The Profile of the Stable Coronary Artery Disease Patient –
Analysis of Pro-health Behaviors in Comparison with Healthy Individuals

Sylwetka pacjenta ze stabilną chorobą wieńcową –
analiza zachowań zdrowotnych w porównaniu do osób zdrowych

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ABSTRACT

Aim. The primary concern of the study was to compare pro-health behaviors in participants with stable coronary artery disease (SCAD), also known as stable ischemic heart disease (SIHD), and in healthy controls in order to improve the effectiveness of preventive measures in that group of patients.

Material & methods. The study comprised a total of 394 participants aged 18 to 88 years (mean age 49.5 ± 14.9 yrs), including 294 patients of the Cardiology Outpatient Clinic who were treated due to SCAD and 100 healthy controls. All participants were asked to complete the Health Behavior Inventory (HBI) by Juczyński. Moreover, the measurements of their body weight, height and waist and hip circumference were taken, and their BMI and WHR values were calculated. Finally, the risk for developing metabolic complications was assessed.

Results. Healthy body weight was discovered in 32.6% (n = 96) of cardiology patients and in 45.0% of controls. Abdominal obesity was more often found in cardiology patients (55.0%) than in controls (49.0%). Increased risk for obesity complications was disclosed in 60.2% of SCAD patients and in 37.0% of controls. Cardiology patients maintained health-related attitudes to a greater extent than controls on each subscale (p < 0.05).

Conclusions. Secondary prevention of coronary artery disease (CAD) should include both maximization of effective treatments and constant support of and encouragement for patients to reduce CAD risk factors and develop and implement pro-health behaviors.

Keywords: pro-health behaviors, stable coronary artery disease, stable ischemic heart disease

STRESZCZENIE

Cel badań. Celem pracy było porównanie zachowań zdrowotnych pacjentów ze stabilną chorobą wieńcową oraz osób zdrowych, co pozwoli na optymalizację działań profilaktycznych na rzecz pacjentów.

Materiał i metody. Badaniami objęto 394 osoby w wieku od 18 do 88 lat ($49,5 \pm 14,9$ lat), w tym 294 pacjentów Poradni Kardiologicznej, leczących się z powodu stabilnej choroby wieńcowej i 100 osób zdrowych. Posłużono się Inwentarzem Zachowań Zdrowotnych Juczyńskiego. Przeprowadzono pomiar masy, wysokości ciała, obwodu talii i bioder, obliczono wskaźnik BMI oraz WHR. Oszacowano ryzyko powikłań metabolicznych.

Wyniki. Prawidłową masę ciała miało 32,6% (n = 96) pacjentów kardiologicznych i 45,0% osób z grupy kontrolnej. Nadmierne gromadzenie tkanki tłuszczowej w okolicy brzucha obserwowano częściej u pacjentów kardiologicznych (55,0%) niż u osób zdrowych (49,0%). Podwyższone ryzyko powikłań otyłości obserwowano u 60,2% pacjentów z CAD i 37,0% osób zdrowych. Pacjenci z CAD w większym stopniu cechowali się pozytywnymi zachowaniami zdrowotnymi w każdej podskali, w porównaniu z osobami zdrowymi (p < 0,05).

Wnioski. W ramach prewencji wtórnej choroby wieńcowej istotna jest zarówno maksymalizacja efektywnego leczenia, jak i zakrojona na szeroką skalę promocja zwalczania czynników ryzyka i przyjęcia pozytywnych zachowań zdrowotnych.

Słowa kluczowe: zachowania zdrowotne, choroba niedokrwienna serca, stabilna choroba wieńcowa

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INTRODUCTION

Cardiovascular diseases (CVD) are the leading cause of death in many countries worldwide, accounting in Europe for over 4 mln deaths [1] and globally for more than 17.3mln deaths a year [2, 3]. Coronary artery disease (CAD) factors are a matter of separate statistics. The prevalence of CAD, also known as ischemic heart disease (IHD), increases with age, and it affects males twice as often as females [4]. It is estimated that annually 1.8 mln Europeans die because of CAD, which accounts for 20.0% of all deaths [1].

CAD risk factors are commonly known, and among others they include: hypercholesterolemia, tobacco use, hypertension, obesity, and a positive family history of heart-related disease. Elimination or reduction of the above factors may significantly improve patients' comfort of living, decrease the disease recurrence, and minimize the need for surgical interventions [5]. Preventive pro-health behaviors are considered to be some of the most important factors influencing human health [6].

The choice of pro-health behaviors is affected by many psychosocial factors, such as, e.g.: age, gender, place of living, education, family or external environment, and habits or psychological features [7]. Data concerning pro-health behaviors in CAD patients should make it possible to improve the effectiveness of preventive measures in that group of patients. The purpose of this research was to compare pro-health behaviors in SCAD patients and in healthy controls.

