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## CONSUMER AWARENESS AND PREFERENCES IN THE POLISH PRO-HEALTH PRODUCTS MARKET – BASED ON A SURVEY STUDY

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**Abstract:** This article addresses very important social issues related to the dynamic growth of consumption of pro-health products based on surveys. The main objective of the article was to discover the respondents' knowledge of pro-health products, the frequency of their consumption and the factors influencing the purchasing decisions of these products in the Polish market. The survey found that respondents consume pro-health products several times a week (31%), once a day (21%), or several times a day (16%). Socio-demographic factors, such as gender, age, education and place of residence were an important criterion ( $p < 0.05$ ) determining the frequency of consumption of pro-health products by consumers. In purchasing decisions on health-promoting products, consumers value most the composition and health-promoting properties of these products.

**Keywords:** pro-health products, products quality, consumer surveys, functional food, consumer behavior, purchase determinants, Polish market.

### 1. INTRODUCTION

The popularity and development of health-promoting foods in Europe and around the world are mainly associated with their beneficial effects on the human body [Franco Lucas et al. 2023]. Consumption of such foods helps maintain health and reduces the risk of developing civilization diseases, such as obesity, diabetes, cardiovascular diseases and cancer [Prior 2015; Rezin and Andrezza 2015; Valko et al. 2016].

The increased awareness of healthy eating is linked to the growing problem of cancer. An inadequate diet is one of the factors contributing to its development. A diet rich in fibre, carotenoids, polyphenols and other bioactive compounds in food has a protective effect for the body and reduces the risk of developing many cancers as well as influencing the treatment process.

Products classified as health-promoting foods have unique nutritional values and nutrients that can exert beneficial effects on the body. They contain vitamins, minerals, phytochemicals, bioactive peptides, enzymes, saponins and other active substances that may exhibit therapeutic effects in specific disease entities. Valuable natural sources of the antioxidants provided with food are herbs, spices, vegetables and fruit [Namita, Mukesh and Vijay 2012; Kaładkiewicz and Lange 2013]. Fruits are a major source of antioxidants, as are medicinal herbs, with both being used as potential commercial sources of antioxidants in various supplements [Kaczmarczyk 2002]. Health-promoting foods include many products, such as: chia seeds, sunflower seeds, acai berries, goji berries, cacao, guarana, aloe vera, camu camu, avocado, quinoa, and bellows. On the Polish market there are many raw materials or natural products whose ingredients have a positive effect on the body, i.e. garlic, honey and bee products, elderberries, black chokeberries, quinces, sea buckthorn, broccoli, beets, and millet groats.

In contrast, health-promoting foods like superfoods from different regions of the world are new and interesting to consumers. People who consider themselves conscious consumers select these products because they want to learn about a new range of products and try exotic foods [Andruszkiewicz 2011; Gassler and Teuber 2025].

There is no official definition of a superfood, as this term is a marketing name and it is connected with pro-health products with a large amounts of bioactive compounds with specific biological properties and beneficial effects on health [Gupta and Mishra 2020].

Consumer behaviour in the market is shaped by a number of determinants, in addition to economic, social and cultural ones - including a change in lifestyle to a more healthy, active one and following nutritional trends [Dejnaka 2019]. Consumers choose health-promoting foods for a variety of reasons. The change in consumer behaviour regarding the purchase of food products follows trends due to new scientific information in terms of the impact of nutrition on health and the growing awareness of the impact of diet on the body. Increasing the awareness of organic foods causes people who buy health-promoting products to pay attention to the quality certificates of these products.

There are three main factors economic, social-health and environmental issues that influence the consumers' perception and decision-making concerning pro-health types of superfood products [Fernández-Ríos et al. 2023].

Many different definitions of consumer behaviour emphasizing its various aspects can be found in the literature. Hansen defines consumer behaviour as the totality of actions and perceptions that make up the preparation of the decision to choose a product, to make a choice, and to consume [Hansen 1972]. Similarly, some authors [Engel, Blackwell and Mirand 1993] define consumer behaviour as the spectrum of activities related to obtaining, using and disposing of products and the decisions preceding and conditioning these activities.

