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# Health Behaviours of Patients with Circulatory Insufficiency Aged 60-75, treated in the Cardiology Department

**Ewelina Bąk[1], Elżbieta Skowronek[2]**

**[1] University of Bielsko-Biała, Department of Nursing, Faculty of Health Sciences**

**[2] Railway Hospital Wilkowice Bystra**

## Abstract

**Introduction:** Heart failure is an important public health problem in industrialized countries with aging populations. The progressive nature of the disease entails a lot of limitations and has an impact on the health behaviour of patients. The aim of this paper was to present health behaviours using the example of patients with cardiac insufficiency treated in the Department of Cardiology of the Railway Hospital in Wilkowice.

**Materials and methods**: The research was carried out by means of diagnostic survey. The research tools involved: a self-questionnaire and a standardized questionnaire of Health Behaviour Inventory. The research was conducted from March to December 2017 among 100

patients hospitalized in the cardiology department, the Independent Public Health Care Centre of the Railway Hospital in Wilkowice - Bystra.

**Research findings:** Among the preferred health behaviours of patients with heart failure, Positive Mental Attitude and Health Practices were the highest rated, and the lowest rated were the correct eating habits.

**Conclusions**: The declared health behaviours, among patients with heart failure, receive higher scores in a statistically significant way, among women, people with higher education, following medical/nursing recommendations and non-smokers.

**Keywords:** health behaviours, heart failure, the elderly.

## Introduction

Health-promoting behaviours are a very broad approach, going beyond the sphere of explicit actions, but consistent with modern knowledge developed by health psychology and taking into account the impact of beliefs and expectations, emotions and mental patterns on our health [1]. Health-related behaviours are specific activities taken by people related to the psychophysical condition. Such behaviours are divided into pro-health, i.e. health-promoting and anti-health, i.e. harmful to health. The first include: preventive behaviours, health practices, proper eating habits, positive mental attitude and physical activity. Harmful effects, in turn, may be demonstrated by smoking and alcohol abuse [2,3,4].

Chronic heart failure leads to the impairment of normal functioning and is associated with a decrease in the quality of life. Persons suffering from heart failure should be aware that in addition to modern diagnostic methods, the pharmacological and invasive treatment, the European Cardiology Society recommends preventive measures, applied from an early to very old age [5,6]. Cardiovascular diseases are the most important mortality factors. Due to their course and incidence, they are also the cause of disability and impaired quality of senior citizens' life [7].

**Materials and methods**

The research was conducted among the patients of the Cardiology Department of the Railway Hospital in Wilkowice, from March to December 2017. Before the study began, the written consent of the director of the Railway Hospital in Wilkowice was obtained for its implementation. The permission of the Psychological Tests Lab of the Polish Psychological Association in Warsaw was obtained for the use of questionnaires. The respondents were thoroughly informed about the research objective and the principle of anonymity and voluntary participation in the research before the study began. The criteria for the inclusion of patients in the study were as follows: consent of the patient, heart failure diagnosis and age from 60 to 75. The research was conducted among 100 patients. In order to achieve the assumed research goal, the diagnostic survey method was used. The research tools that were used in the work were: self-questionnaire, Health Behaviours Inventory (HBI) questionnaire by Juczyński.

## Statistical methodology

Statistical analysis was performed in the following programs:

- PQStat 1.6.6
- Libre Office Calc 5.1.6.2

In all the analyses, the relevance level was set at $\alpha = 0.05$. The statistical significance p obtained at the lesser level allowed us to reject the null hypothesis and accept the alternative hypothesis of the existing relationships.

The normal distribution of variables was checked by the Shapiro-Wilk test. If the variables were of a different type from standard or of standard type, but the equality of variance hypothesis was not confirmed, nonparametric tests were used: Mann-Whitney U test, Kruskal-Wallis one-way analysis of variance by ranks. In the case of the standard character of the variables and the veracity of the hypothesis about the equality of variance, the parametric tests: T-student (t test for independent groups), ANOVA (one-way analysis of variance).

## Results of the tests performed

The detailed sociodemographic characteristics of the studied group are presented in Table I.

