



Research Article

A RESEARCH ON FUNCTIONAL FOOD PERCEPTION OF ACADEMICIANS

Saadet Pınar TEMİZKAN^{1*} (orcid.org/ 0000-0002-8200-9564)

Ayşe Nur USLU² (orcid.org/ 0000-0002-3082-943X)

¹Eskişehir Osmangazi University, Faculty of Tourism, Department of Gastronomy and Culinary Arts, Eskişehir, Türkiye

²Karabük University, Safranbolu Faculty of Tourism, Department of Gastronomy and Culinary Arts, Karabük, Türkiye

Abstract

Functional foods are foods that contain components beneficial to the body beyond basic nutrition. Today, with the Covid19 pandemic, people are more inclined to use of functional foods. When the literature related to the field is examined, it is seen that the studies on functional foods are mostly carried out in the mainly of science, engineering, and medicine on the nutritional effects, health effects, and chemical properties of functional foods. This study was carried out to evaluate the functional food perceptions of academicians in different branches. The research was conducted with 407 academicians who agreed to participate. Data were evaluated using “frequency” and “t-test”. It has been observed that most academicians know functional foods. The most popular functional food products among academicians are dark chocolate and herbal teas. When the reliability of communication channels of academicians about functional foods is examined, “newspaper” is seen as the most reliable source by women, while “magazine” is seen as the most reliable communication channel by men.

Anahtar Kelimeler: Functional foods, Healthy food, Consumption, Nutrition, Consumer perception

* Sorumlu yazar: aysenuruslu@karabuk.edu.tr

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Introduction

Due to the emergence of various human health disorders such as obesity, hypertension and heart problems, there has been increased interest in researching foods that offer functional components or substances, affect the physiological system, and prevent diseases by going beyond merely healing people (Soccol and Oetterer).

With the beginning of the 21st century, living standards have improved in most countries, and people have begun to behave more sensitively and consciously about the characteristics of the foods they purchase and their effects on health. Today, consumers not only consume foods but also pay attention to the benefits of the food they consume. The awareness of consumers and the search for alternative products by manufacturers have led the food industry to new quests; as a result, functional foods have emerged.

Due to the consumers' demand for healthy living, many product groups with different functional properties have been introduced to the market. The benefits of these products can be listed as giving energy, providing weight loss, general health, joint health, cardiac health, bone health, preventing colds, strengthening the immune system, preventing cancer, avoiding diabetes, improving mood, and increasing cognitive functions (Watson, 2003).

The concept of "functional food", which was developed as a convenient and inexpensive solution to chronic health problems, has begun to be effective in many branches of science and policy. Since its first conceptualization in 1984, the meaning of "functional food" has changed according to country and culture, and it has been the subject of several studies in recent years, especially in the fields of advanced food health and technology (Martirosyan and Singh, 2015; Baker et al., 2022).

Compared to the general society, academicians are a group with a high level of education and knowledge. When examined in terms of income levels, it is above the general average of the society (Berkel, 2011). The aim of this article is to reveal the consumption trends and perceptions of academics, who are in a high position in terms of education level in the society, on functional food. With this study, it is aimed to contribute to the literature.

Conceptual Framework: Functional Foods

Food is term related to the components necessary for the growth and maintenance of the body, but also for many functions that ensure the continuation of life, such as generating energy, supplying nutrients, and supporting various metabolic activities. In the early 20th century, nutritional science was concerned with preventing deficiencies and promoting body growth. In the last two decades, new and healthier foods that reduce the risk of many chronic diseases have been designed with the knowledge of the impact of diet on health and well-being (Doyon and Labrecque, 2008; Kaur and Das, 2011).

Food has three main functions: nutritional, sensory, and physiological. While nutritional and sensory functions are found in many foods, only some foods have physiological functions. However, with the application of various technological processes in recent years, physiological functions can be added to foods (Ekşi, 2005).

The term functional food first appeared in Japan in the early 1980s, and its inclusion in the legislation was first introduced in 1991 with the concept of FOSHU (Foods for Specific Health Use) (Castillo et al., 2018). Functional foods were first defined by M. Roberfroid as "food similar in appearance to conventional foods, intended to be consumed as part of the normal diet, but modified to serve physiological roles beyond the provision of simple nutritional requirements" (Roberfroid, 1999).

Several definitions of functional foods have been made around the world. Some definitions emphasize that any food marketed with a functional orientation is unctional food. Some argue that only reinforced, enriched, or enhanced foods should be considered as functional that has a component with health benefits beyond basic nutrition. Some argue that food may be functional food if it has a health claim. Another definition is "foods or food ingredients that may have health benefits that reduce the risk of certain diseases or other health problems" (Doyon and Labrecque, 2008).

The International Food Information Council (IFIC) has defined functional foods as foods that can provide health benefits beyond basic nutrition (ADA, 2004).

Shahidi (2012: 226) described functional foods as products similar to traditional foods but with physiological benefits. Functional Foods Commission of the European Union defined functional food as follows: "in order for a food to be considered a functional food, it must be effective in improving human health and/or preventing the formation of diseases, in addition to its basic nutritional properties" (Alaşalvar and Pelvan, 2009).

Among the purposes of use of functional foods, improving the general conditions of the body (for example, pre-biotics and probiotics), reducing the risk of some diseases (for example, cholesterol-lowering products) and curing some diseases can be listed (Bigliardi and Galati, 2013).

