THE PHYSIOLOGICAL EFFECTS OF FISH CONSUMPTION WHY SHOULD WE CONSUME FISH ON A REGULAR BASIS?

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ABSTRACT

Fish contains nutrients which are essential for our organism, vitamins (for example: A; B_1; B_2; D), minerals and various unsaturated and polyunsaturated fatty acids (for example: Omega 3 fatty acid). The latest cannot be produced by our organism, but indispensable to its normal operation. There is literature on its various effects on the brain, immune system, and it is widely known that it plays a significant role in preventing cardiovascular diseases, since due to its anti-inflammatory effect it is able to cure inflammations on the vascular walls. Omega 3 fatty acids appear mainly in marine phytoplankton and in sea fish in large quantity. We can see that our organism would need regular fish consumption. Researches show that one should take 1 gram of Omega 3 fatty acid on a daily basis. Experts state that fish is one of the indispensable conditions of a healthy diet, so we should consume fish twice a week. Despite the fact that fish is delicious and healthy, it is not part of our everyday menu. The ideal consumption of oily fish would be more than 15 kg/capita/year, but in Hungary this is hardly 4 kg/capita/year.

Keywords: fish consumption, health, way of life, Omega 3 fatty acid

1. INTRODUCTION

We consider the endeavours for a healthy life extremely important. Many food consumption risks are known, but the alternatives to handle them are also available [1]. Fish consumption is a pivotal part of healthy way of life [2]. Numerous professional works have been published on the observations of the effects of food-producing companies [3] and on food-industrial investments [4]. It justifies my topic choice that earlier Zsótér and Kaliczka [5] also dealt with the examination of consumer habits.

Awareness of the Beneficial Effects of Fish Consumption to Health among the Interviewed, n=407
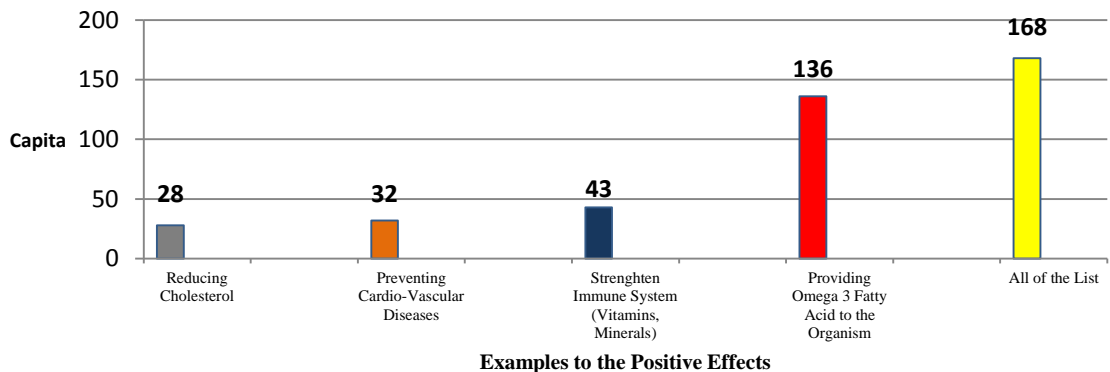

Figure 1. Diagram on the Awareness of Benefits of Fish Consumption

The major part of nutrient sources, vitamins (e.g.: A; B_1; B_2; D), minerals and various unsaturated and polyunsaturated fatty acids (e.g.: Omega 3 fatty acid) essential to our organism can be ensured by consuming more fish [6]. The diagram above shows that the majority of the interviewed consider fish meat really healthy. They assume that all of the listed beneficial effects play a role if we consume fish regularly. However, the most known advantage seemed to be the intake of Omega 3 fatty acid, which is not surprising, since it has got the largest publicity. The favourable effects – among others – can be attributed to the loose structure of fish meat. It is easily digestible to our organism. It has an ideal energy/fat-content. Its protein content is average 15-20%, so it can be well applied in weight-loss diets. We can distinguish fish rich in fat (e.g.: carp, catfish, tuna, mackerel, salmon and herring) and fish types which are not so fatty (e.g.: silver carp, amur, bass, cod and hake). The number of death incidents due to heart disease showed 52% lower occurrence at those who consumed fish at least weekly than those who consumed fish once a month. This is justified by a research in 2000, which was carried out by Hungarian Gastronomic National Association [7].

Frequency of Fish Consumption
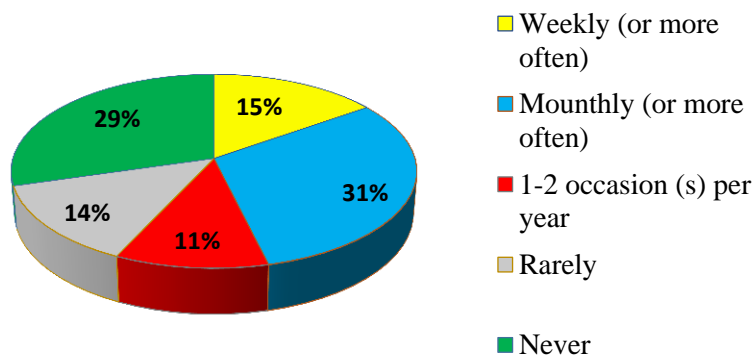**Sample = 407 persons**

Figure 2. Chart on the Frequency of Fish Consumption

In our investigation we aimed to assess the frequency of fish- and fishproduct consumption of the students nowadays in Miklós Radnóti Secondary Grammar School in Szeged. Thanks to the small edible fishbones, which are typically found in canned fishproducts, we additionally could also get Calcium. Fat soluble vitamins (such as vitamins A and D) can be provided to our body by incorporating fishmeat into our diet. This is extremely important, because so our organism can neutralize the free radicals (i.e.: the materials originating from physiological processes as well as getting into the body from outside source, which damage tunica and cause cancer-related diseases). From water soluble vitamins fish contains B1 and B2 in larger quantities. Regarding minerals, its iron, selenium, zinc and iodine content is significant [8].

