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Health Literacy in Chronic Patients with Epilepsy

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Abstract

By reviewing the literature, many authors cite health literacy as one of the strongest predictors of the health status of the individual and the community. According to the World Health Organization from 2000, health literacy represents personal, cognitive and social skills that determine an individual's ability to access information, understand and utilize information to improve and maintain health, and is cited as one of the important public health goals for the 21st century. The purpose of this cross-sectional study was to assess the level of health literacy among patients with epilepsy and to examine the association between health literacy and soft sociodemographic indicators. A structured survey questionnaire modified according to the Compliance Questionnaire for Rheumatology questionnaire and the eHealth questionnaire was used to assess the usefulness of health information obtained through electronic sources. 90 subjects of both sexes were included in the study, and the most represented age group was between 30 and 49 years old. Data analysis included descriptive statistics, and Chi-square test with Fisher's exact correction was used for testing. The results indicated that there is a statistically significant difference between health literacy and certain sociodemographic indicators, and that the younger population recognizes the internet as a useful source of information that helps in making personal health decisions. This study did not prove a statistically significant difference in patients between health literacy and level of education, nor that patients from rural areas have poorer health literacy.

Introduction

Health literacy is an increasingly important topic in the field of public health. It has been defined in many different ways since it was first introduced as a term in 1974 (1). Although the concept of health literacy is defined on the basis of many different theories and methods, the scope has been expanded and supplemented during the last decade. In recent decades, interest in the concept of health literacy has been growing along with an increased emphasis on individual responsibility for health and disease self-management. Health literacy is aimed at empowering a person to take control in preserving their own health by improving access to health information and improving the ability of personal well-being as well as the well-being of people in the environment (2). Health literacy may or may not be related to formal education and a person who functions adequately at home or in the workplace may be illiterate in the health care system environment. There are more than 250 different definitions in the academic literature. Vague and inconsistent interpretations of health literacy are predicted to limit the development of valid and reliable measurements, accurate evaluation and comparison of health literacy initiatives, and synthesis of the evidence which support strategies for improving health literacy (3). One of the widely accepted definitions from the document on health goals developed by the United States National Library of Medicine (USA), Healthy People 2010, defines health literacy as a degree to which individuals can obtain, process, and understand basic health information and services that they need to make appropriate health-related decisions (4). Thus, in the mentioned health goals in the USA, the goal of improving health literacy is mentioned for the first time. The said goal was tasked with improving the health literacy of persons with inadequate or marginal literacy skills and was presented as a 'developmental' goal on the basis that there was no established measure of health literacy (5). In China, a survey called "National Health Literacy Survey" was conducted in which about 80,000 residents aged 15 to 69 from 31 provinces, municipalities and autonomous regions of mainland China were surveyed. The mentioned research indicated that health literacy is better in men than in women, in urban residents compared to residents from rural areas, in eastern and central parts of China compared to the western areas of China, in those younger than 45 compared to those above 45 years of age, in persons with a higher level of education compared to those with a lower level of education (6). The total level of health literacy measured in 2005 among Chinese residents was only 6.48%. The research was conducted in 2012 and has been conducted every year since then, and it indicates that health literacy is constantly growing; from 8.8% in 2012 to 10.25% in 2015. In 2016, the Chinese government issued its "Healthy China 2030 Action Plan", where the Plan states that the national health literacy rate is intended to be increased to 30%, tripling the current level compared to 2015 (7). Low health literacy is often a significant health challenge in many countries, therefore promoting health literacy is an important public health goal, and interventions to improve health literacy are often a public health priority (4). In 2012, an important survey called "European Health Literacy" was conducted in eight selected EU member states with the aim of measuring "how people access, understand, evaluate and apply information for decision-making in disease prevention and health promotion". The results showed that more than 10% of the total surveyed population had an inadequate level of health literacy, although the percentage varied between 1.8 and 26.9 by country. On the other hand, almost every second citizen was affected when the percentage of limited health literacy (which varied between 29 and 62) was taken into account. The results imply that almost 50% of people are exposed to the risk of inadequate health literacy, which is especially pronounced in certain groups where the risk exceeds 60%. However, variable significance varies depending on the country, so it is advisable to extend the research to other European countries (8). Bobinac et al. state that the Croatian National Health Development Plan for the period from 2021 to 2027 (OG, 147/2021) represents a good platform for health literacy research given that there is no visible health literacy research conducted on a nationally representative sample of the Croatian population. According to the same source, a quantitative study conducted among 1,000 subjects aged 18 and over in 6 regions of the Republic of Croatia indicates that a higher level of health literacy significantly correlates with younger age and higher personal monthly income, it is in a positive and statistically significant correlation with self-assessed health, and a statistically significant correlation was also shown between

