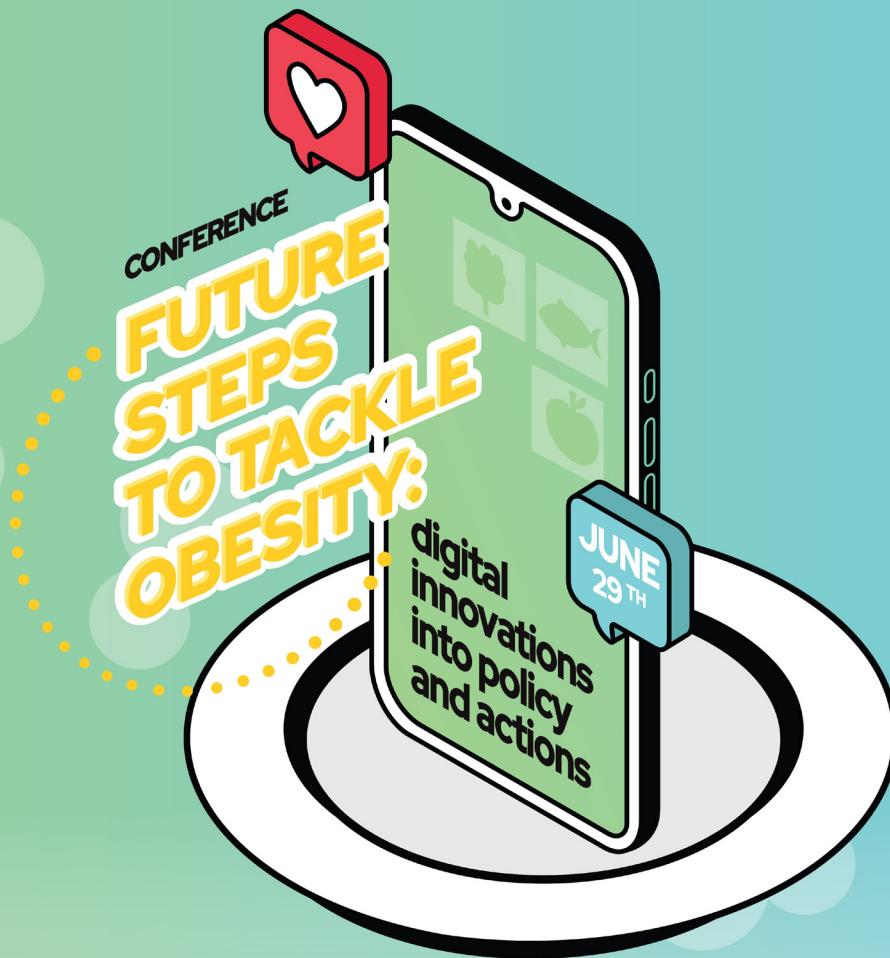


Future steps to tackle obesity: digital innovations into policy and actions

Conference report
29 June 2021



Abstract

The Portuguese Ministry of Health under the Portuguese Presidency of the Council of the European Union and the WHO Regional Office for Europe jointly organized a conference “Future steps to tackle obesity: digital innovations into policy and actions”, which took place on 29 June 2021. This conference included discussions and deliberations by a panel of experts on how the widespread use of digital tools and applications in the food environment affects structural and behavioural changes in our food choices. By understanding the threats and opportunities created by the digital world, actions can be formulated to tackle and prevent obesity. The conference concluded with the Lisbon Call to Action, which proposes that children under 18 years of age should be protected from obesogenic digital environments by reducing their exposure to digital marketing of unhealthy food products and by expanding the opportunities offered by digitalization to enhance the accessibility and affordability of healthy and environmentally sustainable food. The Call to Action, signed by the Portuguese Minister of Health, calls on governments, diverse stakeholders and relevant actors to become signatories.

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Future steps to tackle obesity:

digital innovations into policy and actions

Conference report

29 June 2021

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Abbreviations

AI	Artificial Intelligence
EU	European Union
MDA	meal delivery app
NCD	noncommunicable disease
SDG	Sustainable Development Goal
UNICEF	United Nations Children's Fund

Glossary

obesogenic environment	The sum of influences that the surroundings, opportunities or conditions of life have on promoting obesity in individuals or populations (1).
digital food environment	A digital setting in which consumers engage with different services, activities and information that might influence decisions about acquiring, preparing and consuming food (2).
food system	A system that encompasses a range of factors associated with the production, aggregation, processing, distribution, consumption and disposal of food products that originate from forestry and fisheries. A food system delivers economic sustainability, social sustainability and environmental sustainability (3).
food systems approach	A way of thinking and doing that takes into account all the elements, relationships and effects of food systems. It takes into account factors such as the current climate, population growth, health, urbanization, globalization, growing wealth and changing consumption patterns (3).
artificial intelligence	The science and engineering of intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but artificial intelligence does not have to confine itself to methods that are biologically observable (4).
big data	The field that treats ways to analyse, systematically extract information from, or otherwise deal with data sets that are too large or complex to be dealt with by traditional data-processing software. It surpasses the traditionally used amount of storage, processing and analytical power in three different dimensions – namely, volume, velocity and variety (5).

Executive summary

This report summarizes discussions that took place during a one-day conference entitled *Future steps to tackle obesity: digital innovations into policy and actions*, jointly organized by the Portuguese Ministry of Health under the Portuguese Presidency of the Council of the European Union and the WHO Regional Office for Europe. The conference, held online on 29 June 2021, brought together experts from the European Union (EU) in the fields of data, technology, policy-making, governance, regulation and public health.

The conference discussed the opportunities created and the threats posed by digital food environments that can lead to obesity, prevent obesity and increase equity. It aimed to address the following three questions pertaining to digital food systems:

- How is digital transformation influencing food consumption and what will be the long-term effects on health outcomes?
- How can we use new digital tools to devise models and methodologies for food-related data collection and to monitor obesity policies?
- What are the potential avenues for governments to use digital innovations to devise policy and actions to tackle obesity?

