obesity in children with the involvement of community players. The intervention targeted 5 behavioral changes: (i) decreasing the consumption of foods high in fat, salt and sugar; (ii) increasing the consumption of fruits and vegetables and wholegrain products; (iii) decreasing TV viewing; (iv) increasing PA levels; (v) and increasing knowledge, positive attitudes about nutrition and healthy diet, and related behavior change. | 2008–2009 | • Poland is ‘on course’ to meet one targets for maternal, infant and young child nutrition (MIYCN). |
| • National Program for the Promotion of Healthy Eating (PNPAS) | Portugal | | 2012 | • There is insufficient data to assess the progress that Poland has made towards achieving the low-birth-weight target, with 5.9% of infants having a low weight at birth. |
| • Integrated Strategy for the Promotion of Healthy Eating (EIPAS) (Graça et al., 2018) | Portugal | | 2017 | • There is insufficient data to assess the progress that Poland has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. Poland is ‘on course’ to meet the target for stunting, with 2.6% of children under 5 years of age affected. |

https://globalnutritionreport.org/resources/nutrition-profiles/europe/eastern-europe/poland/

• Poland is ‘on course’ to meet one targets for maternal, infant and young child nutrition (MIYCN).
• There is insufficient data to assess the progress that Poland has made towards achieving the low-birth-weight target, with 5.9% of infants having a low weight at birth.
• There is insufficient data to assess the progress that Poland has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. Poland is ‘on course’ to meet the target for stunting, with 2.6% of children under 5 years of age affected.

https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/portugal/

• Portugal is ‘on course’ to meet two targets for maternal, infant and young child nutrition (MIYCN).
• There has been no progress towards achieving the low-birth-weight target, with 8.9% of infants having a low weight at birth.
• There is insufficient data to assess the progress that Portugal has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data.
• Portugal is ‘on course’ to meet the target for stunting, with 3.2% of children under 5 years of age affected, which is lower than the average for the

(continued on next page)
| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|---------------------------|
| National Plan of Food for Nutrition | Romania | Action areas: Overweight, obesity and diet-related NCDs, Overweight in children 0-5 yrs. | 2009-2010 | Europe region (4.5%). There is insufficient data to assess the progress that Portugal has made towards achieving the target for wasting; however, the latest prevalence data shows that 0.6% of children under 5 years of age are affected.  
• The prevalence of overweight children under 5 years of age is 7.1% and Portugal is ‘on course’ to prevent the figure from increasing.  
• Portugal has shown limited progress towards achieving the diet-related non-communicable disease (NCD) target. |
| Priority Project ‘Development of Healthy Lifestyle’ | Russian Federation | Action areas: Nutrition in schools, School-based health and nutrition programs, Promotion of healthy diet and prevention of obesity and diet-related NCDs | 2017-2025 | Russia is ‘off course’ to meet all of the global nutrition targets for which there was sufficient data to assess progress.  
• Russia is ‘off course’ to meet all targets for maternal, infant and young child nutrition (MIYCN).  
• No progress has been made towards achieving the low-birth-weight target with 5.8% of infants having a low weight at birth.  
• There is insufficient data to assess the progress that Russia has made towards achieving the exclusive breastfeeding target.  
• Russia has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. |
| Program                                      | Country/ies involved | Areas of intervention                                                                 | Year/s of implementation | Progress Outcomes, Results                                                                                                                                                                                                 |
|----------------------------------------------|----------------------|----------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| National Program on Nutrition Improvement    | Slovakia             | All thee (3) national programs include educational activities focused on reducing the consumption of foods high in fat, sugar or salt (HFSS) by adults, adolescents and children. | 2006-2010               | There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Russia is on course to prevent the figure from increasing.  |
| National Obesity Prevention Program          |                      |                                                                                       | 2008                     | There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Russia is on course to prevent the figure from increasing.  |
| National Program on Care for Children and Adolescents |          |                                                                                       | 2008                     | There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Russia is on course to prevent the figure from increasing.  |
### Table 2 (continued)

