World Health Organization
REGIONAL OFFICE FOR Europe

Digital food environments

Factsheet

WHO European Office for the Prevention and Control of Noncommunicable Diseases

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What are digital food environments

Digital food environments are the online settings through which flows of services and information that influence people's food and nutrition choices and behaviour are directed. They encompass a range of elements, including social media, digital health promotion interventions, digital food marketing and online food retail.

Digital food environments provide both opportunities and barriers for food choices to influence health and nutrition.

The past 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 personal and, consequently, more difficult to monitor.

The out-of-home (OOH) food sector has increased rapidly in recent years, with more people accessing meals from an OOH source. Meal delivery apps (MDAs) – platforms that connect customers with restaurants and food outlets – are a fast-growing part of the OOH food sector. Little is known about the OOH food sector, however, as many of the businesses within the sector operate at small or medium scale. The sector is also constantly evolving, making it difficult to track.

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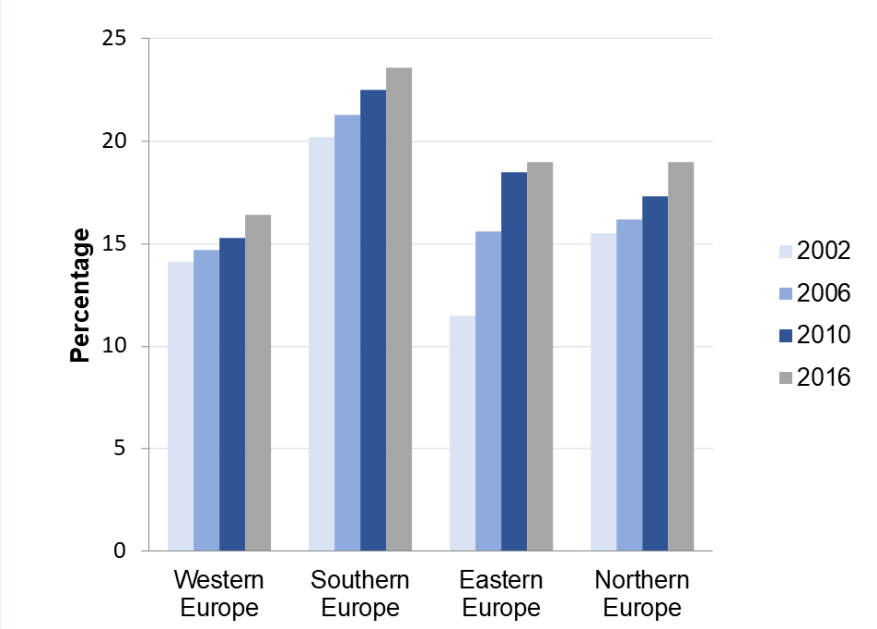
The challenge

Of all six WHO regions, the WHO European Region is the worst affected by noncommunicable disease (NCDs), with alcohol consumption, overweight and obesity contributing large proportions of the burden.

90% **Ninety per cent of all deaths in the WHO European Region are due to cardiovascular diseases, type 2 diabetes, some cancers and other NCDs.**

Tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets are the four main behavioural risk factors for dying from an NCD (1). Overweight and obesity significantly contributes to the NCD burden in the Region, affecting over 59% of adults and an increasing number of children (1). Fig. 1 demonstrates how the number of overweight adolescents in the European Region has increased over the past 20 years. The rise in childhood obesity rates in recent decades is at least partly caused by environmental factors, of which the digital OOH food environment is part.

Fig. 1. Overweight among children and adolescents, WHO European Region



Source: data from the Health Behaviours in School-aged Children (HBSC) study for overweight in boys and girls aged 11, 13 and 15 years.

Food systems also contribute substantially to climate change, biodiversity loss and the depletion of natural resources. Changes in food systems will not only have to address the rise in diet-related NCDs, but will also need to promote a shift towards environmentally sustainable diets. Human health and planetary health are deeply interconnected (2).

The connection between digital food environments and public health

Digital technologies are becoming integrated to varying degrees into everyday life across the 53 countries of the WHO European Region. The increase in digital technologies can increase the convenience of food and prepared meals. A recent unrepresentative survey of 10 European countries found that every fifth meal was consumed outside of the home, with 80% from commercial outlets (3). The influence of digitalization on dietary behaviour, however, is not well understood, raising questions about its influence on the health and nutrition of adults and children.

