

## CONSUMER PERCEPTIONS OF FUNCTIONAL FOODS FOR TYPE 2 DIABETES IN ROMANIA AND REPUBLIC OF MOLDOVA

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**Abstract:** In the frame of the study, the perception by consumers of functional foods for people with type 2 diabetes, the factors of consumer perception of foods, the principles of their choice of functional foods were studied. The 2 online questionnaires were developed to conduct a survey in 2 countries - Republic of Moldova and Romania; the analysis of the obtained data and their comparison with each other was carried out. On the basis of obtained data, the important conclusions were made that contribute to the prevention of the problem of low demand for functional foods for people with type 2 diabetes.

**Keywords:** consumer perceptions, functional food for diabetes, new food development and investigations, survey.

### 1. Introduction

In the process of developing and introducing to the market a new functional product, including products for people with type 2 diabetes, it is very important to evaluate the perception of such a product by consumers (Azzurra *et al.*, 2009). The success of the product depends on this, or rather, the scale of its distribution, consumer confidence, the measure of consumption and the improvement of the health status of the population (Baker *et al.*, 2022). Factors influencing the choice of food products can be divided into three main categories: organoleptic characteristics, individual human factors (stress level, appetite, preferences, etc.), social factors (state policy, prices, etc.) (Guine *et al.*, 2020).

The attitude towards functional foods is also influenced by consumers' perception of the technology used for the production, the degree of compliance of the organoleptic properties of the product with consumer expectations, as well as pricing policy (Nakaweesa, 2006). One of the current approaches is to understand why consumers do not choose functional food. This can be achieved by realizing the risks and barriers on the way to healthy eating (Menrad *et*

*al.*, 2006). Therefore, understanding the risks of consumers, their concerns related to processing technologies and new scientific approach, should be the main methodology for the dissemination of functional foods (Spence, 2006). This will allow the development of information strategies applicable to the general population that will bring real health benefits to people suffering from certain diseases (Topolska *et al.*, 2021).

Buyers' buying behavior is related to their personal preferences, attitudes, desires, intentions and willingness to make a purchase. This is a complex psychological process that always takes place unconsciously. But nevertheless, it has a huge effect on the effectiveness of the choice and the demand for products (Urala *et al.*, 2011).

The aim of the work was to analyze the perception of functional foods by consumers, in particular, awareness of this type of product and attitude to the creation and introduction to the market of a new food product for people with type 2 diabetes.

The objectives were to deepen knowledge about the designated topics and research methodologies; conducting a survey; formulation of conclusions based on the obtained data.

## 2. Materials and methods

### 2.1. Study design

The design of the study included setting goals and objectives, deepening in the chosen topic, formulating questions, compiling two online questionnaires, searching for respondents



**Fig. 1.** Study Design

### 2.2. Research Methodology

The study of consumer demand for functional foods for people with type 2 diabetes was conducted. For this, 2 online questionnaires were developed. The survey included: determining the consumer profile - socio-demographic characteristics (gender, age, level of education and occupation); determining the awareness of functional foods for people with type 2 diabetes; identification of the main factors influencing the purchase of a functional product; revealing the attitude of consumers and the desire to consume a functional product, as well as the readiness for the appearance on the market of functional foods for people with type 2 diabetes.

A combination of different questions was used to obtain quantitative and qualitative data on sources of information related to functional foods and awareness, perception and understanding of health claims about functional foods. These questions explored current consumption of such foods, current sources of information, need for additional information, motivating factors that might increase consumption of functional foods.

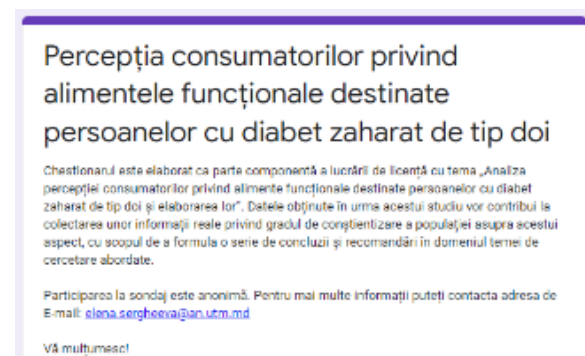
The purpose of some of the questions was also to raise awareness about the definition and properties of functional foods. Hints and explanations were given in the wording of some

in the territory of two countries and sending out questionnaires, collecting information, its thorough analysis, comparing data across countries, and formulating the most important conclusions.

of the questions, and a separate question presented the correct facts about the characteristics and properties of functional products. Accounting for gender, age, employment and educational level is necessary to compile the socio-demographic profile of the consumer. This data will make it possible to draw the link between the consumer profile and his preferences, awareness and willingness to improve his eating habits.

