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## Evaluation of health behaviour of patients with arterial hypertension and its selected predispositions

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### Abstract

**Introduction.** Arterial hypertension is a valid modifiable risk factor of the circulatory system diseases. The aim of this study was to evaluate the health behaviour of patients with arterial hypertension and its selected predispositions.

**Material and methods.** The study was conducted in the Cardiology Department of the Clinical Hospital no. 4 in Lublin, the Cardiology Department of no. 1 Military Hospital in Lublin and Cardiology Department of Public Clinical Hospital no. 1 in Lublin. In the study the diagnostic survey of the Inventory of Health Behaviour (Inwentarz Zachowań

Zdrowotnych, IZZ) by Juczynski Z. was used. The patients' body mass and height BMI (Body Mass Index) for each of them was calculated.

**Results of the study.** The patients with arterial hypertension most often declare a high level of health behaviour. The research subjects show more beneficial health behaviour in the areas of preventative actions, health practices and positive mental attitude than in the healthy eating habits domain.

**Conclusions.** BMI index does not differentiate the level of healthy eating practices and preventative actions. However, the level of health practices is significantly higher among people diagnosed with excess weight and obesity. It is an optimistic attitude to life that influences health behaviour positively rather than realistic and pessimistic attitude. The placement of the health assessment responsibility is linked to the mental attitude of the studied patients.

**Keywords:** health behaviour, arterial hypertension

## **Introduction**

Arterial hypertension constitutes an important health problem of the modern society as it is one of the most widespread diseases and one of the most important risk factors of cardiovascular diseases. It is estimated that the frequency of the disease occurrence increases with age and that it is about 30-45% among the general population [9]. Modifying the way of life is the foundation for arterial hypertension treatment. Non-pharmacological treatment is a cheap, safe and almost devoid of side effects strategy of treatment. The implementation of even minor changes allows arterial pressure normalisation, increase in the pharmacotherapy effectiveness, decrease in doses of antihypertensive medicine and probably decrease in cardiovascular complications, and counteracts the development of the hypertensive diseases among people who are genetically loaded [12].

The aim of the following study was to get to know the health behaviour of the patients with arterial hypertension and its selected predispositions.

## **Material and methods**

The research was conducted on 120 people suffering from arterial hypertension. The studied group consisted of people undergoing outpatient treatment who attended regular planned

doctor's appointments. The study was conducted in the Cardiology Department of the Clinical Hospital no. 4 in Lublin, the Cardiology Department of no. 1 Military Hospital in Lublin and the Cardiology Department of Public Clinical Hospital no. 1 in Lublin. The Bioethical Commission at the Medical University in Lublin issued an approval to conduct this study (KE-0254/78/2016).

In the study a diagnostic poll method was used. The research tool used in the study was the Inventory of the Health Behaviour (Inwentarz Zachowań Zdrowotnych, IZZ) by Zygfryd Juczynski [3], the questionnaire of assessment of health behaviour considerations and BMI (Body Mass Index).

The obtained results were submitted for statistical analysis. Mean, median and standard deviation indices were used to assess the measurable parameters. The analysed non-measurable parameters were presented in the form of count and proportion. Shapiro-Wilk W test was used in order to analyse the normality of the distribution of the assessed measurable parameters. Mann-Whitney Test U (Z) was used to compare two independent groups. In order to compare multiple groups Kruskal-Wallis (H) test was utilised. The chi squared homogeneity test was used for the unrelated qualitative characteristics in order to determine the differences between the compared groups. The chi squared independence test was used to evaluate the existence of relationships between the analysed characteristics. The level of statistical significance was established at  $p < 0.05$ . The given level of significance reflects the occurrence of statistically important differences or relationships. The statistical analysis of the obtained data was conducted using STATISTICA 12.0 (StatSoft, Poland) computer software.