During the conference, 16 expert speakers shared their perspectives on different aspects of the digital food environment, including data and privacy protection, targeted marketing, initiatives to monitor food consumption, case studies on regulatory and policy changes, threats and opportunities associated with digital food systems, and using digital innovations to tackle obesity. The discussions recognized the immense power of digital food systems, the challenges and threats posed, and the opportunities to empower citizens to make healthy food choices and give policy-makers key insights into developing new policy frameworks. Digital apps, platforms and other kinds of services can make healthy food readily available, more affordable and convenient. The conference participants acknowledged that artificial intelligence and big data can play a major role in tackling noncommunicable diseases and influencing people's food habits.



Hans Kluge
WHO Regional Director for Europe



Marta Temido
Portuguese Minister of Health



“A very important discussion has been started about the roles and pathways, about gaps in data and our understanding, about the tools and approaches that help address these gaps and inform future policies.”

Dr. Hans Henri P. Kluge | WHO Regional Director for Europe

“This conference has addressed essential subjects for improving the health of our youngest citizens.”

Dr. Marta Temido | Portuguese Minister of Health

As next steps, the conference called for increased collaboration among EU member countries to develop innovative policies to address digital challenges. It concluded with the launch of the Lisbon Call to Action, calling on key stakeholders and players in the digital food ecosystem to commit to undertake necessary action within their scope to protect children (aged under 18 years) from obesogenic digital environments.

1. Context

Worldwide, it is estimated that one in five deaths is associated with poor diet. Obesity is a chronic condition associated with different comorbidities, such as coronary heart disease, hypertension and stroke, certain types of cancer, type 2 (non-insulin-dependent) diabetes mellitus, gallbladder disease, dyslipidaemia, osteoarthritis and gout, and pulmonary diseases, including sleep apnoea. In addition, people living with obesity suffer from various degrees of functional limitation – obesity-related disability (6) – and from social bias, prejudice and discrimination (7).

In the WHO European Region, more than 50% of adults live with overweight or obesity, while one in three 11-year-old children do so (8). Obesity leads to the development of many chronic conditions and noncommunicable diseases (NCDs). Ninety percent of all deaths in the WHO European Region are due to cardiovascular diseases, type 2 diabetes, some cancers and other NCDs.

In recent years, digital food environments – online settings in which people interact with information and services that may influence their food and nutrition choices and behaviour – have rapidly evolved and changed our behaviour and habits around food that may influence obesity numbers. Recent decades have seen growth in the time people spend on online platforms. Food marketing has taken on new forms in the digital space and many online platforms have introduced marketing of food and drink products in their content. It is difficult to regulate the marketing of unhealthy products, as advertising has become more targeted and personalized and, consequently, more difficult to monitor. Hence, it is crucial to discuss how digital innovations can help policy actions in tackling obesity, especially among children and adolescents.

1.1 Adapting to evolving digital food environments

Digital food environments are an emerging trend that encompasses new actors (digital influencers), settings (websites, social networking, smartphone apps) and activities/services (digital marketing, food e-commerce), which influence what people buy and eat in various ways. Digital technologies are changing our food shopping experiences through e-commerce. Meal delivery apps have revolutionized how we access ready-to-eat food and are known to have negatively influenced our food choices because many of the meals sold on these platforms are high in salt, added sugar and saturated fats. There has also been a shift in the advertising models used to promote food products. Digital food service companies have now turned to digital marketing, targeting children and adolescents, who are especially vulnerable.

“We need to embrace technology and use it to our advantage.”

Dr. Hans Henri P. Kluge | WHO Regional Director for Europe

The use of online digital marketing and social media in digital food environments poses several challenges. Social influencers, who are not necessarily certified nutritionists or medical professionals, play a significant role in influencing the food choices of children. There is also the possibility of misinformation or incorrect information related to diet and food choices propagating on social

media. Digital food environments can also be a component of an obesogenic food environment, in which obesity is promoted by the prevalence of unhealthy foods. In this context, it is necessary to train the next generation of professionals to re-envision food systems that are not only economically efficient but are also resilient, just, healthy and sustainable. There is also a need to regulate digital marketing to children to protect their rights and privacy.

“Digital marketing and health misinformation are the most important risks for public health.”

Dr. Maria João Gregório | Portuguese Directorate-General of Health (DGS PT)

Before we adapt to new digital food environments, it is important to understand that diet is a key area to prevent obesity and our food choices and behaviours affect how we tackle the obesity epidemic. Traditional food environments that include physical food shops and restaurants and traditional food marketing on television have now given way to e-commerce ventures in food retail and digital marketing over social media and via apps. Children and adolescents are exposed to food marketing are disproportionately exposed to and have become the new targets of digital food marketing campaigns; according to a Canadian study, 72% of children and adolescents have been exposed to such marketing on social media (9).

Studies have shown that marketing unhealthy foods, high in sugar, salt and saturated fats, contributes significantly to obesogenic environments. It also increases children’s dietary intake and has a negative impact on their preference for food of high nutritional quality. During the COVID-19 pandemic, the use of food delivery apps to access ready-to-eat food has doubled and expanded our choices beyond local food. However, limited studies have demonstrated that a significant amount of the popular menu items on such apps are discretionary foods and beverages that can lead to poor diets and obesity (10). Hence, new policies are needed to rein in digital food systems, so ensuring that people are empowered to make healthier choices about what they eat and increasing the accessibility, acceptability, convenience and affordability of healthy food.

