# Preferred patient behaviours related to health

Moczydłowska A. [1,2*],Krajewska-Kułak E.[3], Kózka M.[4], Bielski K.[1]

1. General Hospital in Wysokie Mazowieckie, Wysokie Mazowieckie, Poland
2. School of Agrobusiness in Łomża, Łomża, Poland
3. Department of Integrated Medical Care, Medical University of Białystok, Białystok, Poland
4. Department of Clinical Nursing, Medical College, Jagiellonian University, Institute of Nursing and Midwifery, Faculty of Health Sciences, Jagiellonian University Medical College, Cracow, Poland

## ABSTRACT

**Introduction:** Health education is the child of medicine and pedagogy, and they share a common focus on humans. The aim of this study was to assess the preferred behaviours associated with health as well as the health locus of control of the tested patients.

**Materials and methods:** The study included 300 patients from surgical wards (group I) and 300 from non-surgical wards (group II), studying them using the Health Behaviour Inventory (HBI) and the Multidimensional Health Locus of Control Scale (MHLC) scales.

**Results:** For the six statements contained in the Sanitary Behaviours Letter concerning proper nutrition, the surveyed patients received the lowest average values. Among the preventive behaviours, participants reported that they complied with medical recommendations, conducted settled family and social life, and reduced their smoking, but that they did not attach sufficient importance to rest or weight control. In relation to the four examined categories of behaviour, general indicators of the severity of health behaviour did not differ significantly between the groups, which both reported a low level of health behaviour. The majority of women expressed the conviction that their health depends on themselves, demonstrating internal health control, while men tended to claim that their health was dependent on fate or luck. Inhabitants of rural areas exhibited internal control and blamed their own health behaviour for their well-being. Urban residents, on the other hand, showed a stronger belief in the influence of others on their health.

**Conclusions:** The majority of patients showed poor attention to health matters, especially in terms of preferred health practices. However, the less education the participants had and the worse their financial situation grew, the stronger the care for their own health became.

**Key words:** Health behaviours, patients, HBI, MHLC

***Corersponding author:**
Moczydłowska Alicja
General Hospital in Wysokie Mazowieckie, Wysokie Mazowieckie, Poland
e-mail: moczydlowska@szpitalwysmaz.pl

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## INTRODUCTION

In European culture, an overall focus on health issues was organised by the "father of medicine"– Hippocrates [1]. According to Hippocrates's principles, the concept of health determines well-being, whereas disease and discomfort are dependent on humans' surroundings. The scientific community increasingly took an interest in health, which affected the development of the medical and socio-cultural reality, as they considered the idea of health as the beginning of health education and practical life [1].

Health education is the child of medicine and pedagogy, as they share a common focus on humans. Practical teachings specify norms for actions, verifying them by experiment and eventually recommending them for general practice [1-3].

Illness can be very challenging, especially in the case of chronic diseases, which are often connected with biological functions of the body and can involve impairment or physical disability, as well as changes in the mental, physical, or social functions of a patient. Sometimes delayed treatment worsens the disease, leading to exclusion from social life and dependence on others [4].

Disease is a significant challenge, and one must meet the demands of a new reality in order to face it. Many factors, such as the nature and type of the disease and the patient's age, sex, education, intelligence, personality, and style of coping in crisis situations have been related to health and disease [5].

A disease may change one's current lifestyle. Patients have to take into account their conditions, constraints and opportunities in order to adapt to different situations and be prepared for them. To our knowledge, no comparative studies have been conducted in patients from surgical and non-surgical wards in regard to preferred behaviours associated with health as well as the health locus of control.

The aim of this study was to assess the preferred behaviours associated with health as well as the health locus of control of patients from surgical and non-surgical departments.

## MATERIALS AND METHODS

The study was approved by the bioethics committee of the Medical University of Bialystok. The study was conducted between 1 December 2011 to 31 May 2012 in a hospital in Wysokie Mazowieckie in a group of 300 randomly selected patients from surgical wards (group I), including such wards as: General Surgery, Orthopedic Surgery, Trauma, Gynaecology and Obstetrics, and 300 randomly selected patients from the internal medicine wards (group II), including the Department of Internal Medicine and Division of Pulmonology. In the first group, a total of 355 questionnaires were distributed, and the study used 300 questionnaires, whereas in the group II – a total of 345 surveys and the study used 300 questionnaires.

Patients in the study were of age 18 and over, they were staying at least 3 nights in the hospital. They were able to read and write without the influence of psychotropic drugs and pain, had no disturbances of consciousness and agreed to participate in the study. Patients filled out a survey at the best time of the day.

The essential study was preceded by a pilot study, in groups of 50 patients from each ward. The study used a survey containing: general questions - about patients' gender, age, marital status, place of residence, who they lived with, as well as about their social and living conditions; HBI - Juszczyński Inventory of Health Behaviours Inventory [6]; MHLC (The Multidimensional Health Locus of Control Scale) by K. A. Wallstone, B. S. Wallstone, R. DeVellis in Polish adaptation by Juczyński - version A [6]. HBI is designed to study healthy and sick adults [6]. Polish version of this questionnaire was developed by Juczyński. He used also "The General Preventive Health Behaviours Checklist" and "Reported Health Behaviour Checklist". This questionnaire contains 24 statements for determining the severity of the overall rate of health behaviours and the severity of these four categories of behaviour: proper nutrition mainly taking into account the type of food they eat, preventive behaviours regarding following the health recommendations, as well as obtaining information on health and disease, health practices - daily sleep habits, recreation and physical activity, positive mental attitude - the avoidance of strong emotions, stress, or situation affecting in a depressive way [6]. The tested person indicates how often they perform these steps related to health, assessing each of the behaviours listed in the inventory on the scale of five. The numerical values indicated by the tested are counted in order to obtain 24 to 120 points. Higher score indicates greater the severity of the declared health behaviours. The overall rate, when converted into standardised units is subject to interpretation according to the properties characterising the sten scale. Results of 1 - 4 sten scores were treated as low results, however the ones within the limits of 7-10 sten scores as high, which corresponds to the area of about 33% of the lowest results, and the same number of the highest in the scale.