Functional foods are divided into four groups: (1) traditionally used foods, (2) modified foods, (3) medical foods, and (4) special-use foods. Traditionally used foods are foods that appear whole, unchanged, and have strong health benefits, such as vegetables, fruits, fish, dairy legumes, and grains. Modified foods are foods that have been enriched or reinforced with a particular nutrient to enhance their health benefits. The most common examples are calcium, antioxidants and vitamin-reinforced beverages, calcium and folate-enriched bread, plant fibers sterols, and products enriched with Omega- 3 fatty acids. Medical foods contain phenylketonuria (PKU) formulas that do not involve Phenylalanine. Foods for special use include hypoallergenic foods such as baby foods, gluten-free foods, lactose-free foods, and weight- loss foods (Hasler and Brown, 2009).

In response to the large number of consumers who want to maximize their health, the food industry has developed different types of new functional food products that increase the demand for such products in the market. Subsequently, the functional food market is spreading around the world. The most remarkable market area in this market was probiotic products. In Turkey, the functional food market comes to prominence with food groups such as milk and dairy products, fruit juices and nectars, biscuits/crackers and herbal teas (Dölekoğlu et al., 2012).

Functional ingredients with potential usefulness can be included in the food formulation naturally, or they can be added to the formulation completely by external addition or by enriching the existing ingredient. Among the most widely known members of the functional components, category are carotenoids, dietary fiber, fatty acids, flavonoids, isothiocyanates, phenolic acids, prebiotics, probiotics, and phytoestrogens (Guiné et al., 2009).

The global functional food market is increasing by 10% every year. According to 2012 data, the functional food market in the world which is worth 100 billion dollars is shared by Japan (38.4%), the USA (31.1%), Australia (1.6%) and European countries (28.9%) (Taş and Sezer, 2012). By 2020, the demand for functional foods has risen in the global market with the increase of awareness that peptides are health promoting substances, and the introduction of factors such as product processing and technology (Tadese, 2020).

Table 1. Global functional food sales in 2015-2018 and Forecasts for 2019-2024

| Global values | 2015-2018 | 2019-2024 Billion dollars |
|---------------------------|------------------|--|
| Global sales | 128-160 | 171-253 |
| Middle East and Africa | 7-8 | 8-12 |
| Central and South America | 9-13 | 13-17 |
| Europe | 26-32 | 26-52 |
| North America | 36-44 | 45-68 |
| Asia and Pacific islands | 51-64 | 70-104 |

Source: (Kurbutowicz, 2018 cited by Kociszewski, 2019)

When Table 1 is examined, prediction is that the sales volume of functional foods in the world will increase by approximately 50 billion dollars between the years 2019-2024 compared to the years 2015-2018. When the sales volumes in Europe are analyzed, it is estimated that the sales amount can reach 52 billion dollars. When the data in the Table is examined, it is seen that the sales of functional food in the Middle East and Africa are at lower levels compared to other regions. With the development of the market volume of functional food, the importance of functional food suppliers is increasing and the products are being diversified (Yıldırım, 2021).

Methodology

Compared to society at large, academicians constitute a group with high levels of education and knowledge. When examined in terms of income levels, they are above the general average of society (Berkel, 2011). The aim of this article is to reveal the consumption trends and perceptions of academicians, who are at a higher level in terms of education in society, on functional food. With this study, it is aimed to contribute to the literature.

The questionnaire technique, one of the quantitative data collection methods, was used in the research. Studies (Ulu, 2018) and (Aslan, 2021) were employed to develop the survey questions. With the help of the

questionnaire, 407 academic personnel in different branches of various universities in Turkey were reached online.

The Ethics Committee approval for the study was obtained with the decision of the Social and Human Sciences Research Ethics Committee of Karabuk University, dated 10/12/2021 and numbered 2021/11-26.

Results

Normality Test and Reliability Analysis

Prior to the statistical evaluation of the obtained data, a normality test was performed to determine the normal distribution of the data. Skewness and Kurtosis values were checked for the normality test. It was observed that the Skewness value varied between -0.907 and 0.121, and the Kurtosis value varied between -1.084 and 0.241. When Kurtosis and Skewness values are between -1.5 and +1.5, it is considered to be a normal distribution (Tabachnick & Fidell, 2013; Erbay & Beydoğan, 2017). Since the values showed normal distribution, it was deemed proper to use parametric tests.

In order to obtain the data, the reliability analysis of the scale was performed using the Cronbach Alpha method. Cronbach Alpha coefficient value in the range of $0.80 < \alpha < 1.00$ indicates that the reliability level of the scale is high (Kayış, 2010). As a result of the reliability analysis, Cronbach's Alpha value was 0.825. The reliability level of the scale is considerably high.

Demographic features

As a result of the questionnaires and analyses applied, the demographic characteristics of the 407 participants are shown in Table 2.

