

## FOOD INDUSTRY DEVELOPMENT IMPACT ON LIFE QUALITY

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**Abstract.** *In this work, the evolution of life will be reviewed from the point of view of improving the quality of nutrition. To begin with the development of agriculture and animal husbandry allowed humans to cultivate crops and raise livestock, leading to more varied and nutrient-rich diets. In recent times, advancements in science and technology have led to further improvements in the quality of nutrition. The discovery of essential vitamins and minerals, as well as the development of fortified foods, has helped to address nutrient deficiencies and improve overall health. Overall, the evolution of life has been shaped by the need to obtain and utilize nutrients efficiently.*

**Keywords:** *evolution of nutrition, food industry, healthcare, life quality, nutrition.*

### Introduction

The development and discovery of fire by ancient people increased duration of life, because it allowed people to diversify protein and carbohydrate foods and led to the possibility of cooking food of animal origin. This demonstrates that the development of nutrition has a significant impact on a person's life. The evolution of the quality of human life has led to changes in the field of nutrition, which is directly related to the improvement of the quality of nutrition and the emergence of such a concept as "proper nutrition".

Proper nutrition is the most important factor in ensuring man's health, his ability to work and resistance to external adverse influences and, along with way of life determines its quality and duration. There is a direct relationship between the state of a person's nutrition and his health; every year the number of consumers who partially or completely change their diet is increasing, in particular under the influence of modern techno trends and directions of state policy in the field of healthy nutrition.

### A timeline of nutrition research

While food and nutrition have been studied for centuries, modern nutritional science is surprisingly young. The foundation of modern nutritionology is laid due to the knowledge of General Chemistry, the development of Chemical Analysis, Biochemistry and Physiology. The development of nutrition science as a clinical discipline can be traced back to the early 20th century, with the discovery of essential nutrients such as vitamins and minerals. Prior to this, the relationship between food and health was poorly understood, and nutritional deficiencies were common.

The 1910s to 1950s was a period of significant discovery in the field of nutrition, particularly in the area of vitamins. The discovery of vitamins and minerals led to the recognition of the importance of a balanced diet for maintaining good health. To prevent vitamin deficiency, the first dietary strategies and recommendations for the use of specific products appeared.

In the early 1910s, Casimir Funk first coined the term "vitamin," and identified thiamine (vitamin B1) as the first vitamin. This was followed by the discovery of other vitamins, including vitamin A, vitamin C, vitamin D, and vitamin E, throughout the first half of the 20th century.

The discovery of these vitamins had a profound impact on public health, as it led to the identification and treatment of many nutrient deficiencies that were common at the time. For example, the discovery of vitamin C led to the prevention and treatment of scurvy, a disease that had plagued

sailors for centuries. The discovery of vitamin D led to the prevention and treatment of rickets, a disease that was particularly common among children in urban areas.

Although, the discovery of vitamins, other important developments occurred during this era, such as the identification of essential minerals like iron and iodine.

The historical period of food shortages, which included the Great Depression in the United States and World War II, had a significant impact on the quality of human nutrition.

During the Great Depression, many people experienced food shortages and malnutrition due to a lack of access to adequate food. This led to the development of government initiatives, such as the Federal Surplus Relief Corporation, which aimed to distribute surplus food to those in need. Additionally, nutrition research during this time led to the discovery of essential nutrients and the development of fortified foods that helped to prevent nutrient deficiencies.

World War II had a similar impact on nutrition, with food shortages and rationing affecting many countries. The war also led to the development of food preservation techniques and the introduction of fortified foods into military rations. These advances helped to improve the nutritional status of soldiers and civilians alike. In 1941, at the Conference "On Nutrition for Defense", the first scientifically based dietary recommendations were presented, which included the minimum possible amount of calories, protein, vitamins, iron, calcium and phosphorus for maintaining human life and social activity.

Furthermore, the emphasis on nutrition during wartime led to the development of government programs such as the National School Lunch Program in the United States, which continues to provide nutritious meals to school children today.

The 1950s to 1970s was a period of increasing concern about the role of dietary fat and sugar in human health, as well as a growing awareness of the importance of protein in the diet.

During this time, researchers began to investigate the relationship between dietary fat intake and the risk of heart disease. This led to the development of the low-fat diet, which emphasized the consumption of carbohydrates and reduced fat intake. The low-fat diet gained popularity in the 1970s and 1980s, and was widely promoted as a way to improve cardiovascular health.

