

FACTORS DETERMINING THE LEVEL OF HEALTH BEHAVIOURS AMONGST PATIENTS AND HEALTHY INDIVIDUALS

Czynniki determinujące poziom zachowań zdrowotnych wśród pacjentów i ludzi zdrowych



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Summary

Aim of the study: Health behaviours play important roles in determining the health status of communities, but the evaluation of these roles remains difficult. The aim of this study was to assess the level of health behaviours in patients with different prognoses (colorectal cancer, gallstones), and in healthy participants of similar age.

Material and methods: This study included 296 general surgery patients. This group included 99 patients hospitalised due to the primary surgical treatment of colorectal cancer and 100 patients who were operated on due to gallstones. The control group comprised 97 participants who were free from cancer or gallstones, and were selected at random from visitors to the clinic.

This study was based on a standardised questionnaire tool – the Health Behaviour Inventory. We also determined the effects of demographic variables on the level of health behaviours in the studied groups.

Results: The studied groups did not differ significantly in terms of mean values of HBI and its components: dietary habits, prophylactic behaviours, psychological attitude, and health practices. The highest levels of health behaviours pertained to psychological attitude and the lowest to dietary habits. Values of HBI and its components were significantly higher in females, people aged 65 years or older, single people, and non-working participants; however, these relationships differed amongst the studied groups.

Conclusions: In conclusion, this study confirmed the existence of relatively low levels of health behaviours in Polish society and highlighted potential sociodemographic features that should be considered during modification of this situation.

Key words: health behaviours, prevention, dietary habits.

Streszczenie

Cel pracy: Zachowania zdrowotne odgrywają ważną rolę w określaniu stanu zdrowia społeczeństwa, ale ewaluacja tej roli nadal jest bardzo trudna. Celem pracy była ocena poziomu zachowań zdrowotnych u chorych z odmiennymi rozpoznaniem (rakiem jelita grubego, kamicą pęcherzyka żółciowego) i u zdrowych uczestników w podobnym wieku.

Materiał i metody: W badaniu wzięto udział 296 pacjentów chirurgii ogólnej. Badaną grupę stanowiło 99 pacjentów hospitalizowanych z powodu chirurgicznego leczenia raka jelita grubego i 100 pacjentów operowanych z powodu kamicy pęcherzyka żółciowego. Grupę kontrolną stanowiło 97 uczestników potencjalnie zdrowych, wybranych losowo spośród osób odwiedzających klinikę.

Do badania wykorzystano standardowy kwestionariusz – Inwentarz Zachowań Zdrowotnych (IZZ). Efekty zmiennych demograficznych określono na podstawie poziomu zachowań zdrowotnych w badanych grupach.

Wyniki: Badane grupy nie różniły się istotnie pod względem średnich wartości IZZ i jego komponentów: nawyków żywieniowych, zachowań profilaktycznych, postawy psychicznej i praktyk zdrowotnych. Najwyższy poziom zachowań zdrowotnych dotyczył postaw psychologicznych, a najniższy nawyków żywieniowych. Wartości IZZ i jego komponenty były istotnie wyższe u kobiet, osób w wieku 65 lat i starszych, osób samotnych oraz uczestników niepracujących. Relacje te różniły się jednak między badanymi grupami.

Wnioski: Praca ta potwierdza występowanie relatywnie niskich poziomów zachowań zdrowotnych w społeczeństwie polskim i podkreśla potencjalne demograficzne cechy, które powinny być wzięte pod uwagę podczas próby zmiany zaistniałej sytuacji.

Słowa kluczowe: zachowania zdrowotne, profilaktyka, nawyki żywieniowe.

Introduction

The significant roles of environment and lifestyle in determining human health have been known for a long time. These two areas overlap and complete each other because lifestyle sometimes determines the degree of exposure to harmful environmental factors. The health awareness of a community is very important from the viewpoint of health prevention [1]. By having sufficient knowledge in regard to risk factors for various diseases, individuals with high health awareness may avoid these factors whenever possible or reduce their exposure to them. These individuals may also partake in regular prophylactic screening in order to detect potential diseases at early stages when the probability of recovery is markedly higher. These aforementioned activities, corresponding to the practical execution of health awareness, are known as health behaviours.