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|----------------------------|
| National program on Nutrition and Physical Activity and HEPA | **Slovakia** | The program aims to address the physical activity habits of the Slovenian population from the early years of life to old age, as well as promoting daily physical activity. | 2015–2025 | • Slovakia has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. [https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/slovakia/](https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/slovakia/) • Slovenia is ‘off course’ to meet all targets for maternal, infant and young child nutrition (MIYCN). • Meanwhile, there has been no progress towards achieving the low-birth-weight target, with 6.1% of infants having a low weight at birth. • There is insufficient data to assess the progress that Slovenia has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. • There is insufficient prevalence data or data to assess the progress that Slovenia has made towards achieving the target for wasting, nor is there adequate prevalence data. • There is insufficient prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Slovenia is on course to prevent the figure from increasing. |}

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|----------------------------|
| National program on Nutrition and Physical Activity and HEPA | **Slovenia** | Ministry of Health | | • Slovenia has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. [https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/slovenia/](https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/slovenia/) • Slovenia is ‘off course’ to meet all targets for maternal, infant and young child nutrition (MIYCN). • Meanwhile, there has been no progress towards achieving the low-birth-weight target, with 6.1% of infants having a low weight at birth. • There is insufficient data to assess the progress that Slovenia has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. • There is insufficient prevalence data or data to assess the progress that Slovenia has made towards achieving the target for wasting, nor is there adequate prevalence data. • There is insufficient prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Slovenia is on course to prevent the figure from increasing. |}

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|----------------------------|
| National program on Nutrition and Physical Activity and HEPA | **Spain** | Ministry of Health | | • Spain is ‘off course’ to meet all targets for maternal, infant and young child nutrition (MIYCN). • No progress has been made towards achieving the low-birth-weight target, with 8.3% of infants having a low weight at birth. • There is insufficient data to assess the progress that Spain has made towards achieving the exclusive breastfeeding target, nor is there adequate prevalence data. • There is insufficient prevalence data or data to assess the progress that Spain has made towards achieving the target for wasting, nor is there adequate prevalence data. • There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Spain is on course to prevent the figure from increasing. |}

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|----------------------------|
| Strategy for Nutrition, Physical Activity and prevention of Obesity (NAOS) (Neira and de Onis, 2006) | **Spain** | Spanish Ministry of Health & Consumer Affairs Coordinated by the Spanish Food Safety Agency and the General Directorate of Public Health | | With the aim of improving the health of consumers and reducing overweight and obesity levels, in 2019 the government and the food industry reached an agreement to cut the content of sugar, salt and fat in more than 3,500 food and drink products over the next three years, with the voluntary commitment of nearly 400 companies. These ingredients are expected to be cut by around 10%, on average. [https://eurohealthobservatory.who.int/countries/spain/](https://eurohealthobservatory.who.int/countries/spain/) |}

| Program | Country/ies involved | Areas of intervention | Year/s of implementation | Progress Outcomes, Results |
|---------|----------------------|-----------------------|--------------------------|----------------------------|
| Nutritional labelling system Nutri-score | **Spain** | Estrategia de Seguridad Alimentaria (Food safety and Nutrition Strategy) | | [https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/spain/](https://globalnutritionreport.org/resources/nutrition-profiles/europe/southern-europe/spain/) |}

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(continued on next page)
Table 2 (continued)

| Program                                      | Country/ies involved | Areas of intervention                                                                                                                                                                                                 | Year/s of implementation | Progress Outcomes, Results                                                                                                                                                                                                 |
|----------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A Healthy School Start Plus (Elinder et al., 2018) | Sweden               | Aims to prevent childhood obesity and overweight in disadvantaged areas in a 6-month program using education directed at parents, motivational interviewing of parents, school-based activities for children and online self-test. Aims to reduce the proportion of overweight and obesity in adults, children and pregnancy by 2020. | 2018 (ongoing)           | In Sweden, the responsibility for performing surveys lies with the Public Health Agency. Trends in dietary habits and levels of physical activity in the population have been monitored by the agency and reported in public health reports. Nationally representative data on obesity among children in Sweden are not available, but some regions have been monitoring long-term trends based on data from routine school health examinations. Small-scale projects designed to reduce childhood obesity are evaluated through maternal and child health services, but no national database exists. |
| National guidelines for prevention and treatment in case of unhealthy lifestyles |                      |                                                                                                                | 2018 (ongoing)           | https://globalnutritionreport.org/resources/nutrition-profiles/europe/northern-europe/sweden/                                                                                                      |
| Action plan for overweight and obesity - Stockholm |                     |                                                                                                                | 2016-2020                | • Sweden is 'on course' to meet one targets for maternal, infant and young child nutrition (MIYCN).                                                                                                                                 |
| • Swiss Nutrition Policy                      | Switzerland          | To reduce the prevalence of nutrition-related diseases, ensure the supply of safe and high-quality food and contribute to the sustainable and environmentally friendly production and distribution of food. The Network Health enhancing Physical Activity Switzerland was created to promote PA among the population. The NPDPA has five goals, which are implemented by its four partners. | 2013-2016 2004 | • Switzerland is 'off course' to meet all targets for maternal, infant and young child nutrition (MIYCN).                                                                 |
| • National Program on Diet and Physical Activity NPDPA |                     |                                                                                                                |                          | • There has been no progress towards achieving the low-birth-weight target, with 6.5% of infants having a low weight at birth.                                                                                          |
|                                               |                      |                                                                                                                |                          | • There is insufficient data to assess the progress that Switzerland has made towards achieving the target for stunting. There is also insufficient data to assess the progress that Switzerland has made towards achieving the target for wasting, nor is there adequate prevalence data. |
|                                               |                      |                                                                                                                |                          | • There is inadequate prevalence data to show the proportion of children under 5 years of age who are overweight and there is insufficient data available to assess whether Switzerland is on course to prevent the figure from increasing. |
|                                               |                      |                                                                                                                |                          | • Switzerland has shown limited progress towards achieving the diet-related noncommunicable disease (NCD) targets.                                                                                       |

