

The locus of health control among the elderly people with frailty syndrome

Umiejscowienie kontroli zdrowia wśród osób starszych z zespołem kruchości

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Abstract

Introduction. The locus of health control among the elderly people can modify their beliefs and involvement in hospital treatment. People with the internal locus of health control become responsible for their actions are convinced that their health is depended on themselves. However the people with the external locus of health control could manifest that their health is caused by others' activities, by coincidence, fate or any different outer factors. **Aim of the research.** The main purpose of the research was to determine the locus of health control among people with the frailty syndrome. **Material and methods.** The study involved 150 people aged over 60 years. This study was performed using socio-demographical questions in the questionnaire, standardized MHLC – Multidimensional Health Locus of Control and The questionnaire SHARE-FI (SHARE Frailty Instrument) to assess the fragility syndrome. The research was conducted in accordance with the principles from the Declaration of Helsinki. The existence of the differences and strength of the relationship between the variables was estimated on the level of relevance $p < 0,05$. **Results.** The health that is a result of dependent control interaction demonstrated statistically significant relation in the research group of women with frail and the risk of the development that frail ($p=0,02$). Men and women with frailty syndrome more often answered affirmatively for questions about exhaustion ($<0,001$), losing appetite (0,001), difficulties in walking (0,014), difficulties in going up the stairs ($<0,001$), with lower level of physical activity than men and women with the pre-frail and non-frail groups. **Conclusions.** There is an increase of beliefs of external locus of health control by coincidence, fate alongside with the increasing of the risk of the frailty syndrome. People with the internal locus of health control rarer experienced the risk of the frailty syndrome. (Gerontol Pol 2019; 27; 112-118)

Key words: locus of health control, the elderly people, frailty syndrome

Streszczenie

Wstęp. Poczucie umiejscowienia kontroli zdrowia wśród osób starszych w istotny sposób może modyfikować przekonania i zaangażowanie w proces leczenia. Osoby z wewnętrznym umiejscowieniem kontroli zdrowia przyjmują odpowiedzialność za skutki swoich działań, są przekonane, że ich stan zdrowia uzależniony jest od nich samych, natomiast osoby z zewnętrznym umiejscowieniem kontroli zdrowia mogą przejawiać przeświadczenie, że ich zdrowie jest wynikiem oddziaływania innych osób lub przypadku, losu czy innych czynników zewnętrznych. **Cel pracy.** Głównym celem podjętych badań było określenie umiejscowienia kontroli zdrowia wśród osób z zespołem kruchości. **Materiał i metody.** Badaniem objęto 150 osób po 60 roku życia. W badaniu posłużono się metryczką pytań demograficzno-społecznych, standaryzowaną Wielowymiarową Skalą Umiejscowienia Kontroli Zdrowia (MHLC) oraz kwestionariuszem SHARE-FI do oceny zespołu kruchości. Badanie zostało przeprowadzone zgodnie z zasadami zawartymi w Deklaracji Helsińskiej. Istnienie różnic i siły związku między zmiennymi oszacowano na poziomie istotności $p < 0,05$. **Wyniki.** Zdrowie będące wynikiem oddziaływania kontroli zależnej od przypadku wykazało istotny statystycznie związek w badanej grupie kobiet z wyodrębnionym zespołem kruchości i ryzykiem rozwoju tego zespołu ($p = 0,02$). Mężczyźni i kobiety z zespołem kruchości częściej odpowiadali twierdząco na pytanie dotyczące wyczerpania ($< 0,001$), utraty apetytu (0,001), trudności w chodzeniu (0,014), trudności w wejściu

po schodach ($< 0,001$), wykazując niską aktywność fizyczną niż mężczyźni i kobiety przynależący do grup: ryzyka zespołu kruchości i bez zespołu kruchości. **Wnioski.** Przekonanie o zewnętrznym poczuciu umiejscowienia kontroli zdrowia przez wypadek, los zwiększa ryzyko występowania zespołu kruchości. Osoby z wewnętrznym umiejscowieniem kontroli zdrowia rzadziej doświadczają ryzyka wystąpienia zespołu kruchości. (*Gerontol Pol* 2019; 27; 112-118)