Sztucki, on the other hand, argues that consumer behaviour refers to the actions of buying and using the products purchased, including the psychological and sociological mechanisms preceding and following these actions [Sztucki 1998].

The behaviour and conduct of the consumer influences the formation of certain preferences for the currently offered product, as well as innovative products. The quality of the offered products is among the most important factors shaping consumer preferences. Shaped consumer preferences influence the decision to purchase a certain type of product, which is characterized by the readability of information, good presentation and quality of packaging [Dmowski and Sieńkowska 2015].

The concept of preferences (preference relations) plays a very important role in economic science, especially in consumer behaviour theory and utility theories. Consumer preferences reflect and formalize consumer tastes and do not depend on the price of goods or the consumer's budget, but solely on the satisfaction or utility they provide to the consumer. Preferences allow the consumer to make choices among different alternatives. The preference relationship constitutes the basis for the study of individual consumer decisions [Malawski 1999].

This study highlights the need to better understand the consumers' perception of pro-health products foods and to describe their behavioral patterns and socio-demographic characteristics and identify factors influencing their choice of health-promoting products. The analysis of consumer awareness and preferences in the Polish market is particularly important in order to understand the differences between consumer groups in Poland and to target the right consumer group in marketing campaigns by creating a portfolio of food products made with health-promoting products.

The main purpose of the article was to determine the respondents' knowledge concerning health-promoting products, the frequency of their consumption and the factors influencing the purchasing decisions related to these products on the Polish market.

The research hypotheses concerned the impact of socio-demographic factors (gender, age, education, income and place of residence) on the respondents' knowledge of the definitions and properties of health-promoting products, their beneficial effects on the body and the frequency of consumption of these products.

## **2. MATERIAL AND METHODS**

The present study investigated consumer preferences toward health-promoting products. The influence of socio-demographic factors were analysed, such as gender, age, education and place of residence on consumer knowledge and consumer preference toward health-promoting products.

The study was conducted using the Computer Assisted Web Interview (CAWI) method and personal interviews. A questionnaire consisting of 16 closed-ended questions, some using a 5-point Likert scale, was used for the study. All questions were divided into two sections: a substantive section (10 questions) and a metrics section (6 questions). The substantive section involved the definition of health-promoting foods, frequency of consuming health-promoting foods, quality of meals consumed and preferences related to the selection of these products. The metrics section included questions about age, gender, place of residence, education and income.

The survey involved 210 respondents in Poland, between January and March 2025, involving 122 women and 88 men aged 18 years and older. The survey was anonymous (Tab. 1). The criteria for the selection of the research sample were the declaration of consuming health-promoting products and the age of the respondents (over 18 years).

Each survey response was assigned 4 distinguishing characteristics describing the respondent, i.e. gender, age, education and place of residence. Pearson's chi-square independence test was used to test the interdependence of the nominal variables, with an assumed significance level of  $\alpha = 0.05$ , using the Statistica version 13.3 software package.

**Table 1.** Socio-demographic characteristics of respondents (n = 210)

<b>Gender</b>		<b>Percentage of respondents [%]</b>
	Females	58
	Males	42
<b>Age</b>	18–25	22
	26–40	34
	41–50	26
	51 or higher	18
<b>Education</b>	Secondary	30.48
	Higher	55.24
	Vocational	14.29
<b>Place of residence</b>	Rural area	62.86
	Up to 20 thousand residents	4.77
	More than 20 thousand and fewer than 100 thousand residents.	8.08
	More than 100 thousand and fewer than 500 thousand residents	9.05
	More than 500 thousand residents	15.24

*Source: own study.*

### 3. RESULTS AND DISCUSSION

A survey showed that the majority of respondents, i.e. 70%, understand the definition of health-promoting food, correctly indicating that it is food that provides a large amount of vitamins and minerals, designed to support the immune system and regulate the microbiological balance of the digestive system. The remaining respondents (i.e. 30%) did not know the correct definition of health-promoting foods. In this case, age was a significant criterion of consumer knowledge towards the definition of health-promoting foods ( $p < 0.05$ ) (Tab. 2).

