

HEALTH-RELATED BEHAVIOURAL DIFFERENCES BETWEEN THE SEXES DETERMINES NUTRITION STATUS IN HOSPITALIZED ELDERLY PATIENTS

RÓŻNICE BEHAWIORALNE ZWIĄZANE Z ZACHOWANIAMIZDROWOTNYMI MIĘDZY PŁCIAMI, DETERMINUJĄCE STAN ODŻYWIENIA U HOSPITALIZOWANYCH PACJENTÓW W PODESZŁYM WIEKU

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A – przygotowanie projektu badania | study design, **B** – zbieranie danych | data collection, **C** – analiza statystyczna | statistical analysis, **D** – interpretacja danych | interpretation of data, **E** – przygotowanie maszynopisu | manuscript preparation, **F** – opracowanie piśmiennictwa | literature review, **G** – pozyskanie funduszy | sourcing of funding

SUMMARY

Background: Health-related behaviours affect the preservation and maintenance of health. They form a important part of the everyday life of all individuals including the elderly. Some of the most significant factors affecting health are eating habits, physical activity, and the ability to handle stress and limiting the use of substances.

Aim of the study: The aim of this paper was to assess the effect of health-related behaviours on nutrition in hospitalized elderly patients.

Material and Methods: The study population consisted of 151 subjects over 60 years old. The study tools included a diagnostic survey, the Health Behaviour Inventory and the Mini Nutritional Assessment. Statistical significance for differences and strength of correlation between the variables was set at $p < 0.05$.

Results: The general indicator of health behaviour was higher among women (88.78 ± 13.82 vs. 83.55 ± 12.93 ; $p = 0.01$). The analysis of health behaviour showed significant differences between men and women in relation to good eating habits ($p = 0.01$) and prophylactic behaviour ($p = 0.01$).

Conclusions: Elderly people who followed a proper diet, which included fruit and vegetables, and avoided food with preservatives, were better nourished. A positive attitude was connected with the state of nutrition. Well-nourished status can be observed among the elderly who have positive attitude, avoid anger, anxiety and depression, and have friends and a stable family life.

KEYWORDS: health behaviour, elderly, state of nutrition

STRESZCZENIE

Wstęp: Zachowania zdrowotne osób starszych, będące elementem codziennego życia, wpływają na utrzymanie i wzmacnianie zdrowia. Do jednych z najważniejszych czynników warunkujących zdrowie należą nawyki dotyczące prawidłowego odżywiania i aktywności fizycznej, umiejętność radzenia sobie ze stresem czy ograniczenie stosowania używek.

Cel pracy: Celem podjętych badań była ocena wpływu zachowań zdrowotnych na stan odżywienia osób starszych.

Materiał i metody: Badania przeprowadzono wśród 151 osób po 60. roku życia, przy użyciu kwestionariusza wywiadu, Inwentarza Zachowań Zdrowotnych i Minimalnej Oceny Stanu Odżywienia. Istnienie różnic i siły związku między zmiennymi oszacowano na poziomie istotności $p < 0,05$.

Wyniki: Ogólny wskaźnik zachowań zdrowotnych wyższy był wśród kobiet niż mężczyzn ($88,78 \pm 13,82$ vs $83,55 \pm 12,93$; $p = 0,01$). Analiza zachowań zdrowotnych wskazywała istotne różnice między kobietami a mężczyznami w zakresie: prawidłowych nawyków żywieniowych ($p = 0,01$), zachowań profilaktycznych ($p = 0,01$).

Wnioski: Osoby starsze, które dbają o prawidłowe odżywienie, jedzą warzywa, owoce, unikając spożywania żywności z konserwantami, charakteryzowały się lepszym stanem odżywienia. Pozytywne nastawienie psychiczne pozostaje w związku z oceną stanu odżywienia. Zadawalający stan odżywienia cechuje osoby starsze, które myślą pozytywnie, unikają gniewu, lęku i depresji, mają przyjaciół oraz uregulowane życie rodzinne.

SŁOWA KLUCZOWE: zachowania zdrowotne, osoby w podeszłym wieku, stan odżywienia

BACKGROUND

In view of the progressive ageing of society, which is perceived as a challenge for the 21st century, the health behaviour of the elderly has become very significant, not only in the context of delaying the incidence of chronic diseases, but also in the context of social ramifications.