METHODS

Sample and Settings

The study comprised a total of 394 participants aged 18 to 88 years (mean age 49.5 ± 14.9 yrs), including 294 patients of the Cardiology Outpatient Clinic who were treated for SCAD and 100 healthy controls. Family members of cardiac patients who declared no chronic diseases in the interview were included in the control group. Individuals with whom it was impossible to communicate effectively were excluded from the survey. All respondents were informed about the aim of the survey, voluntary participation in it, and full anonymity, and they were instructed on how to complete the questionnaire form. The study was conducted from December 2014 to January 2015 in Tarnow (Malopolska Region, Poland). The study was conducted according to the principles for professional ethics and good research practice stated in the Declaration of Helsinki.

Measures

The diagnostic survey incorporating the Health Behavior Inventory by Juczyński was used. The above tool contained 24 health-related behavior statements, classified within the following four categories: healthy eating habits (HEH), preventive behaviors (PB), pro-health practices (PHP), and positive attitude (PA). Participants rated the relevance of these statements on the five-point Likert scale. The mean score in health-related behaviors fell between 24 and 120 points, and a higher score denoted greater prevalence of such behavior types. The general score, given in standardized units, was returned in sten scores. The sten score of between 1 and 4 was considered low, between 5 and 6 moderate, and between 7 and 10 high [8].

Moreover, measurements of participants' body height, body weight, and waist and hip circumference were taken. In each case, they were taken by the same person, in the same order, and by means of the same devices. Body weight was measured within 0.1 kg on the Tanita scales (participants were measured undressed to their underwear), whereas body height was measured within 1 mm by means of a stadiometer. Participants were asked to stand erect on the floor board of the stadiometer with the heels of their feet together and the head maintained in the Frankfort Horizontal Plane position. The waist circumference was measured at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest, when exhaled and with relaxed abdomen, without sucking it in. The hip circumference was measured around the widest portion of the gluteal muscles. All the measurements were taken twice, using approved devices in order to minimize the incidence of errors. Then the Body Mass Index (BMI) and the Waist-to-Hip Ratio (WHR) were calculated, taking into account the WHO criteria, according to which obesity is recognized in adults at BMI $\geq 30.0 kg/m^2$. It was also accepted that WHR should be smaller than 0.8 for females and 0.9 for males. Higher ratios than the above-mentioned referred to android fat distribution (fat around the trunk and upper body), whereas lower ones to gynoid fat distribution (fat around the hips and bottom) [9]. The risk for developing metabolic complications was assessed on the basis of the waist circumference (≥ 80 cm for females and ≥ 94 cm for males) [10].

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Data analysis

Statistical data analysis was conducted by means of the SPSS 20 software. The equality of variances was calculated using the F-test. Basic descriptive statistics and the U Mann-Whitney test were incorporated to describe the results achieved. Differences were considered significant at $p < 0.05$.

RESULTS

Analysis of somatic traits

Cardiology patients and controls did not significantly differ in their age and body height. Cardiology patients were considerably heavier (5.13 kg difference), had higher BMI (2.16 kg/m² difference), greater waist circumference (7.23 cm difference), smaller hip circumference (7.28 cm difference), and greater WHR (0.05 difference) than controls (Table I).

A total of 32.6% (n = 96) of cardiology patients and 45.0% (n = 45) of controls had healthy weight. Overweight was discovered in 33.0% (n = 97) and in 43.0% (n = 43), whereas obesity in 34.4% (n = 113) and in 12.0% (n = 12) of participants respectively. Excessive body weight was more often found in male cardiology patients and in female controls (Table II).

Android fat distribution was observed more often in cardiology patients (n = 162; 55.0%), but controls also showed almost identical tendency for fat distribution around the abdomen or the hips. In both groups, females were more prone to android fat distribution. A higher risk for developing obesity complications based on the waist circumference was observed in 60.2% (n = 177) of cardiology patients and in 37.0% (n = 37) of controls. In cardiology patients, a higher risk for obesity complications was more typical of males, whereas in controls of females (Table III).

