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Health behaviors and health locus of control in patients with epilepsy

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Summary

Objective: The aim of the study was to show the relation between health behavior and preferred health locus of control in epileptic patients.
Material and methods: One hundred and ninety six participants gave their answers to the Polish version of the Multidimensional Health Locus of Control questionnaire version B and Health Behavior Inventory.
Results: Among all dimensions of health locus of control, the respondents obtained the highest scores in the dimension of internal control (26.0±8.2), and the lowest ones in the dimension of external control (18.0±5.5). The average score for health behaviors was (88.0±11.0). In the category of prophylactic behaviors the highest scores were (23.0±3.6). The category of health practices received the lowest number of points (21.0±3.5). The internal dimension of health control showed a strong significant correlation with the following categories: health behaviors (P=0.00), proper nutrition habits (P=0.00), and positive psychological attitude (P=0.002). The external dimension of health control showed a low significant correlation with health behaviors and prophylactic behaviors (P=0.05). The chance dimension of health control did not show any significant correlations with health behaviors and their categories (P>0.05 in all cases). **Conclusion:** Our results demonstrate that the participants believed to have more control over their health than other people or chance did. Sociodemographic and clinical factors did not influence health locus of control in patients with epilepsy.

Key words: epilepsy; health behaviors; health locus control, MHLCS, HBI

Introduction

Following therapeutic recommendations is an important factor that influences the success of a therapeutic process. Patient's belief that it is possible to control and have influence on their life can determine whether and to what extent a patient will follow treatment recommendations. There are two types of health locus of control: internal and external one. The former refers to a situation when a patient believes that health condition is dependent on a patient,[1] whereas the latter concerns a situation when a patient believes that their health condition depends on external factors.[2] There is on more group of patients – those who claim that chance plays an important role for their health condition.[3] On a daily basis, everyone undertakes a number of activities, including health behaviors, that can positively or negatively influence health condition. Juszczyński distinguished four basic categories of health behaviors: proper nutrition habits, prophylactic behaviors, health practices and positive psychological attitude.[3] Other factors determining health behaviors include: age, gender and socio-cultural situation.[4] In some cases, after being diagnosed with a disease, especially a chronic disease, patient's learned health habits have to be modified, since only appropriate health behaviors can help a patient fight a disease and its consequences.

Epilepsy is a heterogeneous disease due to the variety of epilepsy seizures which occur with a different frequency. It seems impossible to provide optimum functioning for patients suffering from epilepsy, as well as stabilization of their well-being and a possibility to perform social roles without a proper treatment. Its success depends on patient's active participation. In the case of patients with epilepsy, it is of key importance for a patient to learn about the disease, follow therapeutic recommendations and have positive health behaviors. A chronic disease, lack of acceptance and social stigma can significantly modify health locus of control and result in patient's loss of faith in their influence on health condition, and in an increase in patient's expectations about other people's responsibility for their health condition, e.g. medical personnel's responsibility.

Objective

The aim of the study was to show the relation between health behavior and preferred health locus of control in patients with epilepsy, as well as a relation between health locus and demographic and clinical factors.

Material and Methods

Participants

This prospective study was conducted among patients of a neurological clinic in Warsaw, in Poland. Patients were included into the sample if they were given a physician-made single diagnosis of epilepsy. Inclusion criteria were: age≥18 years and native knowledge of Polish language to complete the questionnaires. Exclusion criteria were: age≤18 years, lack of consent to participate in the study and diagnosis of other diseases. Participation was anonymous and voluntary. Patients were informed about the aim of the study and the fact that the results obtained would be used for research purposes only. Completion of the survey was deemed to be participant's consent. The study included 196 patients.

Methods

The study was conducted in the period from September 2016 to March 2017. For the purposes of the study, two standardized questionnaires were used: Health Behavior Inventory (HBI) and Multidimensional Health Locus of Control scale-version B (MHLC-B). The study also included the authors' own questionnaire.