(continued on next page)
childhood obesity in European region, surveillance of population minor 5 years of age should be strengthened to warrant timely, regular, and qualitative data for the development of obesity prevention strategies and interventions (Brinsden and Neveux, 2021). The European region WHO has strengthened surveillance and monitoring of obesity in children aged 6 to 9 years with the implementation of the WHO European Childhood Obesity Surveillance Initiative (COSI) since its launch in 2007 (Spinelli et al., 2021). Thus, expanding the initiative to include data on obesity in children younger than 5 years is of critical importance.

3.4. Examples of progress and gaps in the current European Union school food policy landscape

Public health policies targeting children’s food choices and consumption, excluding their dietary choices within school attending hours, have the double aim either to limit the sale of alcoholic beverages and processed foods or to determine the nutritional content of food (nutrient-based guidelines are mostly used to limit foods high in energy, fat, sugar, or sodium) by setting relevant standards (Tatlow-Golden et al., 2021).

As reported by the 2nd Global Nutrition Policy Review, globally, 77 of 160 nations (global rate 48.1%) have in their agenda some sort of regulation in place for the types of food and drink that can be sold in places like schools, cafeterias, supermarkets, convenience stores, and vending machines; In the European context this specific rate comes to 28.6% (22 European countries out of 77 countries). Moreover, eighty-nine percent of the 160 countries surveyed reported having school health and nutrition programs, with most emphasizing the consumption of fruits, vegetables, water, and whole grain cereals and limiting savory snacks, cakes and pastries, fried foods, salt and high sodium condiments, carbonated and noncarbonated soft drinks (Organization, 2018b).

Moreover, optimal national public authorities’ involvement in the educational sector, exerting considerable influence, namely in setting food standards and in food procurement. All EU Member States have exhibited praiseworthy progress in this area, introducing voluntary or mandatory school food policies (SFPs) in the 28 EU countries. However, translating these policies into healthy food realities still remains a challenge.

A review of current European school feeding policies (Storcksdieck
Table 3

WHO Regional Office for Europe data sources for monitoring and surveillance of childhood obesity