Słowa kluczowe: umiejscowienie kontroli zdrowia, osoby starsze, zespół kruchości

Introduction

The health locus of control belongs to human individual characteristics and means a belief in one's potential and a degree to which people believe that they have control over their lives. This concept determines how people perceive and receive oncoming information and how they behave in particular situations [1]. People with internal health locus of control, as opposed to those with external one, feel more responsible for their health and, therefore, they follow daily health routines, have healthy eating habits, tend to be more sensitive to signals sent by their bodies and, when they are ill, they choose those forms of treatment which let them control the situation. People with internal health locus of control have a higher level of adaptable functioning, they avoid dangerous situations and are more likely to make some effort in order to recover faster and improve their well-being [2,3]. External health locus of control can be observed as a belief that health condition is a result of other people's actions especially the actions of medical staff or as a belief that health condition is determined by chance, fate or other external factors [3]. The process of recovery tends to be longer in these people because they are more likely to apply passive, avoidance strategies of coping with the situation rather than take action [2].

Advancing process of aging societies both in Poland and in other European countries gives rise to questions about the health locus of control in the elderly people because of progressing limitations accompanying the aging process. These limitations, also called the frailty syndrome, result from decreased capacity and efficiency of various physiological systems and may be modified by the locus of control, which is particularly important in case of progressing and serious conditions.

Although there exists no clear consensus as far as the definition and diagnosis criteria are concerned, the frailty syndrome, also referred to as the fragility syndrome or reserve exhaustion, is characterized by a decline in reserves and immunity to stressors resulting from limited efficiency of various physiological systems. The incidence of frailty syndrome symptoms including unintentional weight loss, fatigue, low grip strength, slowed walking speed or low physical activity may be followed by numerous health consequences which have an impact on

physical and mental functions. Early diagnosis and proper treatment aimed at frailty syndrome are key factors in the process of preventing its negative consequences in biological, psychological and social spheres [1,4-6].

Aim

The main objective of the study was to locate the health locus of control in elderly people suffering from frailty syndrome.

Material and methods

The study was carried out in 2017 in a group of patients hospitalised on a non-invasive treatment ward. It was conducted in accordance with the principles of the Declaration of Helsinki. Before giving informed consent for participation in the research each patient was informed about its purpose. Patients qualified for the research met the following criteria: they were 60 years old or over, their health condition was stable, verbal communication with them and their cognitive functions were not distorted and they did not suffer from depression, paresis or disability which could cause mobility impairment. The study was conducted with the application of a socio-demographic questionnaire as well and standardised ones.

Frailty syndrome was assessed by means of SHARE-FI questionnaire developed by R. Romero-Ortuno [7], with an adapted Polish version of SHARE-FI scale prepared by M. Muszalik [8]. The questionnaire included questions about patient's gender, self-reported exhaustion, low appetite, difficulty in walking or climbing the stairs, low physical activity, weakness and handgrip strength assessment (measured with hydraulic hand dynamometer) [8,9]. The figures obtained from the study, calculated by means of virtual SHARE-FI calculator for men and women separately, made it possible to allocate the patients into one of the following groups: non-frail, pre-frail and frail [9].

The assessment of health locus of control was carried out by means of Multidimensional Health Locus of Control scale, MHLC-B version, which consists of 18 statements (scored according to a 6-point scale where

1 means “I definitely disagree” and 6 means “I definitely agree”). The statements refer to generalised expectations in three dimensions of health locus of control, that is:

- internal control (I), which means that the control over patients’ health depends on the patients themselves (internal health locus of control);
- the influence of others (O), which means that the health condition depends on the actions undertaken by other people (external health locus of control);
- chance (Ch), which means that chance and other external factors are responsible for patients health (external health locus of control).

The total score is calculated for each scale separately by adding up individual scores. The higher the score, the stronger patients’ belief that a given factor has an influence on their health. Proper interpretation is carried out with the application of a diagnostic key for each of the three health dimensions separately [3].

Statistical analysis of the survey results was conducted by means of Statistica 10.0 program created by StatSoft. Chi² test or Fisher’s exact test were used in order to detect differences between particular groups for nominal variables. Shapiro-Wilk test was applied to evaluate the congruence between the distribution of the examined quantity variables and normal distribution. Descriptive statistics including arithmetic mean, standard deviation (SD), lower quartile (Q1) and upper quartile (Q3) were used to describe the variables. Because of incongruence between the distribution of the examined group and normal distribution Mann-Whitney U test was applied in the case of bivalent grouping variables and Kruskal-Wallis

test for grouping variables with a higher number of categories. Spearman’s rank correlation coefficient (R) was used to assess the strength of correlations between variables. The significance level for detecting differences and the strength of correlations between variables was estimated at $p < 0.05$.