**Table 2.** Pearson's chi-square test results for all analyzed variables (significant differences at  $\alpha \leq 0.05$  level of significance)

Question	Answer	% of respondents	p-value*				
			Gender	Age	Education	Earnings	Place of residence
Please select the correct definition of a health food	Correct answer	70.48	0.995	0.007	0.910	0.306	0.335
	Incorrect answer	29.52					
Do you think that eating health-promoting products can have a beneficial effect on your health?	Yes	85.71	0.752	0.394	0.000	0.646	0.873
	I do not know	12.86					
	No	1.43					
What is your knowledge of the properties of health-promoting products?	Very high knowledge	3.33	0.412	0.037	0.233	0.056	0.074
	A lot of knowledge	22.38					
	Average knowledge	41.43					
	A little knowledge	23.33					
	Aery little knowledge	9.52					

\*assumed significance level  $\alpha = 0.05$

$p < \alpha$  – the null hypothesis (H<sub>0</sub>) is rejected in favour of the alternative hypothesis (H<sub>A</sub>),

$\alpha = 0.05$  (this means that there is a relationship between the variables under study).

$p \geq \alpha$  there is no basis for rejecting the null hypothesis (H<sub>0</sub>) (we assume that there is no relationship between the variables under study).

Most young people aged 18–25 years are very familiar with the definition of health-promoting foods, and this group of respondents most often marked the correct answer (89%). In the 26–40 and 51–64 age groups, the percentage of correctly indicated answers was lower and amounted to 64% and 63%, respectively. In the 41–50 age group, as many as 73% of respondents marked the correct definition of health-promoting foods (Tab. 3).

**Table 3.** Pearson's chi-square test results only for variables that proved to have a significant impact ( $p < 0.05$ ) on the responses (significant differences at  $\alpha \leq 0.05$  level of significance)

Question	Criterium		Answer [%]				
			Correct answer	Incorrect answer			
Please select the correct definition of health food	Age	18–25	88.89	11.11			
		26–40	64.38	35.62			
		41–50	73.21	26.79			
		51–64	63.64	36.36			
Question	Criterium		Answer [%]				
			Yes	I do not know	No		
Do you think eating health-promoting products can have a beneficial effect on your health?	Education	Higher	89.66	9.48	0.86		
		Secondary	85.93	10.94	3.13		
		Vocational	40.00	53.33	6.67		
Question	Criterium		Answer [%]				
			Very extensive knowledhe	Extensive knowledge	Average knowledge	Little knowledge	Very little knowledge
What is your knowledge of the properties of health-promoting products?	Age	18–25	2.22	46.67	31.11	15.56	4.44
		26–40	4.11	16.44	43.84	26.03	9.58
		41–50	5.36	12.50	48.21	21.43	12.50
		51–64	0.00	18.18	40.91	22.73	18.18

Source: own study.

This study also assesses consumer knowledge related to the impact of health-promoting products on our health. Numerous literature reports address this topic, in terms of reducing the risk of degenerative diseases. It has been proven that superfoods (white mulberry, avocado, acai berries, kale, chia seeds, black chokeberry, sea buckthorn, quince, quinoa, millet and quinoa) have anti-cancer activities, support the treatment of type II diabetes, have a strong antioxidant effect and regulate the lipid metabolism [Ćwiek, Grdeń and Malik 2018; Franco Lucas et al. 2023].

Most respondents are aware of the beneficial effects of health-promoting products on our bodies. It was found that the majority of respondents (81%) believe that consuming health-promoting products can have a beneficial effect on health. Only a small percentage of respondents (16%) were unsure about the beneficial effects of these products on health. In this case, education was an important criterion determining consumers' knowledge of the beneficial effects of health-promoting foods on our bodies. Respondents with higher education were most likely to give the correct answer (89%), stating that consuming health-promoting products has a beneficial effect on health. Similarly, the majority of respondents (82%) with a secondary education also indicated the correct answer. Only a small percentage of those with a secondary education (11%), were unsure whether eating health-promoting foods has a beneficial effect on health, with 3% of respondents indicating that it does not. Gender, age and place of residence did not constitute a significant criterion for consumers' knowledge towards the beneficial effects of health-promoting products on health (Tab. 3).