Table I. Comparison of selected variables (nonparametric U Mann-Whitney test; differences significant for p<0.05)
Tabela I. Porównanie wybranych zmiennych (nieparametryczny test U Manna-Whitneya, różnice istotne dla p<0,05)

Variable	Control group Mean±SD	Median	Cardiology patients Mean±SD	Median	p
Age [years]	48.48±10.76	46.00	49.89±16.05	53.00	0.2
Body weight [kg]	74.77±10.02	76.00	79.90±16.05	78.00	0.03*
Body height [cm]	169.85±8.26	168.00	168.41±8.87	168.00	0.3
BMI [kg/m²]	25.98±3.52	25.53	28.14±5.64	27.37	0.002*
Waist circumference [cm]	84.69±11.16	82.00	91.62±14.55	92.00	0.000002*
Hip circumference [cm]	109.16±10.92	96.00	101.88±11.85	102.00	0.002*
WHR	0.85±0.11	0.86	0.90±0.11	0.90	0.00009*

*statistically significant difference

Table II. Participants' nutritional status (males vs. females)
Tabela II. Stan odżywienia badanych (mężczyźni vs. kobiety)

Group	Gender	Healthy body weight n (%)	Overweight n (%)	Obesity n (%)	Row totals n (%)
Control	Females	24 (38.71%)	30 (48.39%)	8 (12.90%)	62 (100%)
	Males	21 (55.26%)	13 (34.21%)	4 (10.53%)	38 (100%)
	All	45 (45.00%)	43 (43.00%)	12 (12.00%)	100 (100%)
Cardiology	Females	62 (37.35%)	50 (30.12%)	54 (32.53%)	166 (100%)
	Males	34 (26.56%)	47 (36.72%)	47 (36.72%)	128 (100%)
	All	96 (32.65%)	97 (32.99%)	101 (34.35%)	294 (100%)
Column total		141 (35.79%)	140 (35.53%)	113 (28.68%)	394 (100%)

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Table III. Fat tissue distribution (WHR) and risk for obesity complications based on waist circumference
Tabela III. Rozkład tkanki tłuszczowej (WHR) i ryzyko powikłań otyłości w oparciu o obwód talii

Group / Gender	Control			Cardiology			Column total n (%)
	Females n (%)	Males n (%)	All n (%)	Females n (%)	Males n (%)	All n (%)	
Fat tissue distribution							
Excess fat in the abdominal region	43 (69.4%)	6 (15.8%)	49 (49.0%)	117 (70.5%)	45 (35.2%)	162 (55.1%)	211 (53.5%)
Excess fat in the hips region	19 (30.6%)	32 (84.2%)	51 (51.0%)	49 (29.5%)	83 (64.8%)	132 (44.9%)	183 (46.5%)
Row totals	62 (27.2%)	38 (22.9%)	100 (100.0%)	166 (72.8%)	128 (77.1%)	294 (100.0%)	394 (100.0%)
Risk for obesity complications							
No risk for complications	33 (53.2%)	30 (79.0%)	63 (63.0%)	68 (41.0%)	49 (38.3%)	117 (39.8%)	180 (45.7%)
Risk for complications	29 (46.8%)	8 (21.1%)	37 (37.0%)	98 (59.0%)	79 (61.7%)	177 (60.2%)	214 (54.3%)
Row totals	62 (27.2%)	38 (22.9%)	100 (100.0%)	166 (72.8%)	128 (77.1%)	294 (100.0%)	394 (100.0%)

Analysis of the Health Behavior Inventory scores

a) eating habits

As much as 6.0% of controls and 26.5% of cardiology patients normally cultivated healthy eating habits. A total of 49.0% of controls and 32.3% of SCAD patients very often followed a healthy eating plan, whereas 1.0% and 4.4% of participants respectively did not care about healthy eating at all. Nearly 60.0% of all participants from both groups frequently or normally ate vegetables and fruits, while 11.0% of controls and 9.2% of cardiology patients ate vegetables and fruits extremely rarely or never. A total of 37.0% of controls and 48.0% of cardiology patients acknowledged that they generally or often reduced animal fat and sugar intake, and 3.0% and 8.2% of participants respectively never cut down on the above food products. As much as 24.8% of cardiology patients and 8.0% of controls normally avoided salt in their diet, whereas 31.3% and 35.0% of participants respectively often reduced their salt intake. On the other hand, 5.1% of cardiology patients and 2.0% of controls did not care about their salt intake. Wholemeal bread was always or frequently eaten by 53.0% of controls and by 52.7% of cardiology patients, whereas 7.0% and 6.8% of participants respectively never ate that kind of bread. A total of 41.0% of controls and 51.4% of cardiology patients habitually or mostly avoided food products containing preservatives. As a rule, only 1.0% of controls and 8.2% of cardiology patients did not care at all about the content of additives and preservatives in their food products (Table IV).

