

LIFESTYLE AND HEALTH OF THE WARSAW ORGANIC AND CONVENTIONAL FOOD CONSUMERS (POLAND). A COMPARATIVE STUDY

Summary

The aim of the study was to verify the assumption that organic food consumers have higher self-assessment of health, and, in addition, they have a closer contact with nature and evaluate their living environment better than conventional food consumers. A direct interview based on a survey questionnaire was carried out in Warsaw in 2009-2010. The respondents were women and men aged 26-55. The results were developed by means of introducing three indices (including 41 questions in total): health self-assessment, quality of living environment and the frequency of contact with nature. The significance of differences between the obtained results was assessed by means of one-way analysis of variance (ANOVA) using Statistica software. The research has demonstrated that organic consumers had higher self-assessment of health than the conventional ones. There were no significant differences between organic and conventional groups in terms of the quality of living environment. When it comes to contact with nature, a significantly better index was reported only in the case of women from organic group. That was not confirmed for the whole group consisting of men and women.

Key words: organic consumer, conventional consumer, lifestyle, health

STYL ŻYCIA ORAZ STAN ZDROWIA WARSZAWSKICH KONSUMENTÓW ŻYWNOSCI EKOLOGICZNEJ I KONWENCJONALNEJ: ANALIZA PORÓWNAWCZA

Streszczenie

Celem badania było stwierdzenie, czy występują istotne różnice w samoocenie stanu zdrowia oraz środowiska mieszkalnego, a także częstotliwości kontaktów z przyrodą między konsumentami żywności ekologicznej oraz konwencjonalnej. Badanie ankietowe zostało przeprowadzone w Warszawie w latach 2009-2010. Respondentami byli mężczyźni i kobiety w wieku 26-55 lat. Na podstawie 41 pytań opracowano trzy wskaźniki: wskaźnik samooceny stanu zdrowia, jakości środowiska mieszkalnego, oraz częstotliwości kontaktu z przyrodą. Wyniki poddano jednoczynnikowej analizie wariancji wykorzystując program statystyczny Statistica. Badania wykazały, że konsumenci żywności ekologicznej oceniają swój stan zdrowia istotnie lepiej w porównaniu do konsumentów żywności konwencjonalnej. Nie stwierdzono natomiast różnic w jakości środowiska mieszkalnego między badanymi grupami respondentów. Dla kontaktu z przyrodą, wyższy wskaźnik został odnotowany wyłącznie w przypadku kobiet żywiących się produktami ekologicznymi. W przypadku mężczyzn i kobiet łącznie nie stwierdzono istotnej różnicy w wysokości tego wskaźnika w zależności od pochodzenia (ekologicznego i konwencjonalnego) żywności.

Słowa kluczowe: konsumenci żywności ekologicznej, konsumenci żywności konwencjonalnej, styl życia, zdrowie

1. Introduction

Currently, a healthy lifestyle is becoming increasingly popular among the European societies, and organic food is an integral part of such health-promoting behaviours (Pilariski 2008). At the same time, an idea of so called "socially responsible consumption" is getting more widespread. The idea is related to the behaviour and purchasing decisions of consumers who are inspired in their actions not only to satisfy current and individual needs, but also to prevent the occurrence of possible negative consequences of their actions. Therefore, this is, among others, where an increasing interest of consumers in organic and environmentally-friendly products stems from (Klimczyk-Bryk 2000; Storstad and Bjørkhaug 2003; Tobler et al., 2011). The development of organic production in Poland is favourably influenced by the lower use of production improving chemicals than in other EU countries, poor industrialization and mechanization of agriculture, lower concentration of agricultural production, and natural conditions. These factors have a positive effect on the development of the market of organic products (Łuczka-Bakuła 2007; Kazimierczak 2009).

The food has a healthy status thanks to its safety as well as nutritional, calorific and dietary values. It should provide the necessary nutrients and energy, and – at the same time – be free from any risks to health. Chemical pollution of the environment decreases the food health quality, thus affecting the human health. Ensuring health security is particularly important for organically produced food, because in this case no protective chemicals reducing the risk of biological hazards are applied (Łukasiński 2008).