Health behaviours undoubtedly play important roles in determining the health status of communities, but the evaluation of these roles remains difficult. Proper health behaviours (or the lack of them) usually have long-term consequences, with the identification of respective cause-effect relationships having proven to be difficult. Research in this field is also complicated due to the complex characteristics of the activities involved in health behaviours.

Besides research limitations, the aforementioned problems cause many people to omit proper health behaviours despite having relatively high health awareness [2]. Usually patients begin to partake in health behaviours only after being diagnosed with a disease. Therefore, in many patients with chronic disease, primary prevention is in fact tertiary prevention. In the case of recurrent diseases, the term "secondarily primary prevention" seems to be the best description of patient activities. Due to the aforementioned research limitations and the lack of standardised research tools, observations of health behaviours in healthy and diseased individuals are sparse and based on case studies that have not been verified in large population studies.

The aim of this study was to evaluate the level of health behaviours in patients with different prognoses and in healthy participants of similar age based upon a standardised research tool – the Health Behaviour

Inventory. We also determined the effects of demographic variables on the levels of health behaviours in these groups.

Material and methods

This study included 296 patients of the General, Gastroenterological, Colorectal, and Oncological Surgery Ward. This group included 99 patients hospitalised due to the primary surgical treatment of colorectal cancer (Group A) and 100 patients who were operated on due to gallstones (Group B). The control group (Group C) comprised 97 participants who were free from cancer or gallstones, and selected at random from visitors to the Clinic. The statistical characteristics of the study participants are summarised in Table 1.

Patients from Group A and B were subjected to a questionnaire survey during the pre-operative period, whereas participants in the control group completed the questionnaire during their visits to the Clinic. All participants were asked to complete the standardised questionnaire: Health Behaviour Inventory (HBI), kindly provided by the Workshop of Psychological Tests by the Polish Psychological Society in Warsaw. This questionnaire was developed to examine healthy and diseased adults. It contains 24 questions pertaining to the last 12 months and describes health behaviours in regard to four different aspects: 1) dietary habits (DH), 2) prophylactic behaviours (PB), 3) psychological attitude (PA), and 4) health practices (HP). The answers to these questions were graded using a five-point scale where 1 corresponds to nearly never and 5 corresponds to nearly always. Based on this point system, the mean level of health behaviours was calculated for each of the four categories. The total HBI was calculated as the sum of all points gathered. Theoretically, the total HBI could range from 24 points (all answers graded 1) to 120 points (all answers graded 5). These values are presented and interpreted using the standard ten scale (women: low 24–77 pts, moderate 78–91 pts, high 92–120 pts; males: low 24–71 pts, moderate 72–86 pts, high 87–120 pts). Cronbach's reliability index (alpha index) of HBI was calculated to be 0.85, ranging from 0.60 to 0.65 depending on the analysed category of health behaviours [3].

Table 1. Statistical characteristics of the study participants

	Group A (n = 99)	Group B (n = 100)	Group C (n = 97)	P value ¹
Age (years)	64.19 ±9.92	60.94 ±10.73	62.11 ±10.99	0.091
≥ 65 years (n)	55 (55.56%)*	39 (39.00%)	40 (41.24%)	0.040
Women (n)	46 (46.46%)	56 (56.00%)	48 (49.48%)	0.388
Married (n)	72 (72.73%)	67 (67.00%)	70 (72.16%)	0.620
Professionally active (n)	26 (26.26%)	33 (33.00%)	36 (37.11%)	0.259

¹ANOVA, *significant differences between groups

The three groups of subjects were compared in terms of mean HBI levels and mean levels of health behaviours in each of the four HBI categories. They were also compared in terms of HBI distribution using the standard ten scale. Additionally, associations between the sociodemographic characteristics of study participants and the values of HBI or its categories, or HBI distribution in the standard ten scale, were also analysed.