*Table I. Sociodemographic characteristics of the examined group*

| General sociodemographic characteristics | | | |
|---|---|---|---|
| Number of respondents | Total | Women | Men |
| | 100 | 25 | 75 |
| **Age** | | | |
| average | 69,57 | 71,96 | 68,77 |
| standard deviation | 4,92 | 4,13 | 4,93 |
| median | 70 | 73 | 70 |
| minimum | 60 | 60 | 60 |
| maximum | 75 | 75 | 75 |
| **Place or residence** | | | |
| Town/city | 62 | 60% | 62.67% |
| Countryside | 38 | 40% | 37.33% |
| **Marital status** | | | |
| Single | 7 | 0% | 9.33% |
| Married | 64 | 56% | 66.67% |
| Widowed | 20 | 40% | 13.33% |
| Divorced | 9 | 4% | 10.67% |
| **Professional activity** | | | |
| Employed | 11 | 4% | 13.33% |
| Unemployed | 3 | 4% | 2.67% |
| Disability pension | 6 | 0% | 8% |
| Pension | 80 | 92% | 76% |
| **Type of work before retirement** | | | |
| White-collar | 40 | 64% | 32% |
| Blue-collar | 60 | 36% | 68% |
| **Education** | | | |
| Elementary | 4 | 8% | 2.67% |
| Vocational | 37 | 24% | 41.33% |
| Secondary | 47 | 56% | 44% |
| Higher | 12 | 12% | 12% |
| **Living** | | | |
| alone | 25 | 28% | 24% |
| with family | 75 | 72% | 76% |

*Source: Own calculations*

The characteristics of the health condition are presented in Table II.

*Table II. Characteristics of the health condition of the examined group*

| General characteristics of health condition | | | |
|---|---|---|---|
| Number of respondents | Total | Women | Men |
| | 100 | 25 | 75 |
| **Time from the diagnosis of the disease** | | | |
| 6 months | 26 | 24% | 26.67% |
| 12 months | 22 | 20% | 22.67% |
| Over 5 years | 29 | 44% | 24% |
| More than 10 years | 23 | 12% | 26.67% |
| **Following medical/nursing recommendations** | | | |
| Yes | 78 | 80% | 77.33% |
| No | 22 | 20% | 22.67% |
| **Smoking** | | | |
| Yes | 30 | 20% | 33.33% |
| No | 70 | 80% | 66.67% |

*Source: Own calculations*

Health behaviours among the patients are presented in Table III

*Table III. Health behaviours among the patients*

| The descriptive breakdown of health behaviours based on the HBI | | | |
|---|---|---|---|
| Number of respondents | Total | Women | Men |
| | 100 | 25 | 75 |
| **General indicator [steny]** | | | |
| Average | 6,02 | 6,48 | 5,87 |
| standard deviation | 1,93 | 2 | 2 |
| Median | 6 | 6 | 6 |
| Minimum | 1 | 2 | 1 |
| Maximum | 10 | 9 | 10 |
| **Proper eating habits (PEH)** | | | |
| Average | 20,04 | 22,8 | 19,12 |
| standard deviation | 4,85 | 3,28 | 4,96 |
| Median | 20,5 | 23 | 20 |
| Minimum | 7 | 11 | 7 |
| Maximum | 30 | 27 | 30 |
| **Preventive behaviours (PB)** | | | |
| Average | 21,17 | 23,36 | 20,44 |
| standard deviation | 4,16 | 2,96 | 4,26 |
| Median | 22 | 23 | 21 |
| Minimum | 8 | 16 | 8 |
| maximum | 30 | 28 | 30 |
| **Positive mental attitude (PMA)** | | | |
| Average | 21,55 | 22,16 | 21,35 |
| standard deviation | 3,41 | 3,36 | 3,43 |

| | | | |
|---|---|---|---|
| Median | 22 | 22 | 22 |
| Minimum | 14 | 14 | 14 |
| maximum | 30 | 29 | 30 |
| **Health practices (HP)** | | | |
| Average | 21,25 | 22,92 | 20,69 |
| standard deviation | 4,09 | 3,07 | 4,25 |
| Median | 21 | 23 | 21 |
| Minimum | 10 | 11 | 10 |
| Maximum | 30 | 27 | 30 |

*Source: Own calculations*

Influence of sociodemographic factors on health behaviours of the studied group

Detailed results are presented in Tables IV and V.