b) preventive behaviors

SCAD patients tried to avoid catching colds to a greater extent than controls. A total of 45.9% of cardiology patients, i.e. nearly half of them, and 36.0% of controls almost always or frequently avoided catching colds. A greater proportion of all participants, i.e. 74.8% of cardiology patients and 61.0% of controls, always had ambulance service emergency contacts with them. It was discovered that, on balance, sick persons usually went for regular medical check-ups three times more often than healthy members of the society. In our study, a total of 5.1% of SCAD patients and 15.0% of controls conceded that they did not have regular check-ups at all. As much as 83.0% of cardiology patients and only 57.0% of controls admitted that they conscientiously followed doctors' health-related recommendations. Nearly 60.0% of cardiology patients and 51.0% of controls conceded that they often or extremely often searched for information about their disease and its underlying mechanisms. Knowing how other people avoided illnesses or diseases was extremely important for 12.5% of cardiology patients and for 8.0% of controls, and it was totally ignored by 13.0% and 17.0% of participants respectively (Table V).

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Table IV. Eating habits in cardiology patients and in controls (nonparametric U Mann-Whitney test; differences significant for p<0.05)

Tabela IV. Nawyki żywieniowe pacjentów grupy kardiologicznej i grupy kontrolnej (nieparametryczny test U Manna-Whitneya, różnice istotne dla p<0,05)

Variable / Group	Never n (%)	Rarely n (%)	Occasionally n (%)	Often n (%)	Always n (%)	p
I eat a lot of vegetables and fruits						
Control	0 (0.0%)	11 (11.0%)	26 (26.0%)	44 (44.0%)	19 (19.0%)	.65994
Cardiology	10 (3.4%)	17 (5.8%)	92 (31.3%)	123 (41.8%)	52 (41.8%)	
I reduce animal fat and sugar intake						
Control	3 (3.0%)	27 (27.0%)	33 (33.0%)	32 (32.0%)	5 (5.0%)	.00782*
Cardiology	24 (8.2%)	49 (16.7%)	68 (23.1%)	87 (25.6%)	66 (22.5%)	
I take care of healthy nutrition						
Control	1 (1.0%)	13 (13.0%)	31 (31.0%)	49 (49.0%)	6 (6.0%)	.0466*
Cardiology	13 (4.4%)	32 (10.9%)	76 (25.9%)	95 (32.3%)	78 (26.5%)	
I avoid food products with additives and preservatives						
Control	1 (1.0%)	27 (27.0%)	31 (31.0%)	34 (34.0%)	7 (7.0%)	.07186
Cardiology	24 (8.2%)	56 (19.1%)	63 (21.4%)	81 (27.6%)	70 (23.8%)	
I avoid salt and salted food products						
Control	2 (2.0%)	20 (20.0%)	35 (35.0%)	35 (35.0%)	8 (8.0%)	.02088*
Cardiology	15 (5.1%)	51 (17.4%)	63 (21.4%)	92 (31.3%)	73 (24.8%)	
I eat wholemeal bread						
Control	7 (7.0%)	13 (13.0%)	27 (27.0%)	27 (27.0%)	26 (26.0%)	.97606
Cardiology	20 (6.8%)	36 (12.2%)	83 (28.2%)	79 (26.9%)	76 (25.9%)	

* statistically significant difference

c) pro-health practices

One in ten cardiology patients and one in four controls did not make any efforts to avoid tobacco use. A total of 75.6% of cardiology patients and 60.0% of controls did not smoke at all. Body weight was frequently or usually controlled by 61.6% of SCAD patients and 57.0% of controls. Cardiology patients more often acknowledged that they avoided excessive physical effort or overwork, but at the same time, more than half of them did not devote enough time to relaxation during the day. Only one third of controls complained that they did not rest long enough during the day. One in three cardiology patients and one in ten controls admitted that they always slept long enough; however, it was controls who grumbled that they did not sleep long enough (Table VI).

d) positive mental attitude

A similar proportion of cardiology patients and controls always followed health-related recom-

mendations of persons who cared about their state of health (60.0% vs. 61.2%). Daily positive thinking was mentioned by one third of all participants from both groups, whereas 1.0% of cardiology patients and 1.0% of controls never thought positively. It is known that cardiology patients try to avoid stress and negative emotions. In our study, over 90.0% of controls and more than 80.0% of cardiology patients had good relations with their families and friends, while bad relations with relatives were rather scarce in both groups (Table VII).