### 2.3. Research tool

The working tool of the study was two questionnaires developed in the Google Forms program. Each questionnaire was intended for residents of different countries - the Republic of Moldova and Romania.



**Fig. 2.** The fragment of the questionnaire

The questionnaire was anonymous and did not require filling in personal contact information. For the questionnaires, 25 questions were formulated, which involve obtaining detailed up-to-date information regarding the issues under consideration. Conditionally questions are divided into 4 groups: social nature; questions about functional foods; questions about type 2 diabetes; questions about functional foods for people with type 2 diabetes.

The first group of questions refers to social and consists of four questions. They are designed to reveal general information about the respondents, namely their gender, approximate age, occupation and level of education.

The group of questions about functional foods consists of 8 questions. All of them are designed to reveal the degree of awareness of respondents about the existence of functional products, about their useful properties and functions. Questions of the third group reveal the degree of spread of this disease among the respondents and their environment, which indicates the relevance of the topic, as well as the awareness and attitude of respondents to nutrition in case of type 2 diabetes and its prevention. The fourth group of questions includes questions about functional foods for type 2 diabetes. These questions determine the readiness for the

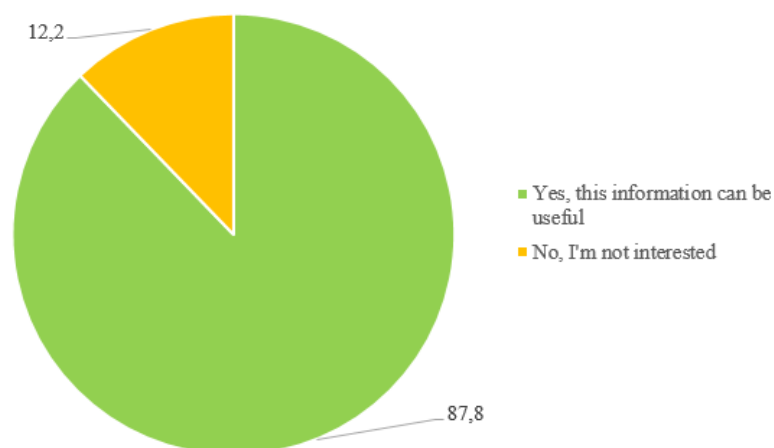
appearance of new functional products, the most preferred category of products.

#### 2.4. Respondents

The respondents are residents of the Republic of Moldova and Romania, men and women of different ages with different employment (students, employees, entrepreneurs, unemployed and pensioners). They were invited to the survey via mailing list, social media announcements and personal invitations. Most of the respondents were women, about 70% of the respondents were students in the first cycle of study. This information is necessary for compiling a consumer profile and analyzing these indicators, comparing them with the level of awareness of respondents, striving for new information and readiness to introduce new food habits into their lives.

### 3. Results and discussions

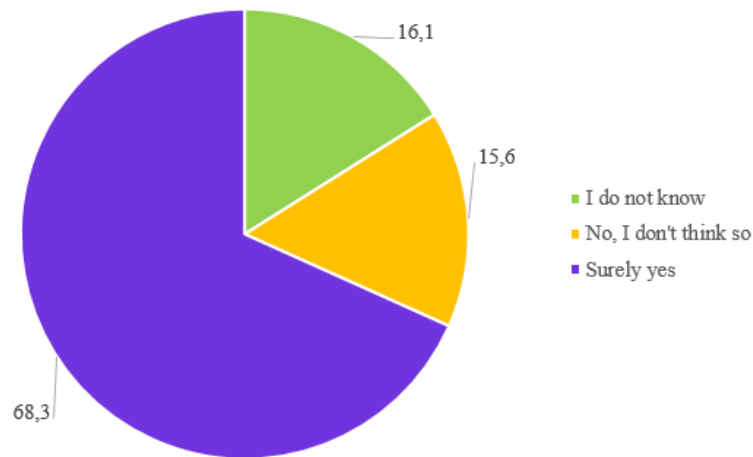
179 people from the Republic of Moldova took part in the survey. Most of the respondents are women (64%), half are students. Most of the respondents have insufficient knowledge about functional foods. At the same time, 88% of respondents would like to know more about such products and their effect on the body (fig. 3).