Results

In the group of 150 respondents (88 women and 62 men) aged 60 or over who took part in the presented analysis the percentage of women was higher than the percentage of men (58.7% vs 41.3%). The average age of women was slightly higher than the average age of men but the difference was not significant (71.99 ± 8.5 vs. 70.8 ± 9.3). Table I presents a full socio-demographic description of the examined men and women.

The assessment of frailty syndrome carried out with the application of SHARE-FI scale detected the syndrome in more than a half of respondents, both women and men (*frail*, 59.7% vs. 64.8%). The risk of developing the frailty syndrome (*pre-frail*) was observed in a smaller group (22.6% vs. 28.4%), whereas the smallest group consisted of the respondents with no symptoms of frailty (*non-frail*) (17.7% vs. 0.8%). No statistically significant differences were found between the respondents’ gender and the frequency of frailty syndrome.

The analysis of particular SHARE-FI scale questions with a positive response led to the conclusion that both in female and male respondents the most numerous gro-

Table I. Socio-demographic description of the examined group

Tabela I. Charakterystyka demograficzna – społeczna badanej grupy

Socio-demographic features N = 88		women		men		p
		%	N = 62	%		
Education	elementary	17	19.3	14	22.6	NS
	vocational	22	25.0	11	17.7	
	secondary	31	35.2	21	33.9	
	higher	18	20.5	16	25.8	
Marital status	married	50	56.8	38	61.3	0.03
	single	4	4.5	9	14.5	
	widowed	34	38.6	15	24.2	
Residence structure	independent	11	12.5	15	24.2	0.06
	with a family	77	87.5	47	75.8	
Place of residence	city	41	46.6	32	51.6	NS
	country	47	53.6	30	48.4	
Financial status	low	15	17	10	16.1	NS
	average	48	54.5	34	54.8	
	good	23	26.1	18	29	
	very good	2	2.3	0	0.0	

N – number of respondents; % - percentage of respondents; p value – for Pearson’s chi² test/Fisher’s exact test; NS – statistically not significant

up was the frail one, a smaller group consisted of women and men with an increased risk of frailty syndrome (*pre-frail*), and the smallest group was formed by those without frailty syndrome (*non-frail*) – table II.

The average value of MHLC (*Multidimensional Health Locus of Control*) scale proved a significant importance of health locus of control – the influence of other people (O) turned out to have the biggest influence, whereas chance (Ch) and internal control (I) are less significant – table III.

As far as the influence of other people is concerned similar results were obtained for women and men, however, men were more likely to be convinced that they can control their health condition or that their health condition is determined by chance – table IV.

Statistical analysis showed a statistically significant correlation between the health locus of control and the frailty syndrome. The respondents who believed that the influence of others has the biggest impact on their health (O) were significantly more likely to suffer from frailty syndrome, whereas the respondents with internal control (I) were classified as those at risk of frailty syndrome (*pre-frail*) or had no symptoms of this syndrome at all – table V.

Health condition resulting from chance-related control is in the examined group of women correlated in a statistically significant way with a diagnosed frailty syndrome and the risk of developing this syndrome ($p=0.02$) – table VI.

Table II. Assessment of frailty according to SHARE-FI scale in the examined group of women and men

Tabela II. Wyniki skali słabości wg skali SHARE- FI w badanej grupie kobiet i mężczyzn