Interpretation of the Health Behavior Inventory scores in cardiology patients and controls

Based on the HBI scores analysis, it was discovered that SCAD patients conscientiously observed preventive care guidelines (mean score 22.74±4.56 pts), cultivated a positive attitude (mean score 22.56±4.20 pts), and maintained healthy eating habits (mean score 21.18±4.80 pts) and pro-health

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Table V. Pro-health behaviors in cardiology patients and in controls (nonparametric U Mann-Whitney test; differences significant for p<0.05)

Tabela V. Zachowania profilaktyczne pacjentów grupy kardiologicznej i grupy kontrolnej (nieparametryczny test U Manna-Whitneya, różnice istotne dla p<0,05)

Variable / Group	Never n (%)	Rarely n (%)	Occasionally n (%)	Often n (%)	Always n (%)	p
I avoid catching colds						
Control	19 (19.0%)	14 (14.0%)	31 (31.0%)	21 (21.0%)	15 (15.0%)	.0048*
Cardiology	22 (7.5%)	58 (19.7%)	79 (26.9%)	88 (29.9%)	47 (16.0%)	
I carry ambulance emergency services contacts on me						
Control	0 (0.0%)	3 (3.0%)	7 (7.0%)	29 (29.0%)	61 (61.0%)	.71884
Cardiology	29 (9.9%)	9 (3.1%)	20 (6.8%)	16 (5.4%)	220 (74.8%)	
I follow doctor's guidelines and recommendations						
Control	5 (5.0%)	8 (8.0%)	30 (30.0%)	42 (42.0%)	15 (15.0%)	<.00001*
Cardiology	3 (1.0%)	15 (5.1%)	32 (10.9%)	88 (29.9%)	156 (53.1%)	
I regularly go for medical check-ups						
Control	15 (15.0%)	13 (13.0%)	40 (40.0%)	19 (19.0%)	13 (13.0%)	<.00001*
Cardiology	15 (5.1%)	30 (10.2%)	47 (16.0%)	65 (22.1%)	137 (46.6%)	
I try to find out how others avoid illnesses and diseases						
Control	17 (17.0%)	13 (13.0%)	33 (33.0%)	29 (29.0%)	8 (8.0%)	.71884
Cardiology	37 (12.6%)	66 (22.5%)	73 (24.8%)	83 (28.2%)	35 (12.3%)	
I search for information and try to understand mechanisms of my disease						
Control	0 (0.0%)	11 (11.0%)	38 (38.0%)	37 (37.0%)	14 (14.0%)	.1031
Cardiology	8 (2.7%)	41 (14.0%)	70 (23.8%)	90 (30.6%)	85 (28.9%)	

* statistically significant difference

behaviors (mean score 21.12±4.38 pts). The overall HBI score was 87.61 (±14.20 pts) out of a total of 120 points, which – when returned as sten scores – referred to a high score (sten between 7 and 10).

Controls achieved the highest scores on the sub-scale of positive attitude (mean score 20.76±3.60 pts) and slightly lower scores on the subscales of preventive behavior (mean score 20.46±4.50 pts), healthy eating habits (mean score 20.22±3.96pts), and pro-health practices (mean score 17.64±4.14 pts). The general HBI score of controls equaled 79.06 points (±12.62 pts), which was interpreted as a mean score (sten between 5 and 6).

The study revealed statistically significant differences in pro-health practices in SCAD patients and controls. Cardiology patients demonstrated pro-health behaviors to a greater extent than controls on each subscale; moreover, on balance, they scored higher in HBI (p<0.05) (Table VIII).

DISCUSSION

It is known that due to a high risk for clinical complications, secondary prevention targeted at developing and implementing pro-health behaviors plays an important role in the care of CAD patients [11]. Based on the studies conducted in Turkey among post-myocardial infarction patients, it was revealed that individual pro-health guidelines positively affected health-related behaviors in that group under research, i.e. those patients avoided tobacco use, increased their physical activity, and lost excessive body weight [12]. The study by Stryczyński et al. also revealed a positive impact of pro-health encouragement on post-myocardial infarction patients who were interviewed about their CAD risk factors and who followed health-related recommendations on how to change their lifestyle. Twelve months after their hospitalization, their pro-health

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Table VI. Pro-health behaviors in cardiology patients and in controls (nonparametric U Mann-Whitney test; differences significant for p<0.05)

Tabela VI. Praktyki zdrowotne pacjentów grupy kardiologicznej i grupy kontrolnej (nieparametryczny test U Manna-Whitneya, różnice istotne dla p<0,05)

