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SENSE OF SATISFACTION WITH LIFE VERSUS DIETARY CHOICES OF FEMALE FITNESS INSTRUCTORS FROM FITNESS CLUBS IN KRAKOW

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Authors' contribution:

- A. Study design/planning
- B. Data collection/entry
- C. Data analysis/statistics
- D. Data interpretation
- E. Preparation of manuscript
- F. Literature analysis/search
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Abstract:

Introduction. Life satisfaction is one of important personal resources promoting health-related behaviours and health improvement.

Aim. The aim of the work was to analyse relations between the sense of satisfaction with life and the frequency of consuming selected products in the group of young women who work as fitness instructors.

Material and methods. The study involved 200 women aged 20-32 (25.0 ± 3.4) working as fitness instructors at Krakow fitness clubs. The tools used in the study were an original questionnaire to measure the frequency of group product consumption and the Satisfaction With Life Scale (SWLS) by Diener et al. The results were analysed with the use of the Mann-Whitney U test and Spearman's rank correlation coefficients in the PQStat ver. 1.6 statistical package.

Results. Statistical analysis showed that as the sense of satisfaction with life in young women increased, the frequency of consuming raw vegetable oils and/or nuts also grew ($p < 0.05$). The comparison of the mean frequency of consuming food products depending on the level of satisfaction with life (low vs. high on the SWLS scale), showed that women with high levels of satisfaction ate saltwater fish ($p < 0.05$) more often, as well as oils and/or nuts ($p < 0.001$) than did women with low satisfaction levels.

Conclusions. The study proved the predictive role of satisfaction with life with regard to quality aspects of diet of female fitness instructors. Women with higher levels of this personal resource tend to display more rational dietary choices.

Introduction

A varied and balanced diet rich in products with high nutritional density is conducive to maintaining health and optimising exercise capacity among physically active people [1-4]. The current model of rational nutrition proposed for individuals undertaking increased physical activity is the Swiss pyramid [5]. The base of the pyramid opens with unsweetened beverages, and at the top, we find sweets, salty snacks and sweetened beverages, between which groups of vegetables and fruits, whole

grain cereals and legume seeds, protein products as well as oils, fats and nuts, recommended for consumption in varied quantities and at varied frequencies, can be found [5]. Furthermore, the current Polish Pyramid of Healthy Nutrition and Physical Activity of the Institute of Food and Nutrition (from January 2016) recommends consuming products with high content of dietary fibres, mineral salts, vitamins, antioxidants and unsaturated fatty acids, while limiting the consumption of products rich in saturated fatty acids, simple sugars and table salt [6]. The currently cited nutritional models emphasize the special

importance of water and other unsweetened beverages for effective regulation of water and electrolyte balance, as well as vegetables and fruits (low- and medium-content glycemic products rich in dietary fibres, potassium, magnesium, group B vitamins and antioxidants) for restoring antioxidant status and acid-base balance in the body [1-7].

Behaviours conducive to improving health (among athletes, also exercise capacity), including rational food choices, are determined by a wide spectrum of socio-economic, cultural and personality-related factors [8-10]. One of the psychological health resources of human beings is a sense of satisfaction with life, defined as a measure of well-being, constituting a key indicator of quality of life assessment [11], or in other words, as a cognitive aspect of life satisfaction determining the degree of positive evaluation of one's life [12]. Earlier studies have shown relationships between individual differences, including a sense of life satisfaction and the nutritional behaviours of various population groups, including perimenopausal women [13, 14], women with type 2 diabetes [15], athletes professionally training individual disciplines [16], Kraków students of teaching specialisations [17, 18] and women recreationally practicing fitness from the Małopolska Voivodeship [19]. In other studies, the predictive significance of other dimensions of personality have been confirmed, including a sense of generalised self-efficacy in relation to the nutritional behaviours of women undertaking leisure-time exercise [20, 21].

In this context, by continuing research on the psychological determinants of eating behaviours among various population groups, research was undertaken regarding the predictive role of life satisfaction in relation to the nutritional choices of young, physically active women employed as fitness instructors. The research was also conducted due to the limited number of papers in the Polish literature on the psychological conditions of diets among women participating in fitness classes [19-20], and in particular, concerning the nutrition of fitness instructors [22] – i.e. women professionally exposed to physical exercise.

