

## COMPARATIVE ANALYSIS OF BEHAVIOURS RELATED TO FUNCTIONAL FOODS AMONG SELECTED YOUNG CONSUMERS IN POLAND AND GERMANY

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**Abstract.** Nutrition is one of the key factors influencing human health. Consuming foods that either naturally contain or have been enriched with bioactive substances may aid the organism's proper development and functioning and, most importantly, be a vital element in the prophylaxis of many non-communicable diseases as well as improve general sense of well-being. The aim of the study was to compare behaviours related to functional foods among a selected group of young people. The survey was conducted among 153 purposively selected young consumers from Poland and Germany in March/April 2015. An original survey questionnaire was employed. IBM SPSS Statistics ver. 23 software was used for statistical analysis (chi-squared test  $p < 0.05$ ). The term "functional foods" was largely unknown among the respondents. A definite majority of the survey participants reported having bought and consumed products that, in fact, belong to this group of foods. The main source of information on the topic of functional foods was the Internet. While buying these products, respondents from both countries chiefly took into account the price, the quality and the list of ingredients. The results point to the need to popularize information about functional foods using trustworthy sources, in order to foster nutritional awareness. Consumer knowledge is the basis for the positive perception and acceptance of health-promoting foods and for making rational dietary choices.

**Key words:** functional foods, young consumers' attitudes, Poland, Germany

### INTRODUCTION

The concept of functional foods appeared already over 30 years ago, in Japan. Currently, with the exception of Japan, there is no generally accepted definition for this food group. According to the European working definition of functional foods developed in 1999 as a result of the cooperation of experts from ILSI (International Life Science Institute) and the European Commission FUFOS (Functional Food Science in Europe) programme, "...foods can be regarded as functional if they can be satisfactorily demonstrated to affect beneficially one or more target functions in the body, beyond adequate nutritional effects, in a way relevant to an improved state of health and well-being and/or reduction of risk of disease. Such foods must be similar in appearance to traditional food and demonstrate beneficial effects in amounts that are expected to be normally consumed within a diet – these are not tablets or capsules, but a component of a proper diet" (Annunziata and Vecchio, 2013; Kudelka, 2011; Scientific..., 1999). The importance of foods classified as functional products results from their nutritional value as well as the type and quantity of bioactive components contained therein. Bioactive components contained in the food demonstrate many potential benefits for health and/or well-being. The health-promoting effects achieved in a very short time after consumption determine the intended use

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of such food for reinforcing the body's functions, while those occurring after long-term consumption decrease the risk of diseases of affluence (Waszkiewicz-Robak et al., 2015).

The market of functional products is one of the most competitive in Europe. According to a report from Leatherhead Food Research (Future Directions for the Global Functional Foods Market) of 2014 (<http://www.leatherheadfood.com/functional-foods-market-increases-in-size>), the global market was valued at USD 43.27 billion, which means a 26.7% increase as compared to 2009. In Poland, the market of functional foods is continually developing, while consumers show a growing interest in this food group. According to Euromonitor 2014 (Fortified..., 2014a), the functional foods market in Poland in 2013 was valued at PLN 2.4 billion. In turn, the functional foods sector in Germany, according to the Industry Overview data (<http://www.gtai.com>) of 2013, was valued at EUR 5 billion. As estimated, the development of the functional foods sector will be affected by the consumers' positive attitudes towards it (Urala et al., 2003). With regard to functional foods, one of the most important factors determining their positive perception and acceptance is considered to be the consumers' knowledge concerning bioactive substances present in such foods and their mechanisms of action, which allows for a better understanding of the role of these nutrients in preventing diet-related diseases and supporting their treatment (Ares et al., 2008; Bornkessel et al., 2014; Pounis et al., 2011).

Undoubtedly, functional foods belong to the sector of innovative products, while young, educated people are often regarded as the most open to innovations in the food market (Jeżewska-Zychowicz, 2009). Such consumers are also increasingly characterized by high awareness of nutrition, they are more demanding and their needs are firmly defined. It can therefore be assumed that the functional foods, i.e., foods with targeted beneficial effects on the body, will be an appropriate response to their needs, and understanding the attitudes of young consumers towards this group of products is especially justified.