Variable Group	Never n (%)	Rarely n (%)	Occasionally n (%)	Often n (%)	Always n (%)	p
I relax long enough during the day						
Control	7 (7.0%)	26 (26.0%)	44 (44.0%)	19 (19.0%)	4 (4.0%)	.00048*
Cardiology	9 (30.6%)	62 (21.1%)	94 (32.0%)	83 (28.2%)	46 (15.7%)	
I avoid overworking						
Control	14 (14.0%)	35 (35.0%)	32 (32.0%)	19 (19.0%)	0 (0.0%)	.00022*
Cardiology	22 (7.5%)	77 (26.2)	91 (31.0)	58 (19.7)	46 (15.6)	
I control my body weight						
Control	5 (5.0%)	8 (8.0%)	30 (30.0%)	42 (42.0%)	15 (15.0%)	.07508
Cardiology	8 (2.7%)	35 (11.9%)	70 (23.8%)	91 (31.0%)	90 (30.6%)	
I sleep long enough						
Control	10 (10.0%)	17 (17.0%)	39 (39.0%)	24 (24.0%)	10 (10.0%)	<.00001*
Cardiology	5 (1.7%)	33 (11.2%)	68 (23.1%)	91 (31.0%)	97 (33.0%)	
I avoid tobacco smoking						
Control	23 (23.0%)	8 (8.0%)	6 (6.0%)	3 (3.0%)	60 (60.0%)	.00634*
Cardiology	29 (9.9%)	8 (2.7%)	19 (6.5%)	15 (5.1%)	223 (75.9%)	
I avoid excessive physical effort						
Control	16 (16.0%)	40 (40.0%)	28 (28.0%)	14 (14.0%)	2 (2.0%)	<.00001*
Cardiology	24 (8.2%)	61 (20.8%)	74 (25.2%)	77 (26.2%)	58 (19.7%)	

* statistically significant difference

behaviors were assessed again. The results of the analysis demonstrated that regular blood pressure measurements were made by 72.8% of patients, and that 96.6% of them admitted that they took hypotension drugs, while 100.0% acknowledged that they were on anti-diabetic medications. Moreover, 75.0% of them declared that they took appropriate measures to change their lifestyles, 87.5% adopted healthy eating habits, and 59.4% did regular physical activities [13].

The risk for developing CAD falls quite rapidly after discontinuing smoking, and within a year from doing so it diminishes by half [14]. On the other hand, recommendations concerning the influence of reducing excessive body weight on the risk for developing cardio-vascular diseases point out that it is not the amount of body weight reduction but its long-lasting effects that are of greater importance [15]. The results of our research showed, among others, that a straight majority of cardiology patients

did not smoke tobacco and a considerable proportion of them often or very often cared for healthy body weight. CAD patients cultivated more pro-health behaviors than controls.

The study by Kowalski et al. revealed that nearly 70.0% of CAD patients admitted that they followed the CAD preventive guidelines, whereas 20.0% of them conceded that they did not observe any preventive care recommendations. However, it turned out that in fact only one person in that group followed the regime of a healthy eating plan [16]. The above findings reveal that the knowledge about preventive measures against cardio-vascular diseases declared by patients differs from their normal habits, including eating habits. This clearly demonstrates that extensive and systematic pro-health counseling should constantly be conducted.

The cross-sectional studies among CAD patients conducted by Kang et al. revealed that elderly patients with higher education followed pro-health

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Table VII. Mental attitude in cardiology patients and in controls (nonparametric U Mann-Whitney test; differences significant for p<0.05)

Tabela VII. Nastawienie psychiczne pacjentów grupy kardiologicznej i grupy kontrolnej (nieparametryczny test U Manna-Whitneya, różnice istotne dla p<0,05)

Variable Group	Never n (%)	Rarely n (%)	Occasionally n (%)	Often n (%)	Always n (%)	p
I seriously treat health-related recommendations of persons worried about my state of health						
Control	1 (1.0%)	3 (3.0%)	7 (7.0%)	29 (29.0%)	60 (60.0%)	<.00001*
Cardiology	6 (1.5%)	13 (4.4%)	35 (11.9%)	60 (20.4%)	180 (61.2%)	
I avoid depressing situations						
Control	7 (7.0%)	12 (12.0%)	34 (34.0%)	40 (40.0%)	7 (7.0%)	.00062*
Cardiology	14 (4.8%)	47 (16.0%)	88 (29.9%)	90 (33.6%)	55 (18.7%)	
I avoid stressful situations						
Control	5 (5.0%)	29 (29.0%)	34 (34.0%)	24 (24.0%)	8 (8.0%)	.00278*
Cardiology	11 (3.7%)	58 (18.0%)	87 (29.6%)	99 (33.7%)	44 (15.0%)	
I have good relations with my family and friends						
Control	0 (0.0%)	2 (2.0%)	6 (6.0%)	28 (28.0%)	64 (64.0%)	.4654
Cardiology	5 (1.7%)	9 (3.1%)	33 (11.2%)	65 (22.1%)	182 (61.9%)	
I avoid negative emotions						
Control	7 (7.0%)	16 (16.0%)	33 (33.0%)	39 (39.0%)	5 (5.0%)	.06576
Cardiology	13 (4.4%)	45 (15.3%)	87 (29.6%)	99 (33.7%)	50 (17.0%)	
I think positively						
Control	1 (1.0%)	11 (11.0%)	17 (17.0%)	38 (38.0%)	33 (33.0%)	.52218
Cardiology	3 (1.0%)	20 (6.8%)	57 (19.4%)	108 (36.7%)	206 (36,1%)	