The Multidimensional Health Locus of Control Scale (MHLC)-K. A. Wallstone, B. S. Wallstone, R. Devellis, in Polish adaptation by Juczyński [6] is a tool for a self-report and contains 18 statements concerning generalised expectations in three dimensions of health locus of control: the inner (the belief that control over your own health depends on yourself), the impact of others (the belief that the state of one's health is a result of the

influence of others, mostly medical personnel) and fate (health depends on fate or other external factors). Results are calculated separately for each of the three scales by summing the points up. The scope of results for each of the scales covers the range from 6 to 36 points. Higher the score, the stronger the belief that a given factor has an impact on health.

## RESULTS

In surgical wards (group I), 51.3% of patients were women, and the remaining 48.7% were men. In non-surgical wards (group II), the majority were men - 61.3%, and the minority were women - 38.7%. The mean age of the group I was 48.64 years (SD = 19.68; range = 18-78years) and the mean age of the group II was 66.55 years (DS= 12.22; range=18-86 years), and there was an age difference ($p<0.001$).

In surgical wards, the largest group of patients had secondary education (35.7%) or vocational education (34%). Non-surgical ward patients had vocational education - 56%, secondary education - 28.7% or university education - 15.3%.

When analysing the data from the Health Behaviour Inventory (HBI) it was proven that the most severe health behaviours manifested in the practice of health care (average 3.558) and the lowest within normal dietary habits (average 2.773). The scale of HBI was counted for every person in both groups (non-surgical and surgical wards). In six of the statements contained in HBI concerning proper nutrition the respondents received the lowest average values (2.773 with a standard deviation 1.112) for *I eat lots of vegetables and fruits* to the highest (3,080 with a standard deviation of 1.104) for *I avoid salt and heavily salted foods*. Cronbach's α reliability of the scale *correct eating habits* were moderate, equal to 0.594. Table I illustrates detailed results. Among the preventive behaviours the test subjects declared that they comply with medical recommendations (the highest average value 3.092 with a standard deviation 1.079), while at the same time they exhibited little interest *in noting down emergency services telephone numbers* (the lowest of the average 2.825 with a standard deviation of 1.147). The calculated reliability (Cronbach's α) of this scale was moderate and equal to 0.582. Table I illustrates the data. In terms of positive mental attitude the participants of the survey conducted settled family and social life. They did not cope very well with avoiding situations that affected them depressingly (average value of 2.848 with a standard deviation 1.105) and with avoiding anger, anxiety, depression (average value 2.997 with a standard deviation 0.992). The reliability (Cronbach's α) of scale *positive mental attitude* was high and equal to 0.609. The data on the sub-scale of HBI are illustrated in Table 1.

When analysing the average values of the sub-scale of health practices it can be seen that the respondents tried to restrict cigarette smoking - it was the highest score (average value 3.558 with a standard deviation 1.297), in turn, they paid little attention to sufficient rest, or weight control. The calculated reliability (Cronbach's α) of this scale was moderate and equal to 0.465. Details are are shown in Table 1.

The average severity of health behavior indicators presented 31.7% of the patients from surgical wards and 34% from non-surgical wards.

Men in both groups cared for their health a bit more and reached higher values in relation to women. Low indicators were presented by 53.8% of men of the surgical wards and 51.9% of the non-surgical wards, average by 33.7% of men of surgical wards and 39.6% of non-surgical wards conservative, and high by 12.5% of men of surgical wards and 8.4% of the non-surgical wards.

Low indicators were presented by 67.2% of women of surgical wards and 67.1% of non-surgical wards, average by 28.4% of women of surgical wards, and 28.1% of the non-surgical wards, high by 4.3% of women of surgical wards and 4.8% of non-surgical wards.

Respondents lived in the city indicated higher values while the inhabitants of rural areas - the lowest (62.9% of surgical wards and 63.9% of the non-surgical wards. The patients belonging to the middle-age and older age groups (41 and above), cared considerably more for their own health status than younger patients. All respondents in surgical wards belonging to the age group of 31 - 40 indicated the average level of the declared health behaviours. A significant portion of respondents of all ages reached a low level of health care. (Details are shown in Table 2).

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**Table 1.** The HBI ratio in the entire sample

| Question No of IZZ scale | | Mean | SD | Cronbach's α | Correlation with the scale |
|---|---|---|---|---|---|
| **Good eating habits** | | **17.56** | **3.70** | **0.594** | |
| **1** | I eat lots of fruit and vegetables. | 2.773 | 1.11 | 0.520 | 0.393 |
| **5** | I limit the consumption of products such as animal fats, sugar. | 2.907 | 1.04 | 0.562 | 0.297 |
| **9** | I care about proper nutrition. | 2.92 | 1.11 | 0.541 | 0.347 |
| **13** | I avoid eating foods with preservatives. | 2.84 | 1.04 | 0.562 | 0.295 |
| **17** | I avoid salt and heavily salted foods. | 3.08 | 1.10 | 0.561 | 0.300 |
| **21** | I eat wholemeal bread. | 3.03 | 1.02 | 0.545 | 0.337 |
| **Preventive behaviours** | | **17.96** | **3.65** | **0.582** | |
| **2** | I avoid getting cold. | 3.02 | 1.08 | 0.532 | 0.330 |
| **6** | I have the emergency services telephone numbers noted down. | 2.82 | 1.14 | 0.562 | 0.266 |
| **10** | I follow medical recommendations resulting from my treatment. | 3.09 | 1.07 | 0.531 | 0.332 |
| **14** | I regularly undergo a medical examination. | 3.06 | 1.06 | 0.513 | 0.372 |
| **18** | I try to find out how others avoid diseases. | 2.95 | 0.98 | 0.548 | 0.292 |
| **22** | I try to get medical information and understand the causes of health and disease issues. | 2.99 | 1.05 | 0.535 | 0.323 |
| **Positive mental attitude** | | **18.00** | **3.67** | **0.609** | |
| **3** | I take seriously the guidance of individuals expressing concern about my health. | 3.19 | 1.03 | 0.595 | 0.264 |
| **7** | I avoid situations that affect me depressingly | 2.84 | 1.10 | 0.569 | 0.332 |
| **11** | I try to avoid strong emotions. stress and tensions | 3.01 | 1.03 | 0.574 | 0.320 |
| **15** | I have friends and a settled family life. | 3.02 | 1.11 | 0.531 | 0.419 |
| **19** | I avoid such feelings as anger. anxiety and depression | 2.99 | 0.99 | 0.566 | 0.341 |
| **23** | I think positively. | 3.00 | 1.03 | 0.551 | 0.376 |
| **Health practices** | | **18.04** | **3.39** | **0.465** | |
| **4** | I get enough rest | 2.82 | 1.03 | 0.425 | 0.222 |
| **8** | I avoid overworking | 2.87 | 1.03 | 0.417 | 0.235 |
| **12** | I control my Weight | 2.83 | 1.06 | 0.417 | 0.235 |
| **16** | I get enough sleep | 2.99 | 1.02 | 0.413 | 0.243 |
| **20** | I limit smoking | 3.55 | 1.29 | 0.466 | 0.167 |
| **24** | I avoid excessive physical effort | 2.95 | 1.03 | 0.381 | 0.303 |

