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MARKET RESEARCH CONCERNING THE CONSUMPTION OF FISH AND FISHERY PRODUCTS

ANCUŢA MARIN[1]

Abstract: *Summary: In order to be healthy, people need essential amino acids, carbohydrates, essential fatty acids and not less than 28 vitamins and minerals. The fish is a healthy protein source with a special nutritional value, rich in essential nutrients: proteins, amino acids, vitamins A, B6, B12, D, and Omega-3. Fish, especially fish from the sea, also contain phosphorus, potassium, sodium. Nutritional needs differ from one stage of life to another, so specialists recommend dietary intake specific to different stages of life. Fats in fish are highly perishable being subjected to oxidation, therefore fresh fish is considered proper for consumption just 1 or 2 days. Fish and fish products must therefore be kept at low temperatures, being known the fact that the nutritional value of the frozen fish is almost the same as that of the fresh fish. Research methods used in this paper are "bibliography analysis" and "survey based on questionnaire". The purpose of the paper is to find out what consumer preferences are, in order to form an image of the requirements of the fish market and fish products. Given the components of fish and its importance in human nutrition, it is not without interest to form a picture of the profile of the urban consumer in Romania. The energy given to humans by eating fish and fish products is very small. The conclusion is that we do not consume fish for the caloric intake it provides but for vitamins (especially B), minerals, but especially Omega-3 it contains.*

Keywords: *fish, essential nutrients, consumption, profile of fish consumer*

JEL classification: O13, M31, Q13

INTRODUCTION

Compared to meat, be it white or red, fish is a source of healthy protein, having a high nutritional value. Rich in iodine and zinc, chemical elements known as "youth elements", fish and seafood are consumed especially in coastal areas around the world or along the rivers that cross the relief. Fish is rich in essential nutrients: proteins, amino acids, Vitamins A, B6, B12, D, Omega-3, minerals, increasing muscle and psychic tone, ensuring a good balance of the consumer's weight. Consumption of fish or fish oil improves the health of the heart and blood vessels, protecting them from cardiovascular disease. Omega 3 fatty acids in fish, are those "good" fats that lower blood pressure, triglycerides and cholesterol, fluidize the blood circulation preventing blood clots and thrombosis.

Research has shown that regular and constant consumption of Omega-3 decreases the risk of death from cardiovascular causes by over 33%. In the first years of life, children receive fish oil for the good development of the brain and nervous system, for increasing the learning and memory capacity, for increasing immunity. Regardless of age, it has been found that polyunsaturated omega-3 fatty acids contribute to the growth of good disposition being considered the "elixir of happiness".

The fish contains protein L-ichtulin, as well as albumin, which are complete proteins. The protein represents 8.95-18.14% of the edible part of the fish, balanced in amino acids (Table 1). The protein has a fairly high content of methionine, lysine, tryptophan, which makes fish necessary in baby foods. The fish contains 6 times less connective tissue than meat, which ensures fast cooking.

The amount of lipids varies greatly depending on the species of fish. Depending on the percentage of fat content, the fish can be classified into several groups:

- fish with low fat (up to 3%): carp, cod;
- fish with moderate fat (3-8%): sleep, carp, splash;
- fatty fish (8-20%): catfish, sturgeon, halibut;
- very fatty fish: (more than 30%): eel fish.

Fish, especially those fished in the sea, also contain phosphorus, potassium, sodium. In order to more easily calculate the caloric content of prepared foods we will take into account the non-edible part of the product (bones, head, skin) and the need of fish meat to obtain 100 gr. edible product. We

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will also take into account the protein, lipid and carbohydrate content of each product analyzed (Table 1).

Fish fats are extremely perishable and are subject to oxidation. Therefore, fish and fish products should be kept at low temperatures, the nutritional value of frozen fish being almost the same as that of fresh fish.