**Fig. 3.** Data on the desire of Moldovan respondents to learn more about functional products

Most respondents (68%) agree that the development and distribution of new functional foods for people with type 2 diabetes can help

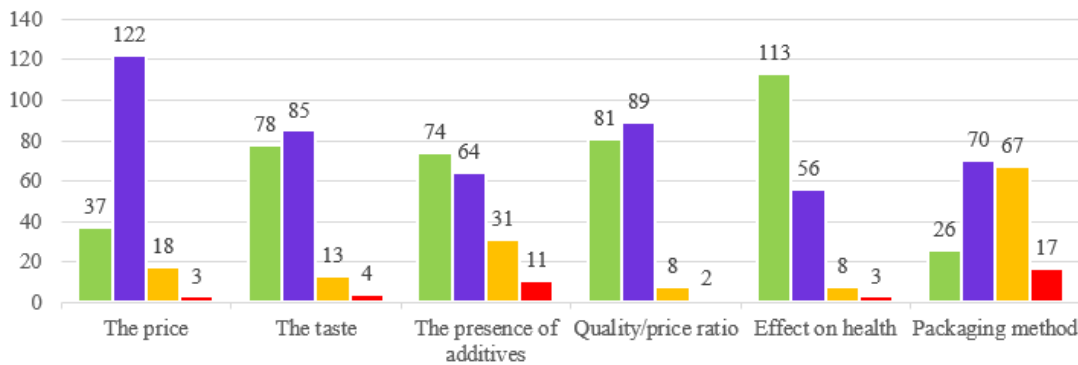
reduce the incidence (fig. 4). And 94% of respondents believe that it is necessary to expand the range of such products. The most demanded functional foods for people with type 2 diabetes are dairy products and confectionery and sweets.



**Fig. 4.** Results of the question on the relationship between the development of new functional products and the reduction of morbidity

When choosing and buying functional products, the most important factors for consumers are the positive effect of products on health, taste characteristics, and the presence of

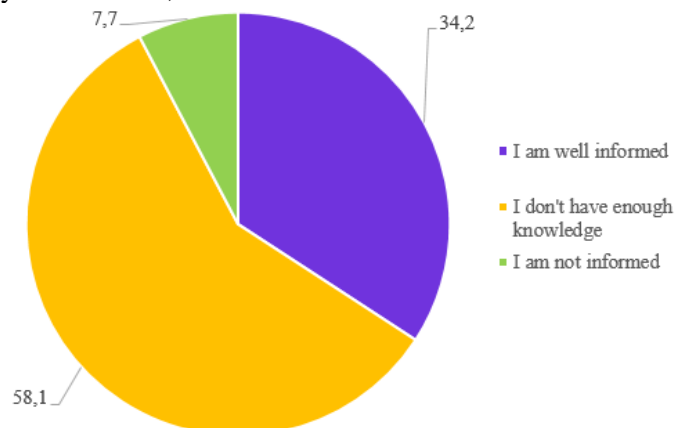
artificial additives (fig. 5). Less important was the price and the way the product was packaged.



**Fig. 5.** Data on the factors influencing the purchase of functional products by Moldovan consumers

It was also found that the low demand for functional foods is due to the lack of public awareness about the existence, properties and benefits of such products, as well as their high cost and unavailability. Most often, residents of

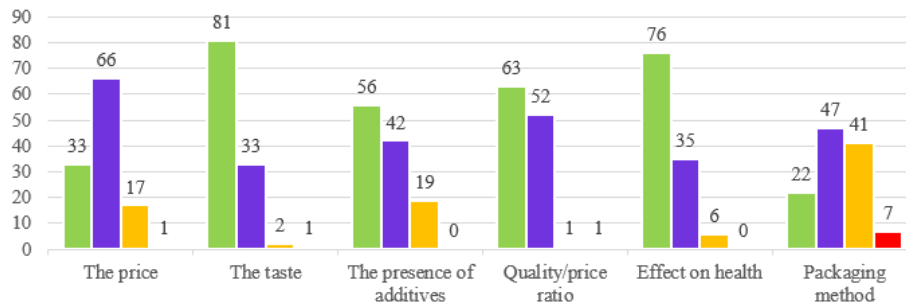
the Republic of Moldova consume functional bakery products and drinks, dairy and meat products. Least often - cereals and pasta, fish and seafood, canned food.