## AIM OF THE STUDY

The aim of this study was to compare the attitudes of selected groups of young consumers from Poland and Germany towards functional foods, including, inter alia,

familiarity with the definition of such foods, sources of information on them, declarations and determinants for purchasing functional foods.

## MATERIALS AND METHODS

The study was conducted at the turn of March and April 2015. Originally, 180 questionnaires were distributed. However, after preliminary verification of the completeness of the data obtained, 153 questionnaires were further analysed. The study involved young consumers being students of two deliberately selected universities: the Warsaw School of Economics (Group P) and the Business Administration in Cologne (Group G). Respondents for the survey were chosen deliberately, using a snowball sampling method. To implement the intended purpose, a survey questionnaire containing 15 questions (open and closed) was used. The questionnaire included questions concerning familiarity with the term "functional foods", bioactive substances found therein, sources of information concerning functional foods, purchasing functional foods, factors affecting the purchase, place of purchase and consumption of functional products. Questions where it was possible to indicate more than one response were presented as the number of indications. The obtained results were statistically analysed using Microsoft Excel 2010 and IBM SPSS ver. 23. To investigate the relationships between variables, a chi-squared test was used. A statistically significant value was assumed at  $p < 0.05$ .

## RESULTS AND DISCUSSION

The study involved a total of 153 respondents, of which 77 were students of the Warsaw School of Economics (Group P), and 76 were students of Business Administration from the University of Cologne (Group G). For the both groups, the predominant part were women (62% in Group P and 68% in Group G). The survey participants in Group P were people aged 19 to 27 (mean age: 23 years,  $SD \pm 2.4$ ). In Group G, the mean age was 25 years ( $SD \pm 2.7$ ).

The respondents were asked to indicate whether they were familiar with the term "functional foods". Both groups equally declared the familiarity (respectively: 23% of students from Group P and 22% of students from Group G). The obtained results are confirmed by the results of a survey conducted among residents of four

countries, where familiarity with the concept was indicated as follows: 21% – of Germans, 19% – of Polish, 33% – of Spaniards and 11% – of the British (Menrad, 2006). In other studies, in turn, the declared familiarity with the concept was substantially higher. And so, in the study by Dymkowska-Malesa et al. (2014), it was indicated by 40% of the survey participants, in the study by Dąbrowska and Babicz-Zielińska (2011) – by 67% of the respondents, in the study by Filipiak-Florkiewicz et al. (2015) – by 72% of the respondents, and in the study by Kowalik et al. (2011) – by as many as 90% of the respondents. In the report “Żywność funkcjonalna 2012 – czyli co ma Polak na talerzu” (Raport..., 2012), 50% of Poles declared familiarity with the term. According to results of the study by Kljusuric and Cacic (2014) concerning the change in the perception of functional foods among young consumers from Croatia, during the analysed period 2008–2013 the researchers observed an increase in the percentage of respondents who knew what functional food was (an increase from 38 to 51% of respondents declaring so).

The respondents who confirmed familiarity with the concept of “functional foods” ( $n = 35$ ) were asked to write their own definition for this food group. The vast majority of answers were correct and focused on health-promoting properties of this product group. The respondents most often perceived as a functional foods the products containing ingredients with health-promoting properties, such as those that have a positive impact on the health, prevent the development of diseases or contain natural active components. Some respondents associated functional foods mainly with fortified foods (especially with vitamins added), whose intake is intended to supplement deficiencies, or with special purpose foods, for example those that “support the development of muscle tissue in people who are physically active”. Only a few respondents (3 indications) stressed that the effect of functional products should be scientifically substantiated. However, according to the definition for this food, only such products can be regarded as functional that are scientifically proven to have beneficial effect of their consumption (Annunziata and Vecchio, 2013; Kudelka, 2011; Scientific..., 1999). In the study by Filipiak-Florkiewicz et al. (2015), 87% of respondents indicated that functional foods were products demonstrating an additional positive impact on the human body as compared to traditional products.