Continuous variables were presented as arithmetic means and their standard deviations (*SD*). Normal distribution was tested using the Shapiro-Wilk test. Arithmetic means between the A, B, and C groups were compared using ANOVA and the Tukey post-hoc test. Discrete variables were presented as number and percentage distributions. Their distributions amongst the groups were compared using the Pearson's chi-square test. Calculations were performed using Statistica 7 (StatSoft®, Poland) software, with statistical significance defined as $p \leq 0.05$.

Results

The studied groups did not differ significantly in terms of mean values of total HBI and its four categories (Figure 1, 2).

In colorectal cancer patients (Group A), significantly higher values of HBI were observed in women than in men (93.43 ± 15.07 vs. 85.53 ± 13.72 , $p = 0.007$). Female patients of Group A had also significantly higher values of variables referring to dietary habits when compared to males (3.70 ± 0.85 vs. 3.10 ± 0.72 , $p < 0.001$). No significant effects of gender on HBI values or its component levels were observed in the remaining groups. The only exception to this observation was in reference to the dietary habits of the control group, where the values were significantly higher in women than in men (3.60 ± 0.64 vs. 3.21 ± 0.94 , $p = 0.019$). Male gallstone patients were characterised by significantly higher

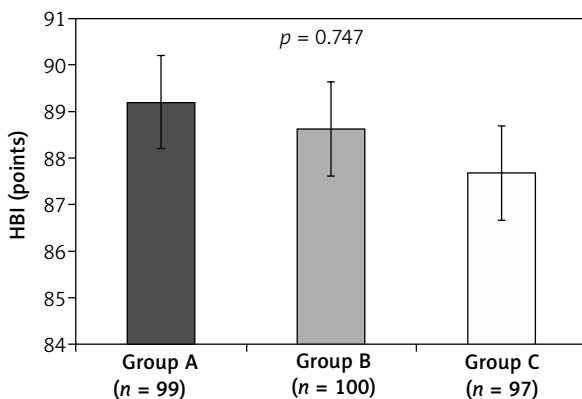


Figure 1. Mean point values ($\pm SD$) of health behaviour inventory (HBI) and its categories in the studied groups

levels of dietary habits compared to men from other groups (3.50 ± 0.71 vs. 3.10 ± 0.72 and 3.21 ± 0.94 in Groups A and C, respectively, $p = 0.046$). Women with colorectal cancer or gallstones predominated over female controls in terms of their psychological attitudes (4.14 ± 0.63 and 3.98 ± 0.56 in Groups A and B, respectively vs. 3.80 ± 0.64 in Group C, $p = 0.025$).

In all groups, significantly higher values of HBI were observed in participants over 65 years of age. Also, mean values of the HP variable significantly increased with participant age in all studied groups. Additionally, PA values increased significantly in elderly subjects from Group A and C, along with the DH variable in controls (Table 2).

In colorectal cancer patients, significantly higher HBI values were observed in single subjects (94.70 ± 12.98 vs. 87.14 ± 15.04 in married individuals, $p = 0.023$). The single subjects from Group A were also characterised by significantly higher values of PA (4.39 ± 0.48 vs. 3.86 ± 0.63 in married individuals, $p < 0.001$) and HP variables (4.03 ± 0.86 vs. 3.61 ± 0.85 in married individuals, $p = 0.031$). In the case of the latter variable, significantly higher values were also noted amongst single subjects from the control group (3.95 ± 0.62 vs. 3.49 ± 0.78 in married individuals, $p = 0.007$). The mean value of PA in single colorectal cancer patients was significantly higher when compared to other groups (4.39 ± 0.48 vs. 3.75 ± 0.68 and 3.95 ± 0.63 in Groups B and C, respectively, $p < 0.001$).

In all of the studied groups, significantly higher HBI levels were observed amongst non-working individuals. The lack of professional activity positively influenced all categories of HBI, with the exception of PB and DH in Group A and B, respectively (Table 3).