Analysing the level of health care and preferred behaviour in the two groups of patients with respect to their education, it can be concluded that the results obtained from the study were similar, and the differences were not statistically significant. In the study groups, there was no significant effect on the increase in the level of health behaviour and awareness of the opportunities and the need to maintain health. The largest proportion of patients preferring a high level of health behaviours, according to HBI, were the respondents from surgical wards with vocational education (17.39%), while in non-surgical wards - patients with secondary education (9.3%). High levels of health behavior declared 6% of people with university education, 11.6% with secondary education, and 17.4% with vocational education; from the surgical wards. Two percent of people had university education, 9.3% had secondary education, and 8.8% had vocational education from the non-surgical wards. Low levels of health behavior declared 68.5% of people with university education, 54.6% with secondary education and 32.6% with vocational education from the surgical wards; 75.2% of people with university education, 59.8% with secondary education, and 44% with vocational education from the non-surgical wards.

People on surgical wards who declared good social and living conditions presented low levels of health behavior (55.6%), average (33.3%), and high (11.1%), and people on non-surgical wards presented low (91.7%) and average (8.3%). People on surgical wards who declared average social and living conditions had lower level of health behaviors

(67.6%), average (26.7%) and high (5.7%); and people on non-surgical wards– low (73.1%), average (19.2%), and high (7.7). People on surgical wards who declared very poor social and living conditions presented more often the average level of health behaviors (44.6%), low (33.9%), and high (21.4%).

When interpreting the results of both groups (from the surgical and non-surgical wards), they can be compared to average results of HBI scale. By varying intensification of four categories of the scale broken down into: health behaviour, proper eating habits, preventive behaviour, positive mental attitude and health practices, similar results were obtained in both groups, in relation to each category. Details are presented in Table 2.

**Table 2.** The results in each category of HBI scale of the respondents from surgical and non-surgical wards

| Group | N | Health behaviours indicator | | Proper eating habits | | Preventive behaviours | | Positive mental attitude | | Health practices | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | SD | M | SD | M | SD | M | SD | M | SD |
| **Surgical wards** | | | | | | | | | | | |
| **Adults** | 300 | 71.22 | 12.51 | 17.19 | 3.80 | 18.06 | 3.63 | 17.81 | 3.72 | 18.16 | 3.52 |
| **Men** | 184 | 70.51 | 12.94 | 17.13 | 4.03 | 17.89 | 3.62 | 17.66 | 3.73 | 17.83 | 3.78 |
| **Women** | 116 | 72.34 | 11.74 | 17.28 | 3.42 | 18.33 | 3.64 | 18.05 | 3.70 | 18.69 | 3.01 |
| **Non-surgical wards** | | | | | | | | | | | |
| **Adults** | 300 | 72.08 | 10.99 | 17.92 | 3.58 | 17.86 | 3.68 | 18.36 | 3.63 | 17.94 | 3.27 |
| **Men** | 154 | 70.96 | 11.40 | 17.91 | 3.75 | 17.34 | 3.67 | 18.14 | 3.76 | 17.57 | 3.38 |
| **Women** | 146 | 73.25 | 10.45 | 17.94 | 3.40 | 18.40 | 3.62 | 18.59 | 3.47 | 18.32 | 3.12 |

Among respondents from surgical wards, consisting of seven age brackets, a stronger belief in the influence of other people on one's health was found in five of them. In the age groups 20-30 and 31-40 the results revealed a stronger internal locus of control of their health. In terms of age groups, consistent with the division of standardization attempts into three age brackets: 18-25, 26-35, 36 and over, it can be seen that the control of their own health was outlined in a manner similar to the seven groups contained in the questionnaire poll. Thus, only one group (26-35) showed a stronger internal control demonstrating the belief that health depends on the entity (subject) that has an impact on health. Non-surgical wards patients, the localised sense of health surveillance differed from subjects belonging to the surgical wards. The respondents belonging to four age groups, coming from 41 and over, showed coincidence as a determining factor for their health. Details are shown in Table 3.

The respondents from surgical wards showed belief in an external locus of health control.

Test results in non-surgical wards were quite diverse in terms of their health locus of control. Women showed a stronger degree of conviction about internal control of health, and men claimed their health was dependent on fate as the decisive factor. Due to the residence, patients living in villages stated that their own health depended on their own behaviours, thus expressing the fact that the person tested is responsible for their health, which may suggest that they demonstrate internal control of health locus. With reference to patients living in the city, their stronger health locus falls on the dimension of health checks, so-called the impact of others. Details are shown in Table 3.

Analysing the relationship between health locus of control and the test group of patients (surgical wards, non-surgical wards) it may be stated that in both these groups health control prevailed, expressed as the influence of others, which is confirmed by the following Table 4.

There were no differences in the groups of non-surgical ward and surgical ward for variable Internal control, t (598) =1.58, p= 0.116. The surveyed groups differed significantly between each other by the level of impact of others variable. Details are shown in Table 5.