| Data Source | Year | Aims & description |
|-------------|------|--------------------|
| European Charter on Counteracting Obesity | 2006 | To address the growing challenge posed by the epidemic of obesity to health, economies and development. |
| The EU Platform for Action on Diet, Physical Activity and Health (Tselengidis and Östergren, 2019) | 2005 | An action-oriented cooperative process to help stem the obesity trend, aimed at addressing the dynamic marketing and media environment in the EU. While it provides a common framework, member companies can make commitments that go beyond it, and several do. Since its launch, most of the member companies have stepped up their corporate commitments, tightening the way they define advertising to children, broadening the scope of their actions and strengthening nutrition criteria. |
| Nutrition, Obesity and Physical Activity (NOPA) database (Swinburn et al., 2013) | 2008 | NOPA Europe database was developed to compile information for 53 Member States to help policymakers identify gaps and needs in data collection and policy development, and monitor progress in addressing obesity. The NOPA database examines progress made by countries based on their Second European Action Plan for Food and Nutrition Policy, which provides an integrated approach to nutrition, food safety and food security from 2007 to 2012. |
| e-Library of Evidence for Nutrition Action (eLENA) | 2011 | https://www.who.int/eLENA/en/ |
| Global database on the Implementation of Nutrition Action (GINA) | 2012 | Contains information from various sources, including a questionnaire to Member States, analyzed in the context of the Global Nutrition Policy review, and direct submissions collected through a wiki platform. GINA will address issues such as child growth and breastfeeding, and will be based on countries’ implementation experiences. |
| Smart childhood Obesity CARing solution using IoT potential (OCARIoT) | 2017-2020 | The main goal of OCARIoT, implemented from 2017-2020 in Spain and Greece, was to promote the improvement of eating and physical disorders and also the prevention of the obesity onset for 9-12 years old children. For doing so, OCARIoT developed an IoT-based customized, personalized obesity coaching plan guiding children to implement healthy eating and PA behavior, and an IoT network observing child activity patterns of daily living, health evolution, physiological & behavioral parameters and environmental data. The proposed solution aimed to empower children, educational staff and families to take control of their health by collecting real-time information about nutrition and PA, and interconnecting doctors and children (including parents and tutors) to adapt the individual obesity coaching plan. |

Genannt Bonsmann, (2014) indicated that all 28 EU countries currently have national school feeding policies, with half setting mandatory standards and the other half providing voluntary guidelines. The methods by which school policy requirements or recommendations are developed are remarkably varied, ranging from straightforward lists of nutrients that are permitted (or not) to be served within schools (e.g., in Cyprus and Greece), to extensive collections of instructions on how to handle different aspects of nutrition policy, like purchasing, catering services, and kitchen and dining facilities (e.g. in France and Spain). Three major policy objectives were to improve child nutrition (at a rate of 97 %), encourage kids to adopt healthy eating habits and lifestyles (at a rate of 94 %), and to lessen or prevent childhood obesity (at a rate of 88 %).

In nearly 90 % of all interventions, lunch and snacks were the most frequently discussed meals. In 68 % of the nations surveyed, nutrition education was a required component of national curricula, and in the remaining nations, the importance of the subject was either acknowledged, or it was strongly advised that it should be included. Finally, 65 % of SFPs stipulated certain training requirements for food service staff.

It is encouraging to diagnose that the majority of EU nations are putting policies into place that aim to increase the consumption of wholesome school lunches and decrease the consumption of junk food and sugary drinks. Leading the pack are Finland, Iceland, Denmark, Hungary, and Portugal (Lloyd-Williams et al., 2014). Other encouraging examples of good practice and policy opportunities in Europe to improve the nutrition environment in kindergartens and schools (Kovacs et al., 2020) were identified, including: the Bulgaria’s National Program for Prevention of Non-Communicable Diseases 2013–2020; the Greek School Canteen Policy; the Public Catering Decree and the Legislation on Daily Physical Education classes in Hungary; the coordinated policies to restrict unhealthy foods in kindergartens and schools in Latvia, and the National Health Promotion Program (NPPZ), and the National Action Plan for the Prevention of Obesity in Slovakia. All policies met the nine good practice core criteria, with the exception of the final two. The criteria for monitoring and evaluating the two Slovene policy initiatives were absent. However, they were included to broaden the portfolio. The National Program from Bulgaria and the two policies from Slovakia targeted the general population, while the other four policies targeted children attending daycare or educational institutions (Kovacs et al., 2020).

According to the most recent confirmed data on published EU country measures from the European Observatory on Health Systems and Policies 2022 (Scott L. Greer, 2022), the WHO Europe Countries Nutrition Profile 2022 Report (WHO, 2022), and the WHO Global database on the Implementation of Nutrition Action (GINA) (descriptive Table 3), child obesity is on the rise in European countries, but all EU countries are ‘on track’ to meet maternal, infant and young child
nutrition (MIYCN) targets, with little or no progress toward the exclusive breastfeeding, stunting and emaciation target. All countries are ‘on track’ to prevent the prevalence of overweight children under 5 years of age from increasing and show limited progress in achieving the targets for diet-related non-communicable diseases (NCDs) (Bellew et al., 2019).

