ORIGINAL PAPERS

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Preferred and Undesirable Products in the Dietary Habits of Women

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A – research concept and design; B – collection and/or assembly of data; C – data analysis and interpretation;
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Abstract

Background. Proper nutrition, especially for elderly women as well as for women after mastectomy, is one of the basic conditions of maintaining physical health and mental well-being.
Objectives. The comparison of dietary habits of women of various ages and various levels of physical activity.
Material and Methods. The investigated group consisted of 90 women: 20 students of the Faculty of Physiotherapy at the Academy of Physical Education in Wrocław, 25 students of University of the Third Age at the Academy of Physical Education in Wrocław, 25 visitors of the sanatorium in Jedlina Zdrój, and 20 women after mastectomy. The authors' questionnaire was applied to assess the adherence of the dietary habits of the women in the researched groups to the rules of proper nutrition on the basis of the consumed products.
Results. The highest average dietary preferences expressed in questionnaire points were revealed among the students of the University of the Third Age (4.13) and the women after mastectomy (4.10). Lower numbers of questionnaire points were noted among the visitors of the sanatorium (3.78) and the students of the Academy of Physical Education (3.60).
Conclusions. A significant correlation of BMI and the average number of questionnaire points was revealed in the group of women after mastectomy and the students of the University of the Third Age and a clear correlation in the group of students. A significant correlation between the average of questionnaire points and the age of the women was observed in the first two groups. Applying the authors' questionnaire makes it possible to assess conscious application and adherence to the rules of proper nutrition on the basis of preferred and undesirable products consumed (**Adv Clin Exp Med 2014, 23, 1, 111–116**).

Key words: dietary preferences, women, age, BMI.

Proper nutrition, along with physical activity, are the main constituents of lifestyle, which is the most important factor conditioning health maintenance [1–4]. The authors of the National Health Program (1996 – 2005) in Poland stated that a person's health depends 50–60% on his or her lifestyle [5]. Based on Lalonde's concept, it was estimated that, in Poland, the influence of lifestyle on mortality caused by cardiovascular diseases amounted to 54% and by cancer to 50% [6].

A commonly applied tool for the assessment of dietary habits is a questionnaire [7]. Research tools can be differentiated into those which take into account the ingredients of food and those which take into account the frequency of consuming meals [8]. A systematic monitoring and a detailed knowledge of dietary habits play a vital role in maintaining health and preventing those diseases which are common in developed countries in the present era [9–11].

The objective of the present work is the comparison of dietary habits of women of various ages and various levels of physical activity.

* The thesis was presented at the Polish National Scientific Conference "Needs and Possibilities in the Care of Elderly People" on 1–2 April, 2011.

Material and Methods

The research encompassed 4 groups of women: 1 – 20 students of the Faculty of Physiotherapy at the Academy of Physical Education in Wrocław (age 20.2 ± 0.7 years, BMI 21.2 ± 2.3 kg/m²); 2 – 25 students of the University of the Third Age at the Academy of Physical Education in Wrocław (age 66.9 ± 4.32 years, BMI 25.7 ± 3.3 kg/m²); 3 – 25 visitors of the sanatorium in Jedlina Zdrój (age 53.3 ± 4.2 years, BMI 28.1 ± 4.3 kg/m²); 4 – 20 women after mastectomy (age 67.9 ± 6.9 years, BMI 27.6 ± 4.8 kg/m²).

The individuals studied were presented with the authors' questionnaire and completed it, stating the presence of preferred and undesirable products in their diet, taking into account the frequency of intake per week.

The acquired answers were attributed points on a five-point scale of frequency 1 – 5 (never – 1, occasionally – 2, once a week – 3, three times a week – 4, every day – 5) for the preferred products, which were meat, fish, vegetables, fruit, cottage cheese, yogurt, dark bread, fresh juices, mineral water, red wine, butter and vegetable oil; and on a reversed 5 – 1 scale of frequency (never – 5, occasionally – 4, once a week – three, three times a week – 2, every day – 1) for undesirable products – white bread, sweets, sweet fizzy drinks, chips, vodka/cognac and lard.