The conducted studies are more and more often showing a higher nutritional value of organic food as compared to the food produced by conventional methods. An analysis of the effect of crop fertilization on the chemical composition of plants, carried out by Brandt et al. (2011), has proved that the increased availability of nitrogen in plants, typical of conventional production, reduces the accumulation of defensive secondary metabolites and vitamin C. At the same time, the content of secondary metabolites, such as carotenoids, which are not involved in the defence against diseases and pests, may increase. In the case of plants from organic production, the inverse processes are observed. In relation to human health, the increase in the consumption of fruit and vegetables from organic farms is associated with

the reduced risk of cancer and cardiovascular diseases. The aim of another analysis was to examine the content of microelements in plant foods produced using organic and conventional farming methods. The meta-analysis showed a higher total level of microelements in organic food compared to conventional food products (462 vs 364 comparisons, $p = 0.002$). Higher levels of minerals occurred more frequently in the case of organic vegetables and legumes compared to the conventional ones (vegetables – 267 vs 197, $p < 0.001$; legumes – 79 vs 46, $p = 0.004$) (Hunter et al. 2011). Lima and Vianello (2011) also confirm the differences in the quality of organic and conventional products. They suggest that the consumption of organic food leads to certain advantages, such as intake of larger quantities of phenolic compounds and some vitamins, like vitamin C, and smaller amounts of nitrates and pesticides. A particular attention should also be paid to the content of substances that stimulate cell division, e.g. polyamines, because some products from organic farming have the higher content of these compounds and, thus, may help in the prevention and treatment of certain diseases. Organic products also contain more essential amino acids and total sugars as well as more dry matter and minerals (Mg and Fe). At the same time, production of such food is more environmentally friendly, which is associated in some way with a negative factor: organically produced plants generally have a 20% lower yield than the conventional ones (Rembiałkowska 2007, Lairon 2010). In the case of products of animal origin, such as milk, it is known that its composition essentially depends on the animal diet and welfare. Milk from cows raised on organic farms contains more beneficial proteins (e.g. α -lactalbumin, β -lactoglobulin and lactoferrin) than the conventional one; in addition, it is characterized by higher unsaturated/saturated fatty acids ratio and a more favourable ratio of Ω -6 to Ω -3 fatty acids. Organic milk has a higher content of polyunsaturated fatty acids as compared to conventional milk. Grazing organic cows on pastures increases the content of fat-soluble vitamins (A, D, and E) in their milk as compared to the milk of animals that are not grazed on pastures. The number of minerals in milk depends on their concentration in the soil and green forage (Gabryszuk et al. 2013).

Pieniak et al. (2010) suggest that consumers' knowledge about organic food is strongly associated with consumer attitudes and purchase of such food. Vindigni et al. (2002) have noted that from a marketing point of view it is very important to know the reason to buy organic food and the opportunities to improve the size of such consumption. In addition to currently widespread organic trend, there are still obstacles to persuade consumers to consume organic food, such as reluctance to incur high costs, not only financial ones, but also the effort and time spent on purchasing such food.

Other studies have thoroughly described the consumer of organic food, his/her motivations, attitudes and psychological characteristics. Currently, regular buyers of organic products represent – in terms of socio-demographic characteristics – a diverse group (Cichocka and Grabiński 2009). The studies by Finch (2005) and Gutkowska and Ozimek (2005) have demonstrated the factors influencing the purchase of food from organic farms, i.e. affluence, level of education and the related health and nutritional awareness. Typical organic consumers are relatively young, affluent and well-educated people, parents of small children, vege-

tarians, allergy sufferers and those affected by chronic diseases (Żakowska-Biemans and Gutkowska 2003; Dahm et al. 2009; Hjelmar 2011; Zagat 2012). Onyango et al. (2006) suggest that wealthier and better educated people can buy organic food not as much because of concern for their own health as because of trend or the nearest social environment. As confirmed by Bartels et al. (2010), social affiliation and identification of an individual are the factors influencing the purchase of new food, including organic food, and the eating behaviours.

Human health is affected by one's lifestyle, which is a result of the system of values, attitudes, beliefs and everyday behaviours influenced by social and cultural factors as well as personality traits. According to the studies by Wojtyński and Goryński (2008), the self-assessment of respondents' health indicates the current state of health of the population and brings to the conclusion of the possibility of health problems in the future. Such self-assessment is affected, in particular, by age, sex, socioeconomic factors, stress, smoking, and diet. One should bear in mind that the self-assessment of health is largely subjective and mainly reflects the state of being of the respondent. However, this is a good method leading to the indicative assessment of health status.

It can be acknowledged that the Poles have a tendency towards physical inactivity, alcohol abuse, smoking, excessive stress, poor quality and length of sleep. Such predispositions are often acquired from an early age. According to the studies by Sygnowska and Waśkiewicz (2004), the higher level of elderly, unemployed and less-educated people in a population, the worse state of health of that population is. Lower physical activity, increased body weight and the incidence of lifestyle diseases among members of such population are demonstrated as well.