Students participating in the study were asked to indicate three products which, in their opinion, were

an example of functional foods or health-promoting substances being their components. The familiarity with bioactive substances and the mechanism of their action translates into a positive perception of health-promoting products by consumers (Bornkessel et al., 2014). Among bioactive components, the respondents pointed primarily to dietary fibre, vitamins and minerals. Participants of the study by Filipiak-Florkiewicz et al. (2015), as bioactive substances with beneficial effects on health recognized primarily vitamins and omega-3 acids. For the both groups of students, examples of products were more often indicated, including above all: vegetables and fruit, yoghurt, green tea and fish. Poles in the Gemius report (Raport..., 2012), as examples of functional foods most often pointed to yoghurt, juices and beverages, cereals, teas (fruit and herbal teas) and vegetable oils.

Next, the respondents’ sources of information concerning functional foods were investigated. More than a half of respondents from Group P (53%) and 38% of respondents from Group G in general did not seek information concerning this product group. Among the respondents seeking the information, students from Group G did it more often. The source most frequently chosen by the respondents within both groups was: the Internet (respectively: 42 and 29 indications), then family/friends/co-workers (21 and 12 indications) and – importantly – the product label (18 and 12 indications). The differences in the sources of information used by the students depending on the country were statistically significant in the case of: the Internet ( $p = 0.029$ ), coach/instructor at the gym ( $p = 0.047$ ) and newspapers/magazines ( $p = 0.018$ ) – the students from Cologne (Group G) used them more often. The least frequently indicated answers were: training courses/conferences (1 indication from Group P) and radio (4 indications from Group P and 1 indication from Group G). According to the report “Żywność funkcjonalna 2012 – czyli co ma Polak na talerzu” (Raport..., 2012), Poles most often drew information on functional foods from the product packaging (56%), the Internet (50%), physician/nutritionist (41%), magazines and newspapers (41%) and television (39%). However, according to results of the study by Filipiak-Florkiewicz et al. (2015), the dominant part among the respondents were those who decided that information on functional foods was not generally available.

Purchasing functional foods was declared by 65% of consumers from Group P and 73% from Group G.

In a study by Dąbrowska and Babicz-Zielińska (2011), such declaration was made by 67% of respondents. In turn, in the study by Górecka et al. (2009), 53% of respondents declared so. For comparison, the percentage among young consumers from Croatia (Markovina et al., 2011) amounted to 75%. Among the respondents declaring the purchase functional foods, 50% from Group P and 58% from Group G were consumers who never encountered the definition of this group of products. Thus it has been observed that the unfamiliarity with the definition of functional foods did not rule out purchasing such products – many consumers were buying them unconsciously, guided probably by other factors than the expected health benefits. According to results of the study by Kljusuric and Cacic (2014), 81% of respondents declared purchasing functional foods.

In both groups, the respondents who declared buying functional foods (Group P:  $n = 51$ , Group G:  $n = 61$ ) indicated mainly a supermarket (40 indications from Group P and 47 indications from Group G) as the most common place to purchase these products. Also in the study by Markovina et al. (2011), a supermarket was the main place to purchase functional foods, as indicated by 66% of respondents from Croatia. According to Euromonitor data for both Poland and Germany (CBOS..., 2014; Health..., 2014a; Health..., 2014b), supermarkets have the largest share in the sales of this group of products. In 2013, the value of retail online sales in the functional foods market in Poland amounted to: 0.4% (Fortified..., 2014a), while in Germany it amounted to: 4.6% (Fortified..., 2014b).

The decision to purchase the product was in both groups influenced mainly by: price (30 indications from Group P and 37 indications from Group G), product quality (26 indications from Group P and 34 indications from Group G) and ingredients (29 indications from Group P and 22 indications from Group G). The respondents from Cologne were in fact significantly more often guided by recommendation from the family/friends (17 indications from Group G and 7 indications from Group P,  $p = 0.035$ ) and by the taste of the product (21 indications from Group G and 7 indications from Group P,  $p = 0.004$ ). Health effects of the food product influenced the decisions on purchasing functional foods for 18 young consumers from Group P and 14 consumers from Group G. In the study by Filipiak-Florkiewicz et al. (2015), consumers while buying functional foods were also guided primarily by the quality and then by

the price. According to results of the Public Opinion Research Center (CBOS) studies (CBOS, 2014) conducted among Poles, products labelled as “healthy food” were chosen by 70% of respondents. In turn, for young consumers in the study by Markovina et al. (2011), the most important attribute when buying food was the taste/price ratio, whereas they did not pay much attention to the brand and functional attributes of the product.