For the obtained results, an arithmetic mean and a standard deviation were calculated for each product and each group. It was assumed that a higher average number of questionnaire points meant a higher adherence of the applied diet to the rules of proper nutrition.

Statistical Methods Applied

– the Kruskal-Wallis test, multiple *post-hoc* comparison
– Pearson's correlation.

The results were considered statistically significant at p < 0.05 in all the analyses.

The statistical analysis was carried out by the use of CSS Statistica v. 9 software.

Results and Their Description

Investigating dietary preferences concerning the 19 researched products, no statistically significant differences between the groups were revealed in relation to 6 products: meat, vegetables, dark bread, sweets, red wine and lard (Table 1).

As Table 2 shows, the investigated students of the Academy of Physical Education (group 1)

achieved lower, statistically significant results (p ≤ 0.05) as compared to:
– group 2 (the students of the University of the Third Age), in consuming 1 product: white bread,
– group 3 (the visitors of the sanatorium), in consuming the following 5 products: cottage cheese, juice, sodas, chips and vegetable oil
– group 4 (the women after mastectomy), in consuming one product: juice.

Group 2, in turn, (the students of the University of the Third Age) achieved higher, statistically significant average numbers of points as compared to:
– group 3, in consuming the following 2 products: chips and vegetable oil
– group 4 (women after mastectomy), in consuming the following 3 products: cottage cheese, yogurt and white bread.

Group 3 achieved lower, statistically significant average results as compared to:
– group 4, in consuming the following 5 products: sodas, chips, beer and vegetable oil

On the basis of the statistical analyses produced, it can be observed that the highest average dietary preferences were revealed among the students of the University of the Third Age, 4.13, and the women after mastectomy, 4.10. Lower results were achieved by the visitors of the sanatorium, 3.78, and the students of the Academy of Physical Education, 3.60. Analyzing the correlation between the average of questionnaire points and the BMI in particular groups, a significant correlation, r > 0.40, was revealed in the group of the students of the University of the Third Age and the women after mastectomy, and a low correlation, r > 0.20, was revealed in the group of the students of the Academy of Physical Education (Table 3, 4).

In turn, while analyzing the correlation between the questionnaire points acquired and the age of the investigated women, a significant correlation was revealed in groups 2 and 4, and a low correlation in group 1.

Discussion

Proper nutrition, especially for elderly women and women after mastectomy, is one of the basic conditions of maintaining physical health and mental well-being. Therefore, the composition of diet should be adapted to age, level of physical activity and BMI, and take into account Polish dietary standards concerning the proportion of energy obtained from fats, proteins and carbohydrates [12–14].

Table 1. Average number of questionnaire points acquired on preferred and undesirable products in the diet of the women studied

Group of women	Meat	Fish	Vegetables	Fruit	Cottage cheese	Yogurt	White bread	Dark bread	Sweets
Students	3.85 ± 0.81	2.53 ± 0.51	4.50 ± 0.69	4.35 ± 0.71	3.20 ± 0.77	4.10 ± 0.79	2.25 ± 1.29	3.40 ± 1.23	2.25 ± 1.07
The University of the Third Age	3.89 ± 0.89	2.96 ± 0.59	4.85 ± 0.36	4.89 ± 0.32	4.33 ± 0.96	4.15 ± 1.06	3.64 ± 1.08	4.44 ± 1.04	2.48 ± 1.39
Staying in a sanatorium	3.92 ± 0.83	3.00 ± 0.72	4.71 ± 0.59	4.79 ± 0.41	3.25 ± 1.07	3.74 ± 1.10	2.01 ± 1.21	4.01 ± 1.35	2.79 ± 1.35
After mastectomy	3.71 ± 0.85	3.05 ± 0.71	4.62 ± 0.59	4.71 ± 0.64	4.19 ± 0.79	4.14 ± 1.01	2.90 ± 0.93	4.19 ± 0.93	2.40 ± 1.21
Statistical analysis*									
H	1.72	7.85	5.97	8.86	24.27	10.76	16.45	5.18	1.75
p	0.6326	0.0492	0.1133	0.0312	0.0000	0.0131	0.0009	0.1591	0.6249