*Table IV. The influence of sociodemographic factors on health behaviours (part 1)*

| **The influence of sociodemographic factors on health behaviours** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **PEH** | **p** | **PB** | **p** | **PNA** | **p** | **HP** | **p** | **HBI** | **p** |
| **Sex** | | | | | | | | | | | |
| Female | **M** | 22,8 | 0,0001 | 23,36 | 0,0004 | 22,16 | 0,3044 | 22,92 | 0,0028 | 91,24 | 0,0005 |
| | **SD** | 3,28 | | 2,96 | | 3,36 | | 3,07 | | 10,12 | |
| Male | **M** | 19,12 | | 20,44 | | 21,35 | | 20,69 | | 81,6 | |
| | **SD** | 4,96 | | 4,26 | | 3,43 | | 4,25 | | 14,94 | |
| **Age** | | | | | | | | | | | |
| 60-65 | **M** | 19,52 | 0,0011 | 21,29 | 0,0537 | 21,86 | 0,1602 | 20,57 | 0,1347 | 83,24 | 0,0097 |
| | **SD** | 4,8 | | 3,9 | | 3,32 | | 4,91 | | 15,18 | |
| 66-70 | **M** | 17,78 | | 19,47 | | 20,66 | | 20,06 | | 77,97 | |
| | **SD** | 5,4 | | 4,95 | | 3,68 | | 5,08 | | 17,57 | |
| 71-75 | **M** | 21,81 | | 22,28 | | 22,02 | | 22,36 | | 88,47 | |
| | **SD** | 3,76 | | 3,28 | | 3,21 | | 2,37 | | 9,82 | |
| **Place or residence** | | | | | | | | | | | |
| Town/city | **M** | 20,48 | 0,2216 | 21,44 | 0,57 | 21,92 | 0,168 | 21,74 | 0,101 | 85,58 | 0,1931 |
| | **SD** | 4,91 | | 4,04 | | 21,55 | | 4,06 | | 14,05 | |
| Countryside | **M** | 19,32 | | 20,74 | | 20,95 | | 20,45 | | 81,45 | |
| | **SD** | 4,74 | | 4,35 | | 3,3 | | 4,06 | | 14,97 | |
| **Marital status** | | | | | | | | | | | |
| Single | **M** | 17,71 | 0,3219 | 20,57 | 0,6729 | 19,71 | 0,0477 | 20,29 | 0,4305 | 78,29 | 0,3736 |
| | **SD** | 3,3 | | 2,3 | | 1,89 | | 3,15 | | 8,98 | |
| Married | **M** | 20,17 | | 21,03 | | 22,17 | | 21,31 | | 84,69 | |
| | **SD** | 5,02 | | 4,19 | | 3,14 | | 4,14 | | 14,58 | |
| Widowed | **M** | 20,75 | | 21,75 | | 20,1 | | 21,85 | | 84,45 | |
| | **SD** | 3,45 | | 3,45 | | 3,54 | | 3,6 | | 11,77 | |
| Divorced | **M** | 19,33 | | 21,33 | | 21,78 | | 20,22 | | 82,67 | |
| | **SD** | 7,07 | | 6,5 | | 4,76 | | 5,54 | | 22,17 | |

*Key: **M** - median; **SD** - standard deviation; **p** - the level of significance of differences; **PEH**- proper eating habits; **PB**- preventive behaviour; **PMA** - positive mental attitude; **HP**- health practices; **HBI**- Health Behaviours Inventory; Source: own calculation*

*Table V. The influence of sociodemographic factors on health behaviours (part 2)*