It is not a matter of debate that all EU nations still need to win the bet of implementing – in a truly meaningful and effective way- fiscal, as well as regulatory measures in the field of dietary policies to target childhood obesity. The school foodservice milieu remains a much-underutilized stage for promoting healthy nutrition among children, particularly as it addresses in parallel malnutrition and overweight and obesity issues (Organization, 2018b; Carducci et al., 2020). With the aim to make the wholesome choice the simpler choice, endorsing a healthy nutritional head-start ethos, particularly in preschool and school units, posing marketing and advertising limitations to children, are remaining fields in urgent need of deeper consideration.

4. Results

The recent WHO’s (2018) progress report (Organization, 2018a) and relevant studies (Breda et al., 2020), provide evidence of significant improvement in enactment of key policies addressing childhood obesity in recent years; According to European Observatory on Health Systems and Policies (Eurohealth) 2019 report (Hernández-Quevedo et al., 2019), the most advancement has been accomplished on topics such as providing nutritional guidance, school food, food product reformulation, banning vending machines, encouraging PA in schools, fiscal policies and surveillance of childhood obesity.

Poor performance areas include pre-packaged customer registration and the introduction of strict advertising restrictions with appropriate criteria: Food labeling complies with mandatory regulations regarding packaged food. However, although many countries have indicated that pre-labeling is voluntary, few have specific guidelines or regulations and use pre-package labeling for interpretation, particularly for groups with low economic, educational and social background. Relevantly, EU member states still anticipate the revision of the audio-visual media services directive (AMSD), which also regulates -due to its harmful effect in children- the advertising on TV, tablets and mobile phones. Moreover, sustenance for breastfeeding and appropriate complementary feeding remain other areas which should be “reinigorated” or extended, for Member States to attain the set goals.

Furthermore, reformulation is illustrative of the considerable discrepancy between the type and scope of policies undertaken by Member States in terms of a mixture of single-issue policy responses and more coherent measures (Wickramasinghe et al., 2021). Publicly funded obesity education programs for children and young people are one area that may need more attention. However, in certain countries, there is a shortage of funding to conduct such programs. Another persistent difficulty is finding effective ways to interact with the food business in areas such as regulation, taxation, and market processes. Paradoxically, despite the undisputable rise of the burden of childhood obesity epidemic, there are still European countries, where this does not represent a topic of public health debate (Hernández-Quevedo et al., 2019).

5. Directions for further actions

Further actions needed for reversing the burden of childhood obesity prevalence, thus filling the gap of relevant public health interventions, are highlighted by the WHO itself, even from 2007, until recently (Organization, 2021b; Branca et al., 2007), regarding the following pivotal childhood obesity prevention areas: 1) Develop and improve national food-based dietary guidelines; 2) Implement measures to regulate prices to support socially disadvantaged groups in accessing healthy foods; 3) Work together with the media and Internet service providers to regulate advertising aimed at children. Included in this effort is the dissemination of nutrition education, the improvement of food labeling, the promotion of breastfeeding, the enhancement of food nutrition profiles, the encouragement of the cultivation and marketing of fruits and vegetables, and the provision of healthy food in educational institutions. 4) Measures taken to encourage people to get more active, such as making PA more accessible and less expensive, encouraging safe PA transportation, especially for school commutes, bolstering PA at schools, promoting PA in the recreation and counseling sectors, and so on.

6. Conclusions

Europe faces a new and unprecedented public health threat from obesity, which has been underappreciated, underassessed, and not fully recognized as a strategic government problem with significant economic repercussions. Policies in Europe aimed at reversing the rise in childhood obesity are complicated, dynamic, and fast evolving. According to data from the 2021 Global Nutrition Report (Report, 2021) we are not on track to reach five out of six global maternal, infant, and young children nutrition (MIYCN) targets, including those for reducing stunting, wasting, low birth weight, anemia, and childhood overweight, salt consumption, hypertension, obesity, and diabetes are all non-communicable diseases (NCDs) for which dietary goals have not been met yet.

Information on the prevalence of OW&OB among children is crucial for informing the creation and dissemination of effective public health policies and programs, which are seen as the only realistic alternative for reducing the epidemic of childhood obesity. Although European nations have made significant strides toward slowing the rise of obesity, the prevalence of overweight people is still cause for concern, especially among the young populace.

The current narrative review critically addressing European community interventions, monitoring and surveillance targeting childhood obesity, highlighted that implementation of key policies may have been significantly improved in recent years, with advancement being achieved in areas such as school food, food product reformulation, fiscal approaches and surveillance of childhood obesity.