Group of women	Juice	Sodas	Mineral water	Chips	Beer	Wine	Vodka/cognac	Butter	Lard	Vegetable oil
students	2.55 ± 0.83	3.60 ± 0.60	4.25 ± 0.89	3.90 ± 0.64	3.85 ± 0.64	4.30 ± 0.66	4.05 ± 0.42	3.90 ± 1.52	4.60 ± 0.50	3.01 ± 0.86
The University of the Third Age	2.60 ± 1.04	4.53 ± 0.76	4.74 ± 0.69	4.81 ± 0.48	4.46 ± 0.51	4.19 ± 0.46	4.30 ± 0.50	4.31 ± 1.12	4.36 ± 0.81	4.42 ± 0.94
Staying in a sanatorium	2.92 ± 1.33	3.54 ± 0.94	4.42 ± 1.18	4.46 ± 0.93	4.17 ± 0.48	4.01 ± 0.78	4.29 ± 0.46	3.21 ± 1.41	4.46 ± 0.59	4.21 ± 0.59
After mastectomy	3.70 ± 1.01	4.57 ± 0.67	4.30 ± 1.02	4.76 ± 0.44	4.23 ± 0.53	4.29 ± 0.64	4.48 ± 0.51	4.19 ± 0.93	4.43 ± 0.51	4.52 ± 0.51
Statistical analysis *										
H	13.59	21.31	9.15	23.93	11.17	6.32	8.78	7.97	2.51	29.82
p	0.0035	0.0001	0.0274	0.0000	0.0108	0.0972	0.0323	0.0465	0.4744	0.0000

* The Kruskal-Wallis test.

Table 2. The intergroup comparison of consumption of selected products using the Kruskal-Wallis test

Group	H	p	1–2	1–3	1–4	2–3	2–4	3–4
Fish	7.85	0.0492	1.0000	0.3145	1.0000	0.2260	1.0000	0.2419
Fruit	8.86	0.0312	1.0000	1.0000	1.0000	1.0000	1.0000	0.1374
Cottage cheese	24.27	0.0000	0.0831	0.0473	1.0000	1.0000	0.0010	0.0006
Yogurt	10.76	0.0131	0.3358	1.0000	1.0000	0.5708	0.0120	1.0000
White bread	16.45	0.0009	0.0403	1.0000	1.0000	1.0000	0.0013	0.1598
Juice	13.59	0.0035	0.1320	0.0448	0.0031	1.0000	1.0000	1.0000
Sodas	21.31	0.0001	0.3041	0.0075	1.0000	0.8833	0.0622	0.0007
Mineral water	9.15	0.0274	1.0000	1.0000	0.1343	1.0000	1.0000	0.3913
Chips	23.93	0.0000	1.0000	0.0025	1.0000	0.0311	1.0000	0.0003
Beer	11.17	0.0108	1.0000	0.3688	1.0000	0.7155	0.9178	0.0220
Vodka/cognac	8.78	0.0323	1.0000	0.1227	1.0000	1.0000	1.0000	0.3771
Butter	7.97	0.0465	0.3825	1.0000	1.0000	0.2565	0.1128	1.0000
Vegetable oil	29.82	0.0000	1.0000	0.0002	1.0000	0.0069	0.5568	0.0000

Table 3. Correlation between the average number of survey points and BMI in particular groups of women

	Average number of survey point	BMI kg/m²	Correlation coefficient
Group 1	3.60 ± 0.72	21.2 ± 2.3	0.346 [1]
Group 2	4.13 ± 0.81	25.7 ± 2.3	0.407 [2]
Group 3	3.78 ± 0.82	28.1 ± 4.3	0.108 [3]
Group 4	4.10 ± 0.75	27.6 ± 4.8	0.456 [2]

[1] low correlation.
[2] moderate, significant correlation.
[3] weak correlation.