In the event of an unhealthy lifestyle, and consequently the poor health of the Polish population, the question whether organic food consumption is associated with better self-assessment of health is highly important.

2. Hypotheses and the Research Objective

It has been hypothesised that organic food consumers should better assess their health status than conventional consumers. Additional hypotheses concern the fact that organic consumers should have closer contact with nature and better evaluate their living environment than those from the conventional group.

The aim of the study was to verify described hypotheses.

3. Research Methodology

The research was conducted and analysed based on the methodology described by Rembiałkowska et al. (2008). A direct interview based on a survey questionnaire was carried out in Warsaw in 2009-2010. The respondents were women and men aged 26-55. Among the conventional food consumers the interview was carried out in supermarkets, while in the case of organic consumers – in organic food stores. The people were randomly selected. The respondents answered the questions of the interviewer who was filling out the questionnaire and, at the same time, had the opportunity to clarify the questions in case of respondent's doubts. The respondents' age structure is shown in Fig. 1.

The respondents were classified into two groups – the people who eat organic food (organic consumers) and those

consuming conventional food (conventional consumers); each group consisted of 200 women and 200 men. The final number was determined before the study. It lasted until the receipt of the predetermined number of correctly completed questionnaires.

A respondent was classified as an organic consumer if in his/her diet at least 25% of the total amount of food came from organic farms and he/she had consumed such food for at least half a year.

The study consisted of three subject areas: health status, living environment and contact with nature. It was preceded by gathering personal information about the respondents (i.e. age, marital status, education, major employment, the average monthly income per person, subjective assessment of the financial condition, the number of people in a household and the number of children under 18, the proportion and period of organic food consumption). The questions were closed or semi-open.

In the section related to health status (27 questions) a respondent was asked, inter alia, about the past and present illnesses, the frequency of doctor's visits and the intake of supplements and stimulants. The questions also concerned the factors associated with a lifestyle – the length of sleep, exposure to stress, contacts with friends, professional work and rest, including the practice of sport. The respondent also had to assess subjectively whether he or she felt healthy.

The living environment section (6 questions) concerned the questions about the respondent's neighbourhood, the surrounding nature, aesthetics, cleanliness as well as the proximity of industrial plants and noise level in the neighbourhood.

The questions regarding contact with nature (8 questions) assessed the respondent's desire to be with nature, i.e. possession of own allotment garden, pets, balcony, potted plants, a place for weekend and holiday rest, and the time spent in nature and outdoors.

The study results were developed using the so-called quantification method – the answers to specific questions concerning health, living environment and contact with nature were assigned to the appropriate score from 0 to 3 or 4, depending on the number of answers in a given question. A diversified score was the result of more or less positive responses in terms of improved self-assessment of health, environment quality and a stronger contact with nature. The more favourable response in terms of quality, the greater number of points was assigned.

Having summed up the points for each respondent and calculated the mean for the whole group, there were obtained three indices respectively:

- for section 1 – index of health self-assessment (max = 29 pts.), called further as 'health status';
- for section 2 – index of environment quality (max = 12 pts.), called further as 'living environment';
- for section 3 – index of the frequency of contact with nature (max = 18 pts.) called further as 'contact with nature'.

The results were analysed using one-way ANOVA in the Statistica 9 software, at the significance level of $p < \alpha < 0.05$. There were calculated basic statistics.

4. Results

Table 1 shows the results of the analysis of difference significance in the groups of consumers surveyed, broken

down by sex and type of food consumed (organic/conventional consumers) and, above all, taking into account the analysed indices – health status, living environment and contact with nature.

There were found significant differences (for the level of significance $p < \alpha = 0.05$) in health status and contact with nature between the studied indices for the groups. None of the groups differed significantly in terms of quality of living environment (p from 0.187 to 0.693).

The men consuming organic products had the highest index of health self-assessment (mean of 22.13). There were recorded significant differences between them and the conventional women ($p = 0.004$) as well as the conventional men ($p = 0.001$). The apparent differences, although not significant, were found between the organic men and women ($p = 0.079$). The organic women showed a tendency towards a better health status than the conventional women, but the differences were not significant ($p = 0.267$).

No significant differences were shown for the quality of living environment between any of the groups (p -value from 0.693 to 0.187). The organic men had a tendency for higher index than the conventional ones. It was similar in the case of organic vs. conventional women, but the differences were not significant.