### **The characteristics of the studied group**

The study was conducted among 120 people who were from 42 to 93 years old. The mean age was  $69.90 \pm 9.88$  years. Research subjects who were younger than 65 constituted 30.00% (n = 36) of the whole group, both groups 66-70 and 71-75 constituted 21.67% (n = 26), and people older than 75 constituted 26.66% of the group. The majority of the respondents - 51.67% (n = 62) were women, and 48.33% (n = 58) were men. Most respondents lived in urban areas- 67.50% (n = 81), and 39.17% (n = 47) in rural areas. The biggest group declared high school education-39.17% (n = 47), and 24.17% (n = 29) had higher education. Elementary and vocational education was declared by 18.33% (n = 22) in each group. The majority of the respondents were married (67.50%, n=81). Almost a quarter of the studied group were

widowed (24.17%, n = 29), 7.50% (n = 9) were divorced, and 0.83% (n = 1) were unmarried. Respondents who were professionally inactive constituted the majority of the group (81.67%, n = 98), and only 18.33% (n = 22) were professionally active. The average duration time of the disease was  $15.05 \pm 9.89$  years (range between 0.50 to 40.00 years, Me = 11.50). The respondents who suffered from the disease for less than 10 years established 30.83% (n = 37), those who had the disease for between 10 and 20 years 32.50% (n = 39), 22.33% (n=28) between 20 and 30 years and 13.34% (n = 16) 30 years or longer.

### **The results of the original study**

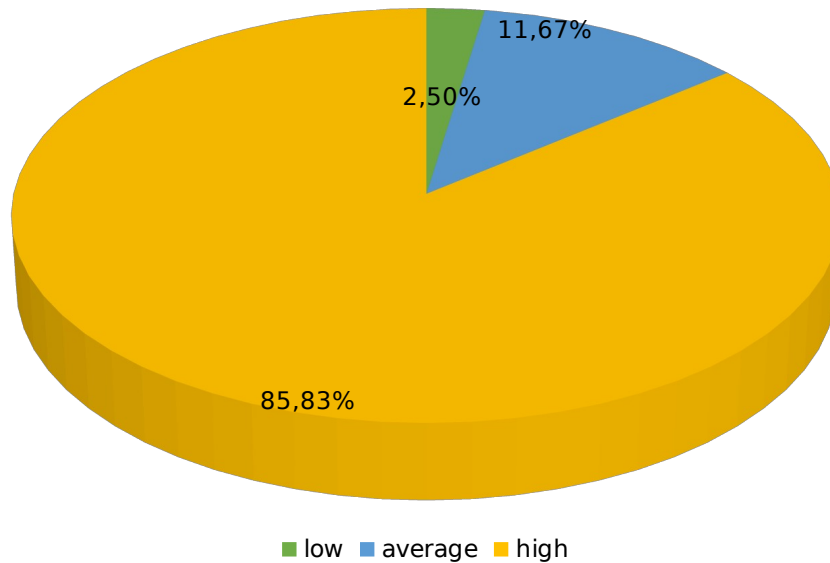
As a result of the conducted study it was ascertained that the general IZZ indicator in the studied group was  $97.67 \pm 10.63$  (Me = 99.00) out of 120 points.

Table 1 presents the standard ten results of IZZ indicator. The declared health behaviour levels were located between 7-10 sten (85.83%, n = 103) meaning a high level of health behaviour, for 11.67% (n = 14) of the respondents the results were at 4-6 sten (average level), and for 2.50% (n = 3) at 1-3 sten (low level).

Sten results of IZZ indicator for women were most often found at 8 (32.26%) and 7 (22.58%) sten. Among men the results were mostly distributed between 8 (37.93%), 7 (20.69%) and 9 (20.69%) sten.

**Table 1. Sten results of the IZZ broken down by gender of the respondents**

Sten	Overall N=120		Women n=62			Men n=58		
	n	%	Point range	n	%	Point range	n	%
1	0	0.00	24-53	0	0.00	34-50	0	0.00
2	0	0.00	54-62	0	0.00	51-58	0	0.00
3	3	2.50	63-70	2	3.23	59-65	1	1.72
4	3	2.50	71-77	3	4.84	66-71	0	0.00
5	3	2.50	78-84	3	4.84	72-78	0	0.00
6	8	6.67	85-91	3	4.84	79-86	5	8.62
7	26	21.66	92-98	14	22.58	87-93	12	20.69
8	42	35.00	99-104	20	32.26	94-101	22	37.93
9	24	20.00	105-111	12	19.35	102-108	12	20.69
10	11	9.17	112-120	5	8.06	109-120	6	10.35



**Figure 1. The level of health behaviour in the studied group based on IZZ indicator**

In the studied group of patients with arterial hypertension consecutive categories of health behaviour were assessed. The indicator of healthy eating habits expressed by the mean of the declared results was at the average level of  $3.80 \pm 0.67$  (Me=3.83). The averages for the remaining categories were higher and amounted to consecutively: preventative actions  $4.25 \pm 0.55$  (Me=4.33), positive mental attitude  $4.13 \pm 0.49$  (Me=4.17) and health practices  $4.10 \pm 0.71$  (Me=4.33).

