ORIGINAL ARTICLE

RELATIONSHIPS BETWEEN DIETS AND THE QUALITY OF LIFE TO WOMEN AGED 50 TO 64

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ABSTRACT

Background. Adverse effects of numerous environmental factors, including improperly balanced diets, may accelerate the onset of ailments related to the climacteric period.

Objective. The aim of the study was to examine the relationships between diets and the quality of life of working women aged 50-64 years.

Material and methods. The study included 274 working women aged 55.4±4.0 years living in Biała Podlaska and the surrounding area. These were women working in various positions (teaching, administrative, economic department) at the State School of Higher Education in Biała Podlaska, Poland and patients of the Health and Rehabilitation Centre in Biała Podlaska. The study was conducted by means of a popular tool used to diagnose quality of life i.e. SF-36 questionnaire (Short Form Health Survey) and the Questionnaire of Eating Behaviour (QEB).

Results. In all categories of quality of life (SF-36), apart from pain and general health, there were statistically significant differences between the results of the respondents and the norm for Polish women aged 50 to 60 years. Fruit, vegetables and wholemeal bread were the most frequently consumed products in the healthy diet group, while legumes, fish and curd cheese were the least frequently consumed by the respondents. Of the unhealthy products, the women most often chose sweets (at least once a week), cheese and fried food. Analysis of the effect of a healthy diet on the quality of life showed that a statistically significant correlations were observed in the case of mental health, functioning in society, emotionality, vitality, and well-being.

Conclusions. A positive correlation with the application of a healthy diet was observed in all the categories of quality of life. This means that the respondents with healthy diets had a higher quality of life.

Key words: *nutrition, quality of life, women, menopause*

STRESZCZENIE

Wprowadzenie. Niekorzystne oddziaływanie licznych czynników środowiskowych, w tym stosowanie niewłaściwie zbilansowanej diety może przyspieszać pojawienie się dolegliwości związanych z okresem klimakterium.

Cel badań. Celem badań była weryfikacja zależności pomiędzy spożywaną dietą a jakością życia kobiet w wieku 50-64 lata aktywnych zawodowo.

Materiał i metody. Badaniami objęto 274 kobiety w wieku 55,4±4,0 lat, aktywne zawodowo zamieszkujące Białą Podlaską i okolice. Były to osoby pracujące na różnych stanowiskach (dydaktycznych, administracyjnych, działu gospodarczego) w Państwowej Szkole Wyższej w Białej Podlaskiej oraz pacjentki korzystające z usług Centrum Zdrowia i Rehabilitacji w Białej Podlaskiej. Badania dokonano za pomocą narzędzia używanego do diagnozy jakości życia - kwestionariusza SF-36 Short Form Health Survey oraz kwestionariusza QEB do badania zachowań żywieniowych i opinii na temat żywności (QEB – Questionnaire of Eating Behaviour).

Wyniki. We wszystkich kategoriach jakości życia (SF-36), poza „bólem" i „zdrowiem ogólnym", odnotowano różnice istotne statystycznie pomiędzy wynikami respondentek i normą dla polskich kobiet w wieku 50-60 lat. Najczęściej spożywanymi przez badane kobiety produktami z grupy prozdrowotnej są owoce, warzywa i pieczywo razowe, natomiast najrzadziej potrawy z nasion strączkowych, ryby oraz sery twarogowe. Z produktów niezdrowych najczęściej badane kobiety sięgają po słodycze, sery żółte i potrawy smażone. Analizując wpływ diety prozdrowotnej na jakość życia respondentek odnotowano istotną statystycznie zależność w przypadku zdrowia psychicznego, funkcjonowania w społeczeństwie, emocjonalności, witalności oraz samopoczucia.

Wnioski. We wszystkich ww. kategoriach jakości życia odnotowano dodatnią korelację ze stosowaniem prozdrowotnej diety. Oznacza to, że respondentki, które odżywiają się zdrowo posiadają wyższą jakość życia.

Słowa kluczowe: *odżywianie, jakość życia, kobiety, klimakterium*

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INTRODUCTION

Improving the health-related quality of life (HRQoL) and promoting successful ageing have become important points in policies and programmes targeting populations of older adults [4, 17]. Health depends to a large extent on diets, which, if properly selected and balanced, have a positive effect on health status, while poor nutrition has a negative impact on the body. In recent years, this problem has been addressed more and more frequently in scientific research [6, 7, 8, 19, 22, 23, 24, 25]. A change in the diet to eliminate nutritional mistakes significantly improves the health and quality of life of women, especially in the perimenopausal period [6, 7, 22, 23].