Health Behavior Inventory

HBI was developed by Parcel GS. and Meyer MP., whereas in Poland, it was adapted by Juczyński Z.[3] The scale consists of 24 statements concerning various types of behaviors connected with health:

- proper nutrition habits (type of food);
- preventive behaviors (following health recommendations, obtaining information regarding health and sickness);
- positive mental attitude (everyday habits with regard to sleeping, recreation and physical activity);
- health practices (avoiding intense emotions, stress, or depressing situations).

Respondents' answers were scored 1-5 (from 1 - almost never to 5 - almost always). The total of the results from all subscales ranged from 24 to 120. The higher the total result, the higher the intensity of declared health behavior. Results were calculated for each of 4 categories separately. A single category was scored in a range from 1 to 30. Reliability of the HBI based on Cronbach's α was 0.85 and for the subscales it ranged from 0.60 to 0.65.

Multidimensional Health Locus of Control Scale

MHLCS was developed by Wallston KA., Wallston BS., and DeVelli R., whereas in Poland it was adapted by Juczyński Z.[3] The scale consists of 18 statements that describe generalized expectations in 3 dimensions of health locus of control:

- internal health locus of control (one's own behaviors affect one's health condition);
- external health locus of control (other people, such as medical staff and friends, have control over one's health condition);
- chance health locus of control (one's health condition is a matter of fate, luck or chance).

Respondents' answers were scored 1-6 (from 1 - strongly disagree to 6 - strongly agree). The score for each subscale ranged from 6 to 36. The higher the scores, the stronger the belief in a particular type of control. Reliability of the MHLC-B based on Cronbach's α was 0.64 for internal HLC, 0.59 for external HLC and 0.63 for chance HLC.

Authors' own questionnaire

The authors created an original questionnaire composed of 10 single and multiple choice questions. The questionnaire was divided into two sections: 1) demographic data (age, sex, education, marital status, place of living) and 2) clinical characteristics (duration of epilepsy, type of therapy, kind of antiepileptic drugs (AEDs), dosage of antiepileptic drugs, adverse effect of antiepileptic drugs).

Ethics

A consent of the Ethics Committee was not required for the presented research. According to the statement of the Ethics Committee of the Medical University of Warsaw: "The Committee does not provide opinions on surveys, retrospective studies, or other non-invasive research" (Detailed information and templates of documents of the Ethics Committee of the Medical University of Warsaw (accessed 2016-10-01): http://komisjabioetyczna.wum.edu.pl/content/ szczeg%C3%B3%C5%82owe-informacje-orazwzory-dokument%C3%B3w).

Statistical Analysis

Descriptive statistics (mean, minimum, maximum, standard deviation) and variables distributions were used. Spearman's rank correlation coefficient was used to study correlations, whereas U Mann-Whitney test was used to evaluate the differences between the two groups. Statistical significance was established at the level of $P \leq 0.05$.

Results

Demographic characteristics

The study involved 196 patients with epilepsy, 124 of whom were female (63.3%). The mean age of patients was 38.6±9.3. The youngest patient was 19 years old, the oldest 76. The majority of the study participants received secondary education (34.7%). The largest group was composed of married persons (42.9%) and urban residents (74.5%).

Clinical characteristics

The mean duration of epilepsy was 126.3 months. The range was 2-357 months. The most common therapy applied was polytherapy (52.6%). The majority of the patients were: taking ≥2 medications daily (57.1%); using a combination of antiepileptic drugs of old and new generation (44.9); and reporting side effects from taking medications (54.6%). Table 1 presents demographic and clinical characteristics of the patient population.