Areas, however, in which implementation is lagging and therefore necessitate more reinvigorated or extended attention and effort embrace: i) front-of-package labelling and comprehensive marketing restrictions, ii) support of breastfeeding, as exclusive breastfeeding rates in most countries of the European region tend to considerably decline after four months, being very low in infants under six months of age due to widespread inappropriate complementary feeding practices, iii) reformulation, monitoring policy implementation for better food and nutrition children under 5 years. If we are to attain the Sustainable Development Goals and associated targets, which governments across the European Region have agreed upon, more formidable approaches to food and nutrition policy may be needed in the coming years.

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Data availability

Data will be made available on request.
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References

(NCD-RiC NRFC, 2017. Worldwide trends in body-mass index, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128-9 million children, adolescents, and adults. Lancet 390, 2627–2624.

Bellev, W., Bauman, A., Kite, J., et al., 2019. Obesity prevention in children and young people: what policy actions are needed? Public Health Res. Pract. 29.

Borys, J.M., Le Bodo, Y., Jebb, S.A., et al., 2012. EPODE approach for childhood obesity prevention: methods, progress and international development. Obes. Rev. 13, 209–315.

Branca, F., Nikogosian, H., Lobstein, T., 2007. The challenge of obesity in the WHO European Region and the strategies for response: summary. World Health Organization.

Breda, J., Castro, L.S.N., Whiting, S., et al., 2020. Towards better nutrition in Europe: Evaluating progress and defining future directions. Food Policy. 96, 101887.

Breda, J., Farrugia Sant’Angelo, V., Duleva, V., et al., 2021. Mobilising governments and society to combat obesity: Reflections on how data from the WHO European Childhood Obesity Surveillance Initiative are helping to drive policy progress. 22: e13217.

Brinsden, S., Neveux, M., 2021. The STOP Project: Developing a multidisciplinary evidence-base for effective and sustainable policies to prevent and manage childhood obesity. . Europe and Food.

Brug, J., Lien, N., Klepp, K.I., et al., 2010. Exploring overweight, obesity and their economic determinants of nutrition and physical activity for the prevention of childhood obesity across Europe: the value of improving surveillance. Obes. Facts 11, 360–371.

Bruck, S., 2017. Determining factors and critical periods in the formation of eating habits: results from the Habeat project. Ann. Nutr. Metab. 70, 251–256.

Kickbusch, I., Allen, L., Franz, C., 2016. The commercial determinants of health. Lancet Glob. Health 4, e895–e896.

Kolektzko, B., Brands, B., Demmelmair, H., 2011. The Early Nutrition Programming Project (EARNET) s 5 of successful multidisciplinary collaborative research. Am. J. Clin. Nutr. 94, 1749S–1758S.

Kovacs, V.A., Sarkadi-Nagy, E., Sandu, P., et al., 2018. Good practice criteria for childhood obesity prevention in kindergartens and schools-elaboration, content and use. Eur. J. Pub. Health 28, 1029–1034.

Kovacs, V.A., Menings, S., Sarkadi-Nagy, E., 2020. Improving the food environment in kindergartens and schools: An overview of policies and policy opportunities in Europe. Food Policy. 101,048.

Lambirnou, C.P., van Stralen, M.M., Androustos, O., et al., 2019. Mediators of the effect of a kindergartens-based, family-involved intervention on pre-schoolers’ snacking behaviour: the Toybox-study. Public Health Nutr. 22, 157–163.

Lampert, D.J., Wu, S.Y., Drever-Heaps, J., et al. (2021) Can Public Health Interventions Change Immediate and Long-Term Dietary Behaviours? Encouraging challenges from a Pilot Study of the U.K. Change4Life Sugar Swaps Campaign. Nutrients 14.

Lloyd-Williams, F., Bromley, H., Orton, L., et al., 2014. Smorgasbord or symphony? Assessing public health nutrition policies across 30 European countries using a novel framework. BMC Public Health 14, 1–20.

Loure, V., Escabíans, J., Cloa-Monasterolo, R., et al., 2018. Unhealthy dietary patterns established in infancy track to mid-childhood: The EU Childhood Obesity Project. J. Nutr. 148, 752–759.

Mahase, E., 2022. Obesity: No European country is on track to halt rising levels by 2025, WHO warns. BMJ 377, e1107.