The aim of the study was to analyse the relationship between the sense of satisfaction with life and the frequency of consuming selected groups of food products among a group of young women - fitness instructors at Kraków health clubs.

Materials and methods

The study was carried out in the summer of 2017 among a group of 200 young women, aged 20-32 (25.0 ± 3.4) - instructors at Kraków fitness clubs. Single women comprised (52%) while (48%) were

married, those with higher education – B.A. (36%) and M.A. (33%) and those with secondary education totalled (31%). They came both from urban (77%) and rural (23%) environments. They took up 7.8 ± 4.9 hours a week of physical activity at fitness clubs. Their average experience with fitness clubs was 3.0 ± 2.5 years. All women had completed the appropriate courses (personal trainer or fitness instructor). Additional physical activity in their free time was declared by 98% of the surveyed women, equalling, on average, 6.1 ± 3.0 hours per week. The mean BMI of the examined women was 21.3 ± 1.9 kg/m², which was considered within the norm.

The questionnaire created by the authors on the frequency of consuming selected groups of food products was used to assess the diet. Reliability of the questionnaire was assessed using estimation of Pearson's signed-rank correlation coefficient (retest after 6 weeks). The analyses showed a strong and highly significant correlation of the the whole survey ($r: 0.56; p < 0.01$). The frequency of food consumption was evaluated using the scale: daily (6), several times a week (5), once a week (4), once a month (3), less often (2) and never (1). In the interpretation regarding the average values of the frequency of food consumption, the following ranges were assumed: daily (6.00-5.50), several times a week (5.49-4.50), once a week (4.49-3.50), once a month (3.49-2.50), less often (2.49-1.50) and never (1.49-1.00).

The level of satisfaction with life was measured with the Satisfaction with Life Scale (SWLS) designed by E. Diener, R.A. Emmons, R.J. Larsen and S. Griffin, using the adaptation by Z. Juczyński [9]. The SWLS, containing 5 statements, is constructed in such a way that the higher the test result (within the range of 5-35 points), the higher the sense of life satisfaction. The classification of the surveyed women into groups with different levels of life satisfaction was based on the middle value (median) of the raw results. Results below the median on the SWLS indicated - low, and above the median - a high sense of optimism. The median raw score on the SWLS for the surveyed women was 21 ($M \pm SD: 21.28 \pm 2.40$; Min-Max: 15-25).

The results were analysed using the PQStat statistical package ver. 1.6. Comparison of the frequency of consuming individual groups of products depending on the level of life satisfaction was made using the Mann-Whitney U test, and the analysis of the relationship between the intensity of satisfaction and the frequency of consuming individual product groups was performed by estimating Spearman's rank correlation coefficients. The test probability level of $p < 0.05$ was considered statistically significant, and highly significant values were at the levels $p < 0.01$ and $p < 0.001$.

Results

Among the cereal products included, fitness instructors consumed wholemeal rather than light bread more often (on average: several times a week vs. once a week), and muesli rather than sweetened cereals (on average: several times a week vs. once a month). They usually consumed vegetables on a daily basis, and fruits several times a week. Women consumed dairy products (with varying amounts of fat), on average, once a week. Among other protein products, they most often chose poultry meat and coldcuts, and less often fish or pork meat and coldcuts. They usually consumed raw vegetable oils and/or nuts once a month. Women also usually reached for sweets and fast food products once a month. Among non-alcoholic beverages, they most often chose mineral water, and the least frequently - isotonic beverages. The women usually reached for alco-

holic beverages once a month, but dry red wine was at a lower frequency (Table 1).

In the statistical analysis, it was shown that female fitness instructors, along with the increase in sense of life satisfaction, consumed raw vegetable oils and/or nuts significantly more often ($p < 0.05$) (Table 1).

Comparison of the average frequency of consuming food products depending on the level of life satisfaction (low vs. high on the SWLS) showed that women with its high level, consumed sea fish ($p < 0.05$) and oils and/or nuts ($p < 0.001$) significantly more often than women with a low intensity of this personal resource (Table 1).