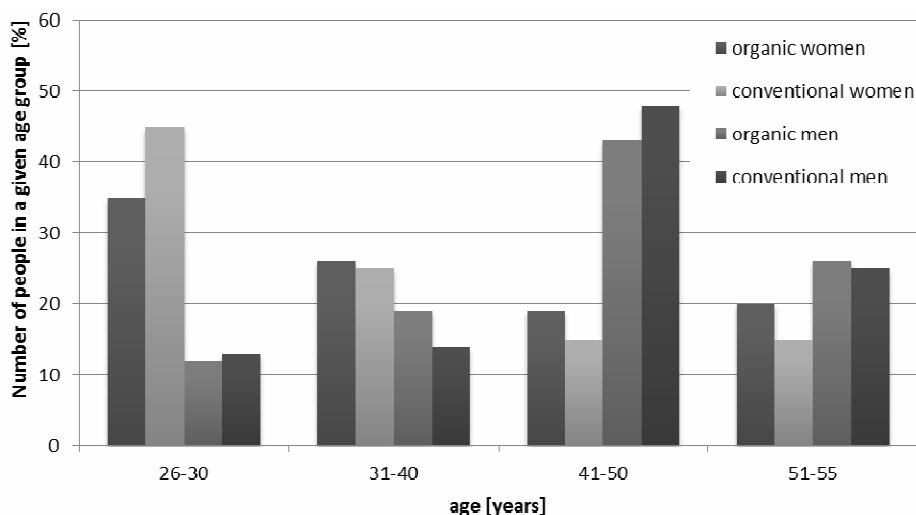
When it comes to contact with nature, a significantly better index was recorded in the case of the organic women as compared to the conventional ones. Furthermore, a significantly better index was assigned in this category to the group of conventional men vs. conventional women. However, there were found no differences between the organic and conventional men as well as the organic men and women.

While examining significant differences between the groups, there were taken into account the differences between the indices for the group of conventional and organic consumers without sex distinction (Table 2). Statistically significant differences were recorded for health status ($p = 0.002$), where the organic food consumers obtained better results. In terms of the quality of living environment and contact with nature, the organic and conventional groups did not differ statistically ($p = 0.171$ and $p = 0.257$).

An analysis of the factor of sex and its impact on the selected lifestyle indices (i.e. health status, living environment and contact with nature) presented no statistically significant differences between the groups ($p > \alpha = 0.05$), as shown in Table 3.

5. Results Discussion

Both the conducted studies and the results of previous analyses indicate a relatively high self-assessment of health status among the respondents in favour of organic consumers. Szakály et al. (2012) has stated that the choice of different types of functional food depends largely on one's lifestyle and taking care of own health among consumers. According to the studies by Gutkowska and Osóbka (2007), consumers perceive food products, in particular those from organic production, as a source of nutrients which affect the strengthening of the body. They notice their impact on the proper functioning of the body, bringing good mood and improving well-being, as well as boosting immunity, i.e. disease prevention. According to Kriwy and Mecking (2012), consumers' health awareness, more than environmental awareness, is strongly associated with the consumption of organic food.



Source: own work

Fig. 1. Age structure of each group of respondents

Table 1. Comparison of the significance of differences between the groups of conventional and organic men and women for the following indices: health status, living environment and contact with nature, using the Anova analysis

Index (n-number of respondents)	Group 1 vs. Group 2 (K-women, M-men, E-organic, K-conventional)	Index mean value for group 1	Index mean value for group 2	Level of the results significance ($p < \alpha = 0.05$)
Health status (n=400)	M K vs. M E	20.54 ± 3.18 ^a	22.13 ± 3.49 ^b	0.001
	M K vs. K K	20.54 ± 3.18 ^a	20.72 ± 3.31 ^a	0.695
	M K vs. K E	20.54 ± 3.18 ^a	21.25 ± 3.55 ^a	0.138
	M E vs. K K	22.13 ± 3.49 ^a	20.72 ± 3.31 ^b	0.004
	M E vs. K E	22.13 ± 3.49 ^a	21.25 ± 3.55 ^a	0.079
	K E vs. E K	21.25 ± 3.55 ^a	20.72 ± 3.31 ^a	0.276
Living environment (n=400)	M K vs. M E	7.75 ± 2.41 ^a	8.09 ± 2.61 ^a	0.340
	M K vs. K K	7.75 ± 2.41 ^a	7.61 ± 2.51 ^a	0.688
	M K vs. K E	7.75 ± 2.41 ^a	7.95 ± 2.39 ^a	0.556
	M E vs. K K	8.09 ± 2.61 ^a	7.61 ± 2.51 ^a	0.187
	M E vs. K E	8.09 ± 2.61 ^a	7.95 ± 2.39 ^a	0.693
	K E vs. F K	7.95 ± 2.39 ^a	7.61 ± 2.51 ^a	0.328
Contact with nature (n=400)	M K vs. M E	10.53 ± 3.82 ^a	10.31 ± 3.75 ^a	0.682
	M K vs. K K	10.53 ± 3.82 ^a	9.38 ± 3.14 ^b	0.021
	M K vs. K E	10.53 ± 3.82 ^a	10.40 ± 3.28 ^a	0.796
	M E vs. K K	10.31 ± 3.75 ^a	9.38 ± 3.14 ^a	0.058
	M E vs. K E	10.31 ± 3.75 ^a	10.40 ± 3.28 ^a	0.857
	K E vs. K K	10.40 ± 3.28 ^a	9.38 ± 3.14 ^b	0.026