Both Poland and other European countries have been experiencing a regular increase in the number of people aged 60 and above. According to GUS 2016 data, in 2014 the number was 8,500,000 out of 38,500,000 of the total population of Poland (which accounted for 21.5% of the total). The number is forecast to rise to 13,700,000 (840.4%) by 2050, with a simultaneous decline in the overall population number to 33,900,000 [1].

Health behaviour comprises the activities an individual undertakes as part of their everyday life that affect the maintaining and improving of health, which in turn pertains to longevity and quality of life. An important determinant of an individual's decisions is an interdisciplinary approach, which is largely affected by personal experiences and knowledge of health and diseases, determined by the attitude towards one's health adopted earlier in life. Some of the most significant factors determining health are eating habits, physical activity, and the ability to handle stress and limiting the use of substances. Even though the process of ageing is inevitable, it is possible to remain independent for longer, with proper nutrition being one of the basic conditions of physical and mental health [2–4].

Age-dependent changes in the organism of an elderly person, accompanied by socio-economic factors (poverty, loneliness) and psychological issues (depression, stress) account for bad nutrition condition. The most common problems arising from the bad eating habits of the elderly include malnutrition and obesity. Malnutrition is more common in hospitalized patients and among the residents of care homes. It is closely connected with chronic diseases (such as cancer or neurological disorders) and the medicines taken. Obesity is more common among the elderly living in their own homes and may lead to serious metabolic diseases (diabetes, hypertension) [5]. This paper, analysing health

behaviour in the context of the assessment of the state of nutrition among the hospitalized elderly, was undertaken because such knowledge is becoming more and more important.

AIM OF THE STUDY

The aim of this paper was to assess the effect of health-related behaviour on nutrition among the hospitalized elderly.

MATERIAL AND METHODS

The study was conducted on a population of 151 patients hospitalized between August and December 2015, in accordance with the rules and regulations of the Helsinki Declaration. The study population comprised people: over 60 years old, both sexes, in the initial stages of hospitalization, in the stable period of illness, with maintained verbal contact, lack of communication disorders, and conscious consent.

The study was conducted using a diagnostic survey, which consisted of questions on demographic and social characteristics, the Health Behaviour Inventory, and the Mini Nutritional Assessment.

The Health Behaviour Inventory consists of 24 statements describing different types of health behaviour. By considering the frequency of individual behaviours indicated by the respondents, the researcher establishes the general intensity of health behaviour and the categories of these behaviours: good eating habits, prophylactic behaviour, positive attitude and health practices. Each statement is rated on Likert's 5-point intensity scale. Particular areas of health behaviour are analysed as the mean number of points in each category [6].

The Mini Nutritional Assessment is a simple tool which was developed for early detection of the risk of malnourishment. The respondent can score a maximum of 30 points. A score over 24 points is interpreted as a good state of nutrition, which does not require dietary intervention, scores between 17 and 23.5 points indicate a risk of malnourishment and a score below 17 points indicates malnourishment of the respondent [7].

Statistical analysis was performed using the SPSS programme. Descriptive statistics (arithmetical mean, minimum maximum and standard deviation) were used to analyse the variables. The Shapiro-Wilk test was used to assess the consistency of normal distribution of the variables with quantitative features. Due to no consistency of normal distribution of the variables, the Mann-Whitney U test was used when the grouping variable had two values and the Kruskal-Wallis test for analysis of a nominal variable of the grouping variable with a larger number of categories. In order to determine the differences between the groups, a chi-squared test was performed for nominal variables. Statistical significance for the presence of differences and the strength of correlation between the variables was set at $p < 0.05$.