The study shows that in the healthy eating practices domain the following statements were the highest rated: I care about eating healthily ( $3.89 \pm 0.87$ ), I limit the consumption of products like animal fat or sugar ( $3.88 \pm 1.01$ ), I eat lots of fruit and vegetables ( $3.86 \pm 0.89$ ). Slightly lower rated answers were given in response to statements: I avoid salt and heavily salted foods ( $3.79 \pm 1.11$ ), I avoid food products with preservatives ( $3.78 \pm 1.09$ ) and I eat wholegrain breadstuff ( $3.60 \pm 1.26$ ).

In the preventative actions category the study shows that the highest rated statements were: I regularly attend physical examinations ( $4.72 \pm 0.72$ ), I observe my doctor's orders based on my examination ( $4.64 \pm 0.62$ ), I have ambulance services' telephone numbers noted down ( $4.50 \pm 1.30$ ). The respondents less often avoided catching colds ( $4.24 \pm 0.76$ ), tried to obtain medical information and to understand the causes of health and illnesses ( $4.13 \pm 0.91$ ) and tried to learn how other people avoid illnesses ( $3.27 \pm 1.26$ ).

Out of all the statements included in the positive mental attitude subscale the highest rated statements were: I have friends and a stable family life ( $4.64 \pm 0.66$ ), I have a positive mental attitude ( $4.21 \pm 0.81$ ), I treat other people's concerns about my health from other people seriously ( $4.15 \pm 0.94$ ). The respondents slightly less often avoided upsetting and distressing situations ( $3.93 \pm 0.82$ ), avoided anger, anxiety and depression ( $3.92 \pm 0.87$ ), and avoided strong emotions, stress and pressure ( $3.90 \pm 0.84$ ).

In the area of health practises the research subjects most often limited the consumption of tobacco products ( $4.75 \pm 0.79$ ), avoided excessive physical exercise ( $4.13 \pm 1.14$ ), had enough sleep ( $4.04 \pm 1.14$ ) and avoided overwork ( $4.02 \pm 1.11$ ). Less often they had enough rest ( $3.94 \pm 1.11$ ) and controlled their bodyweight ( $3.72 \pm 1.17$ ).

The average value of the BMI index in the studied group was  $29.34 \pm 4.56$  (range between 20.76 and 48.30). The appropriate value of BMI was declared by 19,17% (n = 23) of the

respondents. 38.33% (n = 46) of the respondents declared excess weight, and 42.50% (n = 51) were obese.

The statistical analysis did not show any significant differences among the ratings of health behaviour of groups with regards to BMI ( $p > 0.05$ ), with one exception of health practises. Only in this category did people with excess weight and diagnosed with obesity declare a higher level of health behaviour than people with normal weight ( $p = 0.01$ ) (table 2).

**Table 2. Health behaviour rating broken down by BMI**

Subscales	Normal weight			Excess weight			Obesity			Statistical analysis	
	Mean	Median	Std.dev.	Mean	Median	Std.dev.	Mean	Median	Std.dev.	H	p
	Healthy eating practices	4.04	4.00	0.60	3.73	3.83	0.75	3.76	3.83	0.61	3.65
Preventative actions	4.29	4.50	0.50	4.20	4.33	0.68	4.28	4.33	0.44	0.12	0.94
Positive mental attitude	4.10	4.17	0.54	4.21	4.33	0.54	4.07	4.17	0.40	4.05	0.13
Health practices	3.67	3.67	0.90	4.29	4.33	0.66	4.12	4.17	0.58	8.91	<b>0.01*</b>
IZZ	96.65	99.00	11.52	98.50	101.00	12.67	97.37	96.00	8.05	2.63	0.27