Table 1. Demographic and clinical characteristics

Demographic characteristics		
	N	**%**
Age	mean = 38.6±9.3 yrs range: 19-76 yrs	
Gender		
female	124	63.3
male	72	36.7
Education		
primary	30	15.3
vocational	52	26.5
secondary	68	34.7
university	46	23.5
Marial status		
single	56	28.6
married	84	42.9
widowed	24	12.2
divorced	32	16.3
Place of living		
urban residents	146	74.5
rural residents	50	25.5
Clinical characteristics		
Duration of epilepsy	mean = 126.3±34.1 month range: 2-357 month	
Medication		
monotherapy	93	47.4
polytherapy	103	52.6
Kind of AEDs		
old generation	62	31.6
new generation	46	23.5
old + new generation	88	44.9
Dosage of AEDs		
once a day	84	42.9
≥ twice a day	112	57.1
Side effects of AED		
yes	107	54.6
no	89	45.4

Health locus control

Among all dimensions of health locus of control, the examined patients gained the highest scores in the dimension of internal control (mean: 26.0±8.2, range: 13.0-90.0), and the lowest scores in the dimension of external control (mean: 18.0±5.5, range: 6.0-32.0). A descriptive analysis of the self-reported MHLC-B was presented in Table 2.

Table 2. Results of health locus of control

Health locus of control	Minimum	Maximum	Mean ± SD
Internal	13.0	90.0	26.0 ±8.2
External	6.0	32.0	18.0 ±5.5
Chance	6.0	34.0	19.0 ±5.0
SD – standard deviation			

Health behavior

The average score for health behaviors obtained by the respondents was 88.0±11.0, with a range 63.0-115.0. The category of prophylactic behaviors received the highest scores (mean: 23.0±3.6, range: 16.0-30.0). The category of health practices received the lowest number of points (mean: 21.0±3.5, range: 12.0-30.0). Table 3 presents the distribution of results for health behavior.

Table 3. Results of health behavior

	Minimum	Maximum	Mean ± SD
Health behaviors	63.0	115.0	88.0±11.0
Proper nutrition habits	11.0	29.0	22.0±3.5
Prophylactic behaviors	16.0	30.0	23.0±3.6
Positive psychological attitude	15.0	30.0	22.0±3.6
Health practices	12.0	30.0	21.0±3.5
SD – standard deviation			

Correlation between MHLC-B and HBI

The analysis concerned correlations between all dimensions of health control and health behavior (Table 4).

The internal dimension of health control showed a strong correlation with the following categories: health behaviors (P=0.00), proper nutrition habits (P=0.00), and positive psychological attitude (P=0.002).

The external dimension of health control presented a low significant correlation with health behaviors and prophylactic behaviors (P=0.05).

The chance dimension of health control did not show any significant correlations with health behaviors and their categories (P>0.05 in all cases).

Another phase of the study involved an analysis of the correlations between the results of MHLC-B and HBI, and variables of participants' characteristics (demographic and clinical data). However, the examination of a relation between certain independent variables and the result of MHLC-B and HBI did not prove the existence of a statistically relevant influence (P>0.05 in all cases).

Table 4. Correlations between the Multidimensional Health Locus of Control scale and Health Behavior Inventory results

	Item	***R***	***P* level**
Internal health locus of control	Health behaviors	**0.31**	**0.00**
	Proper nutrition habits	**0.34**	**0.00**
	Prophylactic behaviors	0.13	0.21
	Positive psychological attitude	**0.23**	**0.02**
	Health practices	0.13	0.21
External health locus of control	Health behaviors	**0.20**	**0.05**
	Proper nutrition habits	0.11	0.27
	Prophylactic behaviors	**0.20**	**0.05**
	Positive psychological attitude	0.14	0.18
	Health practices	0.16	0.13
Chance health locus of control	Health behaviors	0.06	0.57
	Proper nutrition habits	0.09	0.37
	Prophylactic behaviors	0.13	0.19
	Positive psychological attitude	0.02	0.81
	Health practices	0.01	0.91

Discussion

In recent years social attitude to health and sickness has changed. Health enhancing behavior has been attributed a significant role in maintaining good health condition and fighting diseases. After being diagnosed with a disease, some patients adopt a passive attitude and start to believe that their health lies in other people's hands, most frequently medical personnel, or they claim that it is choice that decides about their health. However, there are also patients who take responsibility for their health and actively participate in treatment. There have been no studies in health behavior and health locus of control in patients diagnosed with epilepsy in Polish scientific literature, therefore this research was conducted.