RESULTS

Out of 151 subjects (69 women, 82 men), the mean age for women was significantly higher than in the case of men (72.83 ± 9.37 vs. 68.94 ± 7.27 years, $p = 0.01$). The marital status also differed significantly between the sexes, with more men being married (79.3% vs. 43.5%), but at the same time more women declaring being widowed (42.0% vs. 12.2%) and either single (8.7% vs. 4.9%) or divorced/separated (5.8%, vs. 3.7%, $p = 0.01$). The results of the analysis of living conditions differed significantly between the sexes, with twice as many women living alone (33.3% vs. 14.6%) or with children (17.4% vs. 6.1%), and the men more frequently living with their wives and children (42.7% vs. 15.9%), with their wives (32.9% vs. 30.4%), or with other people (3.7% vs. 2.9%, $p = 0.01$). The level of education also differed significantly between the sexes. Women had secondary (42.0% vs. 23.2%), higher (26.1% vs. 25.6%), or primary (11.6% vs. 9.8%) education, while among men the most common was vocational education (41.5% vs. 20.3%, $p = 0.02$).

The general indicator of health behaviour was significantly higher among women (88.78 ± 13.82 vs. 83.55 ± 12.93 ; $p = 0.01$). The analysis of health behaviour categories differed significantly between the sexes in: good eating habits, prophylactic behaviour – Table 1.

Good eating habits, which included the type of food consumed, were statistically significantly more frequently displayed by women than men, and covered: the amount of fruit and vegetables consumed, ensuring proper nutrition, avoiding eating salt and salty foods, and eating wholegrain bread. Prophylactic behaviour, which included following a doctor's recommendations and getting information about health and diseases, was significantly more frequent among women. There were no statistically significant differences between the sexes in positive attitude, which included avoiding strong emotions, stress, and tensions. In the health practices category, which included habits relating to sleep, recreation and physical activity, women significantly more frequently than men limited smoking tobacco – Table 2.

Table 1. Health behaviour categories among the study population

Health behaviour categories	Women	Men	P
	Mean \pm SD	Mean \pm SD	
Good eating habits	3.63 \pm 0.75	3.24 \pm 0.70	0.01
Prophylactic behaviour	3.78 \pm 0.73	3.47 \pm 0.68	0.01
Positive attitude	3.76 \pm 0.68	3.71 \pm 0.59	NS
Health practices	3.62 \pm 0.66	3.50 \pm 0.71	NS

SD – standard deviation, NS – not statistically significant, p value – for Mann-Whitney U test

Table 2. Health behaviour of the study population

Health behaviour	Mean \pm SD	Women	Men	P
		Mean \pm SD		
Good eating habits	I eat a lot of fruit and vegetables.	3.87 \pm 0.98	3.59 \pm 0.89	0.02
	I limit my intake of such food products as animal fats, sugar.	3.33 \pm 1.23	3.09 \pm 1.17	NS
	I ensure I'm well-nourished.	3.78 \pm 1.10	3.43 \pm 1.01	0.03
	I avoid eating food with preservatives.	3.55 \pm 1.25	3.17 \pm 1.37	NS
	I avoid salt and food with large amounts of salt.	3.70 \pm 1.30	3.02 \pm 1.24	0.01
	I eat wholegrain bread.	3.54 \pm 1.35	3.17 \pm 1.09	0.03
Prophylactic behaviour	I prevent colds.	3.96 \pm 1.08	3.77 \pm 1.07	NS
	I have the number for emergency medical services.	4.06 \pm 1.37	3.62 \pm 1.60	NS
	I follow the doctor's recommendations, which are based on my examinations.	4.30 \pm 0.97	4.13 \pm 1.03	NS
	I undergo medical examination regularly.	4.10 \pm 1.11	3.73 \pm 1.21	0.04
	I try to find out how others avoid diseases.	2.55 \pm 1.25	2.24 \pm 1.11	NS
	I try to get medical information and understand the causes of health and disease.	3.72 \pm 1.29	3.29 \pm 1.31	0.03
Positive attitude	I take the advice of people concerned with my health seriously.	3.45 \pm 1.30	3.41 \pm 1.12	NS
	I avoid depressing situations.	3.62 \pm 1.19	3.55 \pm 1.12	NS
	I try to avoid strong emotions, stressful situations, and tensions.	3.35 \pm 1.12	3.54 \pm 0.98	NS
	I have friends and a stable family life.	4.45 \pm 0.98	4.37 \pm 0.92	NS
	I avoid such feelings as anger, anxiety, and depression.	3.55 \pm 1.06	3.22 \pm 1.13	NS
	I think positive.	4.16 \pm 0.90	4.20 \pm 0.87	NS
Health practices	I have enough rest.	3.62 \pm 1.13	3.48 \pm 1.14	NS
	I avoid overworking myself.	3.22 \pm 1.22	3.30 \pm 1.19	NS
	I control my body weight.	3.04 \pm 1.36	2.74 \pm 1.31	NS
	I have enough sleep.	3.75 \pm 1.18	3.79 \pm 1.02	NS
	I avoid smoking tobacco.	4.67 \pm 0.95	4.18 \pm 1.39	0.01
	I avoid over-exertion.	3.43 \pm 1.09	3.51 \pm 1.11	NS