Following the classification of the results, the division of the results in terms of high and low in each of the three dimensions, the largest group of respondents in surgical wards were types: undifferentiated-weak (n=83, 27.7%) and undifferentiated-strong type (n = 78, 26.0%), while the smallest number of patients was classified as a strong internal type (n=17, 5.7%) and a strong external type (n=17, 5.7%), as opposed types. Details are shown in Table 5.

The last area of research concerned verification of the impact of health locus of control dimension on the assessment of work of medical staff (doctors, nurses), and the hospital. It is noticeable the medical staff obtained average marksfrom the largest group of respondents from both wards, in the three dimensions of health checks, in terms of: confidence of patients, the professionalism of doctors and contentment with their work. Details are shown in Table 6.

It was observed that the nursing staff work - in the field of confidence in nurses, their professionalism and contentment with their work, received an average evaluation from the largest number of respondents. In the group of patients from surgical wards, referring to the dimension of the impact of others, there was a slightly different outcome, because the work of nurses was assessed in a comparable way, receiving average and high results, whereas fate - average and low (Table 7).

**Table 3.** Analysis of health locus of control of respondents in surveyed wards according to their age, sex and place of residence

| Group | N | Internal control | | The influence of others | | Coincidence | |
|---|---|---|---|---|---|---|---|
| | | M | SD | M | SD | M | SD |
| **Surgical wards** | | | | | | | |
| **Age** | | | | | | | |
| **up to 20** | 2 | 15.50 | 7.77 | 19.00 | 2.82 | 14.00 | 4.24 |
| **20-30** | 4 | 18.00 | 5.88 | 16.75 | 3.77 | 15.75 | 4.27 |
| **31-40** | 1 | 20.00 | - | 18.00 | - | 17.00 | - |
| **41-50** | 20 | 17.90 | 4.62 | 19.40 | 5.55 | 17.20 | 5.03 |
| **51-60** | 49 | 18.91 | 4.48 | 20.20 | 5.21 | 17.95 | 4.46 |
| **61-70** | 64 | 19.78 | 5.49 | 20.18 | 5.19 | 18.64 | 4.25 |
| **70 and over** | 160 | 19.13 | 4.38 | 20.00 | 4.44 | 18.41 | 4.28 |
| **Age groups according to Polish norms** | | | | | | | |
| **18-25** | 4 | 18.75 | 6.70 | 18.00 | 3.16 | 14.75 | 2.87 |
| **26-35** | 4 | 16.50 | 3.42 | 16.25 | 3.30 | 15.75 | 4.27 |
| **36 and over** | 292 | 19.25 | 4.68 | 20.08 | 4.76 | 18.39 | 4.30 |
| **Sex** | | | | | | | |
| **Female** | 116 | 19.61 | 4.98 | 20.88 | 4.85 | 18.88 | 4.32 |
| **Male** | 184 | 18.80 | 4.49 | 19.40 | 4.66 | 17.83 | 4.33 |
| **Place of residence** | | | | | | | |
| **Village** | 197 | 18.68 | 4.65 | 19.78 | 4.75 | 18.04 | 4.34 |
| **Town** | 103 | 19.95 | 4.68 | 20.35 | 4.84 | 18.62 | 4.37 |
| **Non-surgical wards** | | | | | | | |
| **Age** | | | | | | | |
| **up to 20** | 20 | 18.25 | 4.31 | 19.75 | 4.83 | 18.20 | 4.23 |
| **20-30** | 55 | 19.89 | 5.45 | 19.54 | 4.41 | 19.34 | 3.99 |
| **31-40** | 49 | 19.42 | 4.43 | 19.02 | 4.46 | 17.89 | 4.64 |
| **41-50** | 38 | 18.18 | 4.15 | 17.631 | 4.26 | 18.57 | 4.54 |
| **51-60** | 40 | 18.57 | 3.77 | 17.72 | 4.06 | 18.77 | 4.19 |
| **61-70** | 34 | 17.79 | 3.73 | 18.11 | 5.03 | 18.64 | 3.86 |
| **70 and over** | 64 | 17.35 | 3.45 | 17.34 | 3.76 | 17.60 | 3.88 |
| **Age groups according to Polish norms** | | | | | | | |
| **18-25** | 75 | 19.45 | 5.20 | 19.60 | 4.50 | 19.04 | 4.06 |
| **26-35** | 49 | 19.43 | 4.43 | 19.02 | 4.47 | 17.90 | 4.65 |
| **36 and over** | 176 | 17.82 | 3.63 | 17.64 | 4.18 | 18.20 | 3.98 |
| **Sex** | | | | | | | |
| **Female** | 146 | 19.26 | 4.81 | 18.80 | 4.65 | 18.73 | 4.27 |
| **Male** | 154 | 17.84 | 3.66 | 17.92 | 4.07 | 18.09 | 4.09 |
| **Place of residence** | | | | | | | |
| **Village** | 147 | 18.39 | 4.55 | 17.69 | 4.32 | 18.30 | 4.12 |
| **Town** | 153 | 18.67 | 4.07 | 18.99 | 4.36 | 18.50 | 4.25 |

**Table 4.** Student's *t* - test results - the comparison of Non-surgical Ward group with a Surgical Ward group created from an independent variable - the type of ward calculated in the entire sample. Statistically significant results are shown in bold

| Variable | Non-surgical wards | | Surgical wards | | The impact of Levene's test | variances in both groups | t statistics | df | t test impact | 95% confidence interval for the difference | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | | | | | | min | max |
| **Internal control** | 19.12 | 4.70 | 18.54 | 4.31 | 0.185 | equal | 1.58 | 598 | 0.116 | -0.14 | 1.30 |
| **The impast of others** | 19.98 | 4.79 | 18.36 | 4.38 | 0.030 | different | 4.33 | 593.47 | 0.000 | 0.89 | 2.36 |
| **Coincidence** | 18.240 | 4.356 | 18.410 | 4.187 | 0.243 | equal | -0.49 | 598 | 0.626 | -0.855 | 0.515 |