In another question about respondents' knowledge when it comes to the properties of health-promoting products, they most often declared that they had average knowledge (41%). Almost the same percentage of respondents declared that they had extensive or little knowledge of the health-promoting properties of products (22% and 23%, respectively), and the rest declared that they had very little knowledge (9.5%). Only 3.3% of respondents claimed to have very extensive knowledge of the products' health-promoting properties. Gender, education, income and place of residence did not affect respondents' knowledge of the health-promoting properties of products, only age was a factor in determining the answers given. Most respondents (94.62%) had no education related to nutrition.

Most often, young people between the ages of 18 and 25 (47% of respondents) demonstrated having a high level of knowledge about the health-promoting properties of various products (Tab. 3). A fairly large percentage of respondents (31%) in this age group indicated that they had average knowledge of the health-promoting properties of products. Only 15% of young people aged 18–25 indicated that they had little knowledge of health-promoting foods. Young people of Generation Z, the digital generation, or the iPad generation (born between 1995 and 2015), are characterized by knowledge of advanced technologies and good digital education [Nowak 2025], and quick access to information about a product makes it easier to make the right purchasing decisions.

In the 26–40 and 41–50 age groups, respondents most often declared that they had average knowledge of the health-promoting properties of various products (44% and 48%, respectively) or little knowledge (26% and 21%, respectively). In both age groups, the smallest percentage of people (16% and 12%, respectively) declared that they had extensive knowledge of health-promoting foods (Fig. 2).

According to Franco Lucas et al. (2023), nutritional knowledge is related to the perception of pro-health products since the rejectors have, on average, lower nutritional knowledge than the other consumers' interest in health-promoting foods.

Similar conclusions were presented by Ares, Gimenez and Gambaro (2008), who observed a positive relationship between nutritional knowledge and the consumers' interest in health-promoting foods.

This study also analysed the frequency of the consumption of health-promoting products. Socio-demographic factors, such as gender, age, education and place of residence, were an important criterion determining the frequency of consumption of pro-health products by consumers (Tab. 3). The results of our own research indicate that respondents most often consume pro-health products several times a week (31%), while once a day was declared by 21% of respondents, and several times a day by only 16% of respondents, including those in the 41–50 age range. This result is similar to the results of other authors studies showing that people are more determined to consume pro-health products as they get older [Saba et al. 2019; Predieri et al. 2020; Ekici et al. 2025].

The frequency of consumption of health-promoting products depends on various factors, the most important of which are lifestyle and consumer attitudes toward health-promoting foods. Franco Lucas et al. (2023) evaluated the influence of lifestyle on health behavior, the preference for superfoods and to reveal segments of consumers in Switzerland regarding their attitudes and food behavioral patterns toward superfoods.

The authors found a cluster of adventurous consumers with a more positive attitude toward superfoods, who showed a greater interest in pro-health foods, believing in their health and sustainable benefits. Furthermore, the authors show that these consumers are motivated to try new recipes and are open toward novel foods. According to Franco Lucas et al. (2023) some consumers are skeptical or even rejective toward consuming and buying superfoods.

Therefore, an interesting study for the future might be to investigate more thoroughly the difference between the groups of consumers in Poland.

Among those who most often consume health-promoting products, i.e. several times a day, were mainly women (20.49%), while men accounted for 10.23%, in addition, those with higher education (23.28%) and secondary education (9.38%) (Tab. 2).

Young people in the 18–25 age range were most likely to declare that they consume health-promoting food products once a day (33%) or several times a week (31%), followed by several times a month (24%). Respondents in the 26–40 age group declared a similar percentage of frequency in consuming health-promoting foods. Respondents in the 41–50 age group, on the other hand, were most likely to declare that they consume health-promoting products several times a week (34%), as did those in the 51 and older age group (41%) (Tab. 4).