response to preventive examinations and early cancer detection programs. The authors state that lower health literacy is reflected in the lower motivation of the individual to appear for a preventive check-up, to prevent obesity and to regularly engage in physical activity. A low level of health literacy is associated with negative consequences for the individual, with poorer health, poorer survival and higher costs of care for patients with various diseases (9). Research by Dukić et al. indicates that health literacy generates various economic effects on the health system and affects the implementation of public health policies. For this reason, research into the factors that influence the health literacy of the population directly contributes to a better understanding of the economic effects (10). Lack of health literacy results in underutilization of preventive resources such as vaccinations and routine check-ups. It affects the patient's understanding of the clinician's instructions about medications which may affect the treatment of chronic conditions such as diabetes, asthma or high blood pressure. Among adults, there is a direct association between low health literacy and poor understanding of preventive care information and access to preventive care services (11). Research by Williams et al. indicates that health literacy is extremely low among older people and that there are problems with using and understanding information related to their health condition (12). Health literacy determines the degree to which an individual can obtain, process and understand basic health information and services they need to make appropriate health decisions and preserve health (10,13) therefore it includes two entities: *personal health literacy* - the degree to which individuals have the ability to find, understand, and use information and services to make health-related decisions and actions for self and others. *Organizational health literacy* - the degree to which organizations equally enable individuals to find, understand, and use information and services to make health-related decisions and actions for themselves and others (14). An important area of health literacy involves the use of more advanced cognitive, literacy and social skills. These skills can be used for participation in different health activities, understanding different forms of health messages and application of health information in changing circumstances (8).

Epilepsy is one of the most common neurological disorders in the world, affecting approximately 7.1 per 1,000 people. Large epidemiologic studies reveal that the health burden of epilepsy includes educational attainment, lower annual income, and overall poorer health. A significant number of people with epilepsy also experience a high burden of negative health events (NHEs), including seizures, accidents and visits to the hospital. Non-adherence to prescribed medication, inadequate social support and mental health illnesses contribute to poor treatment of epilepsy and NHEs (15). As with other chronic health conditions, low health literacy is a barrier to optimal outcomes among people with epilepsy. In their research, Bautista et al. indicate that patients with epilepsy who have limited health literacy do not necessarily have worse seizure control but have lower QOLIE-10 quality of life scores (16). Scrivner et al. later extended this by finding that a 1%-increase in health literacy was associated with a 6.61-point increase in QOLIE-10 in patients with treatment-resistant epilepsy (17). The programmes that increase the level of social support, improve health literacy, and improve quality of life can also help reduce patient stigmatization (18). Research conducted by Elliott and Shneker indicates that people with epilepsy do not have a solid understanding of the basic information about the condition, including knowledge of their diagnosis, seizure triggers, specific types of seizures, the purpose and potential side effects of antiseizure medications, safety, concerns, risks and the potential consequences of seizures. The same source states that 30% of subjects believe that epilepsy is an infectious disease or a type of mental disorder. Some of these misinformation may have affected personal safety; for example, 41% of people with epilepsy believe something should be put in the mouth of a person having a seizure, 25% think women should stop taking medication when pregnant, and 25% believe it is safe to drive if they double the dose of medication before driving, if they do not drive alone or if they stop when they feel a seizure (19). A study on the relationship between health literacy and outcomes in patients with epilepsy included in a self-management intervention indicates that a lower level of education and lower income are significantly associated with poorer health literacy ($p<0.001$ and $p=0.03$) (20).

