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CONSUMPTION OF FISH AND FISH PRODUCTS DEPENDING ON THE SEX OF CONSUMERS FROM PODKARPACKIE PROVINCE

SPOŻYCIE RYB I PRZETWORÓW RYBNYCH
W ZALEŻNOŚCI OD PŁCI KONSUMENTÓW
Z WOJEWÓDZTWA PODKARPACKIEGO

Summary. The aim of the work was to study the frequency of consumption of fish and fish products depending on the sex of consumers from the podkarpackie province and learning their preferences in relation to the kind of consumed fish products. From the data analysis it results that among all respondents fresh and frozen fish are consumed mainly once in a week (40% of respondents) and once in a month (41%). When considering the frequency of consumption of fish products it can be found that the products are consumed most frequently once a week by both men and women, yet the latter consume them more frequently (44%). Fresh or frozen fish most frequently chosen by respondents was the pollock, consumed mainly by women. Women more often than men buy fish in special shops with this assortment or at marketplaces or stalls and they more often chose fresh fish, which proves a greater interest in and care for a healthy diet. Gustatory tastes are the most important and most often considered factor when buying fish and fish products. All consumers significantly prefer consumption of fried fish. However, despite concentration on fish prepared in that way, it is women who show greater interest than men in other ways of preparing fish.

Key words: nutritional preferences, consumers' sex, fish and fish products

Introduction

Fish are an indispensable element of the proper diet of man, as easily digestible low-calorie products being a source of nutritional elements, mainly protein, fatty acids, vi-

tamins and minerals (CIEŚLIK *et al.* 2012). Polyunsaturated fatty acids present in meat of fish and marine mammals have a favourable influence on man's health (KOLANOWSKI 2000, GAŃKO and MASZEWSKA 2010, BYKOWSKI 2011). Fish and fish products are a very essential element in man's diet, therefore they are recommended by nutritionists in the pyramid of healthy diet to be regularly consumed (once or twice a week). Unfortunately, more than 80% of Polish people consume maximum one fish meal per week or less.

The sex is considered as one of the most important factors determining the consumer's behaviour. Women usually consume considerably lower amounts of food than men, they eat less meat and more often limit food's calorific value. Women also often prefer the sour taste more and show dislike for many kinds of food. The studies on preferences among the Spanish children showed an essential influence of the sex on preferences; boys found meat, milk and yogurt more valuable whereas girls fish and vegetables (BABICZ-ZIELIŃSKA 2010).

The aim of work was to study the frequency of consumption of fish and fish products depending on the sex of consumers from the podkarpackie province and learning their preferences in relation to the kind of consumed fish products. The data was gathered with the use of survey whose aim was to check how the society eats:

- whether they pay attention to proper diet,
- where they buy food,
- whether they realise how fish products consumed by them influence health and what effect they have on the organism.

The way of nutrition depends, among other things, on consumers' sex, therefore the hypothesis was formulated that the consumption of fish and fish products will be determined depending on this factor.

Material and methods

One of the ways to gather data is conducting surveys, which serves studying mass phenomena. It consists in collecting specific information on man's activity and its conditionings in the form of written answers to questions which are presented on a special form. The effectiveness of the use of this method depends to a large extent on conscious, honest and moderately well-thought-out answers by respondents. In the work there were used the results of surveys conducted in October 2012. The survey forms were filled in by 100 randomly selected persons from the podkarpackie province. Before starting the tests, respondents were informed about the purpose of the tests and their voluntary participation. They were provided with basic information concerning filling in the survey form and assurance of anonymity of gathered data. This information was contained in each survey form.

The survey form contained only closed questions. It consisted of one question concerning the sex, whereas other detailed questions concerned consumption of fish and fish products, preferences and frequency of consumption of individual fish raw materials and products. As a result of the conducted segmentation it was found that in the tested group 59% were women and 41% were men. Respondents were between 18-65.

The overall statement of the obtained results is presented in Table 1. The gathered results of survey forms were subjected to calculations basing on the software Statistica ver. 10 PL. From among statistical methods the analysis of cross tabulations was applied.