Research on quality of diets focuses mainly on the relationship between adherence to healthy dietary patterns and cardiometabolic risk factors [15], cancer [30], mortality [15], and physical and mental functions (e.g. depression) [16]. Many studies presented in the literature have emphasized the adverse effects of climacteric symptoms on quality of life of women [1, 7, 22, 23]. Adverse effects of numerous environmental factors, including improperly balanced diets, may accelerate the onset of ailments related to the climacteric period.

The aim of the study was to examine the relationships between diets and the quality of life of working women aged 50-64 years.

MATERIAL AND METHODS

The study included 274 working women aged 55.4±4.0 years living in Biała Podlaska and the surrounding area. These were women working in various positions (teaching, administrative, economic department) at the State School of Higher Education in Biała Podlaska, Poland and patients of the Health and Rehabilitation Centre in Biała Podlaska. The youngest woman studied was 50 years old, whereas the oldest was 64 years old. The inclusion criteria were: female, age 50 to 64 years, working person and the consent for examinations. The characteristics of the subjects are given in Table 1.

For the purpose of the analysis, the respondents were categorized according to biological factors (age, BMI value) and socio-demographic factors (education, material status, place of residence).

Each participant was informed about the aim of the study, research procedure and the potential use of the results.

The study was conducted by means of a popular tool used to diagnose quality of life i.e. SF-36 questionnaire (Short Form Health Survey) and the Questionnaire of Eating Behaviour (QEB). The SF-36 questionnaire, due to the criterion of control, is numbered among self-assessment methods and allows for evaluation of eight indicators of quality of life i.e.: physical functioning, limitations in performing roles due to worse physical

health, pain, general sense of health, vitality, social functioning, emotional problems, and sense of mental health. According to the Polish version of the SF-36 questionnaire, the highest point score means the lowest level of the quality of life, while the lowest point score means the highest level of quality of life [32].

Table 1. Characteristics of the subjects

Participants		n	%
Education level	primary or secondary	115	42.0
	tertiary	159	58.0
Age	50-54 years	120	43.8
	55-59 years	107	39.1
	60-64 years	47	17.2
Place of residence	rural areas	106	38.7
	city	168	61.3
Financial status	below average	17	6.2
	average	213	77.7
	above average	44	16.1
BMI	normal BMI	130	47.4
	overweight	88	32.1
	obesity	56	20.4
Age	Mean	55.4	
	SD	4.0	
BMI	Mean	26.3	
	SD	5.8	

Based on the answers to the QEB questionnaire (QEB - Questionnaire of Eating Behaviour), it was possible to determine whether a person's diet is healthy (healthy diet index - pHDI-8) or shows unhealthy characteristics (unhealthy diet index - nHDI-8). In order to facilitate the interpretation of both indices, it is recommended to compute the total frequency of consumption and express it on a scale from 0 to 100 points. Healthy diet index (pHDI-8, in point) = (100/16) × total frequency of consumption of eight groups of foods (times/day). Unhealthy diet index (nHDI-8, pt.) = (100/16) × total frequency of consumption of eight groups of foods (times/day) [33]. Products belonging to pHDI-8 are: wholemeal bread, milk and fermented milk drinks, curd cheese, fish dishes, legumes, vegetables and fruits. Products belonging to nHDI-8 are: fast foods, fried foods, cheese, sweets, canned meat, fish, vegetable and meat, sweetened carbonated drinks, energy drinks, alcoholic beverages. The mean healthy diet index (pHDI-8) was computed by summation of the daily frequency of consumption of specific food groups, expressed in times/day, on a scale from 0 to 100, reaching 17.13 in the women studied. The higher the index value, the greater the intensity of health benefits.

Table 2. Comparison of the results of the quality of life of female respondents (SF-36v2) with the norms for Polish women aged 50-60

Variable	Mean	Standard deviation	Minimum	Maximum	Reference	t	p
Physical functioning	55.4	6.4	33.1	62.9	48.0	19.20	0.0000*
Limitations of the role: ailments	53.3	6.0	43.6	59.1	49.0	11.84	0.0000*
Pain	48.2	7.4	29.0	60.6	48.0	0.51	0.6075
General health	48.3	6.1	32.9	63.4	48.0	0.92	0.3582
Limitations of the role: emotionality	62.8	11.7	26.7	85.6	42.0	29.36	0.0000*
Social functioning	66.5	13.7	20.1	85.1	50.0	19.89	0.0000*
Vitality	51.4	5.6	39.8	55.2	54.0	-7.75	0.0000*
Well-being	64.2	10.6	27.1	81.4	50.0	22.29	0.0000*
Physical health	51.9	8.9	28.1	68.7	46.0	11.04	0.0000*
Mental health	78.8	14.6	25.3	107.1	51.0	31.47	0.0000*

t- value of the *Student's t*-test for a single sample; *-significant differences at p<0.0