1.2 Data and technology in digital food environments

The transformation from traditional food environments to digital food environments includes a transition from television-based marketing to digital marketing, where there is increased interaction; from interpersonal communication to social media communication, where marketing is targeted; and from physically accessing restaurants and food shops to ordering food on e-commerce apps, where the accessibility of all types of food increases. With the changing food environment, we also need to view the different drivers of our food systems through the lens of the digital environment. Such drivers include food supply chains, food environments, consumer behaviour, diets and their nutritional and health outcomes. Such a perspective should guide design and implementation of better policies and promote a positive contribution on the part of digital food environments to nutrition and health outcomes.

“When we talk about food systems as public health experts or nutrition experts, we need to bear in mind that different stakeholders will look at it from different delivery angles.”

Dr. Kremlin Wickramasinghe | WHO Regional Office for Europe

A new framework to look at digital food environments that encompasses policy-making and regulatory approaches is necessary as they change the way our food is prepared, delivered and consumed. The entry points for such policy-making include food safety, urban planning, transportation, road safety, employment, innovation, and environment and waste management. There are also concerns about online privacy and protection of data resting with e-commerce and mobile delivery apps and their use to target marketing and spread misinformation. With big-tech companies gaining control over most data on the internet through their platforms and services, putting regulatory policies in place is complex and often insufficient.

“We are talking of creating a program around a digital health manifesto to articulate and prioritize the actual changes in behaviour that we want big-tech platforms to embrace and live around in the next few years.”

Tobin Ireland | WHO Consultant with the WHO European Office for the Prevention and Control of Noncommunicable Diseases

On the positive side, digitalization of the food environment opens up immense opportunities to improve monitoring of the population's food choices. New digital tools can inform food and nutrition policies with insights on food consumption and availability and help nudge the population to make informed choices about their food. Digital transformation, when embraced completely, can transcend physical borders and bring people, processes and technology together. It can also spark new business models that are based on the sale of healthy food and have the potential to reach more people. While more studies to analyse the effect of digital food environments on our daily life are necessary, technology-mediated initiatives can help to develop new ideas, access new information, strive for equity and protect consumer rights, especially those of children.

2. How digital transformation affects food consumption and health outcomes

Digital food environments span the entire food system, from farm to fork, and influence our physical world. Digital transformation in food systems has been found to affect how people buy and consume food and what choices they are presented with in doing so.

2.1 Digitalization in health systems

Health systems have seen new innovations due to digital transformation, such as maintenance of electronic health-care records that can be accessed anywhere. With increased penetration of digital tools, health systems must become more efficient by accelerating digitalization of every aspect of their operation. This includes efficient and safe software and tools, helping professionals to access and share information and to use them to make decisions, thereby bringing improved health gains and experience for citizens. The data thus collected can then feed into policy decisions and actions that can eventually lead to better health outcomes for citizens. Digitalization can also bring about cross-border telehealth services without barriers and transformation of health care.

“Health-care organizations, in a way, are enterprise organizations and they need to be digitized. It is very important that they become more efficient by accelerating the digitalization of every aspect of the company.”

Dr. Diogo Martins | Coordinator of the International Projects Unit of the Shared Services for the Ministry of Health, Portugal

On the other hand, increased adoption of digital innovations and tools may pose new challenges in terms of cybersecurity and data privacy protection. With new policies and regulatory frameworks in place to tackle these concerns, digitizing health systems can open up new possibilities for better health-care delivery. In this changing context, it is vital to evolve new policies and regulatory frameworks to handle the digital transformation.

“We work with Member States and partners on expanding the benefits of digitalization beyond health records and harness the power of big data and artificial intelligence to tackle NCDs, particularly in areas of food habits and physical activities.”

Dr. Hans Henri P. Kluge | WHO Regional Director for Europe

2.2 The rise of meal delivery apps (MDAs)

MDAs are aggregator software that lists different restaurants and eating options in a city or neighbourhood and delivers ready-to-eat meals to a customer's location at the click of a button. Like other online food delivery markets, these apps are witnessing exponential growth all over the world. The central placement of MDAs in the digital food system makes them powerful agents of change and allows them to reach and influence food outlets and consumers. The COVID-19 pandemic has further fuelled the growth of MDAs.

MDAs can change dietary patterns by increasing the convenience and accessibility of certain foods. The apps control the information, such as portion size and sugar, salt and fat content, that is shared with customers. Currently, there are insufficient verification systems to prevent selling of age-inappropriate products such as alcohol to children. A study from Denmark shows that MDAs have increased access to meals that were inaccessible in the traditional restaurant-style food systems (11).

"The central placement of meal delivery apps in the food system makes them powerful agents of change and allows them to reach and influence both food outlets and consumers."

Roberto Flore | Technical University of Denmark

The main customer base for MDAs is young professionals, who are often on the lookout for different food choices, have disposable income, are short of time to cook meals, and need convenience. Hence, MDA marketing strategies are targeted at this customer base. With the power of digital tools and services such as recommendation apps and push notifications, MDAs use pervasive marketing tactics to influence vulnerable customers; and the complex nature of MDAs means that existing regulatory frameworks are insufficient to encompass all aspects of data, marketing and services provided by such apps.

The rise of MDAs calls for alternative holistic design options that not only benefit e-commerce retailers and food outlets but also customers' health and well-being. With all the information gathered on food choices and habits, such designs can help MDAs to consider customers' health profiles and allergy and nutritional information of their food choices and nudge them to eat healthy and sustainable food with appropriate portion sizes. Such innovations can go a long way to creating healthy digital food environments.

"Meal delivery apps are becoming more and more common throughout our region. It's important that we start a conversation about the potential impacts of this technology on public health."