Table 2. Demographics for all participants

| Gender | | |
|---------------------------------|---------------|-------------------|
| | Number | Percentage |
| Female | 186 | 45,7 |
| Male | 221 | 54,3 |
| Age | | |
| | Number | Percentage |
| 21-30 years old | 57 | 14 |
| 31-40 years old | 166 | 40,8 |
| 41-50 years old | 120 | 29,5 |
| 51 years old and above | 64 | 15,7 |
| Academic title | | |
| | Number | Percentage |
| Res. Ast. | 85 | 20,9 |
| Res. Ast. Dr. | 21 | 5,2 |
| Lecturer | 55 | 13,5 |
| Lecturer Dr. | 19 | 4,7 |
| Assistant professor | 123 | 30,2 |
| Associate professor | 63 | 15,5 |
| Professor | 41 | 10,1 |
| Marital status | | |
| | Number | Percentage |
| Married | 288 | 70,8 |
| Single | 119 | 29,2 |
| Monthly food expenditure | | |
| | Number | Percentage |
| <250 TLs | 1 | 0,2 |
| 251- 500 TLs | 8 | 2,0 |

| | | |
|---------------|-----|------|
| 501-750 TLs | 19 | 4,7 |
| 751-1000 TLs | 50 | 12,3 |
| 1001-1250 TLs | 46 | 11,3 |
| >1250 TLs | 283 | 69,5 |

Do you have information about functional foods?

| | Number | Percentage |
|-----|--------|------------|
| Yes | 221 | 54,3 |
| No | 186 | 45,7 |

Would you like to learn about functional foods?

| | Number | Percentage |
|-----|--------|------------|
| Yes | 338 | 83,0 |
| No | 69 | 17,0 |

Have you ever bought functional foods?

| | Number | Percentage |
|-----|--------|------------|
| Yes | 273 | 67,1 |
| No | 134 | 32,9 |

When the demographic features of the academicians participating in the research are examined, it is seen that male participants are the majority, with 221 people making up 54.3% of the total participants.

It is seen that 14% of the academicians participating in the research are in the 21-30 age range, 40.8% are in the 31-40 age range, 29.5% are in the 41-50 age range, and 15.7% are 51 years old and over.

When examined in terms of academic title, it is seen that 20.9% of the participants are research assistants, 5.2% are research assistant doctors, 13.2% are lecturers, 4.7% are lecturer doctors, 30.2% are assistant professors, % 15.5 are associate professors, and 10.1% are professors.

In terms of marital status, it is seen that 70.8% of the participants are married and 29.2% are single.

When the monthly food expenditures of participants are examined, it is seen that 0.2% are below 250 TLs, 2% are between 251-500 TLs, 4.7% are between 501-750 TLs, 12.3% are between 751-1000 TLs, 11.3% are between 1001-1250 TLs and 69.5% are above 1250 TLs.

It is seen that 54.3% of the participants know functional foods, while 45.7% do not know about them.

It was determined that 83% of the participants wanted to learn about functional foods, and 13% did not want to learn.

It was found out that 67.1% of the participants have bought functional foods while 32.7% have not purchased any functional foods.

Attitude Towards Functional Foods

The results of academicians' attitudes towards functional foods are evaluated under different tables as "Confidence in the information given about functional foods and gains from functional foods", "Having adequate knowledge about functional foods", and "No nutritional risk in consuming functional foods" based on the factor analysis performed by Ulu (2018) in his study to determine consumer perception in functional foods.

Confidence in Information Given about Functional Foods

Table 3. includes the values of the perception of the academicians on "confidence in the information given about functional foods". Regarding the expression "functional foods have been scientifically proven", the highest rate of academicians gave the answer "I am neutral" with 51.5%, while the statement "I totally agree" took the last place with rate of 5.9%.

As a response to the expression “I trust the information given about functional foods”, 45.5% of academicians stated that they were neutral, while 23.8% agreed, 15.2% disagreed, 9.8% strongly disagreed and 5.7% totally agreed with the phrase.

In answer to the expression “I can prevent diseases by consuming functional foods”, it was observed that 13.3% of academicians strongly disagreed, 23.8% disagreed, 37.6% were neutral, 21.4% agreed, and 3.9% totally agreed with the statement.

As a response to the statement “I can support my health by consuming functional foods”, 40.8% of academicians agreed, 29.7% were neutral, 12.5% totally agreed, 10.1% disagreed, and 6.9% strongly disagreed with the phrase.

In answer to the statement “Functional foods can make up for the deficiencies of an unhealthy diet”, 37.6% of academicians were neutral, 31.9% agreed, 14.5% disagreed, 9.1% strongly disagreed, and 6.9% totally agreed with the expression.

Table 3. Confidence in the information given about functional foods

| | | n | % |
|--|-------------------|-----|------|
| The reliability of functional foods has been scientifically proven. | Strongly disagree | 40 | 9,8 |
| | Disagree | 59 | 14,5 |
| | Neutral | 208 | 51,5 |
| | Agree | 76 | 18,7 |
| | Totally agree | 24 | 5,9 |
| | | n | % |
| I trust the information given about functional foods | Strongly disagree | 40 | 9,8 |
| | Disagree | 62 | 15,2 |
| | Neutral | 185 | 45,5 |
| | Agree | 97 | 23,8 |
| | Totally agree | 23 | 5,7 |
| | | n | % |
| I can prevent diseases by consuming functional foods | Strongly disagree | 54 | 13,3 |
| | Disagree | 97 | 23,8 |
| | Neutral | 153 | 37,6 |
| | Agree | 87 | 21,4 |
| | Totally agree | 16 | 3,9 |
| | | n | % |
| I can support my health by consuming functional foods | Strongly disagree | 28 | 6,9 |
| | Disagree | 41 | 10,1 |
| | Neutral | 121 | 29,7 |
| | Agree | 166 | 40,8 |
| | Totally agree | 51 | 12,5 |
| | | n | % |
| Functional foods can make up for the deficiencies of an unhealthy diet | Strongly disagree | 37 | 9,1 |
| | Disagree | 59 | 14,5 |
| | Neutral | 153 | 37,6 |
| | Agree | 130 | 31,9 |
| | Totally agree | 28 | 6,9 |