More than a half of the research subjects claimed that they were optimists (57.50, n = 69), 40.00% (n = 48) of the respondents showed a realistic attitude to life and only 2.50% (n = 3) were pessimists. Between the studied groups distinguished with regards to their attitude to life significant differences in the general IZZ score ( $p = 0.0002$ ) were observed, as well as in the following categories: preventative actions ( $p = 0.04$ ), positive mental attitude ( $p = 0.0007$ ) and health practices ( $p = 0.003$ ). There were no significant differences in the ratings of healthy eating practices ( $p = 0.32$ ) (table 3).

**Table 3. Health behaviour rating broken down by the attitude to life**

Subscales	Normal weight			Excess weight			Obesity			Statistical analysis	
	Mean	Median	Std.dev.	Mean	Median	Mean	Median	Std.dev.	Mean	H	p
	Healthy eating practices	3.87	3.83	0.68	3.73	3.83	0.63	3.39	3.67	0.95	2.29
Preventative actions	4.37	4.50	0.43	4.11	4.17	0.63	3.72	4.33	1.06	6.31	<b>0.04*</b>
Positive mental attitude	4.28	4.33	0.40	3.94	4.00	0.54	3.72	3.83	0.35	14.62	<b>0.0007*</b>
Health practices	4.25	4.33	0.72	3.90	4.17	0.66	3.83	3.83	0.50	11.75	<b>0.003*</b>
IZZ	100.61	101.00	9.97	94.04	94.00	9.91	88.00	94.00	16.82	17.26	<b>0.0002*</b>

The respondents most often stated that they are responsible for their own health (69.18%, n=83). Almost a quarter of the research subjects declared that people from their immediate environment (24.16%, n = 29) are responsible for their health or that their health is determined by coincidence (6.67%, n = 8).

The respondents who declared that people from their immediate environment or coincidence are responsible for their health had more beneficial behaviour in the positive mental attitude category than people who cared for their own health themselves (p = 0.02). In the rating of the remaining subscales and the overall IZZ rating there were no significant differences between those groups of research subjects (p > 0.05), (Table 4).



**Table 4. Health behaviour rating broken down by the responsibility for patients' health**

Subscales	Responsible for own health			Other people/coincidence			Statistical analysis	
	Mean	Median	Std. dev.	Mean	Median	Std. dev.	Z	P
	Healthy eating practices	3.84	3.83	0.65	3.72	3.83	0.71	0.86
Preventative actions	4.26	4.33	0.48	4.23	4.50	0.69	-0.80	0.42
Positive mental attitude	4.07	4.17	0.46	4.26	4.33	0.54	-2.26	<b>0.02*</b>
Health practices	4.04	4.33	0.74	4.23	4.33	0.63	-1.30	0.20
IZZ	97.23	99.00	9.83	98.65	100.00	12.33	-1.07	0.29

## Discussion

The original research showed that the health behaviour of the patients with arterial hypertension remained mostly at a high level with the mean of the general IZZ score at high 97.67 points. A slightly lower score (88.39 points) was obtained by Smolen (and others) who studied the health behaviour of the elderly [10]. The reason for the similarity of the results might be the fact that most of the respondents in the original study were geriatric. The study showed that the overwhelming majority (85.83%, n = 103) declared a high level of health behaviour. The average intensity of health behaviour was observed among 11.67% (n = 14) of the respondents whereas a low level of such intensity was presented by only 2.50% (n = 3). Such satisfactory results may indicate that the patients display a high awareness of the influence of their lifestyle on the process of arterial hypertension treatment. Similar results of the health behaviour studies were obtained by Krzyzanowska (and others) [5] as well as Kosek (and others) [4]. The patients studied by them most often declared a high level of health behaviour. The comparison of their results and the original study results shows there is

an observable increase in the number of patients who declare a high level of health behaviour (47.5% vs. 85.83% in the original study). This fact might stem from the rise in the health awareness of patients suffering from arterial hypertension and from the effective promotion of a healthy lifestyle. However, the original study results differ from the results obtained by Kurowska and Lewandowska [6], Kurowska and Ratajczyk [7], Basinska and Andruszkiewicz [1], in which the respondents declared an average level of health behaviour.