Discussion

In this study, the limited scale of rational food choices and the relationship between the level of satisfaction

Table 1. Frequency of consuming food products depending on life of satisfaction with life as well as correlational coefficients between variables among a group of female fitness instructors

Products	Satisfaction with Life Scale (SWLS)									p	R
	Total			Low			High				
	X	SD	Me	X	SD	Me	X	SD	Me		
Light bread	4.05	1.43	4	3.96	1.43	4	4.14	1.42	4	0.2228	0.1285
Wholemeal bread	5.14	0.91	5	5.16	1.02	5	5.12	0.79	5	0.2409	0.0382
Sweetened cereal	2.91	1.79	2	2.86	1.77	2	2.96	1.82	3	0.8824	0.0143
Oatmeal/muesli	4.73	1.26	5	4.71	1.18	5	4.76	1.34	5	0.2900	0.0935
Vegetables	5.77	0.49	6	5.76	0.51	6	5.77	0.47	6	0.8673	-0.0307
Fruits	5.44	0.65	6	5.51	0.58	6	5.36	0.72	6	0.2036	-0.0861
Milk/semi-skimmed	4.22	1.38	5	4.31	1.37	4	4.12	1.39	3	0.1969	-0.1606
Milk/whole-fat	3.58	1.64	4	3.69	1.56	4	3.48	1.71	4	0.4126	0.0262
Fish	3.99	1.07	4	3.88	1.01	4	4.09	1.13	4	0.0403	0.1209
Meat/poultry coldcuts	4.67	1.09	5	4.71	1.00	5	4.64	1.19	5	0.9192	-0.0366
Meat/poultry coldcuts	3.97	1.28	4	3.94	1.17	4	3.99	1.40	4	0.5679	0.0580
Vegetable oils/nuts	4.31	1.54	5	3.88	1.64	4	4.75	1.31	5	0.0001	0.1944*
Sweets/confectionary	3.34	1.42	4	3.33	1.33	4	3.34	1.51	3	0.9459	-0.0840
Fast foods	2.98	1.25	3	3.02	1.20	3	2.93	1.30	3	0.6485	-0.0233
Sweetened carbonated beverages	2.43	1.46	2	2.29	1.43	2	2.56	1.49	2	0.1909	0.0407
Energy drinks	2.30	1.56	2	2.08	1.43	2	2.52	1.66	2	0.0534	0.0614
Mineral water	5.91	0.29	6	5.92	0.27	6	5.90	0.30	6	0.5932	0.0033
Isotonic drinks	1.45	0.61	1	1.51	0.61	1	1.38	0.60	1	0.0787	-0.1695
Alcoholic beverages	2.70	1.21	3	2.75	1.21	3	2.65	1.22	2	0.5125	-0.0910
Dry red wine	2.13	1.12	2	2.08	1.24	2	2.18	0.98	2	0.1409	0.0507

X - arithmetic mean, SD - standard deviation, Me - median, p - statistical significance of differences in the Mann-Whitney U test, R - Spearman's signed rank correlation coefficient, level of statistical significance R: * ($p < 0.05$)

with life and the frequency of consuming certain foods among the group of young female fitness instructors has been demonstrated. In relation to the Swiss recommendations for the healthy nutrition of people subjected to increased physical activity [5] and Polish dietary recommendations [6], a low frequency of consuming fruit, whole grain cereal products, dairy products as well as fish, vegetable oils and nuts, was shown. However, some choices should be assessed positively, including a higher frequency of eating wholemeal rather than light bread, and vegetables rather than fruit. Favourable trends also concerned the more frequent selection of milk and low-fat dairy products than those with a high fat content and poultry meat rather than pork meat. Women were also more likely to choose mineral water over sweetened carbonated beverages and energy drinks. The described average frequency of alcoholic beverage consumption, including dry red wine (once a month or less often, respectively) was lower than in the group of high-performance athletes training team sport disciplines, which also showed lower consumption of these drinks in women than men [23]. Additionally, among other groups of women recreationally practicing fitness, errors were found in nutrition, associated with the low frequency of consuming products recommended for a rational diet, reducing the nutritional and health values of food rations [19, 20, 24-27]. The low frequency of consuming whole-grain cereals, fruit and dairy products demonstrated in the discussed study, corresponded to those described in previous research among a group of recreational fitness students, showing deficiencies in carbohydrates and fibers, vitamin B2, potassium and calcium [25]. Unbalance of food rations, including fat and fibres, as well as excessive supplies of protein and sodium, were also found in a group of women exercising at Lublin fitness clubs [26]. Moreover, in the group of women practicing fitness at clubs in the Małopolska Voivodeship, nutritional errors were found, including: low frequency of consuming whole-grain cereal products, vegetables, legume seeds, fruit as well as dairy products and fish, and relatively high sweets and confectionery intake [21].