The mean values and t-test results of the perception of confidence in the information given about the functional information according to the gender of the academicians are given in Table 4. There was no statistically significant difference ($p>0.05$) in the expressions “The reliability of functional foods has been scientifically proven”, “I trust the information given about functional foods”, “I can prevent diseases by consuming functional foods”, and “I can support my health by consuming functional foods”. However, there is a

statistically significant difference between the genders in the expression “Functional foods can make up for the deficiencies of an unhealthy diet” ($p \leq 0.05$).

Table 4. Perception of trust in the information given about functional foods according to the gender of the academicians

| | | \bar{X} | SS | p |
|--|--------|-----------|--------|-------|
| The reliability of functional foods has been scientifically proven | Female | 3,108 | 1,0341 | 0,209 |
| | Male | 2,842 | 0,9181 | |
| I trust the information given about functional foods | Female | 3,177 | 1,0218 | 0,403 |
| | Male | 2,855 | 0,9709 | |
| I can prevent diseases by consuming functional foods | Female | 2,887 | 1,0771 | 0,966 |
| | Male | 2,706 | 1,0178 | |
| I can support my health by consuming functional foods | Female | 3,613 | 1,0244 | 0,479 |
| | Male | 3,258 | 1,0538 | |
| Functional foods can make up for the deficiencies of an unhealthy diet | Female | 3,220 | 1,1052 | 0,007 |
| | Male | 3,054 | 0,9848 | |

The average values of the perception of confidence in the information given about functional foods according to the marital status of the academicians and the t-test results are given in Table 5. Since all expressions are ($p > 0.05$), there is no statistically significant difference in the statements.

Table 5. The perception of trust in the information given about functional foods according to the marital status of the academicians

| | | \bar{X} | SS | p |
|--|---------|-----------|--------|-------|
| The reliability of functional foods has been scientifically proven | Married | 2,969 | 0,9748 | 0,760 |
| | Single | 2,950 | 0,9987 | |
| I trust the information given about functional foods | Married | 2,972 | 1,0356 | 0,435 |
| | Single | 3,076 | 0,9312 | |
| I can prevent diseases by consuming functional foods | Married | 2,753 | 1,0617 | 0,122 |
| | Single | 2,874 | 1,0131 | |
| I can support my health by consuming functional foods | Married | 3,382 | 1,0690 | 0,361 |
| | Single | 3,513 | 1,0157 | |
| Functional foods can make up for the deficiencies of an unhealthy diet | Married | 3,087 | 1,0440 | 0,683 |
| | Single | 3,235 | 1,0391 | |

Having Adequate Knowledge About Functional Foods

Table 6. includes values belonging to the perception of academicians on “having adequate knowledge about functional foods”. In response to the expression “functional foods are an opportunity offered us by technology”, 32.7% of the academicians were neutral and 32.4% agreed with the statement.

In a response to the statement “social circle is effective in consumption of functional foods”, 45% agreed, 24.8% totally agreed, 17% were neutral, 8.4% disagreed, and 4.9% strongly disagreed with the expression.

In answer to the expression “expert statements are effective on my functional food consumption”, 38.3% of the academicians agreed, 25.6% totally agreed, 18.7% were neutral, 10.1% disagreed, and 7.4% strongly disagreed with the phrase.

As a response to the statement “Functional foods are not adequately promoted”, 30.2% of academicians disagreed, 28% were neutral, 22.6% strongly disagreed, 12.3% agreed, and 6.9% totally agreed with the expression.

Table 6. Having adequate knowledge about functional foods

| | n | % | |
|---|-------------------|-----|------|
| Functional foods are an opportunity offered us by technology. | Strongly disagree | 33 | 8,1 |
| | Disagree | 47 | 11,5 |
| | Neutral | 133 | 32,7 |
| | Agree | 132 | 32,4 |
| | Totally agree | 62 | 15 |
| | n | % | |

| | | | |
|--|-------------------|-----|------|
| Social circle is effective in consumption of functional foods | Strongly disagree | 20 | 4,9 |
| | Disagree | 34 | 8,4 |
| | Neutral | 69 | 17 |
| | Agree | 183 | 45 |
| | Totally agree | 101 | 24,8 |
| | n | | % |
| Expert statements are effective on my functional food consumption. | Strongly disagree | 30 | 7,4 |
| | Disagree | 41 | 10,1 |
| | Neutral | 76 | 18,7 |
| | Agree | 156 | 38,3 |
| | Totally agree | 104 | 25,6 |
| Functional foods are not adequately promoted | Strongly disagree | 92 | 22,6 |
| | Disagree | 123 | 30,2 |
| | Neutral | 114 | 28 |
| | Agree | 50 | 12,3 |
| | Totally agree | 28 | 6,9 |

The average values and t-test results of the academicians' perception of having adequate knowledge about functional foods according to their gender are given in Table 7. There was no statistically significant difference ($p > 0.05$) in the expressions “functional foods are an opportunity offered by technology”, “expert statements are effective on my functional food consumption”, and “functional foods are not adequately promoted”. However, in the statement “social circle is effective in consuming functional food” ($p \leq 0.05$), there is a statistically significant difference between the genders.

