

FOOD, NUTRITION AND HEALTH AND SUSTAINABLE FOOD SYSTEM

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The article presents the societal challenges such as lifestyle-related diseases, climate change, limited resources and demographic changes addressed in the global and European strategic documents such as Green Deal European policies through Farm2Fork Strategy, FOOD2030 European initiative, World Declaration and Plan of Action for Nutrition launched by World Health Organization and United Nations 2030 Agenda for Sustainable Development, in relation with a sustainable food system, including food consumption and eating behaviour. Starting from the main objectives already stated such as, people to have access to sustainable healthy food for a sustainable consumption in an efficient food system and economic competitiveness, the article analyses the global, European and Romanian current information and data. New knowledge production, information and communication, as well as food education is utmost importance in preventing food-borne diseases, in reduction pressure on the health system and, in improving quality of life. Changing the way of producing, processing, consuming food, taking into consideration the systemic approach is needed.

Keywords: sustainable, nutrition, healthy, food system, production, consumers.

INTRODUCTION

Food and Nutrition is the basis of life. The food we consume influences considerably both our physical and the mental status. The quality and quantity of ingested foods influence the development and health, vitality and harmony of the body. The current context for food consumers' decision process to choose food is characterised by: health concerns, a high degree of consumer interest and awareness about environmental issues, confusing messages being sent about food, especially when a food safety crisis occurs and erode consumers trust in the food industry and public authorities; in turn, consumers are coming up with new rules and strategies for what they will and won't eat – and, as a result, their relationship with food is changing. (Papadopoulos *et al.*, 2012, van Rijswijk, Frewer, 2008; Eden *et al.*, 2008).

To meet increasing food request by increasing sustainable food production it should to work on reducing of emissions, water and energy

consumption and food waste along the food chain. The following objectives should be also achieved:

- Improving the access of people to healthy food;
- Improving efficiency of the food chain;
- Encouraging a sustainable food behaviour;
- Increasing economic competitiveness.

GLOBAL VIEW OF LIFESTYLE-RELATED DISEASES AND SUSTAINABLE DEVELOPMENT GOALS

While the global burden of many diseases has declined in the recent decades, the number of years lost (per person) due to lifestyle-related diseases such as diabetes has increased (Thomas M, 2016).

World Health Organization (WHO) talks about the double burden of malnutrition – characterized by the coexistence of undernutrition (*e.g.*, vitamin and mineral deficiency) alongside overweight, obesity or lifestyle-related diseases among individuals and populations, of throughout life. The social and economic impact of the double burden of malnutrition is severe and long-lasting, with low-

and middle-income groups bearing the greatest burden. The double burden of malnutrition shares both drivers and solutions and therefore requires integrated action (WHO, 2017).

Climate change, pollution and water scarcity affect food and nutrition security but, on the other hand, global food production is a major contributor to climate change and the depletion of the earth's natural resources (Global Nutrition Report, 2017). The situation is further aggravated by the increase in demand for food, changing eating patterns and the significant increase in the volume of food wasted along the entire food chain (from farm and sea to fork).

In 2016, the United Nations Agenda for transforming our world was published: the 2030 Agenda for Sustainable Development containing 17 Sustainable Development Goals (SDGs).

Six of the 17 Sustainable Development Goals, detailed in the UN agenda, directly related to nutrition, diet and health are: ODD2 which refers to ensuring food security, improving nutrition and promoting the sustainability of agriculture by promoting regenerative agriculture, ODD3 which refers to ensuring well-being and a healthy life for all people, SDG10 to reduce income inequality within a country and between countries, SDG12 promoting sustainable production and consumption patterns, SDG14 promoting the conservation and sustainable use of marine resources, seas and oceans and SDG15 to refers to the restoration and promotion of sustainable use of terrestrial ecosystems.

Links to societal lifestyle challenges are embedded in many of the SDGs and, the UN, at the secretariat-general level, highlighting the key role of nutrition in being both a factor of production and a marker of development and “improving nutrition it represents a platform for progress in health, education, employment, reducing poverty and inequality and can lay the foundations for peace, security and stability of society” (UN Secretary-General, 2017).

In parallel with the establishment of the Sustainable Development Goals, the International Food and Agriculture Organization (FAO) and the member countries of the WHO launched the Rome Declaration on the Nutrition Action Plan, which was endorsed for the first time by 170 countries and adopted in 2016 by the United Nations General Assembly through the “UN Decade of Action on Nutrition” (WHO, 2014). This plan aims to stimulate increased and integrated global action to end global hunger and malnutrition and ensure

access to healthier and more sustainable diets. Governments are invited to set national nutrition targets for 2025 and milestones for achieving these targets, based on agreed indicators. The UN has established that FAO and WHO will lead the implementation of the “Nutrition Decade of Action”. The Framework for Action commits governments to exercise their primary role and responsibility for eradicating malnutrition. This includes addressing undernutrition and overnutrition, nutrition lacking specific essential micronutrients, and reducing the burden of lifestyle-related diseases in all age groups.