Statistical analysis was conducted using the STATISTICA v.10 software. Arithmetic means and standard deviations were calculated for quantitative data. In order to detect statistically significant differences, the *Mann Whitney* U-test and the *Kruskall-Wallis* test were used. The *Student's* t-test was used to compare the results of the quality of life with the Polish norms. The level of correlations was calculated using the *Spearman's* r rank correlation coefficient. In all analysed cases, the level of significance was set at p=0.05.

RESULTS

In all categories of quality of life (SF-36), apart from pain and general health, there were statistically significant differences between the results of the respondents and the norm for Polish women aged 50 to 60 years. In the case of vitality, the women tested had lower values compared to the norms, with higher values observed in other cases. According to the Polish version of the SF-36 questionnaire, the highest point score means the lowest level of the quality of life, while the lowest point score means the highest level of quality of life [32]. The highest coefficient was achieved for mental health (78.8), social functioning (66.5), and well-being (64.2). Furthermore, the lowest values were found for pain (48.2), general health (48.3), and vitality (51.4), (Table 2).
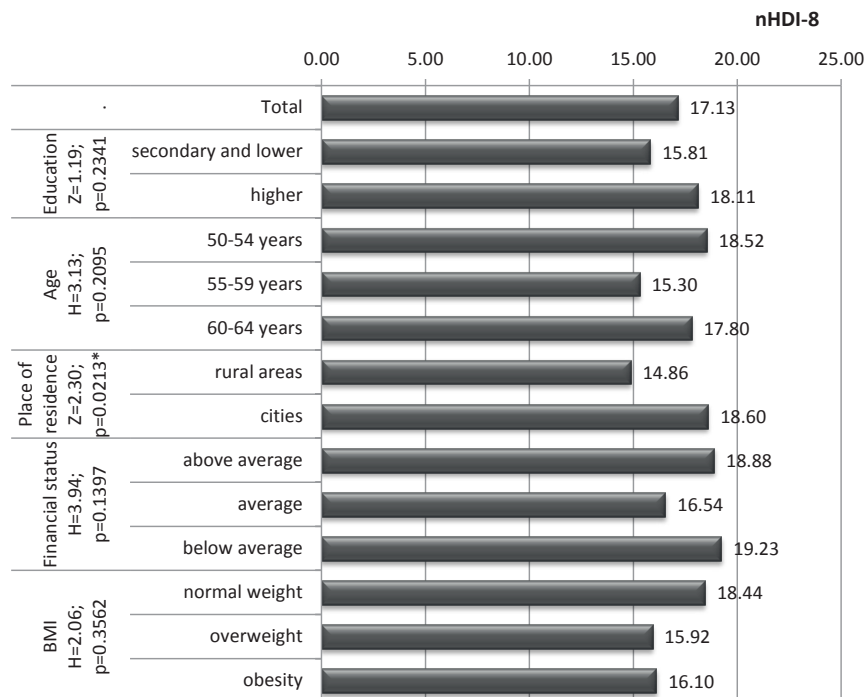
Fruit, vegetables and wholemeal bread were the most frequently consumed products in the healthy diet group, while legumes, fish and curd cheese were the least frequently consumed by the respondents. Of the unhealthy products, the women most often chose sweets (at least once a week), cheese and fried food. The remaining products from the unhealthy category were consumed once every 3 weeks, (Table 3).