Table 4. Correlation between the average number of survey points and age in particular groups of women

	Average number of survey points	Age (years)	Correlation coefficient
Group 1	3.60 ± 0.72	20.2 ± 0.8	0.249[1]
Group 2	4.13 ± 0.81	66.9 ± 5.8	0.407[2]
Group 3	3.78 ± 0.82	53.3 ± 6.8	0.117[3]
Group 4	4.10 ± 0.75	67.9 ± 8.6	0.406[2]

[1] low correlation.
[2] moderate, significant correlation.
[3] weak correlation.

In the present thesis, the answers given by 4 groups of women to the questions from the authors' questionnaire concerning dietary preferences were assessed. Among the 19 investigated products were 12 so-called preferred ones, i.e. commonly believed to be beneficial for our body and health, and 7 so-called undesirable ones which, according to the dieticians' evaluation, influence negatively our body. Such a number of investigated products with the proportion of preferred/undesirable as 60/40 allows a comparatively multi-faceted assessment of the diet, taking into account proteins (4 products), carbohydrates (6 products), vegetable and animal fats (7 products), vitamins and biocatalysts (*circ*. 5 products), as well as water in more than 50% of the products.

On the basis of the attained data, it can be claimed that 2 of the researched groups, i.e. students of the University of the Third Age and women after mastectomy, have proper dietary habits, which is evidenced by their average points for particular products as well as by the general average exceeding 4.0, which means that a preferred product was consumed 3 times a week and an undesirable one only occasionally. It can be assumed that the investigated women above 60 have knowledge gained during physical exercise classes and courses which motivated them to improve their lifestyle and quality of life. The remaining groups, i.e. groups of the visitors of the sanatorium and students of the Academy of Physical Education, in many cases achieved statistically significant, lower results in comparison to the other two groups, however in the case of around 50% of

the products they were also close to the average of 4.0, which reveals healthy dietary habits. Unfortunately, negative phenomena in the diet of the investigated women can also be noted. The excessive consumption of sweets in all groups and insufficient intake of fish and cottage cheese can be mentioned here. An optimistic fact is that the intake of dark bread is greater than that of white bread in everyday diet. The achieved results reveal a higher level of education and greater interest in proper diet among people from big cities, which confirms the results of previously published research [8, 15].

It is worth stressing that there are significant correlations between the number of questionnaire points and the BMI of the investigated women. It proves a significant dependence between dietary preferences and BMI in the group of students of the University of the Third Age and women after mastectomy: r > 0.4.

Also, the correlation r > 0.4 between the average questionnaire result and the age of women in 2 of the mentioned groups is worth observing.

Both investigated groups of women take care of higher life quality by keeping a balanced and various diet and doing physical exercise twice or 3 times a week. Hence, the results which prove that the 60+ group is characterized by a significant correlation between the average of questionnaire points and BMI are interesting. It is a positive result as it corresponds to the observed tendency to overweight and obesity among women of this age [16, 17]. The results achieved by the groups of students of the Academy of Physical Education and the visitors of the sanatorium reveal a pressing need of encouraging healthy dietary habits in these groups.

Further research combining a questionnaire interview concerning diet and physical activity with changes in body composition and anthropometric indices is our immediate intention.

The authors' questionnaire applied in this thesis makes it possible to assess the conscious application of and adherence to the rules of proper nutrition.

The highest average of questionnaire points, reflecting the higher occurrence of preferred and lower of undesirable products in the diet, was shown among the women from the group of the students of the University of the Third Age and the group of women after mastectomy, and lower in the groups of students of the Academy of Physical Education and visitors of the sanatorium.

The correlation between BMI and the average number of questionnaire points is significant in the groups of women after mastectomy and the students of the University of the Third Age and clear in the group of students of the Academy of Physical Education.

The correlation between age and the average of questionnaire points is significant in the group of women after mastectomy and the students of the University of the Third Age.

Especially in 2 of the above mentioned groups, the students of the University of the Third Age and the women after mastectomy, a promising result is the observation that application of and adherence to the rules of proper nutrition increases with age. In these groups, persons with a higher average of questionnaire points also show a lower BMI.

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