FOOD AND NUTRITION RELATED HEALTH AND EUROPEAN COMMISSION FOOD2030

The European Commission, through the FOOD2030 initiative, calls for an integrated approach to food systems, with a multisectoral policy and governance, to improve the acquisition and development of healthier and more sustainable products, taking into account the promotion of the multidisciplinary approach that leads to sustainable consumer behavior (European Commission, 2016).

The food system includes processes and infrastructures necessary to feed the population such as: growing, harvesting, processing, packaging, transporting, marketing and consumption of food products. As stated in the European Research and Innovation for Food and Nutrition Security Policy Framework, food systems should ensure food and nutrition security by providing the food needed for healthy and sustainable diets.

Research and innovation are crucial to enable a transition to sustainable food systems, as outlined in the European Commission's working document, FOOD2030, while nutritional security is assured.

In the European context, the FOOD2030 political framework defines four priorities: nutrition for sustainable and healthy diets; climate-smart and environmentally sustainable food systems; circularity and efficiency of resources; stimulating innovation through partnerships between research and the agri-food industry and implementing relevant national nutrition security policies. The FOOD2030 initiative aims to promote sustainable food systems by improving eating patterns and lifestyles to achieve a 50% reduction in the incidence of lifestyle-related diseases by 2030, while also reducing the impact of food

consumption, on the environment (European Commission, 2017).

In this regard, five areas of interest are identified: reducing the incidence of obesity, healthy aging, healthy and sustainable diets, improving food processing and personalized nutrition. It is also recommended to involve all actors in the food chain, coordinated by the relevant ministries, to take responsibility for the development of a health-centered, climate-smart, sustainable and resilient food system for Europe and, in our case for Romania, based on research and innovation, which works according to a systemic approach. The recommendations to the member states are to align their national (and regional) research and innovation programs to solve the existing societal challenges, namely ensuring nutritional security considering the growth of the global population, the aging of society at the level of our country and at the European level as well as other demographic changes, climate change and the limited existence of resources (water, energy and agricultural land).

An important prerequisite to facilitate citizens to have healthy and more sustainable diets is the provision of sufficient and high-quality raw materials and food ingredients for food production and, of course, appropriate technologies to process these raw materials into food products with high nutritional value.

Ensuring the supply of sufficient safe, nutritious and high-quality food/raw materials for direct consumption and food production at an affordable price is also a challenge. A key component of a future secure food system is a well-functioning, socially acceptable and sustainable food chain with a focus on food for a healthy diet and personalized food products (Gillespie S, Van den Bold M, 2017).

In Europe, lifestyle-related diseases are responsible for 80% of deaths and 77% of associated diseases. It is estimated that about 26% of these deaths are premature, meaning that people died before reaching the age of 70 (WHO, 2013).

According Eurostat data (2021), 45% of adults living in the EU had a normal weight in 2019, 53% were considered as overweight, out of them, 17% obese, 36% pre-obese and approx. 3% as underweight, according to their body mass index (BMI). 25% of people between 18 and 24 years old, and 66% of people between 65 and 74 years old are overweight, and similarly for the obesity rate, 6% vs. 22%. The global costs of overweight and obesity are \$2.0 trillion per year (McKinsey Global Institute, 2014), including direct and indirect costs such as health care costs, lost work productivity and quality of life.

FOOD AND NUTRITION RELATED HEALTH IN ROMANIA

In Romania, a growing number of people have an unhealthy and unbalanced diet. This phenomenon is in close connection with an alarming increase in lifestyle-related diseases, such as obesity, cardiovascular diseases, diabetes, cancers and chronic respiratory diseases as well as with a huge social and economic consequences. The key risks involved are overweight and obesity, hypertension, insulin resistance, hyperglycemia and hyperlipidemia. All these risks are associated, in particular, with poor food quality and food education as well as an inappropriate eating behaviour. Promoting lifestyles with healthier and personalized nutrition is of the utmost importance in preventing these morbidities.

In addition to all of these, our society is faced with an acute malnutrition caused by poverty and cognitive impairment, the latter with a higher incidence in the elderly population, that is prone to chronic diseases age-related, this category of population being either underweight or overweight with associated micronutrient deficiencies.