**Fig. 6.** Data on knowledge of Romanian respondents about functional products

The number of respondents from Romania is 117 people. Most of them (58.1%) claim that they have insufficient knowledge about functional foods (fig. 6). However, there were more people wishing to improve their knowledge (98% of respondents). Almost all respondents revealed a desire to learn more about functional foods and include them in their diet, thereby improving their health. The most preferred functional foods for Romanian people are pasta and cereals, as well as dairy products.

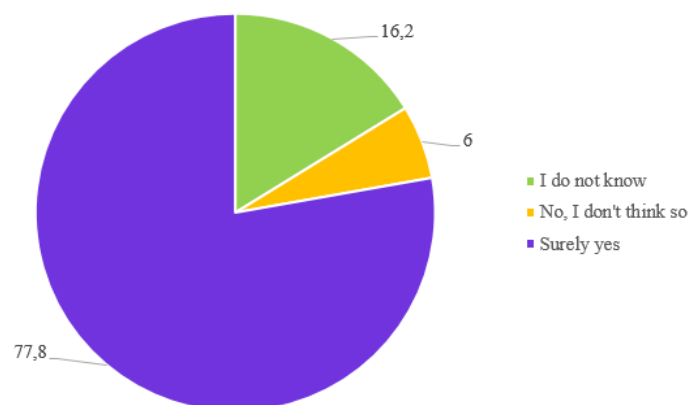
94% of respondents believe that lack of awareness is the main reason for the low popularity of functional foods, it is also affected by the high cost, unavailability of such products, poor assortment and the need to abandon food habits. When buying functional products, the most significant factors are the taste characteristics and useful properties of the product, as well as the price/quality ratio, the presence of artificial additives and the price (fig. 7).



**Fig. 7.** Data on the factors influencing the purchase of functional products by Romanian consumers

More trust among the people of Romania is caused by such sources of information as the Internet and mass media. 77.8% of respondents are confident that the development and distribution of new functional products for people with type 2 diabetes will lead to a decrease in the incidence rate (fig. 8). As a result of a survey of residents of the two countries, common problems

were identified: insufficient awareness of the population about functional foods, a small range of such products. Also, the demand for functional food products and the relevance of this topic on the territory of the Republic of Moldova and Romania were identified.



**Fig. 8.** Results of the question on the relationship between the development of new functional products and the reduction of morbidity

## Conclusions

As a result of the survey, it was revealed that most of the respondents have insufficient knowledge about functional foods. At the same time, almost everyone expressed a desire to consume such products, but only 18% of

respondents from Moldova and 34% of respondents from Romania are aware of their positive impact on health. The most important factor in the purchase of functional foods for respondents was a positive effect on health. The most common reason for refusing to consume functional foods for respondents was the lack of awareness about them, which indicates the need

to disseminate information and introduce it to the masses. Also, there are often problems such as the high cost of such products, their availability and the forced abandonment of eating habits.

88% of respondents from Moldova and 98% from Romania would like to know more about functional foods and their effects on the organism. This fact indicates the insufficiency of advertising campaigns, social videos, etc., that should be corrected in the near future, because type 2 diabetes is a progressive disease, with unfavorable spread statistics, and prevention of these diseases through nutrition is the most effective way to reduce its spread and disease incidence. As a result of the survey, it was found that more than half of the respondents had experienced such a disease as type 2 diabetes, and almost half considered it to be quite common. These data confirm the unfavorable statistics of the spread of morbidity and indicate the relevance of the study.

94% of respondents agree that it is necessary to expand the range of functional products for people with type 2 diabetes. This indicates the readiness of most consumers to introduce such products to the country's market. As a result of the survey, it was revealed that the most popular functional foods for people with type 2 diabetes are dairy products and confectionery and sweets.

As a result of the survey, it was revealed that the market of Romania and Moldova lacks functional foods for type 2 diabetes, and there is interest and demand for such food products among the population, which indicates the need to expand their assortment. The experimental data obtained regarding the perception of functional foods for type 2 diabetes by consumers can make a positive contribution to the coverage of the problem under study and its significance among the population, as well as improve the quality of life of people with type 2 diabetes.

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