Although there are a limited number of studies specifically investigating the association between health literacy and outcomes such as seizures in patients with epilepsy, Paschal et al. in their research indicate that higher results of health literacy among parents

whose children suffer from epilepsy are associated with a lower number of missed doses of medication and the occurrence of epileptic seizures (21). When children lack knowledge about epilepsy, they are more likely to be worried and have more negative attitudes on epilepsy (22). Moreover, when parents of children with epilepsy lack adequate knowledge or have inaccurate beliefs about epilepsy, they may develop negative attitudes and lowered expectations of their children. Epilepsy sufferers and their family members may have many fears when the diagnosis is made. The onset of epilepsy during childhood can be particularly frightening, and seeing seizures can lead parents to believe that their child's condition is life-threatening (23). Children and adults with epilepsy also fear that mental health impairment, injury or death may occur. To manage these fears and prevent unnecessary anxiety, patients need complete and accurate information about the comorbidities and mortality risks associated with epilepsy, including sudden unexpected death in epilepsy, suicide, risks of seizure-related injuries, and long-term seizure risks such as status epilepticus.

Aim

The main aim of this paper is to assess the health literacy in chronic patients, primarily those suffering from epilepsy.

The specific aims of this paper are to assess:

- Whether there is a greater association of health literacy in people who live alone or who have a family.
- Whether there is a greater health literacy with regard to the subject's place of residence.
- Whether there is a better health literacy in people with higher education.

The following hypotheses were established:

H1 - Health literacy is better in patients who are married.

H2 - Patients from rural areas have worse health literacy than patients living in urban areas.

H3 - People with a higher level of education show greater health literacy.

Methods

Design

For the type of study, the simplest form of cross-sectional study was chosen.

Participants

The study was conducted between 1 March and 30 May 2022. A total of 90 subjects of both sexes participated in the study, with a higher proportion of women, 79 (87.8%), and of all age groups, with the largest proportion of people aged 30-49, 51 of them (56.7%).

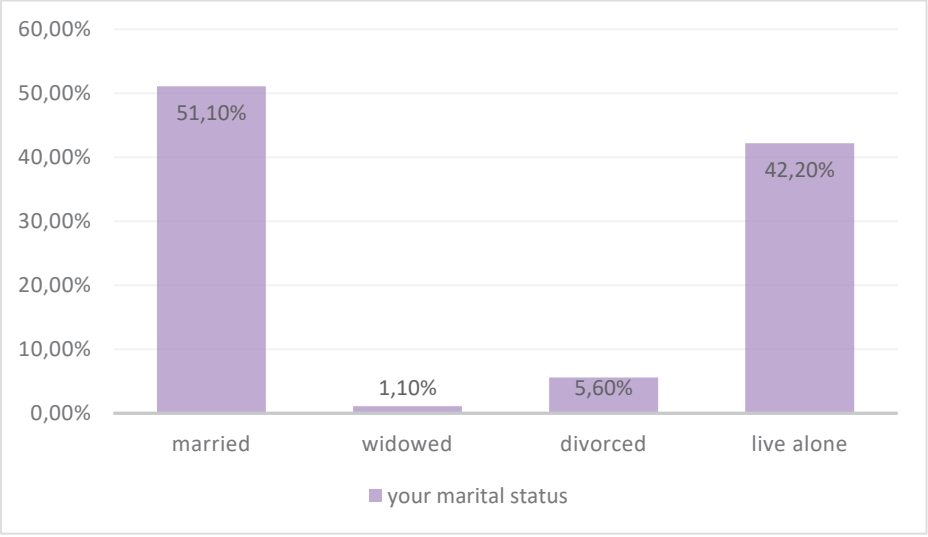
Statistics

The study was conducted by subjects filling out a questionnaire. Consent was requested and obtained from the Croatian Epilepsy Association to conduct the study. Members of the Epilepsy Association participated, and the study was completely anonymous and voluntary. The subjects were offered an instrument (survey questionnaire) that they received through the Epilepsy Association Facebook page, with an explanation of the goal and purpose of completing the questionnaire. Descriptive statistics were used for data analysis, and the obtained data were processed using the Microsoft Office Excel programme. The Chi-square test with Fisher's exact correction was used to test the difference in the observed questions with regard to the sociodemographic indicators of the subjects. The health literacy of the subjects was also tested in the same way.