Out of four main health behaviour categories the most frequent were preventative actions and health practices, followed by a positive mental health attitude. One worse rated category was healthy eating practices of the patients, which is crucial to the non-pharmacological treatment of hypertension. The original study showed similar results to that conducted by Basinska and Andruszkiewicz. The patients with arterial hypertension studied by them performed the worst in this area as well [1]. It might stem from the difficulty in changing the eating habits, the lack of motivation and support, or not exercising the help of a dietician. Bronkowska (and others) in their research concluded that patients diagnosed with arterial hypertension have a satisfactory level of knowledge about nutrition principles, however, it did not result in healthy eating practices among them [2].

In the original research an attempt was made to determine the conditions for the health behaviour of patients with arterial hypertension. In relation to that, the following variables were analysed: the state of nutrition, attitude to life and responsibility for the patient's health assessment.

The analysis of the collected research material showed an interesting difference between the state of nutrition and the declared health behaviour. People with excess weight and obesity declared higher intensity of health behaviour in terms of health practices as compared to people with normal body weight. In the study by Szkup (and others) in the group of patients with advanced coronary disease it was also observed that excess weight and obesity influence health practices. However, in the aforementioned research, the body weight had a negative correlation with health practices. It means that the higher the BMI was, the lower the result in the category of health practices was obtained [11]. The obtained results may stem from the fact that people with excess body weight are reluctant to undertake any physical activity whereas they are more eager to rest, and health practices within IZZ refer to such statements as: I have enough rest, I avoid overwork, I sleep enough, I avoid excess physical activity.

The study by Łatka (and others) [8] concerned the problem of dispositional optimism and health behaviour of patients with arterial hypertension. In the original research the majority of the research subjects (57.50%, n = 69) said they were optimists. These patients performed better in the general IZZ rating, and all its subscales apart from healthy eating practices. Still, in Łatka's (and others') [8] study the respondents with a high level of optimism had more fruit, vegetables and fish in their everyday diet, undertook physical activity more frequently and avoided salt and heavily salted foods. In the original research among four main categories of health behaviour the lowest-rated one was healthy eating practices. The average for the frequent consumption of fruit and vegetables was 3.86 and for avoiding salt and heavily salted foods 3.79. Comparing the original research and the study by Łatka (and others) [8] it can be inferred that the studied group might have had a low level of dispositional optimism. Thus, increasing the level of dispositional optimism could possibly result in the improvement of health behaviour in the healthy eating practices domain. Optimism can be an important human resource that reinforces motivation, consistency in abiding by doctor's recommendations and in following a healthy lifestyle. The conducted research showed that people whose health was someone else's responsibility had significantly better health behaviour in the area of positive mental attitude than people who were responsible for their own health. It might stem from the fact that people who display the external placement of health assessment responsibility often willingly rely on others, so the medical personnel can have influence on them. Presumably it is easier for such people to observe medics' recommendations. It is assumed that the display of positive mental attitude by people who show the external placement of health assessment responsibility, as well as those who think that coincidence is responsible for their health, might arise from them distancing themselves from life. Those people do not burden themselves with the responsibility for their own health and hence present a better positive mental attitude compared to those who feel are responsible for their own health assessment. This problem (of health behaviour, responsibility and health assessment of patients with arterial hypertension) was also discussed by Kurowska and Lewandowska. In the aforementioned study the authors came to a conclusion that people for whose health someone else was responsible had higher intensity of health behaviour in all its subscales compared to those who were responsible for their own health as well as those who thought that coincidence was responsible for their health [6].

## Conclusions

1. Patients with arterial hypertension most often declare a high level of health behaviour.
2. The research subjects declared a higher level of health behaviour in preventative actions, health practices and positive mental attitude categories than in the healthy eating practices domain.
3. BMI indicator does not differentiate the level of healthy eating practices and preventative actions. However, the level of health practices is significantly higher among people with excess weight and obesity.
4. Optimistic attitude to life prompts better health behaviour than realistic or pessimistic attitude.
5. Patients whose health is someone else's responsibility, i.e. those with the external placement of health assessment, display better health behaviour within the positive mental attitude area than those who feel are responsible for their own health themselves.

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