Table 1. Preferences and frequency of consumption of fish and fish products depending on consumers' sex (%)

Tabela 1. Preferencje i częstotliwość spożycia ryb i przetworów rybnych w zależności od płci konsumentów (%)

Specification Wyszczególnienie	Women Kobiety	Men Mężczyźni
1	2	3
How often do you eat fresh and frozen fish? Jak często spożywa Pan/Pani świeże i mrożone ryby?		
2-3 times a week 2-3 razy w tygodniu	15,25	19,51
1 time a week 1 raz w tygodniu	44,07	34,15
1 time a month 1 raz w miesiącu	40,68	41,46
I don't eat them at all W ogóle nie spożywam	0,00	4,88
How often do you eat fish products? Jak często spożywa Pan/Pani przetwory rybne?		
2-3 times a week 2-3 razy w tygodniu	15,25	29,27
1 time a week 1 raz w tygodniu	44,07	41,46
1 time a month 1 raz w miesiącu	37,29	21,95
I don't eat them at all W ogóle nie spożywam	3,39	7,32
What fresh or frozen fish do you eat most often? Jakie świeże lub mrożone ryby spożywa Pan/Pani najczęściej?		
Salmon Łosoś	5,08	9,76
Trout Pstrąg	3,39	4,88
Codfish Dorsz	13,56	4,88
Panga	18,64	24,39

Table 1 – cont. / Tabela 1 – cd.

1	2	3
Sole Sola	5,08	2,44
Pollock Mintaj	33,90	31,71
Tuna Tuńczyk	6,78	7,32
Carp Karp	0,00	7,32
Halibut	3,39	0,00
Other Inne	10,17	2,44
Not applicable (I don't eat them at all) Nie dotyczy (w ogóle nie spożywam)	0,00	4,88
What fish products do you eat most often? Jakie przetwory rybne spożywa Pan/Pani najczęściej?		
Fish salads Sałatki rybne	5,08	4,88
Fish spreads Pasty rybne	6,78	14,63
Marinated herring Śledź marynowany	16,95	7,32
Canned tuna Tuńczyk w puszcze	16,95	9,76
Canned sprat Szprot w puszcze	5,08	2,44
Fish fingers Paluszki rybne	10,17	9,76
Smoked salmon Wędzony łosoś	6,78	4,88
Other Inne	0,00	0,00
Canned herring Śledź w puszcze	6,78	14,63
Canned sardines Sardynki w puszcze	0,00	0,00
Canned mackerel Makreła w puszcze	8,47	7,32
Smoked mackerel Makreła wędzona	16,95	19,51
Sushi	0,00	0,00

Table 1 – cont. / Tabela 1 – cd.

1	2	3
Not applicable (I don't eat them at all) Nie dotyczy (w ogóle nie spożywam)	0,00	4,88
Where do you buy fish? Gdzie kupuje Pan/Pani ryby?		
Fish shops Sklepy rybne	23,73*	9,76*
Marketplaces, stalls Targowiska, stragany	6,78*	2,44*
Supermarket	67,80*	78,05*
From the producer Od producenta	1,69	0,00
I fish Wędkuję	0,00	4,88
Not applicable (I don't eat them at all) Nie dotyczy (w ogóle nie spożywam)	0,00	4,88
What fish do you buy most often? Jakie ryby kupuje Pan/Pani najczęściej?		
Living fish Ryby żywe	0,00	2,44
Fresh fish Ryby świeże	18,64	9,76
Frozen fish Ryby mrożone	54,24	56,10
Smoked fish Ryby wędzone	11,86	9,76
Salted fish Ryby solone	1,69	0,00
Tinned fish Konserwy rybne	13,56	17,07
Not applicable Nie dotyczy	0,00	4,88
What do you first pay attention to when buying fish and fish products? Na co przede wszystkim zwraca Pan/Pani uwagę przy zakupie ryb i przetworów rybnych?		
Price Cena	30,51	24,39
Aesthetic values Walory estetyczne	1,69	7,32
Nutritional value Wartość odżywcza	15,25	12,20

Table 1 – cont. / Tabela 1 – cd.