Dr. Afton Halloran | WHO Regional Office for Europe

2.3 Targeted food marketing

Food marketing to children has been shown to have a negative influence on their food choices and consumption patterns. A Norwegian study, which monitored the digital marketing landscape of food and drinks directed at children, reported that eight in 10 food and drink advertisements were not permitted, according to WHO guidelines, to be targeted at children (12). In many parts of the world, including the European Union (EU), it is not yet sufficiently acknowledged that marketing on digital platforms is a health risk – in spite of the fact that children increasingly engage with such targeted advertisements, which have been found to be detrimental to their diet. It is an ethical imperative and basic human right to protect children's health and well-being from such influences. Less marketing of such food items would improve the food environment for all children and could also reduce the prevalence of NCDs.

Increasingly, digital marketing of unhealthy food options has become an interactive experience for children, rather than (relatively) harmless passive viewing. Such interactions lead to stronger and longer engagement with advertisements, resulting in more complete building of children's online profiles by big-tech companies. These data are then used for targeted advertisements. Although some countries have self-regulatory practices and pledges, these have been found to be inadequate in controlling the widening influence of targeted advertisements on eating habits and digital marketing in general. Hence, there is a need for action against surveillance-based advertising to children.

“Less marketing improves the food environment for all children and may reduce social inequality in their diet.”

Prof. Knut Klepp | Norwegian Institute of Public Health

The rise of targeted marketing highlights the need for digital literacy among parents as well as children. While parents are responsible for protecting their children, it is the obligation of governments to protect their rights. Although today's children are born “digital natives”, they do not know how to navigate the digital world and cannot necessarily make the best decisions for themselves. Hence, they need protection from the harms of targeted marketing in the digital space.

“By fighting misinformation and disinformation, health literacy, media literacy and e-health literacy have all proved to play a key role in reducing risky behaviours.”

Dr. Diana Pinto | University of Minho

Active surveillance of children's online presence can be used to reach them in innovative ways to help them make better choices with food. Data about their food choices can be used to persuade policy-makers to form policies that are aligned with what children actually want. With the digital world creating opportunities for children that extend beyond national boundaries, we need a global response to handle targeted marketing and online surveillance of children.

"We need to address all aspects of digital marketing in a comprehensive way."

Monique Goyens | European Consumer Organisation

Portugal has become the first country in the EU to have a regulation in place for digital marketing, with Law No. 30/2019 of 23 April 2019, which restricts advertising of high-energy products and products with high levels of salt, sugar, saturated fatty acids and trans fatty acids to children. Such advertisements are banned from television, radio, cinemas, print publications, websites and social media when the content is targeted at children under 16 years of age. The Consumer Directorate-General, a central body within the Portuguese Ministry of Economy and Digital Transition, acts on alleged infringements of the law, issues recommendations, and monitors and conducts online investigations of advertising to identify unfair commercial practices.

"Today, digital food brands are disguising their advertising as much as they can to prove that they are not marketing their products to children. The burden of proof is on us to show otherwise, and that is a challenge."

Gisela Serafim | Consumer Directorate-General of Portugal

3. New models and tools for data collection and tackling obesity

With new tools available in the digital space, there are opportunities in the digital food system to disrupt, for the good of society, how data collected online are used. Below are some examples of such emerging initiatives that can help tackle obesity.

“Prototyping new models for digital food environments can offer low-cost opportunities to test potential impactful ideas and to see how these ideas work in the real world. It will also be interesting to see how the different stakeholders and ecosystems interact.”

Roberto Flore | Technical University of Denmark

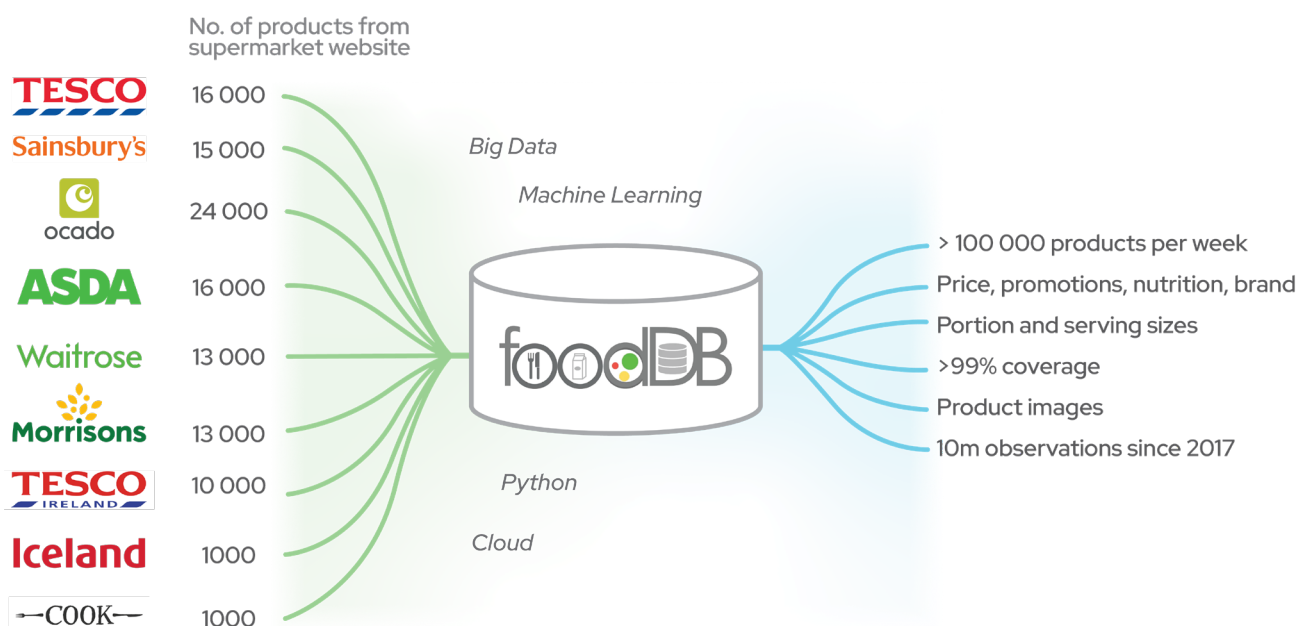
3.1 Big-data solution: foodDB

foodDB, developed by researchers at the University of Oxford, United Kingdom, is a software and database platform for collecting, processing, storing and querying data on food and drink products. It has data on about 120 000 products obtained from 11 core retailers in the United Kingdom and Ireland (Fig. 1). The software captures information periodically (daily and weekly) on products available to buy, their categories, prices, promotion, nutrition information, portion size, country of origin, allergens, description, barcodes and retailer codes. These data are standardized to make them available for research and analysis purposes. Using foodDB, researchers have analysed the amount of sugar, fats and salt in products available in supermarkets, compared their nutrition profiles, and analysed how healthy these food options are.