2. MATERIALS AND METHODS

The last year another project was conducted [9], and the methodology of that is the same as of this current one. The period of the survey is being modified to the months of September and October, 2018. 407 students filled in our questionnaire in Miklós Radnóti Secondary Grammar School.

The basis of our primary research was a questionnaire compiled by us, filled in by secondary school students. The interviewers were us—fostering the proper fill. In the secondary grammar school former teachers ensured possibility to fill in the questionnaire during lessons and head teacher's lessons, with which students helped our work. Our questionnaire consisted of 15 questions, of which 10 questions related to fish consumption habits and relevant opinion of the interviewed, and 5 questions revealed demographic data. Most of the questions were closed ones.

After compiling the questionnaire, we have conducted a test fill-in in the beginning of September, 2018. With this, it could turn out if the logical built-up of the questionnaire is appropriate and the types of questions are ideal [10]. The number of interviewed was 411 altogether, but 4 of the questionnaires could not be evaluated, so during the evaluation we were examining a sample of 407. We have informed the persons involved in the research both about the aim of this current work and about the fact that we have handled the given data with full respect for personal rights [11]. We have evaluated the questionnaires with the PSPP statistical system, which substitutes the patented Statistical Package for the Social Sciences, SPSS program [12]. We have chosen this possibility so that we could process data effectively and fast [13]. PSPP is excellent to compare results from analyses [14]. We have conducted hypothesis investigation using Z-test, where we claim a thing and check on the basis of a pattern appearing during the investigation if it is also true for the whole lot with given (95%) probability [15]. A similar questionnaire-based survey was conducted in 2010 [16]. The Hungarian food economy, besides encouraging fish consumption, has to face many challenges [17].

3. RESULTS AND DISCUSSION

In view of scope limits, we do not publish the details of the research results in this study, this part of this paper focuses on sharing the final results of hypothesis examination.

2.1. One of the hypotheses

According to minimum 50% of the interviewed regular fish consumption is beneficial to health.

n=407 (size of the sample)   Agree with the statement above: 349 persons.

k=349 (number of interviewed according to null hypothesis)   Do not agree with the statement above: 58 persons.

P=0.5000 (the expected value)   Summa interviewed: 407 persons.

p=k/n=0.8575 (value counted from sample)

Z-test: H_0: p ≥ 0.5   ←   Null hypothesis.

          H_A: p <0.5   ←   Alternative hypothesis, on the basis of relation sign left-side test.

                                        ↓

                      (At a left-side test we accept null hypothesis if z-value > critical value.)

Level of Significance: α=0.05 (error probability)

Range of acceptance (critical value): $Z_{0.05}=-1.645$

Z-Test Value: $Z = \dfrac{k-nP}{\sqrt{nP(1-P)}}$ or $Z = \dfrac{p-P}{\sqrt{\dfrac{P(1-P)}{n}}}$ **Result of Z-Test: 14.42**

Statistical Conclusion: Z-Test value is bigger than critical value →
We accept null hypothesis at a 5% significance level, and in the case of 95% probability.

Professional Conclusion:
According to minimum 50% of the interviewed, regular fish consumption is beneficial to health.

2.2. Another hypothesis

The majority of the interviewed (>50%) think that fish consumption should be increased.

n=407 (size of the sample)   Agree with the statement above: 280 persons.
k=280 (number of interviewed according to null hypothesis)   Do not agree with the statement above: 127 persons.
P=0.5000 (the expected value)   Summa interviewed: 407 persons.
p=k/n=0.688 (value counted from sample)

Z-test: H_0: p ≥ 0.5   ←   Null hypothesis.
          H_A: p <0.5   ←   Alternative hypothesis, on the basis of relation sign left-side test.
                              ↓
          (At a left-side test we accept null hypothesis if z-value > critical value.)

Level of Significance: α=0.05 (error probability)
Range of acceptance (critical value): $Z_{0.05}$= −1.645

Z-Test Value: $Z = \dfrac{k-nP}{\sqrt{nP(1-P)}}$ or $Z = \dfrac{p-P}{\sqrt{\dfrac{P(1-P)}{n}}}$ **Result of Z-Test: 7.5855**

Statistical Conclusion: Z-Test value is bigger than critical value →
We accept null hypothesis at a 5% significance level, and in the case of 95% probability.

Professional Conclusion:
Fish consumption should be increased according to the majority of the interviewed.

4. CONCLUSIONS

We can see that fish consumption is a pivotal part of a healthy lifestyle, but we do not integrate it sufficiently into our everyday diet. Excessive presence of seasonality can be observed in fish consumption, despite the fact that our article containing the results of our research as well as numerous other research prove the wide scale of fish consumption's beneficial effects on our organism. We propose fish consumption at a regular basis. In our view, domestic fish consumption could be increased if people could purchase excellent quality (and very importantly fresh) fish in several places.

We also propose even a more pronounced advertising of the benefits of fish to human organism, a clear awareness of this to the people who are currently non-consumers of fish, since many are not aware how much the numerous vitamins, minerals and unsaturated fatty acids in fish support human organism. We are reassured that the more people are aware of these important pieces of information, the more will consume fish. We find it important that rising awareness should take place in various fields. We feel that attention should be called in schools, too, that fish consumption plays an extraordinary role for our health care. If the student meets already during school years the importance of the endeavour for a healthy way of life as well as its tools (e.g.: fish consumption), in their adulthood, while independent, will take actions for this with higher probability. Summarising information on this topic, we can state that fish consumption is healthy and at the same time it is necessary, too.

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