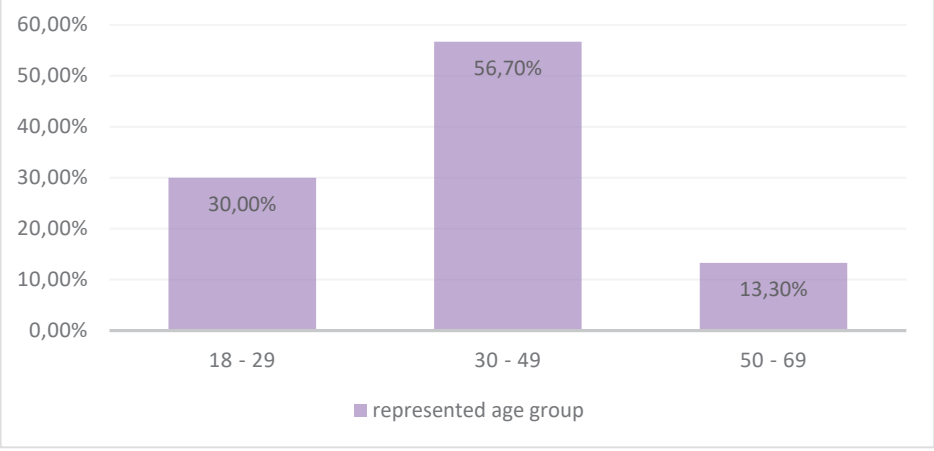
Instrument

The survey questionnaire was modified and personally compiled from a total of 34 questions/statements. The first part of the questionnaire was related to socio-demographic indicators: education, sex, work status, age, marital status, place of residence and a question about the type of epilepsy the patient was diagnosed with. For the type of epilepsy, answers were offered according to the ICD - medical classification of diseases, where each subject could state what type of illness they are suffering from. The questions from the second part of the question-

naire refer to the self-assessment of health literacy. Questionnaires and recommendations for measuring health literacy were used to create the second part of the questionnaire (24-26). The translated Compliance Questionnaire for Rheumatology (CQR5) (25) was used to create and define the first few questions/statements (1-16), which was adapted for all patients with chronic diseases, and for the other questions/statements related to the ability to search, find, understand and evaluate health information from electronic sources and apply the acquired knowledge to solve a health problem, the eHealth questionnaire on health literacy was used. Answers to the questions were scored using the Likert scale where: 1 meant completely agree, 2 - partially disagree, 3 - neither agree nor disagree, 4 - partially agree, 5 - completely agree. It should be noted that the answers to only two items about the usefulness of internet information in decision-making were scored in such a way that: 1 meant not important at all, 2 - not important, 3 - uncertain, 4 - important and 5 - very important. It was possible to mark only one answer to each question.



Graph 1. **The distribution of data for the subjects' marital status**



Graph 2. **The distribution of data for the subjects' age**

Results

In the conducted study on health literacy, N=90 subjects participated with the following diagnoses about the type of illness that the subjects themselves could confirm out of all those offered: epilepsy N=52; epilepsy with generalized seizures N=16; epilepsy with partial seizures N=12; epilepsy of known cause N=7 and epilepsy of unknown cause N=3. The fact that not a single survey was returned without a selected diagnosis should indicate that people are knowledgeable about the type of illness they are suffering from.

As for the socio-demographic indicators of the subjects, the results indicate that most of the subjects were female N=79 (87.8%), while N=11 (12.2%) subjects were male. The most represented age group of subjects was between the ages of 30 and 49, N=51 subjects (56.7%), while there were no subjects aged 70 and over (graph 2). The distribution of results on the level of education indicates that N=43 (47.8%) of the subjects finished secondary school, while a slightly higher number of subjects N=47 (52.2%) have an associate's or bachelor's degree. The largest number of subjects live in an urban area N=53 (58.9%). Graph 1 shows that most subjects are married N=46 (51.1%) i.e. that N=38 (42.2%) of them live alone.

The following is Table 1 with descriptive indicators for the observed questions, displayed frequencies and percentages, arithmetic mean and standard deviation, only for those questions for which the smallest and largest values of the arithmetic mean of the subjects' answers were recorded.