* statistically significant difference

Table VIII. Pro-health behaviors in cardiology patients and in controls

Tabela VIII. Zachowania zdrowotne pacjentów grupy kardiologicznej i grupy kontrolnej

Categories of pro-health behaviours	Group	M±SD	Me	Z	p
HEH	Cardiology	21.18 ± 4.82	22.00	2.02	.043*
	Control	20.24 ± 3.98	21.00		
PB	Cardiology	22.74 ± 4.58	23.00	4.59	<.001*
	Control	20.43 ± 4.48	21.00		
PA	Cardiology	22.52 ± 4.01	22.00	4.04	<.001*
	Control	20.75 ± 3.60	21.00		
PHP	Cardiology	21.15 ± 4.38	21.00	6.50	<.001*
	Control	17.64 ± 4.12	18.00		
HBI GENERAL SCORE	Cardiology	87.59 ± 14.17	88.00	5.30	<.001*
	Control	79.06 ± 12.62	80.00		

M – mean; ±SD – standard deviation; Me – median; Z – U Mann-Whitney test; * statistically significant difference

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guidelines to a greater extent. Moreover, non-smoking persons fully convinced of the effectiveness of their own behavior and those who took part in pro-health counseling sessions were more health conscious [17]. The above-mentioned analysis once again emphasized the role of health guidance and counseling in developing pro-health behaviors. Our study focused on the analysis of pro-health behaviors in healthy controls and in cardiology patients, but it did not assess factors which affected them.

The above results show that the prevalence ratio of pro-health behaviors in SCAD patients calculated in standard units was within the range between sten scores 7 and 10, i.e. high. Szkup et al. also discovered such a high score in patients qualified for a cardiac surgery, and the scores achieved by participants in our study on average equaled 88.69 points (± 12.63) [18]. On the other hand, participants in the study conducted by Kózka et al., who examined the quality of life and pro-health behaviors in geriatric patients treated for SCAD, achieved average scores [19].

CONCLUSIONS

A better knowledge of pro-health behaviors in CAD individuals should help optimize the effectiveness of preventive measures in that group of patients. Both the results of our study and the results achieved by other researchers revealed that secondary CAD prevention should focus on obtaining and implementing the most effective treatments, and encouraging patients to reduce CAD risk factors and implement the best pro-health recommendations and guidelines.

REFERENCES

[1] Nichols M., Townsend N., Scarborough P. et al: Cardiovascular disease in Europe 2014: epidemiological update. Eur Heart J. 2014; 35(42): 2950-2959.

[2] Mendis S., Puska P., Norrving B. (eds.). Global Atlas on Cardiovascular Disease Prevention and Control. World Health Organization, Geneva 2011.

[3] Smith S.C, Collins A., Ferrari R., et al: Our time: a call to save preventable death from cardiovascular disease (heart disease and stroke). J Am Coll Cardiol. 2012; 60(22): 2343-2348.

[4] Mozaffarian D., Benjamin E.J., Go A.S. et al: Heart disease and stroke statistics - 2015 update: a report from the American Heart Association. Circulation. 2015; 131(4): e29-322.

[5] Yusuf S., Hawken S., Ounpuu S. et al. INTERHEART Study Investigators Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): Case-control study. Lancet. 2004; 364: 937-952.

[6] Fisher E.B., Fitzgibbon M.L., Glasgow R.E. et al.: Behavior Matters. Am J Prev Med. 2011; 40(5): e15–e30.

[7] Kluczyńska U.: Styl życia. Główne podejścia i perspektywy badawcze. In: Cylkowska-Nowak M. (ed.): Edukacja zdrowotna. Możliwości, problemy ograniczenia. Wyd. AM, Poznań 2008.

[8] Juczyński Z.: Narzędzia pomiaru w promocji i psychologii zdrowia. Warszawa: Wyd. Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego; Warszawa 2009: 117-122.

[9] Wasowski M., Walicka M., Marcinowska-Suchowierska E.: Obesity – definition, epidemiology, pathogenesis. Post Nauk Med 2013 ;4: 301-306.

[10] Derosa G., Salvadeo S.A.T.: NCEP ATP III Metabolic Syndrome Definition Easiest for Use in Practice. Rev of Endocrinology 2007; I:1-5.

[11] Hall S.C, Lorenc T.: Secondary Prevention of Coronary Artery Disease. Am Fam Physician. 2010; 81(3): 289-296.