**Table 5.** Health Locus of control (the median) - surgical ward

| Type | Surgical wards | | | | | Non-surgical wards | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | Total | | A | B | C | Total | |
| | | | | *N* | % | | | | *N* | % |
| **type strong internal** | high | low | low | 17 | 5.7 | high | low | low | 27 | 9.0 |
| **type strong external** | low | high | high | 17 | 5.7 | low | high | high | 10 | 3.3 |
| **type diminishing the influence of others** | high | low | high | 22 | 7.4 | high | low | high | 39 | 13.0 |
| **typ increasing the influence of others** | low | high | low | 18 | 6.0 | low | high | low | 24 | 8.0 |
| **typ diminishing the influence of coincidence** | high | high | low | 42 | 14.0 | high | high | low | 14 | 4.6 |
| **typ increasing the influence of coincidence** | low | low | high | 23 | 7.7 | low | low | high | 38 | 12.7 |
| **typ undifferentiated-strong** | high | high | high | 78 | 26.0 | high | high | high | 53 | 17.7 |
| **typ undifferentiated-weak** | low | low | low | 83 | 27.5 | low | low | low | 95 | 31.7 |
| A-internal control B- influence of others C - coincidence | | | | | | | | | | |

The level of assessment of nursing staff among the surveyed patients in non-surgical wards, in all health dimensions, was most frequently average, and then low. Study showed that high assessment in all three dimensions of health locus was indicated by the smallest number of respondents. Table 6 shows detailed data.

Evaluation of work of the hospital by the respondents in both groups, with respect to health locus in the three generalised dimensions, was quite varied. High evaluation result was recognized by the surveyed in surgical wards, in terms of recommending a hospital to family and friends, as well as in a dimension called *the influence of others*, while in non-surgical wards, the assessment was related to the three dimensions with average and low result. Table 7 illustrates these data.

It was found in non-surgical wards that the highest evaluation of nurses in regards to patients' confidence (ratio - 18.14), professionalism (ratio - 18.40) and contentment with their work (ratio - 18.37) was given by the respondents having high (strong) attachment to the health practices subscale. Statistically significant were differences in the assessment of confidence in the hospital and recommending it to potential patients, whereas the highest evaluation was given by respondents associated with the positive mental attitude subscale. It should be noted that patients of healthy eating habits subscale and preventive behaviours gave the lowest ratings in terms of work and trust in the staff and the hospital. Details are shown in Table 8.

**Table 6.** The impact of health locus of control dimension on the evaluation of work of medical personnel and nurses in the surveyed hospital wards

| Health locus of control | Surgical wards | | | Non-surgical wards | | |
|---|---|---|---|---|---|---|
| | Low | Average | High | Low | Average | High |
| | N | N | N | N | N | N |
| **MEDICAL PERSONNEL** | | | | | | |
| **Internal control** | | | | | | |
| confidence in doctors | 86 | 111 | 76 | 104 | 122 | 63 |
| evaluation of doctors' professionalism | 93 | 124 | 83 | 105 | 130 | 65 |
| evaluation of contentment with doctors' work | 93 | 124 | 83 | 105 | 130 | 65 |
| **The impact of others** | | | | | | |
| confidence in doctors | 76 | 102 | 95 | 106 | 128 | 59 |
| evaluation of doctors' professionalism | 85 | 108 | 107 | 108 | 130 | 62 |
| evaluation of contentment with doctors' work | 85 | 108 | 107 | 108 | 130 | 62 |
| **Coincidence** | | | | | | |
| confidence in doctors | 99 | 120 | 74 | 100 | 102 | 78 |
| evaluation of doctors' professionalism | 99 | 123 | 78 | 105 | 107 | 88 |
| evaluation of contentment with doctors' work | 99 | 123 | 78 | 105 | 107 | 88 |
| **NURSING STAFF** | | | | | | |
| **Internal control** | | | | | | |
| confidence in nurses | 91 | 114 | 79 | 102 | 123 | 65 |
| evaluation of nurses' professionalism | 93 | 124 | 83 | 105 | 130 | 65 |
| evaluation of contentment with nurses' work | 93 | 124 | 83 | 105 | 130 | 65 |
| **The impact of others** | | | | | | |
| confidence in nurses | 84 | 100 | 102 | 105 | 127 | 60 |
| evaluation of nurses' professionalism | 85 | 108 | 107 | 108 | 130 | 62 |
| evaluation of contentment with nurses' work | 85 | 108 | 107 | 108 | 130 | 62 |
| **Coincidence** | | | | | | |
| confidence in nurses | 101 | 100 | 83 | 97 | 117 | 76 |
| evaluation of nurses' professionalism | 105 | 107 | 78 | 99 | 123 | 78 |
| evaluation of contentment with nurses' work | 105 | 107 | 78 | 99 | 123 | 78 |

**Table 7.** The impact of dimension of health locus of control on the evaluation of the work in the studied hospital wards

| Health locus of control | Surgical wards | | | Non-surgical wards | | |
|---|---|---|---|---|---|---|
| | Low | Average | High | Low | Average | High |
| | N | N | N | N | N | N |
| **Internal control** | | | | | | |
| **confidence in hospital treatment** | 44 | 74 | 55 | 38 | 61 | 50 |
| **sense of security while in hospital** | 63 | 94 | 65 | 74 | 96 | 57 |
| **recommending hospital to family and friends** | 85 | 114 | 77 | 100 | 124 | 63 |
| **The impact of others** | | | | | | |
| **confidence in hospital treatment** | 41 | 61 | 71 | 48 | 60 | 41 |
| **sense of security while in hospital** | 56 | 77 | 89 | 76 | 95 | 56 |
| **recommending hospital to family and friends** | 78 | 96 | 102 | 103 | 124 | 60 |
| **Coincidence** | | | | | | |
| **confidence in hospital treatment** | 56 | 64 | 51 | 39 | 56 | 54 |
| **sense of security while in hospital** | 70 | 82 | 70 | 71 | 92 | 64 |
| **recommending hospital to family and friends** | 93 | 99 | 84 | 94 | 118 | 75 |