Table 1 – Nutrient content of the most consumed fish species

	NECESSARY FOR 100 GR EDIBLE PRODUCT	WEIGHT OF NONEDIBLE PRODUCT	THE EDIBLE QUANTITY OF PRODUCT	PROTEINS		LIPIDS		Kcal
				Gr.	%	Gr.	%	
Bream	222	55	167	16,9	10,12%	3	1,80%	78
Pike	182	45	137	19,1	13,94%	0,4	0,29%	82
Zander	167	40	127	19,4	15,28%	0,9	0,71%	83
Turbot	250	60	190	17	8,95%	2	1,05%	88
Carp	222	55	167	18,9	11,32%	2,8	1,68%	104
Beluga sturgeon	114	12	102	17,5	17,16%	4,7	4,61%	115
Russian sturgeon	114	12	102	18,5	18,14%	17,3	16,96%	237
Mackerel	286	65	221	22	9,95%	10	4,52%	183
Catfish	114	12	102	16,8	16,47%	18	17,65%	244
Herring	182	45	137	17,7	12,92%	18,5	13,50%	245
Pontic shad	182	45	137	14,2	10,36%	25,9	18,91%	299
Sardines	182	45	137	21,1	15,40%	27	19,71%	331

Source: *http://www.cevabun.ro/continutul-in-proteine-lipide-glucide-al-alimentelor-de-baza/*

MATERIAL AND METHOD

In this paper I will present aspects related to determining the need for fish consumption and fish products. The purpose is to find out what are the preferences of the consumers in order to form an image on the requirements of the market and of the selling prices.

The first research method used in this paper is "bibliographic analysis". It aims to extract the official data existing in the field of research of the paper. Data collection was done by accessing the database from the National Institute of Statistics.

The second research method used in this paper is the "questionnaire-based survey", a method that has been used more and more frequently in the last 50 years. The general or specific objectives and assumptions that make sense for the survey were formulated and the sampling was given which gives to the inquiry a survey character, depending on the homogeneity/heterogeneity of the population. The objectives set are:

- identification of the number of consumers of canned fish
- identifying the average frequency of consumption of the fish
- identification of average fish consumption
- identifying the place of purchase of the fish
- identifying consumer preferences regarding the origin of the consumed fish
- identifying the source of the fish
- identifying the average budget allocated for the purchase of fish and fish products
- hierarchy of the fish selection criteria

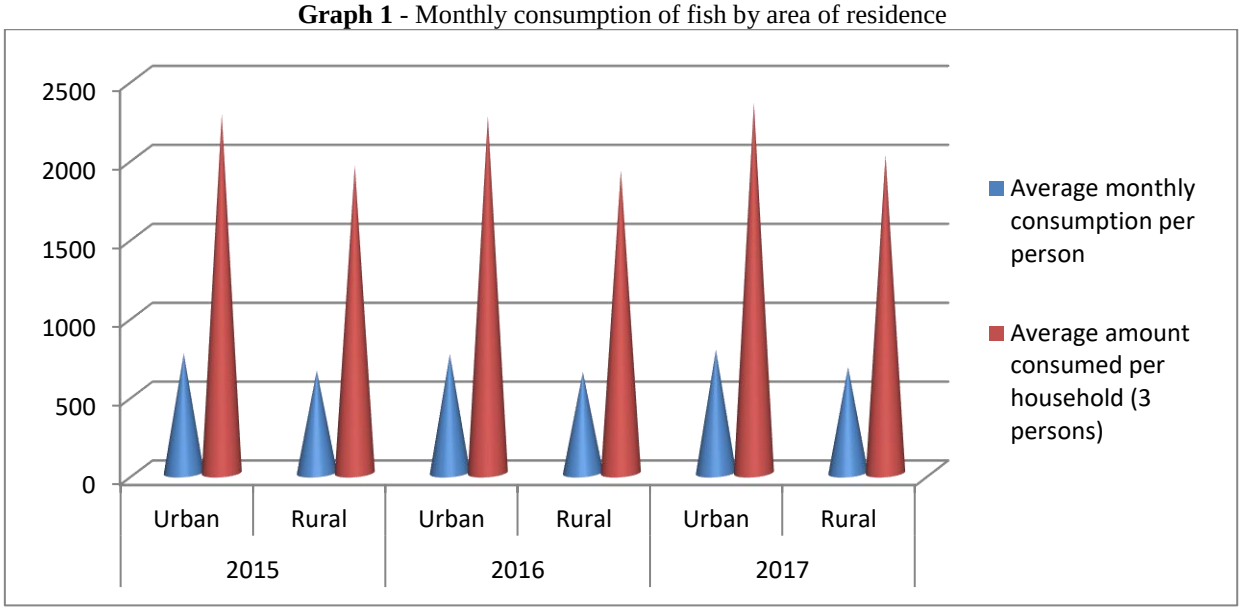
The basic problem of the operation is related to the representativeness of the chosen sample, and can be determined statistically, depending on the sampling technique used. The essential conditions for drafting and applying a questionnaire are validity and fidelity. Validity is the ability to provide information according to the objectives pursued, and validity is the production of results that vary within predictable limits. Another important part of the survey is the coding of the answers and the content analysis of the questions, in order to establish the coding criteria, which allows them to be drawn up and processed (manual for small batches, electronic for large batches). Regardless of whether or not the starting hypotheses are confirmed, the results should be presented objectively, using tables, graphs, posters, slides, etc.