	women				men			
	<i>frail</i>	<i>pre-frail</i>	<i>non-frail</i>	total	<i>frail</i>	<i>pre-frail</i>	<i>non-frail</i>	total
N (%)	57 (59.7)	25 (22.6)	6 (17.7)	88 (100)	37 (64.8)	14 (28.4)	11 (0.8)	62 (100)
exhaustion: yes N (%)	55 (62.5)	15 (17)	3 (3.4)	73 (82.9)	36 (58.0)	11 (17.7)	4 (6.5)	51 (82.2)
low appetite: yes N (%)	38 (43.1)	10 (11.4)	0 (0.0)	48 (54.5)	30 (48.4)	3 (4.8)	0 (0.0)	33 (53.2)
difficulties in walking: yes N (%)	32 (36.3)	9 (10.2)	0 (0.0)	41 (46.5)	26 (41.9)	5 (8.1)	2 (3.2)	33 (53.2)
difficulties in climbing stairs: yes N (%)	51 (57.9)	13 (14.8)	0 (0.0)	64 (72.7)	35 (56.4)	8 (12.9)	1 (1.6)	44 (70.9)
low physical activity: yes N (%)	20 (22.7)	0 (0.0)	0 (0.0)	20 (22.7)	9 (14.5)	2 (3.2)	1 (1.6)	12 (19.3)

% as compared to the total number of respondents (N = 150), *frail* – diagnosed frailty syndrome, *pre-frail* – risk of developing frailty syndrome; *non-frail* – no frailty syndrome

Table III. Average value of health locus of control in the examined group according to MHLC scale

Tabela III. Średnia wartość umiejscowienia kontroli zdrowia w badanej grupie wg skali MHLC

Health locus of control	Average	SD	Median (Q1–Q3)	p
internal control (I)	26.8	5.4	28 (24 – 31)	<0.001
influence of others (O)	29.7	4.7	31 (26 – 34)	
chance (Ch)	27.3	4.9	27 (23 – 30)	

SD – standard deviation; Q1 – lower quartile; Q3 – upper quartile; p – probability level for Friedman's test

Table IV. Average value of health locus of control in the examined group of women and men according to MHLC scale

Tabela IV. Średnia wartość umiejscowienia kontroli zdrowia w badanej grupie kobiet i mężczyzn wg skali MHLC

Health locus of control	Gender	Average	SD	Median (Q1–Q3)	p
internal control (I)	women	25.8	5.1	26 (23 – 30)	NS
	men	27.0	4.6	28 (24 – 30)	
influence of others (O)	women	29.7	5.0	31 (25 – 34)	NS
	men	29.6	4.2	30 (26 – 33.2)	
chance (Ch)	women	26.5	5.1	27 (24 – 29.7)	NS
	men	27.3	5.8	28.5 (22.7- 31.2)	

SD – standard deviation; Q1 – lower quartile, Q3 – upper quartile; p value for Mann-Whitney U test; NS- statistically not significant

Table V. The results describing health locus of control according to MHLC scale depending on frailty syndrome according to SHARE-FI scale**Tabela V. Wyniki umiejscowienia kontroli zdrowia wg skali MHLC w zależności od zespołu słabości wg skali SHARE-FI**

Frailty syndrome	Health locus of control					
	internal control (I)		influence of others (O)		chance (Ch)	
	N	%	N	%	N	%
<i>frail</i>	13	40	58	67.5	23	62.9
<i>pre/non-frail</i>	14	60	28	32.5	14	37.1
p	0,04					

N – number of respondents; p – probability level for Pearson's chi² test**Table VI. The incidence of frailty syndrome and the result on MHLC scale in the examined group of women and men****Tabela VI. Występowanie zespołu słabości a wynik skali MHLC w badanej grupie kobiet i mężczyzn**

Health locus of control	women				men			
internal control (I)								
Frailty syndrome	Average	SD	Me (Q1-Q3)	p	Average	SD	Me (Q1-Q3)	p
<i>frail</i>	25,5	5.0	26 (23–29)	NS	26.7	4.7	28 (24-30)	NS
<i>pre/non-frail</i>	26,5	5.5	27 (22-31)		27.6	4.8	28 (24-30)	
influence of others (O)								
<i>frail</i>	30.3	4.4	32 (28–34)	NS	29.8	3.9	30 (27-33)	NS
<i>pre/non-frail</i>	28.7	6.0	31 (25-33)		29.4	4.7	30 (26-33)	
chance (Ch)								
<i>frail</i>	27.7	4.5	28 (26-30)	p=0.02	27.1	5.8	29 (24-31)	NS
<i>pre/non frail</i>	24.6	5.9	24 (21-29)		27.7	6.0	28 (22-34)	

frail – diagnosed frailty syndrome, *pre/non-frail* – frailty syndrome was not observed; SD – standard deviation; Me – median; Q1 – Lower quartile; Q3 – upper quartile; p- probability level for Mann-Whitney U test; NS - statistically not significant**Table VII. Correlation between dimensions on MHLC scale and the frailty scale for the examined women and men****Tabela VII. Korelacja między wymiarami skali MHLC i skalą słabości dla badanych kobiet i mężczyzn**