“foodDB generates evidence for policy evaluation and for developing new policies and new ideas.”

Dr. Richard Harrington | University of Oxford

Fig. 1. Data captured by foodDB from nine core retailers (13)



The data thus collected can be used to monitor food systems, benchmark products, facilitate in-depth analysis, generate evidence for policy-making and evaluation, experiment with labelling interventions, build models, set targets and inform further research. Portugal, in collaboration with WHO, has become one of the pilot countries, together with Hungary and Israel, to use this database to capture information about products in its supermarkets.

3.2 Monitoring children’s exposure to unhealthy food products: CLICK

The CLICK monitoring framework was developed by the WHO European Office for the Prevention and Control of Noncommunicable Diseases to monitor children’s exposure to marketing of unhealthy products online (14). The framework includes comprehending the digital ecosystem, analysing online advertising campaigns, investigating children’s exposure to digital marketing tools, capturing on-screen marketing content, and sharing knowledge with young people, parents, policy-makers and members of civil society (Fig. 2). It aims to establish an automated research methodology, assess children’s actual exposure, establish trusted age verification systems and tags for advertisement campaigns, and nudge governments to establish national policy frameworks.

Fig. 2. The CLICK monitoring framework (14)



The CLICK framework uses smartphone apps to collect data on paid-for advertisements and children’s interaction with advertisements, to scan social media content, and to assess brands and campaigns; it has defined protocols to set up the apps and perform data analysis. Using its screen-capture software, it assesses what children see online to better understand wider marketing techniques, including user-generated content and product placement. Norway is the first country to successfully investigate the exposure of children to food and beverage advertisements using the CLICK monitoring framework and has found the prevalence of extensive digital marketing of food and drinks at children between the age of 3–17 years (14).

3.3 Online age verification: MyFamily

In the digital world, social media apps and gaming platforms have no way of verifying who their real users are. With devices at home shared by children and parents, it is possible that these platforms expose children and young people to food advertisements in contravention of regulatory practices. Some mobile operators in the United Kingdom have tried to address this challenge with TrustElevate's MyFamily tool, which involves age checking and parental consent embedded in the user interface. With such apps, parents are informed about the content their children are viewing and can approve access to such content. The tool does not store children's data or biometric information, thereby protecting their right to online privacy.

"The business model that underpins the current digital advertising, marketing and extensive surveillance violates human rights and certainly violates children's rights."

Dr. Rachel O'Connell | Expert on digital age verification

3.4 Digital food subscriptions: delivery meal boxes

A healthy alternative to food delivery apps is the rise of online delivery of meal boxes that contain healthy, environmentally sustainable and varied seasonal meals. These apps are also linked to companies or services that allow customers to watch videos on how to prepare their meal, providing simple recipes, cooking tips, etc. These meal boxes are home-delivered and convenient and can encourage people to eat healthy food using the same set of digital tools that enable food delivery. In addition, there are e-commerce delivery platforms that let customers shop for seasonal low-impact and sustainable food options.

4. Turning digital innovations into policy and actions

The vast treasure trove of data captured by digital tools in the food system can help drive policy decisions and action at various levels. However, there are concerns about children's privacy issues, severe profiling of their internet activities, and increased exposure of children to harmful content, such as video games and social media where there is explicit marketing of unhealthy food choices. These issues violate children's right to privacy, and governments have an obligation to support parents in protecting their children against digital marketing through digital literacy training.

"Education and skill development play a role in the digital world, but they cannot replace consumer rights and the need for protection."

Jo Jewell | United Nations Children's Fund (UNICEF)

Although today's children seem to navigate the digital space with ease, they still need protection as they are vulnerable to targeted marketing and surveillance. Hence, teachers and parents need digital literacy. There is also a need for food delivery apps and related digital tools to consider a rights-based approach to formulating regulations and policies. Below are some instances of how insights from available digital innovations can be turned to policy and actions.

"A rights-based framework is a useful way to look at how we can get the most benefit out of digital apps targeting children while balancing the risks."

Jo Jewell | UNICEF

4.1 Informative labelling

Labelling nutritional information about products is mandatory in most countries and serves to educate consumers on what they eat. However, the information can sometimes overwhelm the lay public. Digital meal delivery apps often do not display nutritional labels of foods sold on their platform, the portion sizes, or the number of people the food can serve. Hence, there is a need to have better labelling approaches, both offline and online, that can help people make better food choices. Digital apps can aid policy-makers in designing and displaying labels that are concise, informative and decision-oriented. One such example is e-labels, which can complement physical labels and provide actionable information. Another is the simple nutritional labelling of products seen in Mexico, which allows children to understand whether or not something is a healthier food choice and to inform their parents about it.

“Front-of-pack food labelling helps us make a good choice about our food.”