Table 3. Weekly frequency of consumption of products from healthy and unhealthy groups

Food products consumed		Mean	Standard deviation
Healthy	wholemeal bread	3.03	4.61
	milk	2.12	3.46
	fermented milk beverages	1.41	2.41
	curd cheese	1.19	2.06
	fish dishes	0.66	0.67
	dishes made from legumes	0.45	0.68
	fruit	5.33	5.51
	vegetables	5.23	5.32
Unhealthy	fast food	0.34	1.52
	fried foods	1.04	1.93
	cheese	1.08	2.20
	sweets	2.08	3.42
	canned meat, canned fish, canned vegetables and meat	0.33	0.78
	sweetened carbonated beverages	0.38	1.34
	energy drinks	0.26	1.46
	alcoholic beverages	0.33	0.87

The highest healthy diet index was achieved by women with above-average financial status (19.23), living in the city (18.60) and aged 50-54 (18.52). A statistically significant relationship was recorded in relation to the place of residence, in favour of women living in the city, (Figure 1).
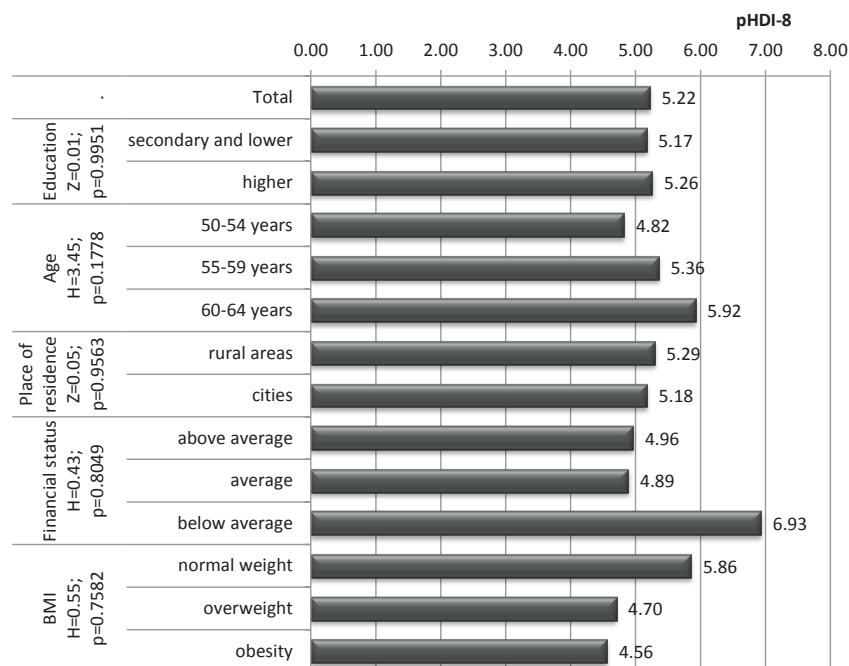
nHDI-8

.	Total	17.13
Education Z=1.19; p=0.2341	secondary and lower	15.81
	higher	18.11
Age H=3.13; p=0.2095	50-54 years	18.52
	55-59 years	15.30
	60-64 years	17.80
Place of residence Z=2.30; p=0.0213*	rural areas	14.86
	cities	18.60
Financial status H=3.94; p=0.1397	above average	18.88
	average	16.54
	below average	19.23
BMI H=2.06; p=0.3562	normal weight	18.44
	overweight	15.92
	obesity	16.10

Z- value of the *Mann-Whitney* test, H- value of the *Kruskal-Wallis* test, *-significant differences at p<0.05

Figure 1. Healthy diet index pHDI-8 (in points) and selected biological and socio-demographic characteristics

The mean score of the unhealthy diet index (nHDI-8) was as above and it reached the level of (5.22). The higher the index value, the greater the intensity of unfavourable health characteristics. The highest index was achieved by women with the best financial status (6.93), aged 60 - 64 (5.92) and having a normal BMI (5.86). The lowest coefficient, indicating low intensity of characteristics of unhealthy diet index, was recorded in the case of obese (4.56) or overweight women (4.70), and respondents aged 50-54 (4.82), (Figure 2).

pHDI-8

.	Total	5.22
Education Z=0.01; p=0.9951	secondary and lower	5.17
	higher	5.26
Age H=3.45; p=0.1778	50-54 years	4.82
	55-59 years	5.36
	60-64 years	5.92
Place of residence Z=0.05; p=0.9563	rural areas	5.29
	cities	5.18
Financial status H=0.43; p=0.8049	above average	4.96
	average	4.89
	below average	6.93
BMI H=0.55; p=0.7582	normal weight	5.86
	overweight	4.70
	obesity	4.56

Z- value of the *Mann-Whitney* test, H- value of the *Kruskal-Wallis* test

Figure 2. Unhealthy diet index nHDI-8 (in points) and selected biological and socio-demographic characteristics of the respondents

Analysis of the effect of a healthy diet on the quality of life showed that a statistically significant correlations were observed in the case of mental health (p=0.0002; r=0.22), functioning in society (p=0.0010; r=0.20), emotionality (p=0.0122; r=0.15), vitality (p=0.0215; r=0.14), and well-being (p=0.0447; r=0.12). A positive correlation with the application of a healthy diet was observed in all the above mentioned categories of quality of life. This means that the women who eat healthily have a higher quality of life.