1	2	3
Gustatory tastes Upodobania smakowe	45,76	46,34
Ease of preparation Łatwość przyrządzenia	6,78	4,88
Not applicable Nie dotyczy	0,00	4,88
How prepared fish do you eat most often? Jak przyrządzone ryby spożywa Pan/Pani najczęściej?		
Fried Smażone	66,10	58,54
Roasted Pieczone	15,25	9,76
Stewed Duszone	3,39	2,44
Cooked Gotowane	0,00	0,00
Grilled Grillowane	1,69	0,00
Raw, e.g. sushi Surowe, np. sushi	0,00	0,00
I don't know Nie wiem	13,56	24,39
Not applicable Nie dotyczy	0,00	4,88
Do you currently apply a diet recommending consumption of fish and fish products? Czy jest obecnie Pan/Pani na jakiejś diecie zalecającej spożycie ryb i przetworów rybnych?		
No Nie	96,61	100,00
Yes Tak	3,39	0,00
How does consumption of fish influences health in your opinion? Jak Pana/Pani zdaniem spożycie ryb wpływa na stan zdrowia?		
Very well Bardzo dobrze	40,68*	29,27*
Well Dobrze	55,93*	43,90*
Indifferently Obojętnie	3,39*	26,83*

Table 1 – cont. / Tabela 1 – cd.

1	2	3
Badly Źle	0,00	0,00
Why do you not eat fish and fish products at all? Dlaczego w ogóle nie spożywa Pan/Pani ryb i przetworów rybnych?		
I'm a vegan Jestem weganinem	0,00	2,44
Their price is too high Ich cena jest zbyt wysoka	0,00	0,00
I don't like them Nie smakują mi	0,00	2,44
Other Inne	0,00	0,00
Not applicable Nie dotyczy	100,00	95,12
What threat can be caused by too frequent consumption of fish in your opinion? Jakie zagrożenie Pana/Pani zdaniem może powodować zbyt częste spożycie ryb?		
None Źadne	30,51	41,46
Heavy metals Metale ciężkie	16,95	14,63
Dioxins Dioksyny	6,78	2,44
Chloroorganic pesticides Pestycydy chloroorganiczne	1,69	0,00
I don't know Nie wiem	44,07	41,46

*Statistically significant differences at $p \leq 0.05$.

*Różnice statystycznie istotne przy $p \leq 0,05$.

Results and discussion

Table 1 contains the results concerning the preferences and frequency of consumption of fish and fish products depending on the sex of consumers from the podkarpackie province. This table also contains information on qualitative features taken into account when buying fish and respondents' knowledge of health properties of this kind of assortment. It appears from the data that among all the respondents fresh and frozen fish are consumed mainly once a week (40% of respondents) and once a month (41%). The decision to purchase a particular fish or fish product is significantly influenced by

the age (MECH 2013). In other authors' studies it was found that the persons aged 41-65 years consume the greatest amounts of fish and fish products compared to other age groups.

The average consumption of fish and seafood in Poland in 2011 was 12 kg and was by 1 kg lower than a year before. The most frequently consumed fish in the country was dory, whereas the consumption of herrings was limited. In 2012, the average Pole consumed more than 2 kg of herring and it was the second most commonly consumed fish in Poland (SZOSTAK 2013, TKACZEWSKA and MIGDAŁ 2013). Consumption of trout as the only freshwater fish increased. High prices clearly influence the fall in the domestic demand for fish and fish products. In all types of households there was noted a decrease in consumption of these raw materials (KRAJEWSKI 2003, LITWIŃCZUK 2004, HRYSZKO 2009, 2012). SYGNOWSKA et AL. (2005) showed that in Poland the consumption of fish and fish products was far below the recommended intake which in the group of men was, on average, 16 g per day (recommended intake 35 g) and 15 g per day in the group of women (recommended intake 30 g). In men the intake of fish was above the recommended values in kujawsko-pomorskie, warmińsko-mazurskie and zachodniopomorskie provinces, while in women in all provinces the intake was below the recommended value. In contrast, in podkarpackie province the consumption of fish and fish products was 14 g in men and 9 g in women.

The data presenting fish consumption in Poland imply that the average Polish consumer reaches for a fish dish or snack less often than once a week (KULIKOWSKI 2013). According to TKACZEWSKA and MIGDAŁ (2013) the frequency of consumption of fish and fish products once or twice a week is declared by 45% of respondents.