SD – standard deviation, NS – not statistically significant, p value – Mann-Whitney U test

The assessment of the state of nutrition of the elderly study population showed a risk of malnourishment in over half of the women studied, and malnourishment in men – Table 3.

Table 3. State of nutrition of the study population

Minimal nutritional assessment	Sex				P
	Women		Men		
	N	%	N	%	
Well-nourished	0	0.00	6	7.3	0.04
At risk of malnutrition	40	58.0	38	46.3	
Malnourished	29	42.0	38	46.3	

p value – Chi2 test

The study results did not show any significant differences between the general indicator of health behaviour and the assessment of the state of nutrition. A significant difference was shown between subjects with good eating habits and the assessment of the state of nutrition – Table 4.

Table 4. Health behaviour categories vs. state of nutrition

Health behaviour	Minimal Nutritional Assessment			P
	Well-nourished	At risk of malnutrition	Mal-nourished	
	Mean ± SD			
Good eating habits	2.75 ± 0.29	3.36 ± 0.77	3.55 ± 0.71	0.02
Prophylactic behaviour	3.33 ± 0.76	3.57 ± 0.76	3.68 ± 0.67	NS
Positive attitude	3.47 ± 0.39	3.71 ± 0.65	3.79 ± 0.62	NS
Health practices	3.72 ± 0.38	3.50 ± 0.70	3.61 ± 0.71	NS

p value – Kruskal-Wallis test

In good eating habits, significant difference was shown between subjects who ate a lot of fruit and vegetables and the assessment of the state of nutrition – Table 5.

Table 5. Good eating habits vs. state of nutrition

Good eating habits	Minimal Nutritional Assessment			P
	Well-nourished	At risk of malnutrition	Mal-nourished	
	Mean ± SD			
I eat a lot of fruit and vegetables.	2.83 ± 0.75	3.58 ± 0.93	3.96 ± 0.89	0.01
I limit my intake of such food products as animal fats, sugar.	2.50 ± 0.84	3.18 ± 1.25	3.28 ± 1.17	NS
I ensure I'm well-nourished.	3.33 ± 0.82	3.45 ± 1.08	3.78 ± 1.04	NS
I avoid eating food with preservatives.	2.17 ± 0.75	3.31 ± 1.34	3.49 ± 1.31	NS
I avoid salt and food with large amounts of salt.	3.00 ± 0.63	3.26 ± 1.32	3.45 ± 1.33	NS
I eat wholegrain bread.	2.67 ± 0.52	3.38 ± 1.32	3.34 ± 1.14	NS

p value – Kruskal-Wallis test

There were no statistically significant differences between the categories: detailed prophylactic behaviour, health practices and the assessment of the state of nutrition. The results of the assessment of the state of nutrition were significantly higher in subjects with positive attitude – Table 6.

Table 6. Positive attitude vs. state of nutrition

Positive attitude	Minimal Nutritional Assessment			P
	Well-nourished	At risk of malnutrition	Mal-nourished	
	Mean ± SD			
I take the advice of people concerned with my health seriously.	3.83 ± 0.98	3.56 ± 1.20	3.24 ± 1.21	NS
I avoid depressing situations.	3.50 ± 1.05	3.56 ± 1.17	3.61 ± 1.15	NS
I try to avoid strong emotions, stressful situations, and tensions.	3.50 ± 0.55	3.37 ± 1.11	3.54 ± 1.02	NS
I have friends and a stable family life.	4.00 ± 1.10	4.36 ± 0.94	4.49 ± 0.94	NS
I avoid such feelings as anger, anxiety, and depression.	2.83 ± 0.41	3.23 ± 1.10	3.58 ± 1.13	NS
I think positive.	3.17 ± 1.17	4.15 ± 0.88	4.30 ± 0.80	0.03

p value – Kruskal-Wallis test

The analysis of the correlation of the variables used in the study showed a positive effect of good eating habits on the state of nutrition, which indicates that the state of nutrition of the population studied improved when they began to develop good eating habits – Table 7.