At the same time, concerns were also raised about the role of sugar in the diet. Some researchers suggested that excess sugar consumption could lead to a range of health problems, including obesity, diabetes, and heart disease. This led to the development of low-sugar diets, which emphasized the consumption of complex carbohydrates and reduced intake of added sugars.

In addition to these debates about fat and sugar, there was also growing concern about the so-called "protein gap," or the idea that many people were not consuming enough protein in their diets. This was particularly true in developing countries, where access to animal products and other sources of protein was limited. To address this issue, researchers and policymakers began to promote the consumption of plant-based protein sources, such as legumes and grains. With the support of the United Nations, a large-scale industrial development of infant formula enriched with protein has begun. However, in 1975, leading scientists from the USA and London concluded that the main cause of protein deficiency and other nutrients was a lack of food: "The concept of global protein deficiency ... no longer stands up to criticism ... the problem lies in the quantity, not in the quality of food" [1].

In the USSR, biochemist Alexey Alekseevich Pokrovsky is considered the founder of nutritionology. Pokrovsky participated in the development of special food products for various groups of the population, athletes, cosmonauts. He and his team had to create food that would meet the specific nutritional needs of cosmonauts, while also being lightweight, easy to store, and safe for consumption in space. They developed a variety of food products, including pureed meats, vegetables, fruits, and special beverages and snacks. This work was groundbreaking and helped to pave the way for future space food innovations. Pokrovsky also developed specialized food products for other groups, including athletes and pregnant women.

The period of the 1970s to the 1990s was marked by an increasing awareness of the link between diet and chronic non-communicable diseases such as obesity, type 2 diabetes mellitus, and certain types of cancer.

High-income countries have decided to call for the help of nutritionology. In 1980, dietary guidelines for the population were developed in the USA, which recommended eating foods with sufficient starch and fiber content, as well as avoiding too much fat, saturated fat, cholesterol, sugar and sodium. Products with a low content of harmful fats, enriched with vitamins appeared on sale, a technology of partial hydrogenation of vegetable oils was developed.

Based on numerous studies, the World Health Organization has developed recommendations for the use of vitamin supplements during pregnancy, as well as for the enrichment of salt with iodine to prevent goiter and developmental abnormalities, such as congenital hypothyroidism and hearing loss [2,3].

Supplementation with vitamins and minerals also became more common during this period. Some studies suggested that certain nutrients, such as antioxidants, might have health benefits beyond their basic nutritional function. This led to the development of dietary supplements and the widespread use of multivitamin and mineral supplements. However, the effectiveness of dietary supplements in preventing chronic diseases remains controversial, and there is still ongoing debate about the optimal levels of nutrient intake for disease prevention and overall health.

### Modern problems and trends of nutrition

Modern nutrition science indicates the necessity of harmonization of food, consisting in full provision of the body with all the necessary nutrients and energy in appropriate quantities and ratios.

In recent years, consumers have increasingly begun to pay attention to "healthy" products that must meet a wide range of requirements, the main of which are: health promotion, environmental friendliness, the absence of harmful artificial additives. This interest is due to the health benefits and environmental protection. In addition, the locality and quality of products have become important correlates, which together has a direct impact on the market: farm and natural products appear, products with a Clean Label, without GMOs and artificial additives, vegetable milk and meat, etc. (Figure 1).