The increasing presence of influencers (people who have developed a large following on social media) on digital platforms enables digital marketing to increase the consumption of unhealthy snacks (4,5). The increase in social-media use creates a conduit for a rise in the promotion of diet trends such as keto, gluten-free and paleo and enables the delivery of a bombardment of conflicting messages from self-proclaimed nutrition and exercise experts (6). Unrealistic content seen in digital marketing, created by careful editing and curation, can encourage unhealthy body comparisons and an obsession with diet and so-called clean eating (5,6). Trends such as these are harmful, as they can lead to an increase in eating and body-image disorders (5,6).

The online component of the OOH food sector (including MDAs) in the European Region currently is unregulated. The sector is new and evolving, so existing government policies promoting healthy diets, such as those on nutrition labelling, reformulation and marketing restrictions, may not apply to the online OOH sector.

OOH foods have been found to be more energy-dense and have higher sodium, saturated and trans fats and sugar content than their retail counterparts. Portion sizes are often larger, which encourages overeating, particularly if there is little price differentials between portion sizes (7). MDAs increase the accessibility of unhealthy meals and beverages (such as alcohol and sugar-sweetened drinks) by enabling people to have meals delivered to them directly, promoting sedentary behaviour.

As such, there is a need to regulate the digital environment and harness it to promote healthy and sustainable nutrition options.

A food systems approach to digital food environments

A food systems approach to understanding digital environments is needed to enable the development of systemic and long-lasting recommendations and interventions to improve digital food environments.

According to the Food and Agriculture Organization of the United Nations, a food systems approach is a way of thinking and doing that considers the food system in its totality, taking into account all the elements, their relationships and related effects. It is not confined to one single sector, subsystem (such as the value chain or a specific market) or discipline, but broadens the framing and analysis of a particular issue as the result of an intricate web of interlinked activities and feedback. It considers all relevant causal variables of a problem and all social, environmental and economic impacts of solutions to achieve transformational systemic changes (8).

This means that food systems, both online and offline, should be assessed to fully understand the current drivers that promote unhealthy digital food environments. For example, regulations requiring physical food establishments to provide nutritional information must also be applied to food delivery platforms. Currently, regulations exist on how data should be presented for search engines. MDAs, however, allow restaurants to pay to promote their products to be at the top of the search.

What do we know at this time?

MDAS AND FOOD DELIVERY SERVICES

Online delivery apps have been around in Europe since 2000 (9). Since then, the food delivery sector has grown and developed, with MDAs now being the most common form of food delivery service (10).

Of all the MDAs, aggregator apps are the most common (10). While most platforms offer access to a single restaurant or chain of restaurants, aggregator platforms provide a selection (11). They consist of web services and mobile apps, but many encourage customers through advertising to use apps instead of web services. This way, the apps are able to promote two-way communication, using interactive communication mechanisms like push notifications and location-based offers to drive up subsequent orders.

Many apps collect a large volume of data on consumers, including previous browsing history. Despite emerging research on the potential harmful effects of MDAs, this new addition to the food environment nevertheless remains far less well understood than other sectors.

The growth of MDAs, however, means online information related to many small and medium-sized restaurants, including details on their location and menus, is now widely available. Capacity to utilize these data to promote nutrition information about menu items needs to be developed; if not, many resources will be necessary to collect data from the menus of smaller restaurants.

WHO is among the organizations building the evidence base on the OOH (including MDAs) sector through reports like this, but much remains unknown. © WHO.

ONLINE FOOD RETAIL

More is known currently about the online food retail environment than about the online OOH sector. Supermarkets cover most of the market share for food retail environment and frequently have an online presence with nutrition information available.

Various forms of data can be used to measure online trends and patterns in food consumption. These include dietary surveys and measures of production, imports and exports and measures of purchase at individual or household levels (12). For example, foodDB is a United Kingdom-based database that regularly collects data on a comprehensive sample of food and drink products available in supermarkets that have an online presence in the country (12). As well as increasing the number of foods included in food composition tables, foodDB also monitors correlations between nutritional and commercial variables, such as prices and promotions. The aim of foodDB is to assess and monitor the nutritional quality of foods to identify important levers for promoting healthy diets (12,13). The tool is updated systematically and consistently and will be able to inform nutrition-related policies to improve population health and reduce the burden of NCDs. Work to expand foodDB to a number of countries in the WHO European Region is under way.