Dr. Kremlin Wickramasinghe | WHO Regional Office for Europe

4.2 Monitoring nutrition quality for policy changes

With small restaurants and food outlets registered on meal delivery apps and other online e-commerce websites, real-time data on their menu items, and the nutrient profile of those items, are now easy to access. These data, which are otherwise expensive to collect, can be analysed with artificial intelligence (AI) tools that can be plugged into existing databases such as foodDB (see section 3.1). This database already receives daily and weekly input from online supermarkets to provide data on various aspects of supermarket food products, including nutrition, collected and analysed automatically through software and AI tools. Such tools can help gather and monitor nutritional quality across the food landscape.

In addition, monitoring of such data can help policy-makers to understand how certain taxation policies are faring, allowing them to assess if they are successful in bringing changes as expected and to reformulate them if needed. When this monitoring is integrated into existing regulations for the sale and marketing of food products, it will be easy to monitor and address breaches. Once certain policies and regulations have been implemented, governments and policy-makers will be able to reach children through social media and other interactive platforms by developing engaging videos or other content.

4.3 Changing dietary behaviour

There is a growing trend among young people to opt for more sustainable foods that are also healthier for the planet. Digital tools that collect data on food choices and food habits could encourage such people to eat a sustainable and healthy diet by showing them relevant options and helping them make better choices. Social media, which has a wider reach among children and adolescents, can be used to circulate interactive and educational videos and content that

encourage better food choices. Since digital technology companies are more influential than food companies, their influence and reach can be used to share knowledge and encourage healthy food behaviour among the population.

There is also a huge potential for retailers to use digital tools to encourage consumers to eat healthily. An example from Belgium is a retail chain that uses the nutritional information from products purchased by customers to give them a score via an app linked to their loyalty card. The healthier product a customer buys, the more points they get on their card, which can be used as credits against future purchases.

4.4 Improving food delivery and delivery systems

When children access meal delivery apps to order food and beverages, there are concerns that they can order age-inappropriate substances such as alcohol. Digital tools can help mitigate this problem by installing trusted age verification mechanisms in such apps to make access to food and beverages safer for users.

With the advent of smart appliances, digital innovations can change how we store food, how we optimize our supply chains to reduce food wastage, and how healthier options such as fruits and vegetables can be made affordable to a greater proportion of the population.

4.5 Reimagining policies for digital food environments

Unlike traditional food environments, where customers could access food by physically going to a restaurant or food store, digital food environments make it possible to access food from any corner of the city. Thus, policies around urban planning, which limit access to unhealthy eating options by regulating different food choices in a neighbourhood, should be complemented by other initiatives/measures. The move to digital food systems calls for reformulating urban planning policies that promote healthy eating. With increased delivery partners on the road trying to deliver food across the city on time, there could also be implications on traffic movement, which is another aspect urban planners need to factor in.

“The digital environment is not isolated. The online and offline systems are very much connected”

Dr. Kremlin Wickramasinghe | WHO Europe

4.6 Addressing cross-border issues towards global policies and action

Digital tools have made it possible for consumers to access foods that were previously made inaccessible by geographical constraints. Individual countries are increasingly finding it harder to implement policies that regulate international companies whose customers extend across the globe. In these circumstances, national policies and regulations are insufficient; we need global policies with wider jurisdictions to cover digital marketing to children, protection of online privacy, and regulatory compliance with rules for food labelling and similar issues. Global problems that are emerging as a consequence of digitalization of food ecosystems need global solutions that can gather traction, influence policy-makers and give a voice to ordinary citizens.

“National responses to global issues are not the way forward. If you team up as countries, there is more traction and influence possible.”

Monique Goyens | European Consumer Organisation

“Digital marketing entails greater challenges for implementing regulations, at times requiring international cooperation considering the cross-border implications of this type of marketing.”

Dr. Marta Temido | Portuguese Minister of Health

4.7 Need for action

The unprecedented move towards all things digital in our lives has provided us with a better understanding of both the benefits to be gained from increased exposure to digital environments and the challenges posed by such exposure. Hence, there is an urgent need to figure out innovative ways that can help us to tackle the issues of obesity, sedentary lifestyle and unhealthy food habits using digital tools. WHO's recently launched Action Network on Health Literacy can be seen as an example of how digital and social innovations can come together harmoniously, reaping the benefits of digital food systems and so improving the health of the population (15). As all the deliberations throughout this conference testify, there is also an urgent need to address the challenges posed by digital food environments, especially to young citizens. The necessary measures include taking regulatory steps, educating citizens and driving through better policies.

"I want to congratulate the Government of Portugal for introducing a law to tackle digital marketing of unhealthy foods to children in line with the WHO European Food and Nutrition Action Plan."

Dr. Hans Henri P. Kluge | WHO Regional Director for Europe

With digital technologies changing our food shopping experiences and increasing access to often less healthy food options, more powerful food marketing strategies have emerged that contribute to obesogenic environments. As a "first-mover" country, Portugal has stepped up to reduce unhealthy food marketing to children through different marketing channels, including digital.

"Organizations like WHO should support first-mover countries that want to bring in regulatory changes to address the challenges of digital marketing as they can set an example for others."

Kremlin Wickramasinghe | WHO Regional Office for Europe

"I am very glad to see the efforts of the Portuguese Presidency [of the Council of the European Union] in the field of health that will enhance such a relevant topic aimed at protecting the future of our young citizens."

Dr. Marta Temido | Portuguese Minister of Health

5. The Lisbon Call to Action

Portugal has invested in actions to reduce unhealthy food marketing to children. In 2019 Portugal introduced a regulation setting restrictions on unhealthy food marketing to children, covering various marketing channels including digital. Internationally, Portugal, alongside Ireland, leads the work package of the EU Joint Action Best-ReMaP on best practices to reduce food marketing to children; it also participates in several projects initiated by the WHO Regional Office for Europe to monitor digital marketing.