No significant differences were observed amongst the studied groups in terms of percentage distributions

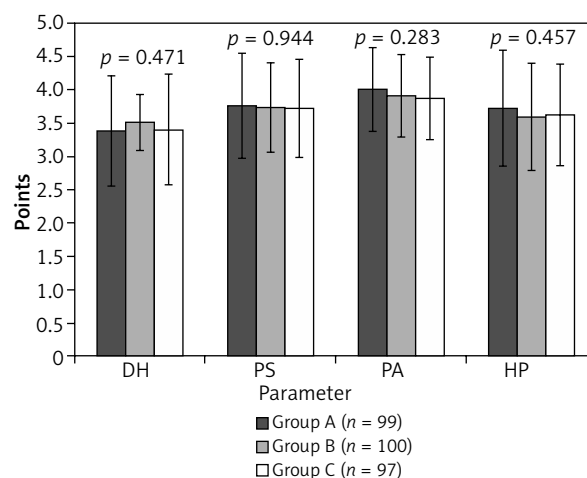


Figure 2. Mean point values ($\pm SD$) of health behaviour inventory categories (DH – dietary habits, PB – prophylactic behaviours, PA – psychological attitude, HP – health practices) in the studied groups

Table 2. Influence of participant age on mean values ($\pm SD$) of HBI and its categories in the studied groups

Parameter	Age	Group A (n = 99)	Group B (n = 100)	Group C (n = 97)	P value ¹
HBI	≤ 64 years	85.61 \pm 13.36	86.41 \pm 12.99	84.42 \pm 14.74	0.733
	65+ years	92.07 \pm 15.44	92.08 \pm 11.82	92.32 \pm 12.98	0.995
	p value ²	0.031	0.030	0.008	-
DH	≤ 64 years	3.27 \pm 0.81	3.46 \pm 0.67	3.27 \pm 0.86	0.332
	65+ years	3.47 \pm 0.85	3.59 \pm 0.83	3.60 \pm 0.74	0.679
	p value ²	0.227	0.364	0.054	-
PB	≤ 64 years	3.69 \pm 0.75	3.68 \pm 0.67	3.63 \pm 0.81	0.917
	65+ years	3.81 \pm 0.82	3.82 \pm 0.67	3.85 \pm 0.62	0.961
	p value ²	0.456	0.305	0.154	-
PA	≤ 64 years	3.85 \pm 0.65	3.87 \pm 0.65	3.75 \pm 0.61	0.564
	65+ years	4.13 \pm 0.60	3.97 \pm 0.56	4.05 \pm 0.60	0.396
	p value ²	0.028	0.433	0.018	-
HP	≤ 64 years	3.46 \pm 0.69	3.41 \pm 0.78	3.42 \pm 0.78	0.926
	65+ years	3.93 \pm 0.95	3.87 \pm 0.77	3.89 \pm 0.66	0.932
	p value ²	0.007	0.004	0.002	-

HBI – Health Behaviour Inventory, DH – Dietary Habits, PB – Prophylactic Behaviours, PA – Psychological Attitude, HP – Health Practices, ¹ANOVA, ²Student's t-test

Table 3. Influence of participant employment status on mean values ($\pm SD$) of HBI and its categories in the studied groups

Parameter	Working	Group A (n = 99)	Group B (n = 100)	Group C (n = 97)	P value ¹
HBI	no	92.67 \pm 14.66	91.97 \pm 11.57	91.48 \pm 12.65	0.868
	yes	79.46 \pm 10.45	81.82 \pm 12.61	81.25 \pm 15.35	0.783
	p value ²	< 0.001	< 0.001	0.001	
DH	no	3.54 \pm 0.85	3.60 \pm 0.70	3.53 \pm 0.74	0.856
	yes	2.92 \pm 0.58	3.32 \pm 0.79	3.19 \pm 0.93	0.152
	p value ²	0.001	0.075	0.045	
PB	no	3.82 \pm 0.82	3.89 \pm 0.64	3.86 \pm 0.61	0.836
	yes	3.58 \pm 0.68	3.40 \pm 0.62	3.49 \pm 0.88	0.675
	p value ²	0.180	< 0.001	0.015	
PA	no	4.17 \pm 0.57	3.99 \pm 0.54	4.01 \pm 0.60	0.129
	yes	3.56 \pm 0.60	3.74 \pm 0.72	3.64 \pm 0.59	0.564
	p value ²	< 0.001	0.064	0.004	
HP	no	3.92 \pm 0.87	3.79 \pm 0.81	3.84 \pm 0.66	0.652
	yes	3.19 \pm 0.64	3.17 \pm 0.62	3.23 \pm 0.79	0.924
	p value ²	< 0.001	< 0.001	< 0.001	