RESULTS AND DISCUSSIONS

To be healthy, people need essential amino acids, carbohydrates, essential fatty acids and *no less than 28 vitamins and minerals.* However, nutritional needs differ from one life stage to another. Specialists recommend a dietary intake specific to different stages of life. These nutritional recommendations are not intended for people who suffer from chronic diseases or who have an increased risk of developing diseases due to age, genetics or as a result of life factors (eg, smoking, alcohol use, physical exertion).

Fresh fish is only good for 1-2 days and should be kept on the lowest shelf in the refrigerator. After cleaning the fish, we can keep the fillets for 6-8 weeks in the freezer. Smoked fish is kept at a temperature of 5-6ºC, in a closed container, so that its characteristic odor does not penetrate other products. Canned fish can be stored for 2-3 days after being opened, provided they are transferred from the box to a closed container.

Graph 1 - Monthly consumption of fish by area of residence



Source: *http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table, 23 mai 2019*

Analyzing the data taken from the National Institute of Statistics the following results:

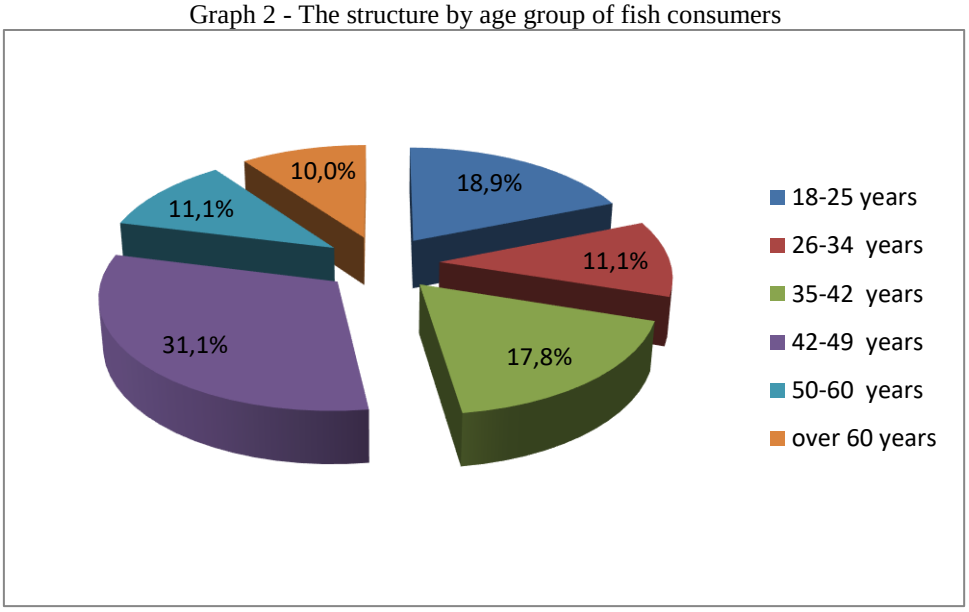
- the average monthly quantity per person varied between 640 g and 782 g unconditional by the environment of residence;
- in urban versus rural the average consumption per inhabitant was about 110 g higher in all the studied years;
- in the urban area, the lowest amount of fish was 754 g/person in 2016, and the highest of 782 g/person in 2017;
- in the rural area, the largest amount of fish consumed by one person was 672 g in 2016, and the lowest of 640 g in 2017.

For the purpose of conducting a market study we conducted an opinion poll in June 2019. The questionnaires were applied to a number of 90 people, resulting the profile of fish consumers in Bucharest:

- 98.9% of those surveyed consume fish frequently;
- the share of women is twice as high (66.7%) than that of men (33.3%);
- 85.60% of the respondents consider that the reason they eat fish is healthy eating.