| The influence of sociodemographic factors on health behaviours | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **PEH** | **p** | **PB** | **p** | **PNA** | **p** | **HP** | **p** | **HBI** | **p** |
| **Professional activity** | | | | | | | | | | | |
| Employed | **M** | 15,73 | 0,0238 | 18,64 | 0,1968 | 19,73 | 0,3572 | 17,45 | 0,0184 | 71,55 | 0,0277 |
| | **SD** | 5,02 | | 4,34 | | 3,2 | | 4,8 | | 15,65 | |
| Unemployed | **M** | 19,33 | | 22 | | 22,33 | | 18,67 | | 82,33 | |
| | **SD** | 3,79 | | 1,73 | | 3,51 | | 5,51 | | 13,5 | |
| Disability pension | **M** | 22,33 | | 22,67 | | 22,67 | | 22,5 | | 90,17 | |
| | **SD** | 4,97 | | 4,8 | | 4,76 | | 5,32 | | 18,76 | |
| Pension | **M** | 20,49 | | 21,38 | | 21,69 | | 21,78 | | 85,33 | |
| | **SD** | 4,6 | | 4,07 | | 3,31 | | 3,58 | | 13,34 | |
| **Type of work** | | | | | | | | | | | |
| White-collar | **M** | 21,8 | 0,0022 | 21,75 | 0,6175 | 22,5 | 0,0222 | 22,48 | 0,0037 | 88,53 | 0,0067 |
| | **SD** | 4,12 | | 3,68 | | 3,39 | | 3,83 | | 12,54 | |
| Blue-collar | **M** | 18,87 | | 20,78 | | 20,92 | | 20,43 | | 81 | |
| | **SD** | 4,98 | | 4,43 | | 3,31 | | 4,08 | | 14,98 | |
| **Education** | | | | | | | | | | | |
| Elementary | **M** | 19,5 | 0,0247 | 22,5 | 0,7083 | 21,75 | 0,1016 | 21,75 | 0,1628 | 85,5 | 0,2101 |
| | **SD** | 4,8 | | 4,65 | | 4,86 | | 1,71 | | 13,03 | |
| Vocational | **M** | 19,78 | | 21,62 | | 21,22 | | 21,41 | | 84,03 | |
| | **SD** | 4,24 | | 3,58 | | 3,32 | | 4,16 | | 13,44 | |
| Secondary | **M** | 19,36 | | 20,68 | | 21,28 | | 20,53 | | 81,85 | |
| | **SD** | 5,44 | | 4,83 | | 3,52 | | 4,3 | | 16,3 | |
| Higher | **M** | 23,67 | | 21,25 | | 23,58 | | 23,42 | | 91,92 | |
| | **SD** | 2,57 | | 2,8 | | 2,31 | | 2,87 | | 6,82 | |
| **lives** | | | | | | | | | | | |
| alone | **M** | 19,32 | 0,2706 | 20,96 | 0,8585 | 20,24 | 0,0259 | 21,12 | 0,871 | 81,64 | 0,2095 |
| | **SD** | 4,97 | | 4,51 | | 3,88 | | 4,59 | | 16,02 | |
| with family | **M** | 20,28 | | 21,24 | | 21,99 | | 21,29 | | 84,8 | |
| | **SD** | 4,82 | | 4,06 | | 3,15 | | 3,94 | | 13,94 | |

*Key: **M** - median; **SD** - standard deviation; **p** - the level of significance of differences; **PEH**- proper eating habits; **PB**- preventive behaviour; **PMA** - positive mental attitude; **HP**- health practices; **HBI**- Health Behaviours Inventory; Source: own calculations*

The influence of the duration of the disease on health behaviours of the examined group is presented in Table VI**.**

*Table VI. The influence of the disease duration on health behaviours*

| **The influence of the disease duration on health behaviours** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **PEH** | **p** | **PB** | **p** | **PNA** | **C** | **HP** | **p** | **HBI** | **p** |
| **Time from the diagnosis of the disease** | | | | | | | | | | | |
| 6 months | M | 19,15 | 0,1117 | 20,81 | 0,5785 | 21,77 | 0,6348 | 20,08 | 0,3727 | 81,81 | 0,6459 |
| | SD | 5,45 | | 4,27 | | 3,79 | | 4,52 | | 16,27 | |
| 12 months | M | 19,14 | | 21 | | 22,18 | | 21,64 | | 83,95 | |
| | SD | 4,54 | | 3,94 | | 3,03 | | 4,16 | | 14,6 | |
| Over 5 years | M | 20,07 | | 21,62 | | 20,97 | | 21,93 | | 84,59 | |
| | SD | 4,77 | | 4,61 | | 3,56 | | 3,77 | | 14,53 | |
| More than 10 years | M | 21,87 | | 21,17 | | 21,43 | | 21,35 | | 85,83 | |
| | SD | 4,29 | | 3,83 | | 3,2 | | 3,87 | | 12,63 | |

*Key: **M** - median; **SD** - standard deviation; **p** - the level of significance of differences; **PEH**- proper eating habits; **PB**- preventive behaviour; **PMA** - positive mental attitude; **HP**- health practices; **HBI**- Health Behaviours Inventory; Source: own calculations*

The impact of compliance with medical/nursing recommendations on health behaviours is presented in Table VII.