The challenge of reducing unhealthy food marketing to children demands cooperative action and cannot be properly tackled by countries acting on their own. This is a moment of opportunity at the EU level, with several recent strategic and legal documents reinforcing the need for action to protect children from unhealthy food marketing. The revised EU Audiovisual Media Services Directive (AVMSD), which came into force in December 2018, includes provisions that may be further strengthened to deliver a more robust framework for tackling advertising of unhealthy products to children at different national levels. Europe’s Beating Cancer Plan and the EU Strategy on the Rights of the Child also highlight the need to reduce food marketing to children.

To reduce children’s exposure to digital marketing of unhealthy food products and to expand the opportunities offered by digitalization to enhance the accessibility and affordability of healthy and environmentally sustainable food, the Portuguese Presidency of the Council of the European Union – in particular, the Portuguese Ministry of Health – calls on key stakeholders and players to commit to undertaking the following necessary actions, within their scope.

<p>Governments</p>	<ul style="list-style-type: none"> ● Take action to reduce inappropriate marketing of unhealthy foods and beverages to children. ● Develop appropriate monitoring systems to evaluate children’s exposure to digital food marketing. ● Implement comprehensive policies to increase health information. ● Promote international/EU cooperation to implement effective strategies to protect children from obesogenic digital environments, addressing the cross-border issues of digital marketing.
<p>Parents and families</p>	<ul style="list-style-type: none"> ● Understand and recognize the health risks of children’s screen exposure to unhealthy food marketing, from an early age. ● Monitor and regulate children’s access to digital tools and devices; parents and families should encourage the reduction of children’s digital and online exposure.
<p>School and educational community</p>	<ul style="list-style-type: none"> ● Support children and adolescents in the development of skills related to their navigation through the digital environment, including the ability to determine the credibility of online sources and information, as well as online social skills. ● Develop and increase online and digital media literacy among children and young people.

Food sector and marketers	<ul style="list-style-type: none"> ● Be committed to responsible food and beverage marketing communication. ● Be committed to not advertise unhealthy food products to children.
Online content developers	<ul style="list-style-type: none"> ● Recognize the social responsibility as influencers of children's and adolescent's preferences and behaviours. ● Be committed to have a responsible communication about healthy diet, nutrition and health. ● Be committed to not advertise unhealthy food products to children or generate content that promotes these types of consumption and unhealthy patterns.
Technology developers	<ul style="list-style-type: none"> ● Develop tools to control and monitor obesogenic digital environments. ● Develop technology tools to increase the accessibility and affordability of healthy and environmentally sustainable food. ● Develop/improve age verification tools to accurately block harmful and inadequate content to children.
Researchers and academia	<ul style="list-style-type: none"> ● Develop robust and high-quality research on children's exposure to digital obesogenic environments and their effects on health outcomes. ● Research how digitalization is influencing dietary behaviour. ● Advocate for, facilitate and actively engage in the implementation of this call to action to protect children from obesogenic digital environments.

We welcome you to subscribe to this proposal and become a signatory of the Lisbon Call to Action here: <https://tackleobesity.pt/the-lisbon-call-to-action>.

In today's world, where digital transformation is the way forward, we should expand the use of technology tools, including AI and big data, to tackle NCDs and other public health problems. We need systemic approaches to understand the effect of digital food systems on cultural and behavioural changes in the entire population and approaches that use technology to our advantage. We also need innovative policies to address specific challenges in digital food systems, such as e-commerce stores and meal delivery apps. This conference marks the beginning of a very important discussion about possible roles and pathways, gaps in the data and our understanding, and the tools and approaches that will help to address these gaps and inform future policies.



THE LISBON CALL TO ACTION

To protect children from obesogenic environments

Online content developers

Recognise the social responsibility as influencers of children and adolescents and be committed to not generate content that promotes unhealthy patterns



THE LISBON CALL TO ACTION

To protect children from obesogenic environments

Food sector and marketers

Be committed to not advertise unhealthy food products to children



THE LISBON CALL TO ACTION

To protect children from obesogenic environments

Parents and families

Recognise the health risks of children's screen exposure to unhealthy food marketing and encourage the reduction of such exposure



THE LISBON CALL TO ACTION

To protect children from obesogenic environments

Non-governmental and civil society organizations

Advocate for, facilitate and actively engage in the implementation of this call to action to protect children from obesogenic digital environments



THE LISBON CALL TO ACTION

To protect children from obesogenic environments

Governments

Take action to reduce inappropriate marketing of unhealthy foods and beverages to children.



THE LISBON CALL TO ACTION

To protect children from obesogenic environments

Researchers and academia

Develop robust and high-quality research on children's exposure to digital obesogenic environments and their effects on health outcomes



THE LISBON CALL TO ACTION

To protect children from obesogenic environments

Tech developers

Develop tools to control and monitor obesogenic digital environments and to increase the accessibility and affordability of healthy and environmentally sustainable food



THE LISBON CALL TO ACTION

To protect children from obesogenic environments

School and education community

Develop and increase online and digital media literacy among children and young people