**Table 8.** HBI scale relationship to the assessment of nurses' and doctors' work, as well as the hospital, in regards to the four subscales in the non-surgical wards

| Non-surgical ward | | Proper eating habits | | | Preventive behaviours | | | Positive mental attitude | | | Health practices | | | Ratio | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Evaluation criteria | | Mean | N | SD | Mean | N | SD | Mean | N | SD | Mean | N | SD | Mean | N | SD |
| Confidence in nurses | yes | 17.0 | 273 | 3.8 | 17.9 | 273 | 3.6 | 17.7 | 273 | 3.7 | 18.1 | 273 | 3.5 | 70.9 | 273 | 12.4 |
| | no | 18.2 | 27 | 3.6 | 19.1 | 27 | 3.6 | 18.3 | 27 | 4.1 | 18.3 | 27 | 3.1 | 74.0 | 27 | 12.6 |
| Professionalism of nurses | high | 17.5 | 219 | 3.6 | 18.1 | 219 | 3.5 | 17.9 | 219 | 3.6 | 18.4 | 219 | 3.5 | 71.9 | 219 | 12.2 |
| | low | 15.5 | 8 | 5.7 | 16.2 | 8 | 4.1 | 15.4 | 8 | 4.3 | 17.5 | 8 | 2.4 | 64.6 | 8 | 13.8 |
| | average | 16.4 | 73 | 3.9 | 17.9 | 73 | 3.7 | 17.7 | 73 | 3.7 | 17.5 | 73 | 3.7 | 69.6 | 73 | 13.2 |
| Contentment with nurses' work | high | 17.4 | 242 | 3.6 | 18.1 | 242 | 3.7 | 17.9 | 242 | 3.7 | 18.3 | 242 | 3.4 | 71.9 | 242 | 12.3 |
| | low | 14.4 | 7 | 2.5 | 15.8 | 7 | 1.9 | 14.4 | 7 | 3.4 | 16.3 | 7 | 1.8 | 61.0 | 7 | 6.53 |
| | average | 16.2 | 51 | 4.3 | 17.8 | 51 | 3.3 | 17.6 | 51 | 3.6 | 17.4 | 51 | 3.9 | 69.2 | 51 | 13.1 |
| Confidence in doctors | yes | 17.9 | 289 | 3.5 | 17.8 | 289 | 3.7 | 18.4 | 289 | 3.6 | 17.9 | 289 | 3.2 | 72.1 | 289 | 10.9 |
| | no | 17.4 | 11 | 4.3 | 17.6 | 11 | 3.1 | 18.2 | 11 | 4.3 | 18.6 | 11 | 4.0 | 71.9 | 11 | 13.2 |
| Professionalism of doctors | high | 18.0 | 280 | 3.5 | 17.9 | 280 | 3.5 | 18.4 | 280 | 3.5 | 18.0 | 280 | 3.2 | 72.5 | 280 | 10.6 |
| | low | 11.5 | 2 | 0.7 | 12.0 | 2 | 0.0 | 14.0 | 2 | 0.0 | 12.5 | 2 | 3.5 | 50.0 | 2 | 2.83 |
| | average | 16.1 | 18 | 4.1 | 16.5 | 18 | 4.5 | 17.5 | 18 | 4.5 | 17.3 | 18 | 3.5 | 67.5 | 18 | 14.0 |
| Pontentment with doctors' work | high | 18.0 | 289 | 3.5 | 17.9 | 289 | 3.5 | 18.4 | 289 | 3.56 | 18.0 | 289 | 3.2 | 72.5 | 289 | 10.5 |
| | low | 11.5 | 2 | 0.7 | 12.0 | 2 | 0.0 | 14.0 | 2 | 0.0 | 12.5 | 2 | 3.5 | 50.0 | 2 | 2.83 |
| | average | 14.6 | 9 | 3.8 | 15.5 | 9 | 5.9 | 15.8 | 9 | 4.9 | 15.6 | 9 | 3.6 | 61.6 | 9 | 16.1 |
| Confidence in hospital treatment methods | yes | 18.2 | 149 | 3.5 | 18.6 | 149 | 3.6 | 19.4 | 149 | 3.7 | 18.5 | 149 | 3.2 | 74.8 | 149 | 10.7 |
| | no | 17.5 | 151 | 3.7 | 17.1 | 151 | 3.5 | 17.3 | 151 | 3.2 | 17.4 | 151 | 3.2 | 69.4 | 151 | 10.6 |
| Sense of security during a hospital stay | yes | 16.9 | 73 | 3.9 | 17.0 | 73 | 3.6 | 17.0 | 73 | 3.0 | 17.0 | 73 | 2.8 | 68.0 | 73 | 10.5 |
| | no | 18.2 | 227 | 3.4 | 18.1 | 227 | 3.6 | 18.7 | 227 | 3.7 | 18.2 | 227 | 3.3 | 73.4 | 227 | 10.8 |
| Recommending the hospital to family or friends | yes | 17.9 | 287 | 3.6 | 17.9 | 287 | 3.6 | 18.2 | 287 | 3.6 | 17.9 | 287 | 3.2 | 72.3 | 287 | 10.8 |
| | no | 16.7 | 13 | 3.4 | 15.3 | 13 | 4.5 | 17.5 | 13 | 4.0 | 17.2 | 13 | 4.2 | 66.8 | 13 | 13.6 |

In surgical wards, in the assessment of nurses' work, in terms of trust (ratio - 18.12) and professionalism (ratio - 18.23), the highest marks were given by patients qualifying to the group of people expressing high attachment to the health practices subscale - including a large attachment to daily habits of sleep, recreation and physical activity. In terms of contentment with their work (ratio - 18.37) a high evaluation was given by patients who showed low commitment to positive mental attitudes, including psychological factors such as: avoidance of strong emotions, stress or tensions that may affect their health. An inverse relationship was noted when evaluating the professionalism of doctors, as the highest evaluation was given by patients with high adherence to health practices. Details are shown in Table 9.