Table 7. Perception of academicians to have adequate knowledge about functional foods according to their gender

| | | \bar{X} | SS | p |
|--|--------|-----------|---------|-------|
| Functional foods are an opportunity offered us by technology. | Female | 3,581 | 1,0937 | 0,632 |
| | Male | 3,158 | 1,1067 | |
| Social circle is effective in consumption of functional foods. | Female | 3,968 | 1,0444 | 0,010 |
| | Male | 3,593 | 1,0603 | |
| Expert statements are effective on my functional food consumption. | Female | 3,806 | 1,1787 | 0,456 |
| | Male | 3,511 | 1,1623 | |
| Functional foods are not adequately promoted | Female | 2,5269 | 1,22665 | 0,087 |
| | Male | 2,4887 | 1,11848 | |

The mean values and t-test results of the academicians' perception of having adequate knowledge about functional foods according to their marital status are given in Table 8. There is no statistically significant difference between the statements as ($p > 0.05$) in all expressions.

Table 8. Perception of academicians on having adequate knowledge about functional foods according to their marital status

| | | \bar{X} | SS | p |
|--|---------|-----------|---------|-------|
| Functional foods are an opportunity offered us by technology. | Married | 3,344 | 1,0932 | 0,187 |
| | Single | 3,370 | 1,1851 | |
| Social circle is effective in consumption of functional foods. | Married | 3,691 | 1,0747 | 0,152 |
| | Single | 3,941 | 1,0358 | |
| Expert statements are effective on my functional food consumption. | Married | 3,583 | 1,1952 | 0,054 |
| | Single | 3,798 | 1,1243 | |
| Functional foods are not adequately promoted | Married | 2,5208 | 1,16553 | 0,736 |
| | Single | 2,4706 | 1,17764 | |

No nutritional risk in consuming functional foods

Table 9. includes the values of the perception of academicians on “lack of nutritional risk in consuming functional foods”. In response to the expression “healthy people do not need to use functional food”, 30% of academicians were neutral, and 26% totally agreed with the statement.

It is seen that, in answer to the expression “functional foods are trickery”, 32.7% of academicians were neutral, 27.3% disagreed, 25.8% totally agreed, 9.1% agreed, and 5.2% strongly disagreed with the statement.

In answer to the statement “I only want to consume normal foods without extra medicinal effects”, %29.5 of academicians disagreed, 26.3% were neutral, 23.8% strongly disagreed, 13.3% agreed, and 7.1% totally agreed with the phrase.

As a response to the statement “functional foods can be harmful if overused”, 34.2% of academicians disagreed, 29% were neutral, 26.8% strongly disagreed, 6.4% agreed, and 3.7% totally agreed with the expression.

Table 9. No nutritional risk in consuming functional foods

| | | n | % |
|---|-------------------|-----|------|
| Healthy people do not need to use functional food | Strongly disagree | 26 | 6,4 |
| | Disagree | 48 | 11,8 |
| | Neutral | 122 | 30 |
| | Agree | 105 | 25,8 |
| | Totally agree | 106 | 26 |
| Functional foods are trickery | Strongly disagree | 105 | 25,8 |
| | Disagree | 111 | 27,3 |
| | Neutral | 133 | 32,7 |
| | Agree | 37 | 9,1 |
| | Totally agree | 21 | 5,2 |
| I only want to consume normal foods without extra medicinal effects | Strongly disagree | 97 | 23,8 |
| | Disagree | 120 | 29,5 |
| | Neutral | 107 | 26,3 |
| | Agree | 54 | 13,3 |
| | Totally agree | 29 | 7,1 |
| Functional foods can be harmful if overused | Strongly disagree | 109 | 26,8 |
| | Disagree | 139 | 34,2 |
| | Neutral | 118 | 29 |
| | Agree | 26 | 6,4 |
| | Totally agree | 15 | 3,7 |

The perception that there is no nutritional risk in consuming functional foods according to the gender of the academicians and the t-test results are given in Table 10. No statistically significant difference ($p>0,05$) was observed in the statements “Healthy people do not need to use functional food”, “Functional foods are trickery”, “I only want to consume normal foods without extra medicinal effects”, and “Functional foods can be harmful if overused”.

Table 10. The perception that there is no nutritional risk in consuming functional foods according to the gender of the academicians

| | | \bar{X} | SS | p |
|--|--------|-----------|---------|-------|
| Healthy people do not need to use functional food. | Female | 3,7688 | 1,14150 | 0,588 |
| | Male | 3,3348 | 1,17787 | |
| Functional foods are trickery. | Female | 3,6935 | 1,12834 | 0,663 |
| | Male | 3,5113 | 1,10623 | |
| I only want to consume normal foods without extra medicinal effects. | Female | 2,6505 | 1,24832 | 0,089 |
| | Male | 2,3801 | 1,13232 | |
| Functional foods can be harmful if overused. | Female | 2,2581 | 2,2581 | 0,466 |
| | Male | 2,2624 | 2,2624 | |

The perception that there is no nutritional risk in consuming functional foods according to the marital status of the academicians and the t-test results are given in Table 11. Since all expressions are ($p > 0.05$), there is no statistically significant difference in the statements.