THE LISBON CALL TO ACTION

To protect children from obesogenic environments



References

1. Swinburn B, Egger G. Preventive strategies against weight gain and obesity. *Obes Rev.* 2002;3:289–301. doi:10.1046/J.1467-789X.2002.00082.X.
2. Granheim SI, Opheim E, Terragni L, Torheim LE, Thurston M Mapping the digital food environment: a scoping review protocol. *BMJ Open.* 2020;10:e036241. doi:10.1136/bmjopen-2019-036241.
3. Sustainable food systems: concept and framework Rome: Food and Agriculture Organization of the United Nations; 2018 (<http://www.fao.org/3/ca2079en/CA2079EN.pdf>, accessed 26 September 2021).
4. McCarthy J. What is artificial intelligence? Stanford (CA): Computer Science Department, Stanford University; 2007 (<http://jmc.stanford.edu/articles/whatisai/whatisai.pdf>, accessed 26 September 2021).
5. Dash S, Shakyawar SK, Sharma M, Kaushik S. Big data in healthcare: management, analysis and future prospects. *J Big Data.* 2019;6:1–25. doi:10.1186/s40537-019-0217-0.
6. Sirtori A, Brunani A, Capodaglio P, Berselli ME, Villa V, Corti S et al. ICF-OB: a multidisciplinary questionnaire based on the International Classification of Functioning, Disability and Health to address disability in obesity. *Eur J Phys Rehabil Med.* 2018;54:119–21. doi:10.23736/S1973-9087.17.04836-5.
7. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. Geneva: World Health Organization; 2000 (<https://apps.who.int/iris/handle/10665/42330>, accessed 26 September 2021).
8. Obesity: data and statistics. Copenhagen: WHO Regional Office for Europe; [n.d.] (<https://www.euro.who.int/en/health-topics/noncommunicable-diseases/obesity/data-and-statistics>, accessed 26 September 2021).
9. Kent MP, Puzé E, Roy E-A, Billy N de, Czoli C. Children and adolescents' exposure to food and beverage marketing in social media apps. *Pediatr Obes.* 2019;14:e12508. doi:10.1111/IJPO.12508.
10. Partridge SR, Gibson AA, Roy R, Malloy JA, Raeside R, Jia SS et al. Junk food on demand: a cross-sectional analysis of the nutritional quality of popular online food delivery outlets in Australia and New Zealand. *Nutrients.* 2020;12:3107. doi:10.3390/NU12103107.
11. Skovgaard RE, Flore R, Oehmen J. The digital foodscape and non-communicable diseases: analysis of the risk factors of meal delivery applications in Denmark. Lyngby: DTU Skylab Foodlab; 2021 (<https://orbit.dtu.dk/en/publications/the-digital-foodscape-and-non-communicable-diseases-analysis-of-t>, accessed 26 September 2021).
12. Steinnes KK, Haugrønning V. Mapping the landscape of digital food marketing: investigating exposure of digital food and drink advertisements to Norwegian children and adolescents 2020. Oslo: Consumption Research Norway (SIFO), OsloMet; 2020 (<https://oda.oslomet.no/oda-xmlui/handle/20.500.12199/6510>, accessed 26 September 2021).
13. foodDB [online database]. Oxford: Nuffield Department of Population Health, University of Oxford; [n.d.] (<https://www.ndph.ox.ac.uk/food-ncd/archive/research-projects/fooddb-and-myshop>, accessed 26 September 2021).
14. Monitoring and restricting digital marketing of unhealthy products to children and adolescents. Copenhagen: WHO Regional Office for Europe; 2019 (https://www.euro.who.int/__data/assets/pdf_file/0008/396764/Online-version_Digital-Mktg_March2019.pdf, accessed 26 September 2021).
15. Drapkina O, da Graça Freitas M, Mikkelsen B, Breda J, Salakhov E, Lopatina M et al. The WHO European Action Network on Health Literacy for Prevention and Control of Noncommunicable Diseases. *Pub Health Panorama.* 2019;5(2–3):197–200 (<https://www.ecoi.net/en/file/local/2016957/php-5-2-3-123-329-eng-rus.pdf>, accessed 26 September 2021).

Annex 1 Conference programme

Session	Speakers
Welcome session	<p>Vanessa Pereira de Gouveia <i>Deputy Director General for Health, Portugal</i></p> <p>Carina Ferreira-Borges <i>Acting Head of the WHO European Office for the Prevention and Control of Noncommunicable Diseases</i></p>
Setting the scene: digital food environments <i>Moderator: Carina Ferreira-Borges Acting Head of the WHO European Office for the Prevention and Control of Noncommunicable Diseases</i>	
From food environment to digital food environment: why should health policies evolve to accommodate the digital transformation?	<p>Maria João Gregório <i>Portuguese Directorate-General of Health (DGS PT)</i></p>
WHO new framework to look at digital food environments	<p>Kremlin Wickramasinghe Afton Halloran <i>WHO Regional Office for Europe</i></p>
The changing digital landscape: why should we have a higher-level approach to tackle these issues from a health perspective?	<p>Tobin Ireland <i>WHO Consultant with the WHO European Office for the Prevention and Control of Noncommunicable Diseases</i></p>
Data and innovation <i>Moderator: Miguel Arriaga Head, Division of Literacy, Health and Well-being at the Portuguese Directorate-General of Health</i>	
The importance of data for monitoring and surveillance	<p>Richard Harrington <i>University of Oxford</i></p> <p>Maria João Gregório <i>Portuguese Directorate-General of Health (DGS PT)</i></p>

Prototyping new models for the digital food environment

Roberto Flore
Technical University of Denmark

Meal delivery apps

Afton Halloran
WHO Regional Office for Europe

Different approaches in the European Union and impact on obesity: voluntary vs regulation and how it can influence adult and childhood obesity

*Moderator: Kremlin Wickramasinghe
WHO Regional Office for Europe*

Digital marketing

Knut Klepp
Norwegian Institute of Public Health

Digital misinformation

Diana Pinto
University of Minho

Online age verification

Rachel O'Connell
Expert on digital age verification

Legal issues: challenges facing the Portuguese law on digital marketing

Gisela Serafim
Consumer Directorate-General of Portugal

Potential avenues for turning digital innovations into policy and actions to tackle obesity

*Moderator: Pedro Graça
Faculty of Nutrition and Food Sciences of University of Porto*

Panellists:

Jo Jewell
United Nations Children's Fund (UNICEF)

Monique Goyens
European Consumer Organisation

Kremlin Wickramasinghe
WHO Regional Office for Europe

Closing ceremony

Marta Temido
Portuguese Minister of Health

Hans Kluge
WHO Regional Director for Europe



TACKLE OBESITY

The WHO Regional Office for Europe

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

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