When considering the frequency of consumption of fish products in this study (Table 1) it can be found that among women and men they are most often consumed once a week, but women use them more often (44% of them). On the other hand, men more often than women eat fish products two-three times a week. From among all the respondents consuming fish products once a month as many as 71% of persons are women. In this connection it should be emphasized that in total fish and fish products were consumed on average twice a week by the surveyed residents of the podkarpackie province, despite the fact that in 2012 the podkarpackie province was classified among the provinces with the lowest income (SIWIAK 2013). As to the question concerning the most frequently consumed fresh or frozen fish, 33% of all respondents indicated the dory, and 21% the panga. The share of individual species in the total consumption of fish is presented in Figure 1. In the structure of dory consumption, women predominate (61%) from among all the respondents, whereas panga consumption in these groups is about 50% for each group. Although the consumption of hake in Poland is higher than, for example, of sole, halibut or carp (in the group of frozen fish it ranks 3rd in terms of sales) (WIELKOŚĆ... 2011, TKACZEWSKA and MIGDAŁ 2013), this species is not so popular in the retail trade in the podkarpackie province. Women more often than men use other species of fish. The data (Fig. 1) show that the carp, halibut, sole or trout mattered the least in fish consumption in the podkarpackie province.

High divergences can be found in respondents' answers concerning the most often consumed fish products (Table 1). From among all fish products the highest consumption of smoked mackerel, both in women, as well as in men was found. Women equally gladly and in much greater percentage than men consume marinated herrings and tinned

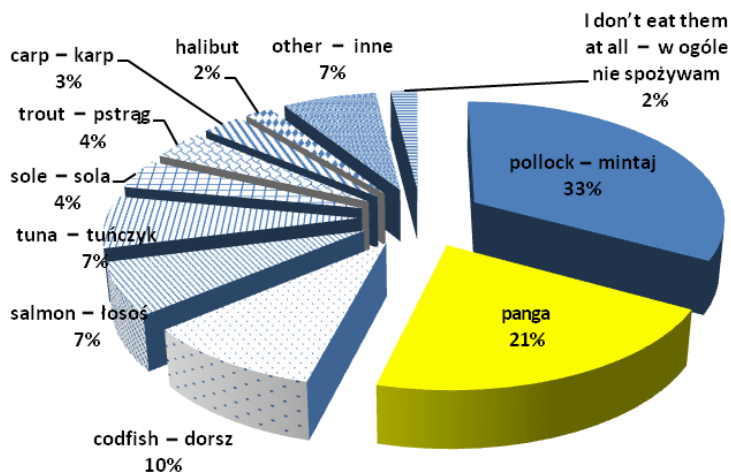


Fig. 1. Structure of consumption of individual species of fish
Rys. 1. Struktura spożycia poszczególnych gatunków ryb

tuna, as from among all the respondents who chose such answers women are more than 70% of persons consuming these products. It is also worth noting that out of all fish products the most popular ones were: pickled herring, tinned tuna and smoked mackerel. The data contained in Table 1 show that the consumers from the podkarpackie province, regardless of the sex, most often buy fish in popular supermarkets. It can be noted that women much more often than men choose special fish shops and marketplaces or stalls to do the shopping there. In 78% it is women that are the customers of fish shops. KOSICKA-GĘBSKA et AL. (2011) on the basis of the conducted studies found that women definitely more often deal with doing the food shopping. It is also confirmed in the studies by TUL-KRZYSZCZUK (2005) and the analysis conducted by Pentor Research International in the years 2003 and 2007 (ZACHOWANIA... 2004, 2008). According to the data in 2003, 59% of respondents claimed that the duty of doing everyday shopping belongs to women. Year by year it can be found, however, that more and more often the shopping is done together by both spouses – 23%. Only one man in every ten takes on the obligation to do shopping on his own.

Considering the kind of fish most often selected by respondents (Table 1) it can be found that regardless of the sex, frozen fish is most gladly bought. Also 55% of women and men select frozen fish to buy. Women much more often than men choose fresh fish. The next question concerned the factors which the consumer takes into account when buying fish and fish products. From among all the respondents almost half, i.e. 46%, take into account their gustatory tastes. This answer was selected most often, regardless of the sex. Also 64% of persons paying attention to the price of a product are women. In turn, men more often pay attention to aesthetic values of the bought product (75% from among all respondents who chose such an answer). The sex exerts quite essential and interesting influence on importance of certain choice factors. The results of studies conducted in the environment of students by BABICZ-ZIELIŃSKA (2010) indicated essential differences in the assessment of importance of certain choice factors for vegetables

and fruits, e.g. women to a larger extent than men valued care for health, need for rational diet or convenience. In turn, in the studies by KREFT and ZABROCKI (2010) it was found that women, to a definitely larger extent than men, attach importance to taste, smell and colour of bought carp. An important effect of the study was also the finding that despite the significance of the feature it was not the leading factor at the purchase of carp by respondents.