As shown in Graph 2, the questionnaire is addressed to adults of all age categories: 30% of those interviewed are young people under 35 years of age, the rest of 70% being second and third age persons.

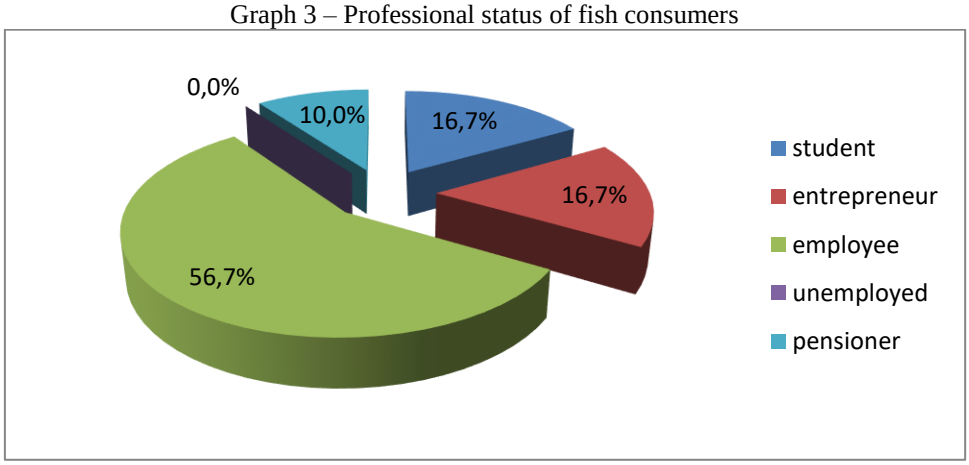
Graph 2 - The structure by age group of fish consumers



Source: *survey data processing*

Regardless of age, most of the interviewees have their own incomes (56.70% employees, 16.70% entrepreneurs, 16.70% pensioners) (Graph 3).

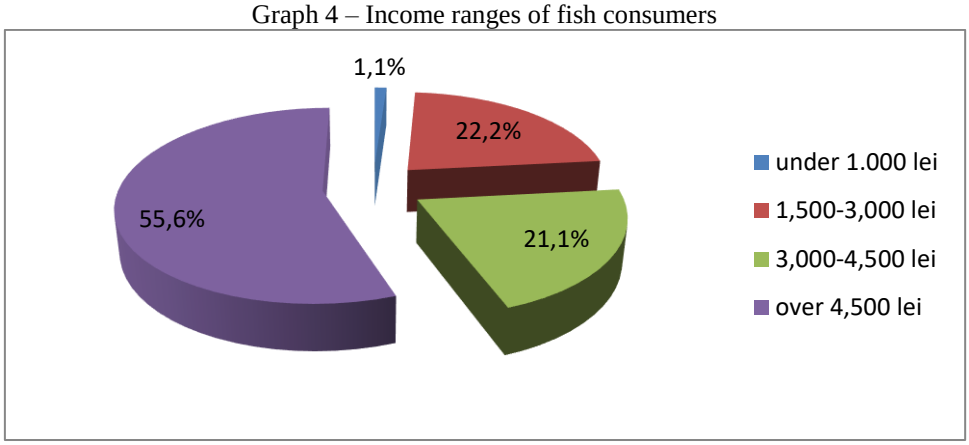
Graph 3 – Professional status of fish consumers



Source: *survey data processing*

It is clear from the answers received that over three quarters of those surveyed have above average incomes (Graph 4).