The respondents asked about their opinion on the price of functional products as compared to traditional food mostly evaluated it as higher (50% of the buyers from Group G and 45% from Group P) or similar (36% of the buyers from Group G and 35% from Group P). No respondent from Group G considered the price of functional foods as definitely higher, while among the students of the Warsaw School of Economics participating in the study, 14% of them considered the price of functional foods to be higher as compared to their traditional equivalents ( $p = 0.022$ ). According to Euromonitor Report “Health and Wellness in Germany” (Health..., 2014b), Germans are a nation less sensitive to the price of food products when these products demonstrate health-promoting benefits. This fact is confirmed by results of the survey conducted among students, according to which no respondent from Group G considered the price of functional foods as “definitely higher”, while in Group P 15% of the respondents declared so. The difference may be due to the fact that the margin for such food in Poland is much higher than in Germany. A higher price may discourage some consumers from buying these products. In addition, the lower sensitivity to food prices in Germany as compared to Poland results from the differences in wealth levels of the both societies.

Consumption of functional products was declared by the vast majority of the survey participants (84% from Poland and 72% from Germany). In the study by Filipiak-Florkiewicz et al. (2015), consumption of these products was declared by 91% of respondents.

It has been observed that purchasing functional foods was not always synonymous with its consumption. Among the surveyed students from both groups, more than a half (59% from Group G,  $p = 0.009$ , and 62% from Group P,  $p = 0.001$ ) declared both purchasing and consumption of this product group, and a small percentage of respondents (15% from Group G and 4% from Group P) declared buying but not eating functional foods (Table 1).

**Table 1.** Attitudes towards functional foods – selected results  
**Tabela 1.** Postawy wobec żywności funkcjonalnej – wybrane wyniki

	P group Grupa P	G group Grupa N
1	2	3
Familiarity with the term “functional foods” Znajomość terminu żywność funkcjonalna		
Yes – Tak	23%	22%
No – Nie	77%	78%
The main source of information on the topic of functional foods (No. of indications) Źródła informacji na temat żywności funkcjonalnej (liczba wskazań)		
TV	10	8
Radio	4	1
Internet	29	42
Magazines – Czasopisma	8	19
Scientific articles – Artykuły naukowe	11	17
Family/friends/colleagues – Rodzina/znajomi/współpracownicy	12	21
Physician/dietitian – Lekarz/dietetyk	6	11
Coach/trainer – Trener/instruktor	2	8
University – Uczelnia	7	9
Training courses, conferences – Szkolenia konferencje	1	0
Product label – Etykieta produktu	12	18
I don't look for information regarding functional foods Nie szukam informacji na temat żywności funkcjonalnej	41	29
Reported purchase of functional foods Deklaracja zakupu żywności funkcjonalnej		
Yes – Tak	65%	73%
No – Nie	35%	27%
Familiarity with the definition vs purchasing functional foods Znajomość definicji a dokonywanie zakupu żywności funkcjonalnej		
Not knowing the definition, buying the products Nieznający definicji, niekupujący	26%	20%
Knowing the definition and buying the products Znający definicję i kupujący	16%	15%
Not knowing the definition, but buying the products Nieznający definicji, ale kupujący	50%	58%
Knowing the definition but not buying the products Znający definicję, ale niekupujący	8%	7%
Place of purchase of the functional foods (number of indications) Miejsca zakupu żywności funkcjonalnej (liczba wskazań)		
Supermarket	40	47