Table 7. Health behaviour vs. state of nutrition

Health behaviour according to the Health Behaviour Inventory	Minimal Nutritional Assessment (in points)	
	R	p
Good eating habits	0.236	0.01

R – Spearman's rank correlation coefficient, p value – for chi2 test

Significant correlations were shown between pro-health behaviour and state of nutrition in the study group – Table 8.

Table 8. Health behaviour vs. state of nutrition

Health behaviour – detailed questions	Minimal Nutritional Assessment	
	R	p
I eat a lot of fruit and vegetables.	0.30	0.01
I ensure I'm well-nourished.	0.19	0.01
I avoid eating food with preservatives.	0.18	0.02
I have friends and a stable family life.	0.16	0.04
I have enough sleep.	0.16	0.04
I avoid such feelings as anger, anxiety, and depression.	0.17	0.03

R – Spearman's rank correlation coefficient, p value – Chi2 test

DISCUSSION

The general indicator for health behaviour determining the attitude towards health, and acquired during the course of life, was shown to be higher among women in our study population of subjects over 60 years old. These results are corroborated by the results reported by Juszczynski, who studied a population of adults [6], and Muszalik et al., who studied elderly residents of Białystok [8]. Moreover, a study by Smoleń et al. reported a high indicator of health behaviour among the elderly attending Third Age University lectures [9]. Individual health behaviour categories showed that women take better care of their health than men. Significant differences between the sexes were noted in good eating habits and prophylactic behaviour. In the present study and in the study by Smoleń et al. [9] prophylactic behaviour included: regular medical examinations, following a doctor's recommendations and broadening knowledge about the causes of health and diseases. The discrepancy between the sexes in health behaviour was also corroborated in a study by Sygit-Kowalkowska, where women were the group performing more pro-health activities than men in the good eating habits category [10]. In the study, the good eating habits followed more frequently by women were eating more fruit and vegetables and wholegrain bread, ensuring proper nutrition, and avoiding salt and salty food. Smoleń et al. also reported a high intake of wholegrain bread, fruit and vegetables as good eating habits among the elderly. Furthermore, the study showed that the elderly limit the intake of animal fats, carbohydrates, salt, and food with preservatives [9]. The diet of the elderly should consist of a proper amount of unrefined carbohydrates, cereals and pulses, as well as fresh fruit and vegetables. Regular intake of dairy products, fish, animal proteins and eggs is recommended in order to ensure the appropriate level of animal products [11]. The state of nutrition

affects the human body at every age, and in the elderly, due to their preferences and diseases experienced, often requires increased monitoring. The wrong diet and bad eating habits, lack of physical activity, lack of sleep, addictions (e.g. smoking cigarettes, excessive drinking) as well as lack of control over one's own health are factors which account for circulatory system diseases [3,5,11].

Moreover, the study showed that subjects with positive attitude had better results in the assessment of the state of health. Elderly subjects with positive attitude, stable family life and getting enough sleep had better results in the assessment of the state of health. The effects of positive attitude, including avoiding stressful situations, strong emotions, stress and tensions, and depressing situations, positive attitude and stable family life were shown among an elderly population in the study by Smoleń et al. [9]. In the study by Sygit-Kowalkowska, positive attitude was in a statistically significant relationship with being associated with a Social Home or a Third Age University [10].

CONCLUSIONS

1. Women take part in more pro-health activities, have higher health behaviour indicator scores and display a higher intensity of good eating habits and prophylactic behaviour than men.
2. Assessment of the state of nutrition of those elderly participants who ensure their proper nutrition, eat fruit and vegetables, and avoid food with preservatives was better.
3. Positive attitude is correlated with the assessment of the state of nutrition.
4. Well-nourished status can be observed among the elderly who have a positive attitude, avoid anger, anxiety and depression, and have friends and a stable family life.

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