*Table VII. The impact of compliance with medical/nursing recommendations on health behaviours*

| **The impact of compliance with medical/nursing recommendations on health behaviours** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **PEH** | **p** | **PB** | **p** | **PNA** | **C** | **HP** | **p** | **HBI** | **p** |
| **Following medical/nursing recommendations** | | | | | | | | | | | |
| Yes | M | 21,24 | 0,0001 | 22,36 | 0 | 22,18 | 0,0004 | 22,15 | 0 | 87,94 | 0,0001 |
| | SD | 4,03 | | 3,17 | | 3,29 | | 3,29 | | 11,23 | |
| No | M | 15,77 | | 16,95 | | 19,32 | | 18,05 | | 70,09 | |
| | SD | 5,2 | | 4,54 | | 2,92 | | 5,04 | | 16,24 | |

*Key: **M** - median; **SD** - standard deviation; **p** - the level of significance of differences; **PEH**- proper eating habits; **PB**- preventive behaviour; **PMA** - positive mental attitude; **HP**- health practices; **HBI**- Health Behaviours Inventory; Source: own calculations*

The impact of cigarette smoking on health behaviours is detailed in Table VIII.

*Table VIII. The impact of smoking on health behaviours*

| The impact of smoking on health behaviours | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **PEH** | **p** | **PB** | **p** | **PNA** | **C** | **HP** | **p** | **HBI** | **p** |
| **Smoking** | | | | | | | | | | | |
| Yes | M | 16,47 | 0,0001 | 18,43 | 0,0005 | 19,27 | 0 | 17,53 | 0,0001 | 71,7 | 0,0001 |
| | SD | 5,43 | | 5,03 | | 3,18 | | 4,04 | | 16,05 | |
| No | M | 21,57 | | 22,34 | | 22,53 | | 22,84 | | 89,29 | |
| | SD | 3,67 | | 3,08 | | 3,03 | | 2,92 | | 9,9 | |

*Key: **M** - median; **SD** - standard deviation; **p** - the level of significance of differences; **PEH**- proper eating habits; **PB**- preventive behaviour; **PMA** - positive mental attitude; **HP**- health practices; **HBI**- Health Behaviours Inventory; Source: own calculations*

## 6. Discussion

### The influence of sociodemographic factors on health behaviours

The results of own research coincide with the studies by Zadworna - Cieślak et al. [8]. The study involved 150 elderly people. The analysis included the results of 70 healthy attenders of the Third Age University and 60 people with cardiovascular diseases. The study involved: 60 men (46.2%) and 70 (53.8%) women. The age of the respondents was within the range 61-88 years. The research was anonymous and voluntary. Two research tools were used in the research: Life Orientation Test - used to measure life optimism and Health Behaviours Inventory. The aim of the research was to determine the role of life optimism in making health-related behaviours in the group of elderly people. The results obtained prove that being male/female is associated with the severity of health behaviours. Women obtained higher scores in the Inventory of Health Behaviour in comparison with men. And that means that they present more correct behaviours. This applies especially to correct eating habits, preventive behaviours and health practices.

Health condition is related in a statistically significant way to the health behaviours of the elderly respondents. People with cardiac diseases, compared to healthy ones, present more pro-health behaviours. They manifest themselves in the form of positive psychological

attitudes and applied health practices. The state of health does not differentiate eating habits and preventive behaviours.

Research carried out by Młynarska et al. [9] from July to September 2013, among patients over 65 years of age, in randomly selected five units of Primary Health Care in the Lublin province coincide with the results presented in this paper. The researchers assessed the level of health behaviours of people over 65 and their socio-demographic conditions, such as: age, place of residence, education, marital status or profession. The HBI diagnostic survey method was used. The research results proved that women declared a higher level of health behaviours compared to men. In addition, the overall level of health behaviours depended on the past education and profession. The declared level of health behaviours generated higher scores among women, people with higher education and those surveyed who in the past did mental work.