Graph 4 – Income ranges of fish consumers



Source: *survey data processing*

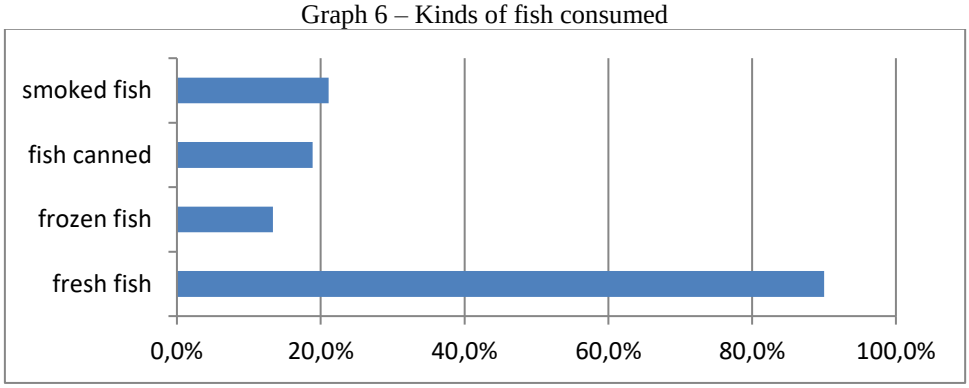
Regarding the satisfaction of the buyers / consumers of fish, it is observed that 53.3% are satisfied and very satisfied with the fish and fish products they find on the market, but there are also dissatisfied and very dissatisfied (13.3 %). A total of 30 people (33.3%) did not vote for any of the variances (satisfied / dissatisfied) (Graph 5).

Graph 5 - The degree of satisfaction regarding the quality of the fish consumed

Source: *survey data processing*

The overwhelming majority of those interviewed prefer fresh fish (90%), but consume largely canned fish (18.9%), smoked fish (21.1%) and even frozen fish (13.3%) (Graph 6).

Graph 6 – Kinds of fish consumed

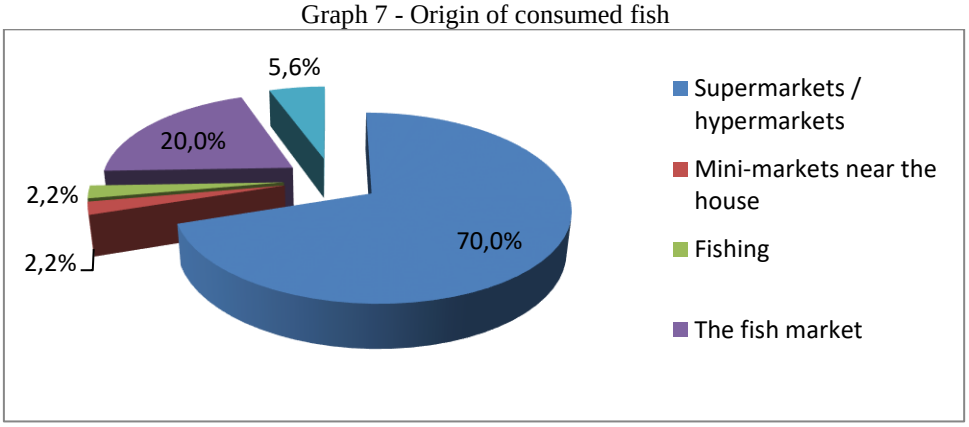


Source: *survey data processing*

As shown in Graph 7, 63 people (70%) buy fish from supermarkets or hypermarkets, considering that in these locations there is a greater degree of product control, knowing that fish is an extremely perishable and highly allergenic food. 20% of those surveyed buy fish from the fish market,

but there are also 2 people who fish and 2 others who prefer ready-made fish at the restaurant (Graph 7).

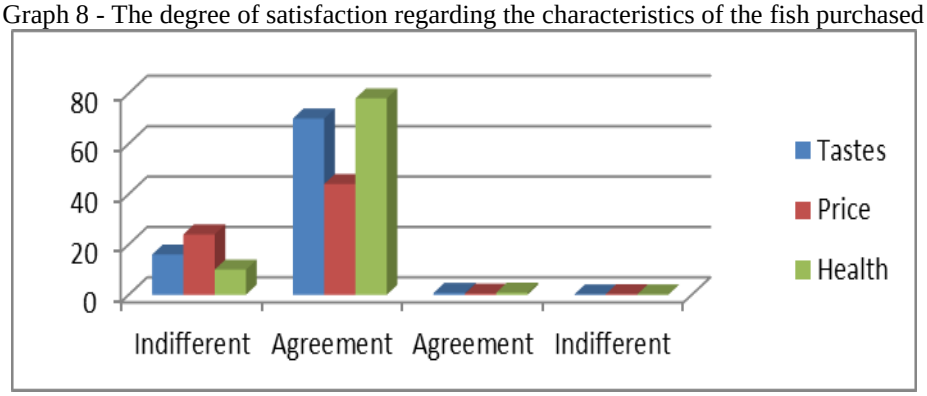
Graph 7 - Origin of consumed fish



Source: *survey data processing*

Consumers interviewed appreciated that the fish is preferred because it is very good for health (78 people) and because it tastes good (70 people). Only 45 of those surveyed appreciated that the fish has an acceptable price (Graph 8).