Table 11. The perception that there is no nutritional risk in consuming functional foods according to the marital status of the academicians

| | | \bar{X} | SS | p |
|--|---------|-----------|---------|-------|
| Healthy people do not need to use functional food. | Married | 3,5035 | 1,18645 | 0,574 |
| | Single | 3,6050 | 1,16603 | |
| Functional foods are trickery. | Married | 3,6007 | 1,10916 | 0,624 |
| | Single | 3,5798 | 1,14608 | |
| I only want to consume normal foods without extra medicinal effects. | Married | 2,4757 | 1,20080 | 0,915 |
| | Single | 2,5714 | 1,17583 | |
| Functional foods can be harmful if overused. | Married | 2,2431 | 1,05425 | 0,886 |
| | Single | 2,3025 | 1,00469 | |

Consumption Habits of Products with Functional Features

The findings regarding the expressions on the use of functional foods in the “Products” section of the questionnaire are given in Table 12.

- Kefir was determined as a product that is consumed occasionally by 30.2% of the academicians, while the rate of those who tried the product but did not use it was 26.3%, and the rate of those who did not know the product was 5.4%.
- Those who knew but did not use probiotic yogurt ranked first with 32.4%, while those who tried and did not use the product ranked second with 26.5%.
- It has been determined that 26% of the academicians have never used Omega-3/Selenium enriched egg although they know about it, and 8.8% of them use the product frequently.
- 37.8% of the academicians stated that they have not used vitamin augmented fruit juices although they knew it, and 4.2% stated that they used the product frequently.
- While the rate of academicians who know and occasionally use whole grain cereals is 31.2%, the rate of those who do not know the product is 7.4%.
- Regarding the cases of using increased protein milk powder, 34.9% of the academicians answered “I know this product, but I have never used it”, while 4.9% gave the answer “I use this product often”.
- Regarding the calcium-enhanced/lactose-free milk, it was determined that 31.4% of the academicians knew this product but never used it, 22.1% did not know this product at all, and 9.3% used it frequently.
- While protein bars were determined as a product that is known but never used by 26% of the academicians, the rate of those who did not know the product was found as 23.1%.
- It has been found that 42% of academicians use the fiber-rich cereal biscuit occasionally and 23.3% of them use the product frequently.
- When asked about the use of bread enriched with vitamins and minerals, 24.3% of the academicians said, “I know this product, I use it occasionally”, 23.1% replied “I know this product, but I have never used it”, and 15.5% said “I use this product frequently”.
- 35.4% of the academicians stated that they use herbal teas occasionally, and 33.4% frequently use them.
- While 31.4% of academicians use reduced-fat milk occasionally, 22.9% stated that they tried the product but have not used it.
- It has been determined that 34.9% of the academicians do not know the reduced sodium salt, 29.7% have never used this product even though they know it, and 6.6% have used this product frequently.
- It has been found that 41.5% of academicians use dark chocolate frequently, and 31.7% of them use the product occasionally.
- As seen in Table 3.5, the most well-known products are herbal teas with a rate of 98.5%, and fiber-rich cereal biscuit with a rate of 97.3%, respectively. The most widely used products are dark chocolate at 73.2% and herbal teas at 68.8 percent.

- The least known products are salt with reduced sodium (65.1%) and vitamin-augmented fruit juice (71%). The least widely used products are vitamin-augmented fruit juice with 15% and sodium-reduced salt with 18.9 percent.

Table 12. Usage status of functional products

| | | n | % | Ort | S.S |
|------------------------------------|--|-----|------|-------|--------|
| Kefir | I don't know this product at all | 22 | 5,4 | 3,278 | 1,1357 |
| | I know this product but I have never used it | 92 | 22,6 | | |
| | I tried this product but I do not use it | 107 | 26,3 | | |
| | I know this product, I use it occasionally | 123 | 30,2 | | |
| | I often use this product | 63 | 15,5 | | |
| Probiotic Yogurt | I don't know this product at all | 37 | 9,1 | 2,887 | 1,104 |
| | I know this product but I have never used it | 132 | 32,4 | | |
| | I tried this product but I do not use it | 108 | 26,5 | | |
| | I know this product, I use it occasionally | 100 | 24,6 | | |
| | I often use this product | 30 | 7,4 | | |
| Omega 3/Selenium enriched eggs | I don't know this product at all | 105 | 25,8 | 2,622 | 1,3147 |
| | I know this product but I have never used it | 106 | 26 | | |
| | I tried this product but I do not use it | 70 | 17,2 | | |
| | I know this product, I use it occasionally | 90 | 22,1 | | |
| | I often use this product | 36 | 8,8 | | |
| Vitamin-augmented fruit juice | I don't know this product at all | 118 | 29 | 2,233 | 1,1084 |
| | I know this product but I have never used it | 154 | 37,8 | | |
| | I tried this product but I do not use it | 74 | 18,2 | | |
| | I know this product, I use it occasionally | 44 | 10,8 | | |
| | I often use this product | 17 | 4,2 | | |
| Whole grain cereals | I don't know this product at all | 30 | 7,4 | 3,339 | 1,1944 |
| | I know this product but I have never used it | 79 | 19,4 | | |
| | I tried this product but I do not use it | 96 | 23,6 | | |
| | I know this product, I use it occasionally | 127 | 31,2 | | |
| | I often use this product | 75 | 18,4 | | |
| Protein-enriched milk | I don't know this product at all | 97 | 23,8 | 2,457 | 1,1797 |
| | I know this product but I have never used it | 142 | 34,9 | | |
| | I tried this product but I do not use it | 73 | 17,9 | | |
| | I know this product, I use it occasionally | 75 | 18,4 | | |
| | I often use this product | 20 | 4,9 | | |
| Calcium-enhanced/lactose-free milk | I don't know this product at all | 90 | 22,1 | 2,629 | 1,2798 |
| | I know this product but I have never used it | 128 | 31,4 | | |
| | I tried this product but I do not use it | 70 | 17,2 | | |
| | I know this product, I use it occasionally | 81 | 19,9 | | |
| | I often use this product | 38 | 9,3 | | |
| Protein bars | I don't know this product at all | 94 | 23,1 | 2,646 | 1,2663 |
| | I know this product but I have never used it | 106 | 26 | | |
| | I tried this product but I do not use it | 92 | 22,6 | | |
| | I know this product, I use it occasionally | 80 | 19,7 | | |
| | I often use this product | 35 | 8,6 | | |
| | I don't know this product at all | 11 | 2,7 | 3,725 | 1,0233 |