Manios, Y., Androustos, O., Lambirnou, C.P., et al., 2018. A school- and community-based intervention to promote healthy lifestyle and prevent type 2 diabetes in vulnerable families across Europe: design and implementation of the Feel4diabetes-study. Public Health Nutr. 21, 3281–3290.

Mersini, E., Hyska, J., Burazeri, G., 2017. Evaluation of national food and nutrition policy in Albania. Zdr. Vzst. 56, 115–123.

Neris, M., de Onís, M., 2006. The PROMO-FIT strategy for nutrition, physical activity and the prevention of obesity. Br. J. Nutr. 96 (Suppl 1), S8–S.

Neveux, M., Ayuandini, S., Klepp, K.-I., 2019. You (th) matters: co-creating policies to tackle obesity. Eurohealth 25, 30–33.

Nitti, G., Sciri, S., Petrelli, F., et al., 2019. Fighting obesity in children from European WHO Member States. Epidemiological data, medical-social aspects, and prevention programs. Clin. Ter. 170, e225–e230.

Pereira, A.R., Oliveira, A., 2021. Dietary interventions to prevent childhood obesity: a literature review. Nutrients 13.

Pineda, E., Sanchez-Romero, L.M., Brown, M., et al., 2018. Forecasting future trends in obesity across Europe: the value of improving surveillance. Obes. Facts 11, 360–371.

Quy, Y.H., Tam, W.-S., Zhang, M.W.B., et al., 2017. Exploring the association between childhood and adolescent obesity and depression: a meta-analyst. Obes. Rev. 18, 742–754.

Rasella, D., Richardi, L., Brachowitz, N., et al., 2021. Developing an integrated microsimulation model for the impact of fiscal policies on child health in Europe: the example of childhood obesity in Italy. BMC Med. 19, 310.

Report GN. (2021) The state of global nutrition. Executive summary.

Rito, A.L., Carvalho, M.A., Ramos, C., et al., 2013. Program Obesity Zero (POZ)–a community-based intervention to address overweight primary-school children from five Portuguese municipalities. Public Health Nutr. 16, 1043–1051.

Roberto, C.A., Swinburn, B., Hawkes, C., et al., 2015. Patchy progress on obesity prevention: emerging examples, entrenched barriers, and new thinking. Lancet 385, 739–749.

Scott, L., Greer, S.R., Nick Fahy, Eleanor Brooks, Holly Jarman, Anniek de Ruijter, Willy Palm, Matthias Wismar. (2022) Everything you always wanted to know about European Union health policies but were afraid to ask. European Observatory on Health Systems and Policies.

Spinnelli, A., Buonocristiano, M., Nardone, P., et al., 2021. Thinness, overweight, and obesity in 6 to 9-year-old children from 36 countries: The World Health Organization European Childhood Obesity Surveillance Initiative–COSI 2015–2020. Obes. Rev. 22, e13214.

Stockmarr, A., Heggaard, T., Matthiessen, J., 2016. Obesity prevention in the Nordic countries. Curr. Obes. Rep. 5, 156–165.

Storcksdike Genannt Bonsmann, S., 2014. Comprehensive mapping of national school food policies across the European Union plus Norway and Switzerland. Nutr. Bull. 39, 369–373.

Swinburn, B.A., Kraak, V.I., Allender, S., et al., 2019. The Global syndemic of obesity, undernutrition, and climate change: the lancet commission report. Lancet 393, 739–759.

Swinburn, B., Sacks, G., Vandevijvere, S., et al., 2013. INFORMAS (International Network for Food and Obesity/non-communicable diseases Research, Monitoring and Action Support): overview and key principles. Obes. Rev. 14 (Suppl 1), 1–12.

Taylor, A., Hjelm, J., Ståhlma, O., et al., 2021. Rising to the challenge: Introducing protocols to monitor food marketing to children from the World Health Organization Regional Office for Europe. Obes. Rev. 22, e13212.

Tragomulou, A., Moschonis, G., Maniot, Y., et al., 2020. Novel e-health applications for the management of cardiometabolic risk factors in children and adolescents in Greece. Nutrients 12.

Tran, B.X., Dang, K.A., Le, H.T., et al., 2019. Global evolution of obesity research in children and youths: setting priorities for interventions and policies. Obes. Facts 12, 137–149.