The impact of health locus of control	Results on the frailty scale	
internal control (I) in men	R	-0.15
	p	0.24
influence of others (O) in men	R	-0.03
	p	0.80
chance (Ch) in men	R	0.05
	p	0.67
internal control (I) in women	R	-0.13
	p	0.23
influence of others (O) in women	R	0.18
	p	0.10
chance (Ch) in women	R	0.25
	p	0.02

R - Spearman's rank correlation value; p – probability level

An analysis of Rho Spearman's coefficient in the examined group of women showed a significant correlation between attributing health control to chance and the increase in the frailty syndrome ($p=0.021$), which is, additionally, stronger than in men ($R=0.25$ vs. $R=0.05$) and positive in character (the higher score related to the belief that health condition is controlled by chance, the higher risk of the incidence of frailty syndrome) – table VII.

Discussion

In the case of elderly people frailty syndrome is responsible for a higher risk of their falls, higher frequency of hospitalisation, necessity to provide them with proper care and increasing costs of this care and, therefore, it is particularly important to assess health locus of control in elderly patients because early introduction of proper precautions makes it possible for them to sustain their

independence and efficiency in everyday routines [4]. There are few publications about health locus of control in elderly people. Most researches which have been conducted so far have a selective character and focus on a younger population. There are no results, however, which assess the health locus of control in elderly people suffering from frailty syndrome.

Taking into consideration all dimensions of health locus of control, in the examined group of respondents aged 60 or more, the greatest importance was attached to the influence of other people (29.7), in other words, to the belief that the health condition of an individual depends, above all, on other people, whereas chance (27.3) or internal control (26.8) are less important. Therefore, it may be assumed that the respondents are likely to pass the initiative and responsibility for their own health into other people's hands, which may stem from the fact that along with deterioration of their physical condition the elderly would rather depend on others as far as their health is concerned. Moreover, such results mean that these respondents will carefully follow doctors' advice and motivate themselves to take further action concerning their lifestyle. According to Milte et al., The internal location of health is beneficial especially in the elderly to maintain high quality of life and physical fitness [10].

Similar results were obtained in a group of elderly patients (aged 60 or over) suffering from geriatric problems and seeking medical advice in a clinic in Bydgoszcz. In this case as well, among all dimensions of health locus of control, it was the influence of other people that obtained the highest score (30.7), whereas the lowest-scored dimension was internal control (27.1) [11]. The influence of others was also the most popular dimension (26.4) in a group of patients (whose average age was 67) recovering from a brain stroke in a health resort (26.4). Chance was in this case the least popular choice (20.9) [12]. For patients recovering after kidney transplant also the highest importance was associated with the influence of others (27.3) and the lowest with chance (20.6). The results connected with the health locus of control were not gender-related [13]. Taking into account respondents' gender in the dimension of chance

the women suffering from frailty syndrome (*frail*) scored higher than those at risk of developing the syndrome (*pre-frail*) or without the syndrome (*non-frail*). An analysis of the material led to a conclusion that women are by far more likely to have an external health locus of control. Women rely on opinions and experience of other people including their doctor, friends or family and, thus, they have a tendency to seek other people's support in case of health problems. Men, more frequently than women, tend to believe in their control over their life or that their life is controlled by chance or other external factors. Also men recovering from a brain stroke had stronger internal health locus of control, however, as far as chance was concerned the scored lower than women [12]. Different results were obtained in the group of aging men treated for a chronic disease, where internal health locus of control was the dominant one and its dimension depended on the age [14].

In the face of growing problem of aging society, there arises a need for sustainable monitoring the influence of frailty syndrome on various aspects of health locus of control in order to create proper organisational policy providing the elderly with health care, support and nursing services. These actions should be aimed at collecting information which would be useful for particular patients as far as their individual conditions and limitations resulting from frailty syndrome are concerned.

Conclusions

1. An increase in the external health locus of control, which is a belief that people's health condition depends on chance or fate, coincides with a higher risk of the incidence of frailty syndrome.
2. People with internal health locus of control are less likely to develop frailty syndrome.

Conflict of interest

None

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