HBI – Health Behaviour Inventory, DH – dietary habits, PB – prophylactic behaviours, PA – psychological attitude, HP – health practices, ¹ANOVA, ²Student's t-test

of participants who had high HBI values in the standard ten scale (above 92 pts and above 87 pts in women and men, respectively). No significant differences amongst the groups were noted after their stratification with grouping variables. Moreover, the grouping variables did not influence significantly the fraction of Group A, B, or C participants who had high HBI values. The only exception was employment status in colorectal cancer patients and in controls where high HBI values were observed significantly

more frequently amongst non-workers (Group A: 53.42% in non-workers vs. 23.08% in workers, $p = 0.008$; Group C: 50.82% in non-workers vs. 22.22% in workers, $p = 0.006$).

Discussion

This study revealed no significant differences amongst colorectal and gallstone patients and healthy controls in terms of the overall health behaviour le-

vels and values of particular HBI components. However, significant differences in health behaviour levels were observed following participant stratification in regard to some sociodemographic features.

We confirmed the significant effect of gender on health behaviour levels amongst colorectal cancer patients. In this group, women were characterised by higher values of HBI and its DH component when compared to males. Better dietary habits were also observed in women from the control group. According to the HBI, proper dietary habits include avoidance of chemically preserved foods, eating cereals and high quantities of fruits and vegetables, along with a reduced consumption of animal fats and sugars as well as salt and salted food products [3]. In males, these aforementioned health behaviours were enforced by participants only in cases where an acute diet-dependent condition – gallstones – was diagnosed. This was probably the reason why gallstone patients were the only group in which gender had no significant influence on the level of dietary habits.

No significant gender-related differences were noted in terms of other HBI components in our population. The lack of gender effects on values of HBI and its components was also observed by Koziet et al. [4] in their study of elderly people. However, this finding does not seem to be universally true because Slusarska and Nowicki [5] revealed that mean HBI values in professionally active women are higher than in working males.

In a study of women after mastectomy, published by Andruszkiewicz and Ozminska [6], HBI levels were slightly higher than 90 points and therefore similar as in our subgroup of female colorectal cancer patients. In our study, however, women with cancer were characterised by better psychological attitudes than healthy controls. Patients after mastectomy, in turn, did not predominate over the healthy controls in terms of psychological attitudes but had higher values of prophylactic behaviours and variables of health practices [6].

Participant age was another factor that significantly influenced levels of health behaviours in this study. Subjects aged 65 years or older took care of their health better than younger participants, particularly in terms of health practices. According to the HBI, these health practices included proper management of leisure time, avoidance of working too much, control of body mass, and the cessation of smoking. Taking these aforementioned components into account, the increase in the amount of spare time due to retirement (along with proven age-related health deficits) seems to be the most probable reason for higher HP values observed amongst the elderly participants of this study. This hypothesis seems to be at least partly confirmed by higher values of health practice variables observed amongst non-working or single individuals. Lower val-

ues of HBI amongst professionally active individuals were also described by Slusarska and Nowicki [5].

Interestingly, the HBI levels of elderly people participating in this study were higher than in seniors participating in the Third Age University projects in Kielce (Eastern Poland), who were studied by Koziet et al. [4]. Plausibly, this variability may be related to differences in geographic locations. According to the literature, this factor – even if minute – may constitute an important determinant of health behaviour levels [7].