In surgical wards, in the assessment of nurses' work, in terms of trust (ratio - 18.12) and professionalism (ratio - 18.23), the highest marks were given by patients qualifying to the group of people expressing high attachment to the health practices subscale - including a large attachment to daily habits of sleep, recreation and physical activity. In terms of contentment with their work (ratio - 18.37) a high evaluation was given by patients who showed low commitment to positive mental attitudes, including psychological factors such as: avoidance of strong emotions, stress or tensions that may affect their health. An inverse relationship was noted when evaluating the professionalism of doctors, as the highest evaluation was given by patients with high adherence to health practices. Details are shown in Table 9.

**Table 9.** HBI scale relationship to the assessment of doctors' and nurses' work as well as the hospital in regards to the four subscales in surgical wards

| Surgical wards | | Proper eating habits | | | Preventive behaviours | | | Positive mental attitude | | | Health practices | | | Ratio | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Evaluation criteria | | Mean | N | SD | Mean | N | SD | Mean | N | SD | Mean | N | SD | Mean | N | SD |
| Confidence in nurses | yes | 17.09 | 284 | 3.84 | 18.00 | 284 | 3.6 | 17.78 | 284 | 3.74 | 18.12 | 284 | 3.52 | 70.99 | 284 | 12.5 |
| | no | 18.94 | 16 | 2.24 | 19.13 | 16 | 3.8 | 18.31 | 16 | 3.32 | 18.88 | 16 | 3.52 | 75.25 | 16 | 11.2 |
| Professionalism of nurses | high | 17.39 | 236 | 3.76 | 18.07 | 236 | 3.5 | 17.93 | 236 | 3.54 | 18.23 | 236 | 3.51 | 71.62 | 236 | 12.2 |
| | low | 16.09 | 57 | 3.84 | 17.84 | 57 | 4.0 | 17.12 | 57 | 4.30 | 17.88 | 57 | 3.72 | 68.93 | 57 | 13.9 |
| | average | 19.29 | 7 | 3.04 | 19.43 | 7 | 3.9 | 19.43 | 7 | 4.04 | 18.14 | 7 | 2.27 | 76.29 | 7 | 10.9 |
| Contentment with nurses' work | high | 18.10 | 10 | 3.98 | 18.30 | 10 | 3.6 | 19.20 | 10 | 3.55 | 17.60 | 10 | 3.34 | 73.20 | 10 | 12.6 |
| | low | 17.31 | 226 | 3.78 | 18.07 | 226 | 3.6 | 18.00 | 226 | 3.59 | 18.26 | 226 | 3.57 | 71.64 | 226 | 12.4 |
| | average | 16.61 | 64 | 3.82 | 17.98 | 64 | 3.5 | 16.92 | 64 | 4.06 | 17.91 | 64 | 3.38 | 69.42 | 64 | 12.6 |
| Confidence in doctors | yes | 18.01 | 290 | 3.54 | 17.90 | 290 | 3.7 | 18.38 | 290 | 3.62 | 17.95 | 290 | 3.22 | 72.24 | 290 | 10.8 |
| | no | 15.30 | 10 | 3.83 | 16.70 | 10 | 3.3 | 17.80 | 10 | 3.94 | 17.60 | 10 | 4.74 | 67.40 | 10 | 14.3 |
| Professionalism of doctors | high | 18.03 | 289 | 3.54 | 17.91 | 289 | 3.6 | 18.43 | 289 | 3.60 | 17.96 | 289 | 3.26 | 72.34 | 289 | 10.8 |
| | low | 15.89 | 9 | 3.55 | 17.44 | 9 | 3.5 | 16.89 | 9 | 4.14 | 18.33 | 9 | 2.92 | 68.56 | 9 | 13.1 |
| | average | 11.50 | 2 | 0.71 | 12.00 | 2 | 0.0 | 14.00 | 2 | 0.00 | 12.50 | 2 | 3.54 | 50.00 | 2 | 2.83 |
| Contentment with doctors' work | high | 16.33 | 3 | 5.51 | 15.67 | 3 | 3.2 | 17.00 | 3 | 3.00 | 17.67 | 3 | 3.06 | 66.67 | 3 | 14.5 |
| | low | 18.03 | 272 | 3.52 | 17.89 | 272 | 3.7 | 18.37 | 272 | 3.58 | 17.95 | 272 | 3.29 | 72.24 | 272 | 10.8 |
| | average | 16.96 | 25 | 3.92 | 17.80 | 25 | 3.6 | 18.36 | 25 | 4.25 | 17.80 | 25 | 3.19 | 70.92 | 25 | 12.3 |
| Confidence in hospital treatment methods | yes | 17.87 | 173 | 3.71 | 18.84 | 173 | 3.6 | 18.45 | 173 | 3.73 | 18.75 | 173 | 3.29 | 73.91 | 173 | 12.1 |
| | no | 16.25 | 127 | 3.73 | 17.00 | 127 | 3.4 | 16.94 | 127 | 3.53 | 17.35 | 127 | 3.67 | 67.54 | 127 | 12.2 |
| Sense of security during a hospital stay | yes | 16.14 | 78 | 3.57 | 17.27 | 78 | 3.6 | 17.18 | 78 | 3.98 | 17.40 | 78 | 4.13 | 67.99 | 78 | 13.4 |
| | no | 17.55 | 222 | 3.81 | 18.34 | 222 | 3.6 | 18.03 | 222 | 3.60 | 18.43 | 222 | 3.25 | 72.35 | 222 | 12.0 |
| Recommending the hospital to family or friends | yes | 17.29 | 276 | 3.77 | 18.14 | 276 | 3.6 | 17.93 | 276 | 3.68 | 18.26 | 276 | 3.50 | 71.62 | 276 | 12.4 |
| | no | 16.04 | 24 | 4.03 | 17.13 | 24 | 3.3 | 16.46 | 24 | 3.99 | 17.00 | 24 | 3.65 | 66.63 | 24 | 13.0 |

## DISCUSSION

The present studies show that respondents in the surgical and the non-surgical wards demonstrated a diversity of opinions and beliefs about the impact on their health. Women more often expressed the belief that their health depended on them, showing the internal health control, while men claimed that their own health was determined by fate.