Analysis of research results leads to the conclusion that unhealthy diets negatively affect the quality of life of the respondents. A statistically significant relationship was recorded in the case of well-being (p=0.0064), (Table 4).

Table 4. The effect of healthy and unhealthy diets on the quality of life

		Spearman's R	t(N-2)	p
Unhealthy diet index	Physical functioning	-0.06	-1.05	0.2945
	Limitations of the role: ailments	-0.03	-0.46	0.6445
	Pain	-0.01	-0.09	0.9319
	General health	0.00	0.05	0.9601
	Limitations of the role: emotionality	-0.06	-0.95	0.3426
	Social functioning	-0.05	-0.86	0.3908
	Vitality	-0.03	-0.50	0.6174
	Well-being	**-0.16**	**-2.75**	**0.0064***
	Physical health	-0.05	-0.80	0.4222
	Mental health	-0.11	-1.76	0.0803
Healthy diet index	Physical functioning	0.10	1.63	0.1047
	Limitations of the role: ailments	0.07	1.09	0.2750
	Pain	0.00	0.07	0.9405
	General health	0.04	0.59	0.5584
	Limitations of the role: emotionality	**0.15**	**2.52**	**0.0122***
	Social functioning	**0.20**	**3.32**	**0.0010***
	Vitality	**0.14**	**2.31**	**0.0215***
	Well-being	**0.12**	**2.02**	**0.0447***
	Physical health	0.09	1.42	0.1581
	Mental health	**0.22**	**3.72**	**0.0002***

t - value of *the Student's t*-test; *-significant differences at p<0.05

DISCUSSION

The presented material constitutes one of the few studies concerning the relationships between dietary patterns and the quality of life of women aged 50-64 and comparative studies of healthy diet index (pHDI-8) and unhealthy diet index (nHDI-8) with selected biological and socio-demographic characteristics.

The results of our study are consistent, among others, with the research studies by *Muñoz* et al.[19], who found that positive self-rated mental and physical health is directly related to the Mediterranean diet, which is consistent with the healthy diet index. *Bonaccio* et al. [3], in their study covering 24,325 inhabitants of the Molise region in Italy, demonstrated that there is a positive link between following healthy diets and the self-rated mental and physical health. Ford et al. [9] found that poor quality of diets is linked to lower health-related quality of life (HRQOL) assessed by the health and activities limitation index (HALex) in older adults.

Researchers from universities in Spain, *Henríquez-Sánchez* et al. [12] conducted an analysis in a group of 11,015 participants with a 4-year observation period and observed a significant direct correlation between healthy diets and all areas of physical and mental health (vitality, social functioning and emotional role). The highest coefficients were found for vitality and general health status. In our studies, we also observed significant statistical differences in mental health, social functioning, emotionality, vitality and well-being.

The explorations conducted by *Gopinath* et al. [10] in Sydney, Australia, in groups of 1,305 and 895 participants (aged ≥ 55 years) demonstrated that a higher quality of diet is prospectively associated with a better quality of life and functional abilities. This was also confirmed by the results of our examinations.

The meta-analysis of cross-sectional study by *Jacka* et al. [13] covering 5,731 people showed that respondents on a high-nutrient diet with better quality

were less susceptible to depression, while higher consumption of processed and unhealthy foods was associated with increased anxiety.

The results of some studies suggest a relationship between diets rich in fruit and vegetables and subjective well-being [5, 11]. Furthermore, *Blanchflower* et al. [2] showed that there is a link between the consumption of large amounts of fruit and vegetables and life satisfaction (LS).

CONCLUSIONS

The problem of the effects of healthy and unhealthy diets on the quality of life of working women aged 50-64, is topical and important from the social point of view, because with the ageing society, it is extremely important not only to extend the life expectancy but also to maintain its quality. Therefore, further research to this problem is needed.

1. Taking into consideration the results of our research, it would be recommended to carry out prospective studies on a larger population of professionally active women aged 50-65.
2. Based on the results of the prospective studies, indicate the direction of education and health promotion in the group of middle-aged and elderly women, which will contribute to their health improvement and extension of a good quality life expectancy.

Conflict of interest
The Authors declare no conflict of interest.

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