**Table 1 cont. – Tabela 1 cd.**

	1	2	3
Local grocery store – Sklep osiedlowy		7	1
Marketplace – Bazar		3	4
Health food store – Sklep ze zdrową żywnością		1	4
Online shop – Sklep internetowy		0	4
Directly from producer – Prosto od producenta		0	1
Factors with an effect on functional food purchase (number of indications) Czynniki wpływające na zakup żywności funkcjonalnej (liczba wskazań)			
Price – Cena		30	37
Ingredients – Składniki		29	22
Taste – Smak		7	21
Health effects – Walory zdrowotne		18	14
Quality – Jakość		26	34
Freshness – Świeżość		21	13
Particular merits of the product Specjalne walory produktu		7	3
Brand – Marka		4	0
Family recommendation – Rekomendacja rodziny		7	17
Advertisement – Reklama		0	1
Environment-friendliness – Przyjazność dla środowiska		0	7
Packaging – Opakowanie		9	0
Price of functional food as compared to traditional food, in the respondents' opinions Cena produktów funkcjonalnych w porównaniu do żywności konwencjonalnej w opinii respondentów			
Definitely higher – Zdecydowanie wyższa		14%	0%
Higher – Wyższa		45%	50%
Similar – Podobna		35%	36%
I don't know – Nie wiem		6%	14%
Reported consumption of functional foods – Deklaracja zakupu żywności funkcjonalnej			
Yes – Tak		84%	72%
No – Nie		16%	28%
Relation between purchase and consumption of functional foods Zależność pomiędzy kupowaniem a spożywaniem żywności funkcjonalnej			
Not buying, not eating – Niekupujący i niespożywający		12%	13%
Not buying but eating – Niekupujący, ale spożywający		22%	13%
Buying but not eating – Kupujący, ale niespożywający		4%	15%
Buying and eating – Kupujący i spożywający		62%	59%

Source: own research (n = 153).

Źródło: badania własne (n = 153).

## SUMMARY

Based on the obtained results, no significant differences between the groups were observed. Nearly three-quarters of the respondents were not familiar with the term “functional foods”. Despite this, the vast majority of respondents declared both purchase and consumption of such foods. The main sources of information on functional foods was the Internet, and the place of purchase was a supermarket. The most important factors influencing the purchase of this type of products among young consumers was the price, followed by the quality and ingredients. The obtained results indicate the need to popularize – on the basis of reliable sources – information on functional foods in order to build nutritional awareness. This is because the knowledge owned by consumers is the basis for a positive perception and acceptance of health-promoting foods and making rational food choices.

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## ANALIZA PORÓWNAWCZA ZACHOWAŃ WOBEC ŻYWNOŚCI FUNKCJONALNEJ WYBRANYCH GRUP MŁODYCH KONSUMENTÓW Z POLSKI I NIEMIEC

**Streszczenie.** Żywnienie to jeden z kluczowych czynników wpływających na zdrowie człowieka. Spożywanie żywności – zawierającej naturalnie lub celowo wzbogacanej w substancje bioaktywne – może wspomagać prawidłowy rozwój i funkcjonowanie organizmu, a przede wszystkim być ważnym elementem profilaktyki wielu niezakaźnych chorób przewlekłych czy warunkować ogólnie dobre samopoczucie. Celem badania było porównanie zachowań wobec żywności funkcjonalnej wybranej grupy osób młodych. Badanie przeprowadzono wśród celowo dobranych 153 młodych konsumentów z Polski i Niemiec na przełomie marca i kwietnia 2015 roku. W badaniu posłużono się kwestionariuszem ankiety. Do analizy statystycznej wykorzystano program IBM SPSS Statistics ver. 23, test Chi2 ( $p < 0,05$ ). Wśród ankietowanych dominowały osoby, które nie znały terminu „żywność funkcjonalna”. Większość uczestników badania deklarowała kupowanie, jak i spożywanie produktów de facto należących do tej grupy. Głównym źródłem informacji na temat żywności funkcjonalnej był Internet. Podczas zakupu produktów funkcjonalnych, ankietowani z obydwu krajów kierowali się przede wszystkim ich ceną, jakością i składem. Uzyskane wyniki wskazują na potrzebę upowszechniania – w oparciu o wiarygodne źródła – informacji na temat żywności funkcjonalnej, celem budowania świadomości żywieniowej. Posiadana przez konsumentów wiedza jest bowiem podstawą pozytywnego postrzegania i akceptacji żywności prozdrowotnej oraz dokonywania racjonalnych wyborów żywieniowych.

**Słowa kluczowe:** żywność funkcjonalna, zachowania młodych konsumentów, Polska, Niemcy

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