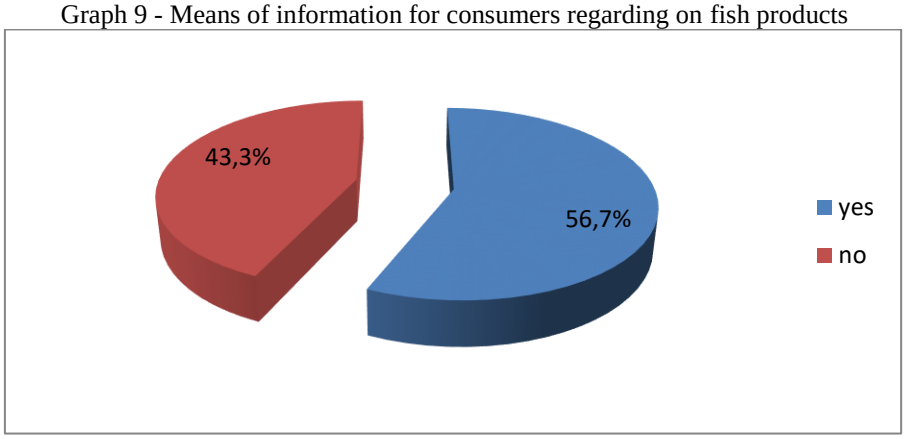
Graph 8 - The degree of satisfaction regarding the characteristics of the fish purchased



Source: *survey data processing*

Interviewed consumers do not watch commercials on fish consumption and fish products (51 people) (Graph 9).

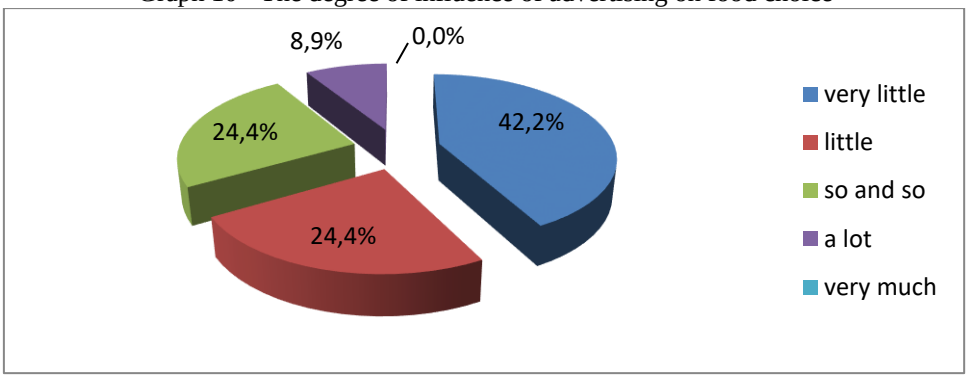
Graph 9 - Means of information for consumers regarding on fish products



Source: *survey data processing*

Regarding the degree of influence of advertising on the choices of different food products, only 9% of those questioned are left influenced by advertising, the rest of 91% (82 people) do not (Graph 10).

Graph 10 - The degree of influence of advertising on food choice



Source: *survey data processing*

CONCLUSIONS

From the questionnaire applied to the 90 consumers in Bucharest, it was found that women consume more fish than men either for health reasons, for aesthetic reasons or because they appreciate its special taste. Most of those who consume fish and fish products are people over 35 years of age, with above average incomes, who consider that fish is still an expensive product.

Only slightly more than half of those surveyed are satisfied with the fish and fish products they generally buy from supermarkets or hypermarkets. Eighty-one of the respondents prefer fresh fish, but among those surveyed are consumers of smoked fish (17 people) and even frozen (12 people).

Romanian consumers of fish and fish products are not influenced by advertising, as they have already formed opinions. In Romania the consumption of fish is influenced by the awareness of its importance as well as by the eating habits and traditions. Therefore, better consumer information and changing eating habits at an early age should be a priority.

The energy offered by marine products is very low. The bottom line is that we do not consume fish for its caloric intake but for vitamins (especially B), minerals, but especially Omega-3's.

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