Health behaviours, Ostrowska [7], encompass general habits, customs and attitudes relating to health for the individual as well as society. They are determined, to a large extent, by the social and cultural context, which thus shapes and limits individual preferences. Health behaviours are also determined by age, gender, marital and family status, ethnic background or social, educational, occupational and financial situation (quote 4). One of the primary determinants of attitudes and health behaviours related to maintenance of health or health prevention activities is the level of people's medical knowledge. Shaping the desired 'pro-health behaviours' and recommendations relating to the 'anti-health behaviours' should constitute an integral part of the socialisation process in which the most important role, beside family, should be played by school institutions.

Smoleń et al. [8] surveyed 88 elderly people

in the district of Sanok, aged 60 to 81. More than half of respondents reported that they cared about proper eating, 66.0% of respondents declared that they avoided salt and heavily salted foods, while 74.0% of respondents did not smoke tobacco. Other diseases reported by respondents, were sleep disorders, rheumatoid diseases and diabetes. The study showed that 53.0% of people regularly reported to medical tests, and 80.0% complied with medical recommendations regarding positive health behaviors.

The total of 166 individuals, 98 women and 68 men, took part in Suligi's studies [9]. A number of abnormal eating behaviours were discovered, which are risk factors for excess weight and obesity, lipid disorders, type 2 diabetes, hypertension and coronary heart disease, and other chronic diseases.

Kurowska and Korecińska [10] conducted study among 89 patients before cardiac surgery. The average result of the global HBI questionnaire reached 83.21 points (46-114 points). The standard deviation value was 14.87, which in combination with the average variation coefficient gave 17.88%. The lowest level of behaviours was recorded for healthy eating habits and health practices. Higher average was presented in preventive behaviours and positive mental attitude. The minimum score obtained for proper dietary practices reached 1.5 points, while for the preventive behaviours - 1.68 points. Slightly higher rates were given to health practices and a positive mental attitude, the maximum score - 2 points.

Koziel et al. [11] examined the health behaviours of 394 elderly people. They demonstrated that elderly people, intellectually active, presented generally higher rate of health behaviours, had better eating habits, were often more concerned about preventive behaviours and practices benefiting health and showed a more positive mental attitude compared to their peers in the control group [11].

Kawalec et al. [12] included 75 people who were overweight or had problems with obesity. Only a third of respondents received a high score regarding health behaviour. A negative correlation was shown between body weight and normal eating habits and a positive attitude and a mental age as well as normal eating habits. Those who preferred leisure and used pharmacological treatment for obesity obtained a positive result in terms of presented health behaviours [12].

Zielinska-Więczkowska et al. [13] studied the health behaviours in elderly people with hypertension. They found that the health behaviours of geriatric patients were differentiated by place of residence, education level and to a lesser extent – gender. Clearly, a greater tendency towards health behaviours showed residents of urban areas, older people having higher levels of education and women.

Also, Pieniążek [14] conducted a study on 60 people suffering from hypertension and also showed that the health behaviours of men provoked greater objections than women's.

In the current study, the HBI was used [6]. For the category of healthy eating habits the Ralph Cronbach common indicator was calculated, which was moderate and of 0.594. In this domain, the greatest recognition deserved such issues as: reducing consumption of animal fats, sugar, preserved foods and salt. Another test category was health behaviour. Ratio of these issues according to Cronbach reliability was moderate at 0.582. Especially noteworthy are questions about the possession of emergency services telephone numbers and efforts to avoid diseases. Absolutely important was to examine the issue of positive mental attitude, which makes it possible to avoid a stressful situation or allows to cope with difficult situations. The reliability of these issues for the respondents rated as moderate and according to Ralph Cronbach it was calculated to a value of 0.609. In assessing the issue of health practices among patients, according to Cronbach reliability for these issues, it was calculated - as a moderate and equal to 0.465. The issue concerning limiting cigarette smoking deserves the greatest attention from health practices scale. It should be emphasised that the least attention was drawn to health practices used by the tested patients. In assessing the scale of HBI in terms of gender and the place of residence, the highest percentage of patients indicated a low level of health behaviours, which was not significantly different, except for the largest age group, 31-40 , who remained in surgical ward, in which 100% respondents demonstrated average health behaviours. Definitely, a lower level of care for their own health was found in people living alone, than those who are married or single. Analysing the impact of education and behaviours related to concern for one's health, the decrease in the level of education is followed by the increase in health care. A similar process was observed by analysing the financial situation of the patients. People with difficult social and living conditions were more concerned about maintaining health and vice versa. In this case, there was no major bearing on what type of ward it was.

All patients were tested regarding their beliefs about the impact of their health locus of control. For this purpose the multidimensional health locus of control scale was used [6].

Opuchlik et al. [15] tested 112 people, divided into two groups. The first group consisted of 60 patients with a diagnosis of ischemic heart disease and hypertension, and the second group of 52 patients with hypertension. There were significant differences between the groups in terms of external health locus of control - patients with coexisting ischemic heart disease and hypertension showed a

stronger belief in the influence of other people on their health.

Juczyński [16,17] emphasizes that external health locus of control proves one's belief that their health depends on external factors. People with this sense of health locus of control do not cope well with stressful situations and reveal the conviction about lack of influence on the course of dealing with stress. External health locus of control also prompts the denial of the symptoms of the disease and diminishes the need to observe behaviour which may have a significant impact on the course of treatment and rehabilitation. In contrast, people with an internal health locus of control aim to improve and maintain health, and use social support more effectively.

## CONCLUSIONS

The results of this study confirmed that most of the patients had a low attention to health, especially in terms of preferred health practices, but with a decline in education and deterioration of the financial situation the care for their own health increased. The majority of women expressed the conviction that their health depends on themselves, showing the internal health control, men claimed that their own health depended on fate. Inhabitants of rural areas demonstrated internal control and for their health blamed their own health behaviours, while urban residents demonstrated stronger conviction about influence of others on their health.

### Conflicts of interest

No conflict of interest has been declared by the authors.

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