Authors' own study revealed that the majority of patients with epilepsy showed an internal health locus of control, which means that these patients believed that their health condition depended mostly on them and did not depend on other people or choice (26.0 ±8.2 vs 19.0 ±5.0 vs 18.0 ±5.5, respectively). However, a study by Asadi-Pooya et al[5] performed in 200 patients with epilepsy in the USA showed that the patients presented an external locus of control, which means that, according to these patients, their health was influenced by other people to the greatest extent, and by them and by choice to a lesser extent (24.4±5.4 vs 19.6±6.3 vs 17.7±6.4, respectively).

Jankowski et al[6] examined health locus of control in patients suffering from respiratory diseases, cardiovascular diseases, urology diseases, locomotive disease, diabetes and neurological diseases. Patients fighting neurological diseases showed an internal health locus of control and stated that their health condition depended on chance and on other people to a lesser extent (25.00±5.53 vs 24.72±5.75 vs 24.12±7.44, respectively). An internal locus of health control was also dominant in patients diagnosed with cardiovascular diseases and it came before external locus and choice (28.30±518 vs 27.28± 6.46 vs 26.72±5.54, respectively). However, patients with cardiovascular diseases, locomotive disease and diabetes showed an external heath locus of control, which was followed by internal locus and chance (25.98±6.65 vs 25.68±5.45 vs 24.32±7.08; 26.63±5.86 vs 26.21±5.23 vs 24.40±6.64; 28.08±6.45 vs 27.92±6.00 vs 25.76±7.09, respectively). Patients with urology diseases stated that their health depended on other people to the greatest extent and on choice and themselves to a lesser extent (28.00±6.14 vs 27.26±5.99 vs 25.98±6.46, respectively). Differences in the

study outcome might result from cultural differences between study participants, type of disease, age or duration of the disease.

Definition of health locus of control in teenagers and parents of children with epilepsy was the subject of the study conducted by Carbone et al.[7] The results of this study showed that teenagers with epilepsy aged 12-17 were of the opinion that other people decided about their health to a greater extent than they themselves or chance (25.1±4.9 vs 22.8±4.0 vs 19.7±5.7, respectively). Parents of children suffering from epilepsy, who were surveyed in the same study, expressed a similar opinion (25.5±4.6 vs 24.5±3.9 vs 17.7±6.5, respectively).
Results obtained in a group of teenagers and parents of children with epilepsy are not surprising because these are parents who follow doctor's recommendations for this group of patients and they are the source of knowledge about the disease and its consequences for the children. Due to the fact that the parents are those who control the course of treatment. They are also the best source of knowledge about a particular child-patient, and about the progress and results of treatment. Authors' study involved adults who, as a rule, have to count on themselves.

In our study, no significant relation between subscales for health locus of control and demographic or clinical variables ($P>0.05$ in all cases) was observed. This finding is similar to the previous study where it turned out that subscales for health locus of control did not show a significant relation with age and duration of epilepsy.[5] The results of studies in health locus of control for other diseases reveal that the age of a patient influences health locus of control in patients suffering from chronic pain,[8] women after mastectomy,[9] and patients diagnosed with hypertension,[10] whereas the results of the study in health locus of control in patients after kidney transplantation are not dependent on age.[11] Therefore, it is impossible to make a clear statement regarding whether and to what extent particular variables influence health locus of control. It depends on a type of disease a patient suffers from and on patient's expectations towards other people or support from them.