**Table 4.** Pearson's chi-square test results  
(significant differences at  $\alpha \leq 0.05$  level of significance)

Question		Answer [%]						Total %	Value p
		Several times a day	Once a day	Several times a week	Several times a month	Less often than once a month	Occasionally		
Gender	Females	20.49	18.85	26.23	25.41	8.20	0.82	100	0.01663
	Males	10.23	22.73	37.50	15.91	11.36	2.27	100	
Age	18–25	4.44	33.33	31.11	24.44	4.44	2.24	100	0.01040
	26–40	17.81	21.92	23.29	24.66	12.32	0.00	100	
	41–50	28.57	10.71	33.93	14.29	10.71	1.79	100	
	51–64	9.09	18.18	40.91	22.73	9.09	0.00	100	
Education	Higher	23.28	15.52	32.76	18.97	9.47	0.00	100	0.00011
	Secondary	9.38	32.81	26.56	21.88	9.37	0.00	100	
	Vocational	3.33	13.33	33.34	30.00	10.00	10.00	100	
Earnings – the national average	Average	13.95	20.93	31.40	19.76	11.63	2.33	100	0.91303
	Below	14.00	18.00	32.00	28.0	8.00	0.00	100	
	Above	20.27	21.62	29.73	18.9	8.13	1.35	100	
Place of residence	Rural area	21.21	20.45	26.52	22.73	7.57	1.52	100	0.00000
	Up to 20 000 residents	0.00	11.11	44.44	33.33	11.12	0.00	100	
	Over 20 000 and below 100 000 residents	30.00	10.00	30.00	20.00	10.00	0.00	100	
	Over 100 000 and below 500 000 residents	7.69	15.38	30.77	23.08	23.08	0.00	100	
	Over 500 000 residents	6.45	29.03	32.26	16.13	16.13	0.00	100	

\*assumed significance level  $\alpha = 0.05$

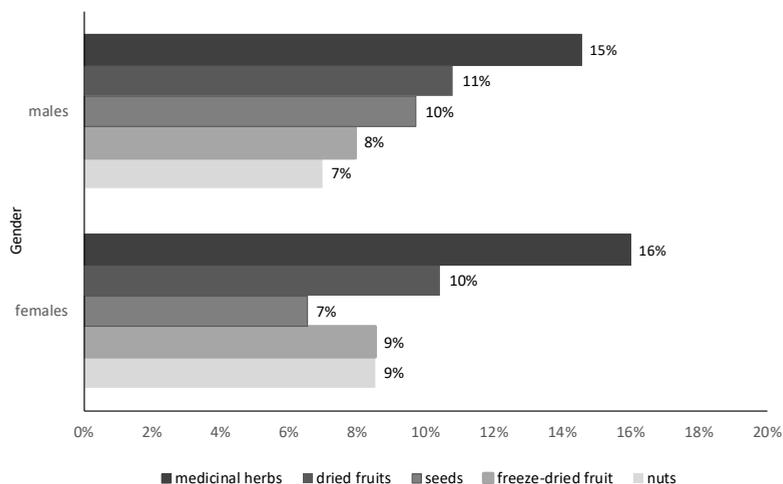
$p < \alpha$  – null hypothesis ( $H_0$ ) is rejected in favour of alternative hypothesis ( $H_A$ ),  $\alpha = 0.05$  (which means that there is a correlation between the variables under study).

$p \geq \alpha$  there is no basis for rejecting the null hypothesis  $H_0$  (assuming that there is no relationship between the variables under study).

Source: own study.

In this study, respondents were asked which health-promoting products they most often buy (Fig. 1). Among the different types of health-promoting products, respondents most often preferred medicinal herbs (e.g., moringa, lemon balm, mint (31%), followed by dried fruits, such as strawberries, raspberries, cherries, mangoes, or bellows (21%). In contrast, the percentage of responses given in each of the next three groups of health-promoting products was the same, at 16%. The groups of these products were seeds (chia, pumpkin and flax seeds), freeze-dried fruits (prunes, cranberries, grapes) and nuts (walnuts, cashews, almonds). A similar trend was found