The health gap between people in higher and lower socio-economic classes is widening. This is another social related food and nutrition condition. The first group often has the knowledge, motivation and financial means to make healthier and more sustainable food choices (*e.g.*, organic food products). People in the second group tend to have less healthy eating patterns and lifestyles, which negatively affects their health. This leads to shortened life expectancy; poor quality of life leads to higher costs of the national health system.

According to the National Study on the Prevalence of Diabetes, Prediabetes, Overweight, Obesity, Dyslipidemia, Hyperuricemia and Chronic Kidney Disease (PREDATORR), 31.4% of adults between the ages of 20 and 79 suffer from obesity, in Romania. Among them, 21.5% have first degree obesity, 7.2% have second degree obesity and 2.7% suffer from morbid obesity. Regarding overweight, 34.6% of the country's population is affected (Predatorr, 2015).

MEETING THE CHALLENGES

There is growing recognition that a sustainable diet, *i.e.*, a mainly plant-based diet, is generally consistent with current dietary recommendations and guidelines because excessive consumption of, for example, meat products and (ultra-)processed

foods that leads to a high consumption of salt, fat and sugar (Lehmann U, Charles VR, 2017).

Changes in food processing could increase the bioavailability of nutrients in plant-based foods, facilitate the reduction of sugar, fat or salt, and as such, help minimize the incidence of diabetes and cardiovascular disease. It is important to design foods that are healthy and sustainable but also in line with sensory and lifestyle attribute needs.

The supply of food products must be adapted to facilitate a major shift towards a more efficient use of the raw materials required for food production. An example is the promotion of animal proteins with terrestrial and aquatic plant proteins (Springmann M, Clark M, 2018). At the same time, product reformulation – reducing salt, sugar, fat and portion size – should help reverse the worldwide rise in lifestyle-related diseases such as obesity, diabetes and cardiovascular disease.

Increased use of existing plant and aquatic resources and exploitation of new raw material resources could be a promising way forward in meeting the demands of limited ingredients. Examples include the extraction of bioactive ingredients such as essential fatty acids from algae, as well as plant proteins from agri-food by-product and waste streams. Knowledge of the health effects and safety of these components as well as the logistics and how they can be efficiently processed must be gained to develop safe and nutritious foods that are accepted and appreciated by consumers.

The challenge is to identify the right balance between the demand for food and resources to avoid reaching the limits of our planet. Biodiversity is also a starting point. Hence the need for accessibility, availability and acceptance by consumers of healthy and more sustainable products, thinking about retail distribution channels as well as restaurants and catering units.

A better use of animal and vegetable raw materials is essential for the conservation of natural resources. For this, the valorization of bioactive, nutritious compounds from the by-products resulting in the food industry would contribute to an efficient use of resources (Stoll-Kleemann S, Schmidt UJ, 2017). However, the lack of scientific evidence on the composition and logistics needed to recover these by-products, including those from commercial fisheries, has limited their use in new food development. But for food waste recovering, logistic and food safety is an important aspect in the development and production of healthy and sustainable food.

The globalization of food trade requires more advanced monitoring and more careful assessment of food contaminant hazards. The presence of environmental toxins and pollutants and the promotion of sustainable resources, for example marine ones, as plant-based sources highlight the challenge for a clean environment and the need for scientific evidence in this area.

The agri-food industry together with research in the field must identify food pollutants and contaminants and facilitate, through advanced real-time technologies, food quality monitoring and hazard assessment along the food value chain.

Blockchain technology, for example, also thinking about digitization, seems to offer interesting opportunities lately. In addition to the risks of environmental pollutants, approaches should also consider contamination during production or *via* packaging material and storage and related issues such as authenticity and traceability should be also taken into account.

The composition of a food, properties of ingredients, processing and storage conditions affect the nutritional value and sensory properties of the final product. The entire food value chain, from raw material to food distribution, should be considered to enable safe and standardized production processes. This should also include the prediction of the effects of food structure and food processing on the nutrition and sensory attributes of foods. Insights from this field will allow the food industry to more effectively design foods adapted to the nutritional needs and sensory requirements of consumers.

Our citizens generally consume excessive levels of salt, sugar and saturated fat. In any case, individual consumers show different metabolic reactions to these food components. In this way, personalized nutrition or precision nutrition is required, the latter being a newer concept circulated. This would contribute to better disease prevention, increase the quality of life and reduce costs in the health care system.

CONCLUSION

The eating behaviour changing is needed, as well as, the approaching of the entire food system, including also catering and restaurants. Shifting to a preponderant vegetal diet is required for a healthy diet and a healthy environment. Sustainability should be taken into consideration in all steps of the food system starting with soil, agriculture, transport

and storage, processing, retailing and consumption while safety and nutritive quality of food is assured. All of these should be supported by an appropriate information and food education of all category of consumers.

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