^{a, b} – the significance of differences between the results; two same letters indicate no significant differences

Source: own work

Table 2. Comparison of the significance of differences between the conventional and organic groups of respondents without distinction of sex, for the following indices: diet (based on organic vs conventional foods), health status, living environment and contact with nature

Index (n-number of respondents)	Group 1 vs. Group 2 (E-organic, K-conventional)	Index mean value for group 1	Index mean value for group 2	Level of the results significance ($p < \alpha = 0.05$)
Health status (n=400)	E vs. K	21.69 ± 3.54 ^a	20.63 ± 3.24 ^b	0.002
Living environment (n=400)	E vs. K	8.02 ± 2.50 ^a	7.68 ± 2.46 ^a	0.171
Contact with nature (n=400)	E vs. K	10.36 ± 3.51 ^a	9.96 ± 3.54 ^a	0.257

^{a, b} – the significance of differences between the results; two same letters indicate no significant differences

Source: own work

Table 3. Comparison of the significance of differences between the groups of men and women without distinction of diet, for the following indices: health status, living environment and contact with nature

Index (n-number of respondents)	Group 1 vs. Group 2 (K-women, M-men)	Index mean value for group 1	Index mean value for group 2	Level of the re- sults signifi- cance ($p < \alpha = 0.05$)
Health status (n=400)	M vs. K	21.34 ± 3.34 ^a	20.99 ± 3.43 ^a	0.308
Living environment (n=400)	M vs. K	7.92 ± 2.51 ^a	7.87 ± 2.45 ^a	0.573
Contact with nature (n=400)	M vs. K	10.42 ± 3.79 ^a	9.89 ± 3.21 ^a	0.133

^{a, b} – the significance of differences between the results; two same letters indicate no significant differences

Source: own work

People who are ill or the elderly are more often willing to buy such food to improve their health status. In addition, young people with small children also exhibit similar tendencies – in this case they are inspired by far-reaching health effects of such consumption. Vijver and Vliet (2012) have proved a connection between the consumption of organic food to improve one's health and its actual positive change after a longer period of consumption, observed by the consumers surveyed, which is also associated with the simultaneous use of fresher products and healthier lifestyle. The own studies have demonstrated a better health status among the organic consumers of both sexes as compared to the conventional ones, which may point out the improved health status in the course of the long organic food consumption.

In the studies on lifestyles of female consumers (26-55 years old, the sample of 200 people) Rembiałkowska et al. (2008) have shown that there are significant differences between organic and conventional consumers in terms of health status ($p=0.0006$) in favour of the organic group – these results are consistent with this paper. Rembiałkowska et al. (2008) have also found a significantly better index of living environment for the organic group ($p=0.0019$) and a lack of differences between the groups in terms of frequency of contact with nature ($p=0.3645$). The results of this paper are different – a better index of contact with nature has been demonstrated for organic women than the conventional ones, while the analysis of both men and women has revealed no significant difference between the organic and conventional groups in this regard.

6. Conclusions

The conducted studies have allowed verifying the hypotheses posed at the outset. There was confirmed the main hypothesis concerning a better self-assessment of the health status among the organic food consumers as compared to the conventional ones.

The hypothesis related to living environment was not confirmed, while the latter hypothesis concerning contact with nature was borne out only partially, just in the case of the women studied.

The obtained results allow us to draw preliminary conclusions regarding a healthier lifestyle of organic consumers, which translates into a better mood and health self-assessment. That primarily applies to the women studied. This implies that it is worth to promote the lifestyle associated with the regular consumption of organic food.

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