The authors' own study focused also on the assessment of health behaviors of patients suffering from epilepsy. There is a general conviction that persons who are ill have a different attitude to health than those who are healthy. This conviction is true also with regard to patients with epilepsy. The problem of everyday functioning of those suffering from epilepsy, their attitudes and behaviors, is not frequently addressed in the scientific literature. This can result from the fact that the elements assessed in HBI, e.g. eating habits, do not influence epilepsy as strongly as they influence e.g. hypertension.[10] Proper and balanced diet, along with pharmacotherapy, plays a significant role in the treatment of the so-called diet-related diseases, and it is a key risk factor for the occurrence of this type of diseases.[12] Besides pharmacotherapy, which is the most frequently applied, therapeutic management of epilepsy might also include a ketogenic diet. It is rich in fats, poor in carbohydrates and has been used in the treatment of epilepsy since 1920s.[13] Ketogenic diet is applied mostly in the treatment of drug-resistant childhood epilepsy. Over years a number of studies in the effectiveness and safety of ketogenic diet have been conducted.[14,15] Available studies show that the effectiveness of this diet varies: it can totally or partially reduce the frequency of epilepsy seizures, or can give no results at all. Nevertheless, proper nutrition habits, which refer to eating specific amount of nutrients, influence a general health condition of a patient.

In authors' own study, patients with epilepsy obtained the worst results in the area of health practices. The results were measured with the use of HBI, and the average was 21.0±3.5. This category covers strong emotions, stress and depressing situations. It is generally known that the aforementioned factors negatively influence patients with epilepsy. This is a two-way influence. On the one hand, patients are frequently ashamed of their illness, fear having seizures in public places and having an injury during a seizure.[16] On the other

hand, strong emotions and stress constitute factors that can induce an epileptic seizure. This explains why the obtained result was so low.

HBI questionnaire used in the authors' own study also assessed patient's mental attitude. The average result was 22.0±3.6. Negative consequences of seizures and the feeling of health impairment connected with them are the most typical sources of mood disorders. It turns out that the most common type of depression in patients with epilepsy is interictal depression. The frequency of the occurrence of depression syndromes in patients with epilepsy amounts to 50%, whereas approx. 20% of patients require antidepressant treatment.[17] Patients with epilepsy can also be negatively affected by the limitations concerning their job or physical activity. Scientific literature shows that a higher percentage of suicidal attempts can be observed in patients with epilepsy who have a problem with finding and keeping a job.[18]

Another category assessed in HBI referred to prophylactic behaviors and it included elements, such as following health recommendations and regular doctor's appointments. A study by Staniszewska et al[19] conducted in a group of Polish patients with epilepsy showed that approx. 90% of those studied started to take better care of their health after being diagnosed with epilepsy and 75% of them took first actions. However, this optimistic result is distorted by the fact that only 35% of Polish patients inform doctors, other than neurologists, about suffering from epilepsy and taking antiepileptic drugs. Furthermore, approx. 50% of patients forget to take their antiepileptic drugs from time to time.[20] Such behaviors belong to a group of anti-health behaviors because they can considerably impair health instead of improving or maintaining it. The only solution to improve the functioning of patients with epilepsy in this respect is health education.

Brodałko et al[21] obtained interesting results that show that there are differences between health behaviors in patients with peptic ulcer disease on working days and on days off. Brodałko observed that respondents showed more pro-health behaviors on days off as compared with working days. Such a difference can be explained by the fact that the patients have more free time on days off and they can devote this time to pro-health activities.

Conclusions

Our results demonstrate that the participants to the study believed to have more control over their health than other people or chance did. Sociodemographic and clinical factors did not influence health locus of control in patients with epilepsy.

Limitation

A limitation of this study is lack of geographic sampling. We included patients with epilepsy who received treatment in two neurological clinics in Warsaw. Therefore, the findings are not representative of all patients with epilepsy in Poland. Further sampling, particularly of patients in underdeveloped areas, needs to be conducted. However, to the our knowledge, this is the first published study about health behaviors and health locus of control in epileptic patients in Poland. Hence, it should constitute a foundation for further detailed research.

Disclosure

The authors report no conflicts of interest in this work.