Analysis of the individual conditioning of young female fitness instructors' nutrition has shown that a higher intensity of the sense of satisfaction with life was conducive to more rational nutrition choices, thus, corresponding to the current nutrition recommendations for individuals with varied levels physical activity [5, 6]. A higher level of satisfaction with life was conducive to more frequent consumption of marine fish and vegetable oils and/or nuts. More regular consumption of these products by women with high life satisfaction increased the health value of the diet due to the cardioprotective role of unsaturated fatty acids, especially

omega 3, which have lipid-lowering, hypotensive and anti-aggregation properties [28]. The obtained results, indicating more rational dietary choices of women with a higher level of life satisfaction, corresponded to the results of previous studies among perimenopausal women [13, 14], women with type 2 diabetes [15] and females practicing fitness [19] as well as fitness instructors from Małopolska [22]. In the cited studies, it has been shown that menopausal women with high levels of life satisfaction (and optimism and self-efficacy) declared significantly more frequent consumption of high nutrient density products recommended in rational nutrition than women with low intensity of these traits [13, 14]. Similar trends, expressed as a positive correlation between life satisfaction levels and the frequency of consuming recommended products (including vegetables, legume seeds, fruit, whole-wheat cereal products, dairy products with reduced fat, sea fish and nuts) were described among women with type 2 diabetes [15]. Research on the predictive role of personal resources (the level of dispositional optimism and life satisfaction) in relation to the scale of implementing the qualitative recommendations of the Swiss nutrition pyramid for athletes among fitness instructors, showed the diversity of some women's nutritional behaviours depending on their level of optimism and the level of life satisfaction, with an indication on a larger scale of taking nutritional recommendations into account by women with a higher intensity of the analysed psychological features [22]. Also, among women recreationally practicing fitness from the Małopolska region, along with an increase in the level of life satisfaction, they significantly less often consumed: light bread and skimmed milk; and significantly more often: wholemeal cereals, legume seeds, fermented milk products, fish and seafood and vegetable juices, and less often sweets and confectionery products, than women with low levels of life satisfaction [19]. The relationships of life satisfaction with some, including nutritional, conditions of health, have also been confirmed in Chilean studies [29, 30]. Additionally, among students of teaching specialisations, a tendency towards more intense pro-health behaviours was described as the level of life satisfaction increased [17, 18]. The relationships shown in these studies can be explained by the relationship between more rational dietary choices and improved health (and exercise capacity), which indirectly translates into better quality of life (and higher level of life satisfaction), and through more pronounced motivation to make better food choices by women more satisfied with life.

The regularities shown in this study, corresponding to the trends previously described in the literature, prove that a high sense of satisfaction with life,

associated with well-being, is an important human health resource, conducive to active care for one's health, including more rational nutritional behaviours, also among women working as fitness instructors at Kraków health clubs.

Of course, one should indicate the potential, other (personality-related, environmental, socio-economic) determinants of the nutritional choices among the tested fitness instructors. Studies by various authors have confirmed the predictive significance of other factors regarding the quality of healthy behaviours, including women's dietary habits [31-35].

The limitations of the presented study are related to taking one area of diet into account (the frequency of consumption of selected food groups) and one psychological resource important for health culture. Further research on the psychological determinants of diet should also include men as well as a broader spectrum of nutrition and personality variables.

Conclusions

1. The insufficient frequency of consuming whole-grain cereals, fruit and dairy products as well as fish indicated the nutritional value of food rations among young, female fitness instructors from Krakow health clubs.
2. A favourable image of physically active women's dietary choices concerned the more frequent selection of products with reduced content of saturated fatty acids (milk and other dairy products with reduced vs. high fat, poultry vs. pork) and simple sugars (mineral water vs. sweetened carbonated drinks and energy drinks, muesli vs. sweetened cereals).
3. The predictive role of sense of life satisfaction for shaping the diet of female fitness instructors has been shown, with an indication of more rational dietary choices (associated with the consumption of products rich in unsaturated fatty acids) among the group of women with a higher level of satisfaction with life.

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