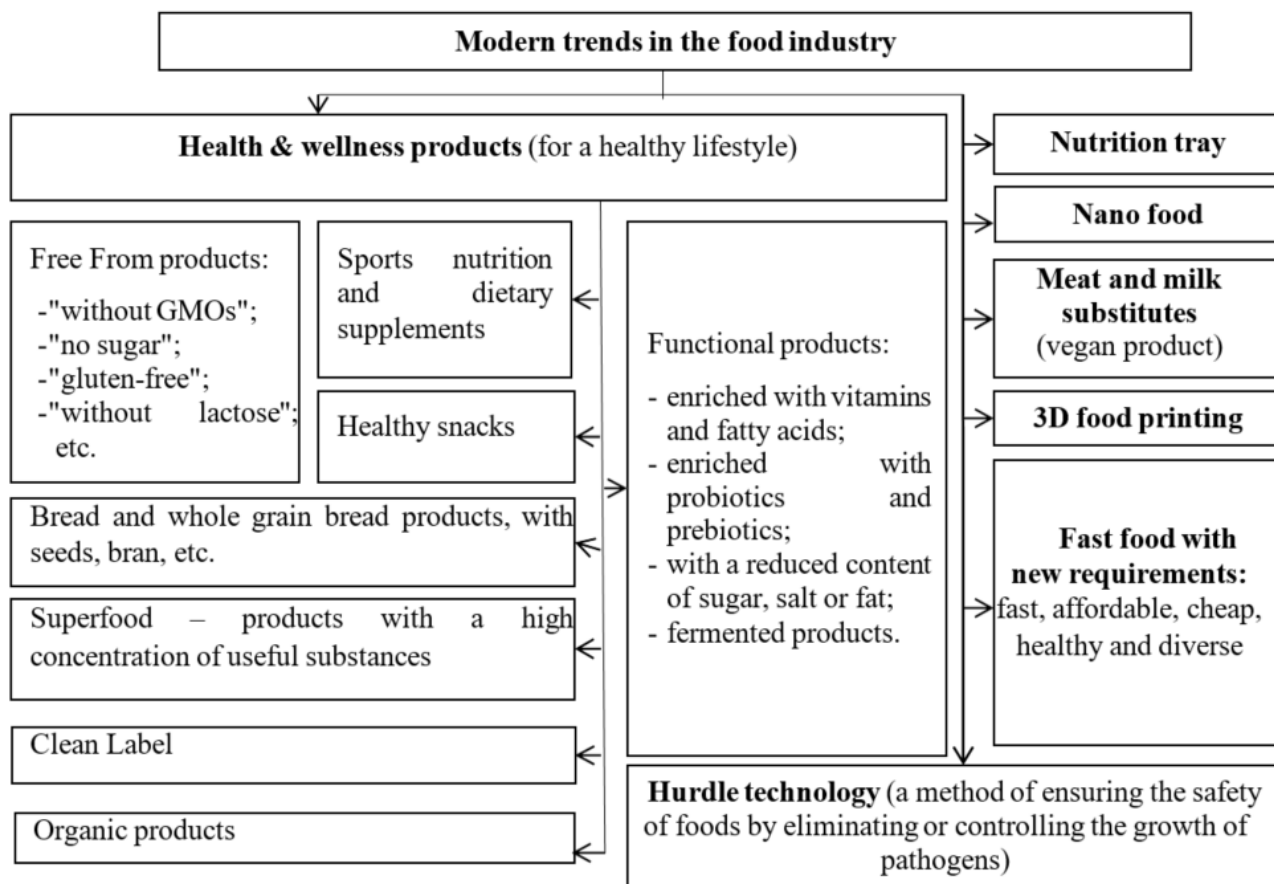


Figure 1. Modern trends in the food industry

A change in nutrition has a significant impact on the functional state of the body and metabolism. The so-called "diseases of civilization" appeared - alimentary diseases associated with malnutrition or excess nutrition: iron deficiency anemia (iron and ascorbic acid deficiency); thyroid disease (iodine deficiency); rickets in children, osteoporosis in the elderly (calcium and vitamin D3 deficiency); overweight and obesity (increased the share of consumption of high-calorie foods with low nutritional value); diabetes mellitus (excessive, uncontrolled consumption of carbohydrates), etc. It is noted that obesity shortens life expectancy by 6-8 years. It should be emphasized that the imbalance of individual components of food plays a role in the development of pathological processes and premature aging, since tolerance to both carbohydrates and fats decreases with age. Therefore, rationally constructed nutrition in childhood and adolescence lays the foundations for active longevity.

### **Conclusions**

The quality of nutrition has played a significant role in improving human life expectancy in the modern world. Improved understanding of the role of nutrition in health, as well as advancements in food industry have contributed to better nutrition for many people.

As a result of these improvements, life expectancy has increased in many parts of the world. According to the World Health Organization, global life expectancy has increased from 64.2 years in 1990 to 72.6 years in 2019. This increase can be attributed in part to improvements in nutrition.

However, it's important to note that nutrition is just one of many factors that contribute to human life expectancy. Other factors such as access to healthcare, clean water, and sanitation also play a critical role. Additionally, while many people have benefitted from improvements in nutrition, there are still many others who do not have access to adequate nutrition, and these disparities can have a significant impact on health outcomes.

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