| | | | | | |
|---|--|-----|------|-------|--------|
| Fiber-rich cereal biscuits | I know this product but I have never used it | 44 | 10,8 | | |
| | I tried this product but I do not use it | 86 | 21,1 | | |
| | I know this product, I use it occasionally | 171 | 42 | | |
| | I often use this product | 95 | 23,3 | | |
| Bread enriched with vitamins and minerals | I don't know this product at all | 64 | 15,7 | | |
| | I know this product but I have never used it | 94 | 23,1 | | |
| | I tried this product but I do not use it | 87 | 21,4 | 3,007 | 1,314 |
| | I know this product, I use it occasionally | 99 | 24,3 | | |
| | I often use this product | 63 | 15,5 | | |
| Herbal teas | I don't know this product at all | 6 | 1,5 | | |
| | I know this product but I have never used it | 46 | 11,3 | | |
| | I tried this product but I do not use it | 75 | 18,4 | 3,88 | 1,0447 |
| | I know this product, I use it occasionally | 144 | 35,4 | | |
| | I often use this product | 136 | 33,4 | | |
| Reduced-fat milk | I don't know this product at all | 44 | 10,8 | | |
| | I know this product but I have never used it | 93 | 22,9 | | |
| | I tried this product but I do not use it | 85 | 20,9 | 3,15 | 1,2316 |
| | I know this product, I use it occasionally | 128 | 31,4 | | |
| Reduced sodium salt | I often use this product | 57 | 14 | | |
| | I don't know this product at all | 142 | 34,9 | | |
| | I know this product but I have never used it | 121 | 29,7 | | |
| | I tried this product but I do not use it | 67 | 16,5 | 2,26 | 1,2401 |
| | I know this product, I use it occasionally | 50 | 12,3 | | |
| Bitter chocolate | I often use this product | 27 | 6,6 | | |
| | I don't know this product at all | 18 | 4,4 | | |
| | I know this product but I have never used it | 32 | 7,9 | | |
| | I tried this product but I do not use it | 59 | 14,5 | 3,98 | 1,1294 |
| | I know this product, I use it occasionally | 129 | 31,7 | | |
| | I often use this product | 169 | 41,5 | | |

Findings Regarding the Reliability of Communication Channels Used to Obtain Information on the Consumption of Functional Foods

When the reliability of communication channels is examined according to gender, it is seen that women see “newspaper” and “social media” as the most and least reliable communication channels, respectively.

As for men, it has been found that the most and least reliable communication channels are “magazines” and “internet”, respectively.

Table 13. Analysis Results of Communication Channels by Gender Variable

| Communication channels | Women | | Men | |
|------------------------|--------|---------|--------|---------|
| | Mean | S.D. | Mean | S.D. |
| (T) Internet | 2,8817 | 1,10380 | 2,7240 | 1,14844 |
| (T) Newspaper | 2,9892 | 1,04488 | 3,0226 | 1,12186 |
| (T) Television | 2,8011 | 1,04400 | 2,9321 | 1,11188 |
| (T) Social Media | 2,6452 | 1,19137 | 2,7647 | 1,39441 |
| (T) Magazine | 2,8817 | 1,08901 | 3,1267 | 1,24399 |

(T): The answers to these questions are reverse coded.

When the reliability of communication channels is examined in terms of academic title, it is seen that research assistants and lecturers see “magazines”, research assistant doctors see “newspapers and magazines”, lecturer

doctors see “newspapers”, assistant professors see “magazines”, associate professors see “newspapers” and professors see “newspapers” as the most reliable communication channels.

It has been determined that lecturers, assistant professors and professors see “social media” as the most unreliable communication channel, whereas research assistant doctors and associate doctors think that it is “internet”, and lecturer doctors regard “internet and social media” as the least reliable channel.