Tran, B.X., Nghiem, S., Afoakwah, C., et al. (2019b) Characterizing Obesity Interventions and Treatment for Children and Youths During 1991–2018. Int J Environ Res Public Health 16.
Preventive Medicine Reports 30 (2022) 102068

Tselengidis, A., Östergren, P.O., 2019. Lobbying against sugar taxation in the European Union: Analyzing the lobbying arguments and tactics of stakeholders in the food and drink industries. Scand. J. Public Health 47, 565–575.

UNICEF/WHO. (2015) The World Bank Group joint child malnutrition estimates: levels and trends in child malnutrition: key findings of the 2020 edition. United Nations International Children’s Emergency Fund (UNICEF) WHOWIBRaDWB. (2019) Levels and Trends in Child Malnutrition: Joint Child Malnutrition Estimates: Key Findings of the 2019 Edition. New York: UNICEF.

Upton, P., Taylor, C., Upton, D., 2015. The effects of the Food Dudes Programme on children’s intake of unhealthy foods at lunchtime. Perspect. Public Health 135, 152–159.

Van Dam, I., Guillen, E., Robinson, E., et al., 2022. Assessment of the Commitments and Performance of the European Food Industry to Improve Population Nutrition. Int. J. Public Health 67, 1604116.

Van Stralen, M.M., te Velde, S.J., Singh, A.S., et al., 2011. EuropeaN Energy balance Research to prevent excessive weight Gain among Youth (ENERGY) project: Design and methodology of the ENERGY cross-sectional survey. BMC Public Health 11, 65.

Weghuber, D.M.K., Schindler, K., Spinelli, A., Tichá, L., Ioakeimidis, I., 2019. Mapping the health system response to childhood obesity in the WHO European Region: An overview and country perspectives WHO: 1-85.

Wickramasinghe, K., Chatterjee, S., Williams, J., et al., 2021. Childhood overweight and obesity abatement policies in Europe. Obes. Rev. 22 (Suppl 6), e13300.

Wickramasinghek, K., Hetz, K., Zhiteneva, O., 2021. Digital Marketing of unhealthy products to children: evidence from the WHO CLICK framework. Eur. J. Pub. Health 31 (ckab164), 186.

Wijnboven, T.M., van Raaij, J.M., Yngve, A., et al., 2015. WHO European Childhood Obesity Surveillance Initiative: health-risk behaviours on nutrition and physical activity in 6-9-year-old schoolchildren. Public Health Nutr. 18, 3108–3124.

Williams, J., Buoncristiano, M., Nardone, P., et al., 2020. A Snapshot of European Children’s Eating Habits: Results from the Fourth Round of the WHO European Childhood Obesity Surveillance Initiative (COSI). Nutrients 12.

Williams, A.M., Suchdev, P.S., 2017. Assessing and Improving Childhood Nutrition and Growth Globally. Pediatr. Clin. North Am. 64, 755–768.

Wolters, M., Abrens, J., Romani-Pérez, M., et al., 2019. Dietary fat, the gut microbiota, and metabolic health – a systematic review conducted within the MyNewGut project. Clin. Nutr. 38, 2504–2520.

World Health Organization, 2018. Global Nutrition Policy Review 2016–2017: Country Progress in Creating Enabling Policy Environments for Promoting Healthy Diets and Nutrition. WHO, Geneva.

World Health Organization, 2021a. Nutrition, Overweight and Obesity: Factsheet on Sustainable Development Goals (SDGs): Health Targets. World Health Organization. Regional Office for Europe.

World Health Organization. (2001) The First action plan for food and nutrition policy: WHO European Region 2000-2005.

World Health Organization. (2008) WHO European action plan for food and nutrition policy 2007–2012. World Health Organization, Regional Office for Europe.

World Health Organization. (2013) Health 2020: a European policy framework and strategy for the 21st century: World Health Organization. Regional Office for Europe.

World Health Organization. (2015) European food and nutrition action plan 2015–2020.

World Health Organization. (2016) Report of the commission on ending childhood obesity.

World Health Organization. (2018a) Better food and nutrition in Europe: a progress report monitoring policy implementation in the WHO European Region.

World Health Organization. (2021b) European Health Report 2015: targets and beyond - reaching new frontiers in evidence. Highlights. WHO Regional Office for Europe.

World Health Organization. (2022) European Regional Obesity Report. Copenhagen: WHO Regional Office for Europe; 2022. Licence:CC BY-NC-SA 3.0 IGO.