Published evidence suggests that mean HBI values in adolescents do not exceed 80 points [8]. Alarmingly, low levels of health behaviours were also observed amongst nursing students, i.e. in the group that theoretically should be prepared for the role of health educators [9]. Meanwhile, prophylactic behaviours constituted the lowest scoring HBI component amongst Polish adolescents [8]. In contrast, a Turkish study revealed a high level of knowledge pertaining to cancer prevention amongst students from local medical universities [10].

The relatively low level of prophylactic behaviours is also an alarming finding amongst the participants of this study. According to the HBI, prophylactic behaviours include the avoidance of catching a cold, easy access to the telephone numbers of medical emergency services, following physicians' prescriptions and recommendations, the regular performance of medical tests, and seeking information on disease aetiology and prevention [3]. According to the literature, health information is more frequently sought by elderly people, women, and individuals with higher levels of education [11]. Surprisingly, our study did not confirm the effects of gender or age on levels of health behaviours. Other evidence pointing to the low health awareness of Polish women is represented by the fact that only 25% of women participate in free cervical cancer screenings, despite receiving individual invitations [12].

In this study, the HBI component pertaining to psychological attitudes was scored highest out of all analysed categories of health behaviours. The PA component included: serious attitudes towards the suggestions of people who worry about the participant's health, the avoidance of depressing situations along with strong emotions, stress, tension, anger, anxiety, and depression, having friends and structure in life, and positive thinking [3]. Noticeably, when compared to other HBI categories, these aforementioned components of psychological attitude are hard to measure and verify, being the potential explanation for the higher values recorded in the PA component as declared by study participants. Similar conclusions originate from other studies using HBI [5]. However, one should not underestimate the role of stress in determining health behaviours because it was revealed to be one of the factors reducing levels of prophylactic behaviours [13]. Emotions play a very par-

ticular role during the interpretation of an individual's cancer risk [14], and a study of males from a prostate cancer risk group revealed stress to be one of the principle factors responsible for delays in performing prophylactic screening for this malignancy [15].

The results of this study, along with the relevant literature review, suggest that modifications of health behaviours are needed in all age groups of Polish citizens [16, 17, 18]. The cost of this type of healthcare and low health awareness constitute the main barriers limiting the spread of health behaviours within communities [1]. Moreover, one of the crucial manifestations of health behaviours, namely participation in prophylactic screening, is influenced by personal and social factors [19]. Additionally, a focus group study revealed that nearly half of the participants do not participate in prophylactic screening despite sufficient knowledge regarding its benefits [2].

A literature review indicates that physicians should play the main role in health education and proper health behaviour implementation [20]. However, this is not always possible; in Polish conditions, the educational mission of physicians is hindered by the inefficiency of the public healthcare system and a continuous decrease in the authority of doctors. Therefore, the educational role of physicians should be (and sometimes is) taken over by mass media [21]. However, it is of crucial importance to deliver health information that is clear, understandable, and adjusted to the level of perception of the target group [20, 22–24]. The modern mass media may provide an opportunity for individualised remote modification of public health behaviours. According to an Australian study, dietary habits and physical activity in patients with type 2 diabetes or hypertension could be efficiently modified by means of telephone-delivered intervention [25]. One should also never forget the health education of people who participate in prophylactic screening [26]. Personal and familial history of disease, particularly in terms of malignant neoplasms, is an important factor possibly influencing health behaviours of individuals [27]. An example of an efficient, low-cost intervention utilising oncologic pedigrees as the basis for the health education of cancer patient families is the prophylactic program ongoing in Lower Silesia – the southwestern region of Poland, which is characterised by some of the highest incidence rates of malignant neoplasms [28, 29].

Conclusions

In conclusion, this study confirmed that one can find relatively low levels of health behaviours in Polish society, and highlighted potential sociodemographic features that should be considered during the modification of this unfavourable situation.

The authors declare no conflict of interest.

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