SOCIAL MEDIA AND DIGITAL MARKETING

Over past decades, digital and mobile advertising has grown rapidly. The number of so-called influencers has also increased greatly in recent years. In 2018, marketers reportedly spent US$ 500 million on influencer marketing (14). It is often difficult, however, for people to recognize digital marketing when they are experiencing it, because the line between content and marketing is blurred.

Digital marketing largely is supported by technology platforms and algorithms that automate the buying and selling of targeted advertising impressions. These mechanisms are incredibly complex, and it can be difficult to establish which advertisements have been sent to which device and user (14). Monitoring the targeting of digital marketing is further complicated by the fact that many children use social media sites despite many platforms requiring users to be of a minimum age. YouTube, for example, requires users to be 13 years old to have an account (4), but in the United Kingdom, 80% of 5–15-year-olds report regularly using YouTube (15). Many children consequently may view advertisements for high-saturated fat, high-salt and/or high-sugar (HFSS) foods that are targeted at users of 13 years and above (14).

With advertising being imbedded within content on platforms such as YouTube, children's ability to recognize when they are being subjected to advertising is diminished, making it harder for them to resist (15). HFSS foods are more likely to be included in media content that appeals to children due to their colourful packaging (4). Studies have found that unhealthy products are far more likely than those that are healthy to feature in TV and online advertising, and healthy items accounted for just one third of cues featured in influencer videos (15). Marketing drives increase consumption of food, and studies have found that additional intake is not being compensated through increased physical activity. Over time, this contributes to weight gain: studies comparing children exposed to marketing of unhealthy snacks compared to those exposed to non-food marketing found that the former increased their overall kcal intake (5).

Another challenge of digital marketing is that countries are failing to regulate the marketing of HFSS foods to children, as it is difficult to monitor its prevalence in digital media where marketing has become more targeted and personal and often is hidden. The WHO European Office for the Prevention and Control of Noncommunicable Diseases developed the

CLICK framework in response to the increase in digital marketing of unhealthy foods (16). CLICK assists countries to comprehend the national digital ecosystem, investigate actual exposure to unhealthy marketing by objectively monitoring advertisements for unhealthy products that are seen by children, and sharing the knowledge to advocate change, raise awareness and influence policy.

A tool for monitoring children's exposure to **marketing of unhealthy products online**

The WHO European Office for the Prevention and Control of Noncommunicable Diseases developed the CLICK framework in response to the increase in digital marketing of unhealthy foods.© WHO.

How can innovation promote healthy and sustainable digital food environments?

From a public health perspective, digital technology is not necessarily a bad thing; rather, it is how technology is used that poses challenges. Digital technology provides opportunities to accelerate progress in many areas in which public health has struggled in the past, such as performing data collection in a time-sensitive manner. There are many examples of companies in the WHO European Region using digital technologies to help citizens to make healthier and more environmentally sustainable food choices (some are shown below).

Ultimately, there is a need to develop a framework to encourage the positive aspects of the digital food environment and harness their potential to help consumers make healthy food choices. The food environment is changing, so it is essential to have policies in place that enable stakeholders to shape it in a way that benefits public health.

The five examples below demonstrate how digitalization can increase accessibility to, and affordability of, healthy and environmentally sustainable food. The examples also promote cooking skills and strive to help citizens to improve their knowledge about nutrition, health and the environmental impacts associated with their food choices.

Making healthy choices

Examples of innovations improving digital food environments are apps that allow consumers to make informed nutritional choices. Such apps can providing data from dietary guidelines and government recommendations to ensure consumers are making healthy choices.

Sustainability

An example of innovations promoting sustainability are apps that increase the accessibility and affordability of sustainably caught fish or farmed produce. These apps can link consumers with low-impact producers as well as incentivise producers to continue to sustainably catch their fish or farm their produce.

Food guidelines

An example of innovation improving digital food environments are apps that contain a database of information about food content. Information can include the ingredients of food products, nutrition facts and other information found on food labels. Consumers have the capacity to search food products in the app in order to view this information and make healthy and informed decisions.

Waste

Another example of the digital environment promoting sustainability is apps that aim to prevent food waste. Such apps suggest ways to use food and produce in different ways through providing recipes. This encourages consumers to cook new recipes by learning to use the food they have and prevent unnecessary waste.

Climate impact

Other innovations improving digital environment are apps that help consumers reduce their carbon footprint. These apps monitor consumers' shopping habits and rate their behaviours based on their carbon footprint. These apps provide advice on how consumers can reduce their carbon footprint.

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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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