Table 14. Analysis results of communication channels by academic title

| Communication channels | Res. Ast. | | Res. Ast.Dr | | Lecturer | | Lecturer Dr. | | Assistant professor | | Associate professor | | Professor | |
|------------------------|------------|-------------|-------------|-------------|------------|-------------|--------------|-------------|---------------------|-------------|---------------------|-------------|------------|-------------|
| | Mea n | S.D | Mea n | S.D | Mea n | S.D | Mea n | S.D | Mea n | S.D | Mean | S.D | Mea n | S.D |
| (T) Internet | 2,82 35 | 1,135 74 | 2,80 95 | 0,872 87 | 2,61 82 | 1,254 49 | 2,94 74 | 1,025 98 | 2,89 43 | 1,085 02 | 2,714 3 | 1,141 99 | 2,73 17 | 1,245 48 |
| (T) Newspaper | 3,08 24 | 1,197 34 | 3,14 29 | 1,108 41 | 3,01 82 | 1,079 97 | 3,10 53 | 1,242 52 | 2,86 99 | 1,007 83 | 3,047 6 | 1,053 85 | 3,07 32 | 1,081 44 |
| (T) Television | 2,88 24 | 1,238 39 | 2,85 71 | 1,152 64 | 2,83 64 | 1,182 65 | 2,78 95 | 0,917 66 | 2,82 93 | 0,972 64 | 2,984 1 | 1,029 78 | 2,90 24 | 1,090 98 |
| (T) Social Media | 2,62 35 | 1,362 56 | 2,90 48 | 1,261 14 | 2,61 82 | 1,283 67 | 2,78 95 | 1,357 24 | 2,82 11 | 1,318 42 | 2,761 9 | 1,324 72 | 2,46 34 | 1,324 72 |
| (T) Magazine | 3,22 35 | 1,294 46 | 3,14 29 | 0,963 62 | 3,10 91 | 1,100 05 | 2,94 74 | 1,078 77 | 2,90 24 | 1,197 09 | 2,825 4 | 1,115 00 | 3,04 88 | 1,223 75 |

(T): The answers to these questions are reverse coded.

Conclusion, Discussion and Recommendations

Today, functional foods are consumed by most people for the purpose of preventing diseases and maintaining a better quality of life. With the Covid-19 pandemic process, consumers have begun to pay more attention to the relationship between the foods they consume daily and their health status. Increasing health problems in this period, the decrease in the sense of trust in food products and the increase in demands for healthy living and healthy nutrition have been effective in consumers’ inclination towards functional food products (Cebeci, 2021).

When the demographic data of the academicians participating in the study are examined, it is seen that the female and male ratios in the participants are very close to each other, and the majority of the participants are male academicians with a ratio of 54 percent.

It is seen that the majority of the academicians participating in the research are married with a rate of 70.8%. The majority (40.8%) of the academicians participating in the research are between the ages of 31-40. When examined in terms of academic title, the majority of the academicians participating in the research are assistant professors with 30.2%. It is seen that the majority of the participants (69.5%) spend more than 1250 TL on food per month.

It was determined that 54.3% of the participants had knowledge about functional foods and 67.1% of them bought functional foods. The reason for the high awareness of functional foods and low consumption can be seen as the high price of functional foods and the low trust on the internet for functional foods. In their study on the consumers in Adana, Gezginç and Gök (2016) determined that 30.4% of the consumers have knowledge about functional foods. Kopuz (2011) concluded in his study on consumers in Istanbul that 39.6% of the participants had knowledge about functional foods. It can be speculated that academicians have more knowledge than other consumer groups due to their high education level.

It was determined that 83% of the participants were willing to learn about functional foods. Accordingly, it is thought that there is a potential for functional food sales volume and that the consumers are not reached sufficiently. Reaching consumers with better advertisements can increase the sales volume of companies.

Academicians’ attitudes towards functional foods were examined under three main headings “confidence in the information given about functional foods and gain from functional foods”, “having adequate knowledge about functional foods”, and “no nutritional risk in consuming functional foods”. It was observed that the majority of the academicians remained neutral on the questions asked.

When the situations regarding the use of functional foods were examined, it was determined that the most widely used products were “dark chocolate” (73.2%) and “herbal teas” (68.8%). It can be interpreted that these products are the most popular ones because they are traditional functional foods with affordable prices, more accessible, and beneficial for health.

When the answer given to the question about the reliability of communication channels used to obtain information in the consumption of functional foods is examined, “newspaper” is seen as the most reliable source by women, and “magazine” is accepted as the most reliable communication channel by men. As can be seen from the conclusion drawn from foregoing, printed communication channels have been identified as the most reliable ones. Today, the number of people who read printed publications is decreasing on a daily basis, so companies need to make their information work on the internet more reliable.

Although the use of social media and the internet is increasing on a daily basis, they are seen as the most unreliable communication channels by the participants. These communication channels need to be upgraded in terms of reliability.

In order to increase the awareness, sales and consumption of functional foods, which are among the products with high market potential, consumers should be made aware of the positive effects of functional foods on health.

Accurate information should be conveyed to consumers by experts in the field of functional foods through various communication channels, especially printed media, so that information pollution can be prevented.

So as to benefit from functional foods in terms of health, it is necessary to inform the public about consumption in proportion and to expand such consumption. At this point, dietitians bear huge responsibility. Individual counseling should aim to raise awareness among people about functional foods.

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