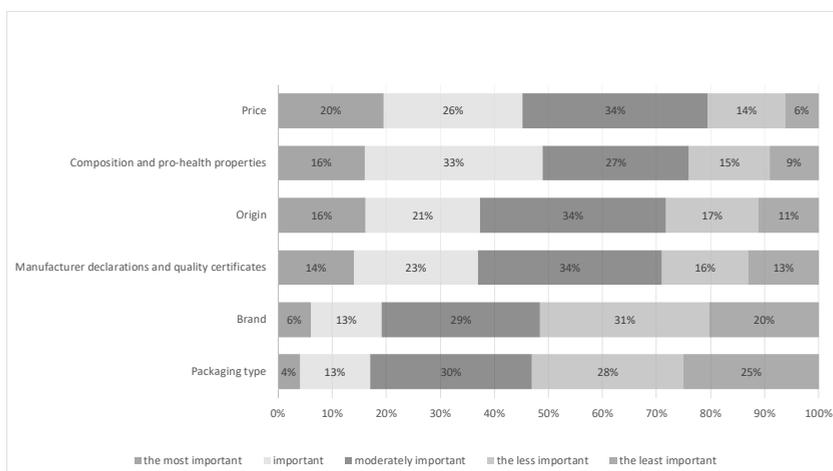
among men and women towards the preferred groups of health-promoting food products. Only women were more likely to buy chia, pumpkin and flax seeds than men, and men buy slightly more nuts than women.



**Fig. 1.** Groups of health-promoting products most frequently purchased by respondents

Source: own study.

The study also analysed the influence of factors determining the choice of health-promoting products. The main factors influencing the choice of health-promoting products were price, composition and health-promoting properties (Fig. 2).



**Fig. 2.** Main factors influencing the choice of health-promoting products

Source: own study.

In third place the origin of health-promoting products can be mentioned. Respondents also indicated manufacturer's declarations and quality certificates on the packaging of health-promoting products (Fig. 2). The survey also shows that for more than half of the respondents, the brand and type of packaging are not very important when it comes to choosing pro-health products.

#### **4. CONCLUSIONS**

The survey research of this paper indicates what groups of consumers exist in the health-promoting products market, their needs, preferences and expectations of health-promoting foods.

The research demonstrated that society is increasingly aware of its dietary choices. However, the main determinant affecting knowledge of the properties of health-promoting products was the age and education of respondents. Young people aged 18-25 are very familiar with the definition of health-promoting foods and are aware of their choices in this regard. Most of them pay attention to the composition of products, which means that the trend of taking care of their health is becoming increasingly popular. Increasing numbers of people see the value in leading a healthy lifestyle. Respondents are well aware of the widespread beneficial effects of health-promoting products on the human body, and so a relationship between this knowledge of the respondents and education was found. The majority of people with higher and secondary education know that health-promoting products benefit our health. The survey also found that about 40% of respondents say they consume pro-health products on a daily basis, with the frequency of consumption of pro-health products being highest among middle-aged people (41–50 years old). Socio-demographic factors are important among the most frequently purchased health-promoting products, including medicinal herbs (e.g., moringa, lemon balm, mint) dried fruits (strawberries, raspberries, cherries, mangoes) and seeds, such as chia, flaxseed or pumpkin seeds.

Considering the fact that the trend of consuming healthy foods is gaining increasing popularity, manufacturers should reliably inform consumers about the health-promoting properties of their products by including appropriate information on the product labels.

Consumers not only expect products tailored to their individual needs but are also keen on utilizing the opportunities of multi-channel sales.

In the 26–50 age group, respondents most often declared that they had little or average knowledge of the health-promoting properties of various products. Therefore, communication with consumers and the labeling of these types of health-promoting foods are crucial. The obtained results can help retailers, guide producers, and marketers of health-promoting foods, hence serving as a basis to develop strategies for different groups of consumers.

This manuscript addresses an important and timely topic regarding health-promoting foods and their perception by consumers. Despite the interesting findings, the current study presents some limitations, such as small sample size and the CAWI method. This may have underestimated the results in comparison to a larger sample size. The low representativeness rate could be considered a limitation and should be considered in future surveys.

In this regard, the qualitative analyses international comparisons should be used in future studies to reach different groups of consumers.

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