As it appears from the authors' research (Table 1), the consumers significantly prefer fried fish and women dominated in this respect. There were 62% of respondents who admitted that they most often consume fish prepared in this way. In the second place women consume roasted fish and this answer was chosen by 15% of women and 10% of men. Stewed, grilled or raw fish are not of a great significance among respondents, which indicates not much varied fish dishes in our diet. In turn, respondents consumed mainly fried fish which, as we know, being prepared in that way are not favourable for our health. It appears from the literature that women are more susceptible to consumption of functional food than men, partially because they show a greater interest in the subject of healthy diet and health (RUTKOWSKI 2001, SOSIŃSKA et AL. 2006). However, the studies by BABICZ-ZIELIŃSKA (1998) showed that the sex did not influence the consumption of 'convenience food' type dishes. Also the analyses by KREŁOWSKA-KULAS (2005) showed that the sex has not got a significant impact on the frequency of consumption of products classified to convenience food.

The next question in the authors' studies (Table 1) concerned the diet recommending or limiting consumption of fish and fish products, which is currently followed by respondents. From among one hundred respondents, only two women stated that currently they follow such a diet. In both cases it was the protein-based diet called Dukan diet which recommends consumption of high-protein products.

The consumers' knowledge of components of fish and fish products was checked by asking two questions. The first question concerned the influence of fish consumption on man's health. The answer "very well" was marked by 36% of all respondents, "well" – 51%, "indifferently" – 13%. None from among respondents chose the answer "bad". Women focused mainly on the answer "well" (56%) and "very well" (41%). High divergence is visible at the answer "indifferently" as men clearly marked it more often – such an answer was chosen by 27% of men and only 3% of women.

The conducted tests show that only two persons from among one hundred respondents do not eat fish and fish products at all, but one of these persons claims to be a vegan, and the other does not consume these raw materials because of gustatory considerations.

Conclusions

1. Fresh or frozen fish most frequently chosen by respondents was the dory, consumed mainly by women. In turn, the smoked mackerel was the most gladly consumed fish product.

2. Women more often than men buy fish in special shops with this assortment or at marketplaces or stalls and they more often chose fresh fish, which proves a greater interest in and care for a healthy diet.

3. Gustatory tastes are the most important and most often considered factor when buying fish and fish products. Such an answer was most often marked regardless of the sex.

4. All consumers significantly prefer consumption of fried fish. However, despite concentration on fish prepared in that way, it is women who show greater interest than men in other ways of preparing fish.

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SPOŻYCIE RYB I PRZETWORÓW RYBNYCH W ZALEŻNOŚCI OD PŁCI KONSUMENTÓW Z WOJEWÓDZTWA PODKARPACKIEGO

Streszczenie. Celem pracy było zbadanie częstotliwości spożycia ryb i przetworów rybnych w zależności od płci konsumentów z województwa podkarpackiego oraz poznanie ich preferencji w odniesieniu do rodzaju spożywanych artykułów pochodzenia rybnego. Z analizy danych wynika, że spośród wszystkich ankietowanych świeże i mrożone ryby są spożywane głównie raz w tygodniu (40% badanych) oraz raz w miesiącu (41%). Rozpatrując częstotliwość spożycia przetworów rybnych, można stwierdzić, że wśród kobiet i mężczyzn najczęściej są one spożywane raz w tygodniu, z tym, że kobiety sięgają po nie częściej (44% z nich). Najczęściej wybraną przez ankietowanych świeżą lub mrożoną rybą był mintaj, spożywany głównie przez kobiety. Kobiety częściej niż mężczyźni kupują ryby w specjalnych sklepach z tym asortymentem lub na targach czy straganach oraz częściej wybierają ryby świeże, co świadczy o większym zainteresowaniu i dbałości o zdrowe odżywianie. Upodobania smakowe są najważniejszym i najczęściej brany pod uwagę czynnikiem przy zakupie ryb i przetworów rybnych. Wszyscy konsumenci znacząco preferują spożycie ryb smażonych. Pomimo przewagi tego sposobu przygotowania ryb, kobiety wykazują większe niż mężczyźni zainteresowanie innymi sposobami ich przyrządzenia.

Słowa kluczowe: preferencje żywnościowe, płeć konsumentów, ryby i przetwory rybne

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