References

1. Dolińska-Zygmunt G. Elementy psychologii zdrowia. Wrocław: Wydawnictwo UW; 1996.

2. Juczyński Z. Przekonania i oczekiwania wyznacznikami zachowań związanych ze zdrowiem. W: Juczyński Z, Ogińska-Bulki N, red. Zasoby osobiste i społeczne sprzyjające zdrowiu jednostki. Łódź: Wydawnictwo UŁ. 2003:49-61.
3. Juczyński Z. Narzędzia pomiaru w promocji i psychologii zdrowia. Warszawa: Pracownia Testów Psychologicznych PTP. 2001.
4. Banaszkiewicz M. Andruszkiewicz A. Zachowania zdrowotne. In: Andruszkiewicz A. Banaszkiewicz M. editors. Promocja zdrowia. Tom I. Lublin; Czelej. 2008.
5. Asadi-Pooya AA, Schilling CA, Glosser D, Tracy JI, Sperling MR. Health locus of control in patients with epilepsy and its relationship to anxiety, depression, and seizure control Epilepsy & Behavior. 2007;11:347-350.
6. Jankowski K, Kurpas D, Kusz J, Mroczek B, Jedynak T., Health-Related Behavior, Profile of Health Locus of Control and Acceptance of Illness in Patients Suffering from Chronic Somatic Diseases. PLoS ONE 8(5): e63920. doi:10.1371/journal.pone.0063920
7. Carbonea L, Zebrackb B, Pleguec M, Joshid S, Shellhaasd R. Treatment adherence among adolescents with epilepsy: what really matters? Epilepsy Behav. 2013;27(1):59-63.
8. Buckelew SP, Shutty Jr MS, Hewett J, et al. Health locus of control, gender differences and adjustment to persistent pain. Pain.1990;42:287-294.
9. Kurowska K, Kalawska H. Zachowania zdrowotne a umiejscowienie kontroli zdrowia u kobiet po mastektomii. Curr. Gynecol. Oncol. 2013;11(2):115-124.
10. Kurowska K, Lewandowska A. Zachowania zdrowotne a umiejscowienie kontroli zdrowia u pacjentów z rozpoznanym nadciśnieniem tętniczym. Arterial Hypertension. 2012;16 (5):296-304.
11. Kurowska K, Kalawska H. Zachowania zdrowotne a umiejscowienie kontroli zdrowia u osób po przeszczepieniu nerki. Psychiatr. Psychol. Klin. 2013;13(3):174-183.
12. Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation. WHO Technical Report Series 916, Geneva; 2003.
13. Ballaban-Gil K.R.: Complications of the Ketogenic Diet; In: Epilepsy and the Ketogenic Diet, ed. Stafstrom C.E., Rho J. M., Humana Press Inc., Totowa, New Jersey 2004,:63.
14. Levy RG, Cooper PN, Giri P. Ketogenic diet and other dietary treatments for epilepsy. Cochrane Database Syst Rev. 2012 Mar 14;(3):CD001903.
15. Titre-Johnson S, Schoeler N, Eltze C, et al. Ketogenic diet in the treatment of epilepsy in children under the age of 2 years: study protocol for a randomised controlled trial. Trials. 2017;18(1):195.
16. Mittan RJ. Patients' fears of death and brain damage from seizures. Merritt Putnam Q. 1989;5:3-19.
17. Lambert MV, Robertson MM. Depression in epilepsy: Etiology, Phenomenology and Treatment. Epilepsia. 2000;40(10):21-47.
18. Lassouw G, Leffers P, De Krom M, et al. Epilepsy in a Dutch working population: are employees diagnosed with epilepsy disadvantaged? Seizure. 1997;6(2) 95-98.
19. Staniszewska A, Religioni U, Dąbrowska-Bender M. Acceptance of disease and lifestyle modification after diagnosis among young adults with epilepsy. Patient Preference and Adherence. 2017;11:165.174.
20. Staniszewska A, Smoleńska E, Religioni U. Health Behaviors Related to the Use of Drugs among Patients with Epilepsy. Am J Health Behav. 2017;41(4):428-434.
21. Brodałko B, Wdowiak L. Zachowania zdrowotne podopiecznych kolejowej służby zdrowia w Lublinie chorych na chorobę wrzodową żołądka i dwunastnicy. Zdr. Publ. 1995;106:186-188.