The results of the research presented by Arend et al. [10] coincide with those presented our own research. They were carried out from November 2012 to January 2013. The study involved 204 men, aged 40 to 80, the largest number of respondents were subjects aged 50-59, and the least numerous group was men over 70. The research used an original questionnaire containing questions about marital status, place of residence, education and professional activity. The HBI diagnostic survey method was also used. The aim of the study was to assess the health behaviour of men over 40 years of age. The results of individual categories of health behaviours showed that the highest positive psychological attitude was assessed, and the least well-assessed respondents assessed the correct eating habits, which also allows convergence with the results of their own research. In the category of positive mental attitude in the case of men who were in a relationship, they achieved the highest average score.

**The influence of the disease duration on health behaviours.**

The analysis of our own research shows that the duration of the disease was not statistically significant for the results of the Inventory of Health Behaviours in the case of patients with heart failure.

The results of research carried out by Kupras et al. [3] are inconsistent with own research. They present, inter alia, the assessment of health behaviours in a group of chronically ill patients with cardiovascular diseases. The study involved 150 patients, and the research tool was HBI. As a result, an increase in the index of health practices along with the prolongation of the duration of the disease was documented. Therefore, it may be concluded

that patients who are ill longer, take an active part in the treatment process, are more often educated by medical staff and have more knowledge about the disease, its symptoms, possible complications and treatment.

**The impact of compliance with medical/nursing recommendations on health behaviours.**

An important role in reducing frequent hospitalizations of people with heart failure and reducing mortality is attributed to the impact of health behaviours and adherence to medical/nursing recommendations. They improve the patients' comfort and reduce the number of exacerbations and hospitalizations. In patients following the medical/nursing recommendations, a higher overall rate of health behaviours (87.94) was found, compared with patients who did not follow them (70.09).

The results of the research presented by Kurowska et al. [5] coincide with those presented in our own research. They were carried out from July 2011 to April 2012, in a group of 101 patients with heart failure. At the St. Antoni Hospital in Ząbkowice Śląskie in the internal ward the average age of the respondents was slightly above 63. In the conducted studies, the HBI, the WHOQL-BREF questionnaire for quality of life assessment and own questionnaire were used. The aim of the study was the impact of preferred health behaviours on the quality of life of patients with heart failure as a determinant in maintaining good health.

The results obtained revealed that the elderly more often follow medical and nursing recommendations. This is due to the fact that they have much more free time, they are usually retired. The older respondents are more disciplined, understand the necessity of complying with medical/nursing recommendations better, their care for their own health is greater. The older respondents are more aware of the correct health practices on their well-being and daily functioning.

**The impact of smoking on health behaviours.**

Among many factors affecting the development of cardiovascular disease, it is precisely the modification of everyday behaviours, such as smoking that determines effective counteracting the development of cardiovascular diseases. Changes in the field of consciousness concerning the implementation of health behaviours in everyday practice may inhibit the further evolution of the existing disease. The results obtained from our own research allow us to state that non-smokers achieve better HBI results (89.29), compared to smokers (71.7). For individual categories of the HBI, non-smoking respondents obtained the

higher intensity of health behaviours.

The results obtained by Ślusarska et al. [2] coincide with those presented in our own research. They were conducted in the preventive activities of cardiovascular diseases among working people who attended the Provincial Centre of Occupational Medicine in Lublin for periodic examinations. 150 people aged from 22 to 62 participated in the research, the average age was 40.74 years, the smaller group was people aged 31-40, a similar group of respondents were people over 50, and the smallest group were 20-30-year-olds. The study was aimed to assess the level of health behaviours predisposing respondents to the occurrence of cardiovascular diseases in the examined group and to analyse their dependence against variables such as: place of residence, sex, age, education, smoking, genetic determinants. The HBI questionnaire tool was used. The cigarette smoking variable diversified the respondents in terms of health behaviours in a statistically significant manner. Non-smoking respondents obtained higher ratings of health behaviours in the overall assessment ($p < 0.05$) and in categories: Correct eating habits, Positive mental attitude and Health practices.

**Conclusions**

1. The health behaviours of patients with heart failure are affected by such factors as: gender, age, occupational activity, type of work performed, education, marital status, living with family or alone.
2. There were no statistical relationships detected between the declared health behaviours and the duration of the disease.
3. The relationship between particular categories of the HBI as well as its overall outcome and compliance with medical/nursing recommendations was demonstrated.
4. The declared health behaviours among patients with heart failure obtain higher ratings in a statistically significant way for non-smokers compared to smokers

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