[12] Uysal H., Ozcan S.: The effect of individual training and counselling programme for patients with myocardial infarction over patients' quality of life. Int J Nurs Pract 2012, 18: 445-453.

[13] Stryczynski L., Duszynska M., Jedlinski I i wsp.: Zmiany zachowań prozdrowotnych chorych w rok po przebytym ostrym zespole wieńcowym. Pol Arch Med Wewn 2006; CXVI (5)11: 1039-1043.

[14] U.S. Department of Health and Human Services: How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General. Atlanta 2010.

[15] Jensen M.D., Ryan D.H., Apovian C.M. et al.: 2013 AHA/ACC/TOS Guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. Circulation. 2014: 129(25 Suppl 2): S102-38.

[16] Kowalski J., Kos M., Gburek J. i wsp.: Risk factors and coronary heart disease prevention in selected Lodz population-Part I-II. Pol Merk Lek 2005; 19(114): 743-753.

[17] Kang Y, Yang I-S, Kim N.: Correlates of Health Behaviors in Patients with Coronary Artery Disease. Asian Nursing Research 2010; 4(1):45-55.

[18] Szkup M., Starczewska M., Skotnicka I. i wsp.: Ocena zachowań zdrowotnych pacjentów zakwalifikowanych do zabiegu kardiochirurgicznego. Fam Med Prim Care Rev 2014; 16: 169–171.

[19] Kózka M., Majda A., Kula A.: Ocena jakości życia i zachowań zdrowotnych pacjentów ze stabilną chorobą wieńcową w wieku geriatrycznym. Probl Piel 2013; 21: 433-442.

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Neighbourhood environment and overweight and obesity prevalence among local residents: A review of literature

Okolica miejsca zamieszkania a występowanie nadwagi i otyłości wśród mieszkańców: przegląd piśmiennictwa

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ABSTRACT

The built environment, which refers to human-made or modified features of the physical neighbourhood, such as homes, schools, workplaces, or parks and recreational areas, undoubtedly has a great impact on our lifestyles and health behaviours.

The objective of this paper is a review of the literature on the correlations between neighbourhood environment and weight status of local residents. This paper presents factors in the built environment which may be related to overweight and obesity prevalence among local residents, resulting in changes in energy balance and affecting BMI. The focus is especially on the relationship between the distance from home to parks and green spaces and physical activity levels, and between the access to fast food restaurants and BMI status or obesity prevalence among residents. The results of recent studies are inconsistent, primarily because of several limitations and methodological problems, and due to multifactorial and complex relationships between the built environment and lifestyle. However, with the still unsolved problem of the increasing prevalence of overweight and obesity, even small changes in individual health behaviour may be important and have a positive impact on the reduction in BMI over time.

Therefore, all activities aimed at shaping neighbourhood environments in ways which facilitate healthy food choices and create opportunities for as well as encourage physical activity should be supported.

Key words: neighbourhood, health behaviours, BMI, obesity

STRESZCZENIE

Zurbanizowane środowisko, obejmujące stworzone lub przekształcone przez człowieka elementy środowiska fizycznego, takie jak dom, szkoła, miejsce pracy, czy parki i tereny rekreacyjne, bez wątpienia ma duży wpływ na styl życia i zachowania zdrowotne.

Celem pracy jest przegląd piśmiennictwa na temat zależności między środowiskiem miejsca zamieszkania a masą ciała okolicznych mieszkańców. Opisano potencjalny związek między występowaniem nadwagi i otyłości a elementami zabudowy lokalnego środowiska, które poprzez zmiany w bilansie energetycznym mogą wpływać na BMI mieszkańców. Uwzględniono w szczególności zależność między odległością parków i terenów zielonych od domu a poziomem aktywności fizycznej oraz dostępnością restauracji typu fast-food a masą ciała lub występowaniem otyłości wśród mieszkańców. Wyniki ostatnich badań nie są jednoznaczne, przede wszystkim z powodu szeregu problemów metodologicznych oraz wieloczynnikowych i złożonych zależności pomiędzy zabudową środowiska a stylem życia. Jednakże, ze względu na coraz częstsze występowanie nadwagi i otyłości, nawet niewielkie zmiany indywidualnych zachowań zdrowotnych mogą być ważne i pozytywnie wpływać na redukcję BMI z upływem czasu.

W związku z powyższym, należy wspierać wszystkie działania na rzecz kształtowania lokalnego środowiska, które ułatwiają dokonywanie zdrowych wyborów żywieniowych oraz stwarzają możliwości i zachęcają do podejmowania aktywności fizycznej.

Słowa kluczowe: środowisko sąsiedzkie, zachowania zdrowotne, BMI, otyłość