In the first eight questions on health literacy, the highest value of the arithmetic means of the subjects' answers is recorded for the question: *I understand the way of taking the medicine prescribed for me*, where the arithmetic mean of the subjects' answers is 4.86, while the standard deviation is 0.49, and for the question: *I understand the importance of taking the prescribed medicine*, where the arithme-

Table 1a. **Self-assessment of health literacy (first group of questions)**

		N	%	x̄	Sd
I understand the way of taking the medicine prescribed to me	Completely disagree	0	0.0		
	Partially disagree	1	1.1		
	Neither agree nor disagree	2	2.2		
	Partially agree	6	6.7		
	Completely agree	81	90		
	Total	90	100	**4.86**	0.49
I understand the importance of taking the prescribed medicine	Completely disagree	0	0		
	Partially disagree	3	3.3		
	Neither agree nor disagree	1	1.1		
	Partially agree	7	7.8		
	Completely agree	79	87.8		
	Total	90	100	**4.80**	0.62
I am able to decide independently about my method of treatment and/or diagnostics	Completely disagree	10	11.1		
	Partially disagree	11	12.2		
	Neither agree nor disagree	16	17.8		
	Partially agree	17	18.9		
	Completely agree	36	40		
	Total	90	100	**3.64**	1.40

tic mean of the subjects' answers is 4.80, while the standard deviation is 0.62.

The lowest value of the arithmetic means of the subjects' answers is recorded for the question: *are you satisfied with your job*, where the arithmetic mean of the subjects' answers is 3.28, while the standard deviation is 1.46, and for the question: *I am able to decide independently about my method of treatment and/or diagnostics* the arithmetic mean of the subjects' answers is 3.64, while the standard deviation is 1.40.

36 (40%) of the subjects agree with the statement: *I understand all the information and support I receive from health service providers*, while the lowest number of subjects who partially disagree with that statement is 7 (78%). 38 (42.2%) subjects completely agree with the statement: *I understand all the terms related to my condition/illness*, while only one subject completely disagrees with that statement.

36 of them (40%) partially agree that they have enough information to actively manage their health, while at least 7 of them (7.8%) partially disagree with that statement.

76 (84.4%) subjects completely agree that they understand the dosage instructions and possible side effects written on the medicine, while only 1 subject partially disagrees with this statement. For the statement: *I am able to read and interpret all terms related to my illness and the therapy I take*, the highest number of subjects who completely agree is 43 (47.8%), while the lowest number of subjects who partially disagree is 4 (4.4%).

Also, by analysing the results of individual items on health literacy, it can be observed that the higher value of the arithmetic means of the subjects' answers is recorded for the question: *I understand the need for preventive programmes (early detection of illness)*, where the arithmetic mean of the subjects' answers is 4.52, while the standard deviation is 0.85, and for the question: *I believe that I am able to find good and valid information about health and health maintenance*, where the arithmetic mean of the subjects' answers is 4.11, while the standard deviation is 0.90.

The lowest value of the arithmetic mean of the subjects' answers is recorded for the question: *I believe*

Table 1b. **Self-assessment of health literacy (second group of questions)**

		N	%	$\bar{x}$	Sd
I understand the need for preventive programmes (early detection of illness)	Completely disagree	1	1.1		
	Partially disagree	3	3.3		
	Neither agree nor disagree	6	6.7		
	Partially agree	18	20		
	Completely agree	62	68.9		
	Total	90	100	**4.52**	0.85
I believe that I am able to find good and valid information about health and health maintenance	Completely disagree	1	1.1		
	Partially disagree	4	4.4		
	Neither agree nor disagree	14	15.6		
	Partially agree	36	40		
	Completely agree	35	38.9		
	Total	90	100	**4.11**	0.90
I believe in the effectiveness of every product that contributes to health	Completely disagree	5	5.6		
	Partially disagree	17	18.9		
	Neither agree nor disagree	36	40		
	Partially agree	17	18.9		
	Completely agree	15	16.7		
	Total	90	100	**3.22**	1.11

in the effectiveness of every product that contributes to health, where the arithmetic mean of the subjects' answers is 3.22, while the standard deviation is 1.11.

27 (30%) subjects partially agree with the statement: *I understand the information I received about my illness/treatment without anyone's help*, while the lowest number of subjects who completely disagree with that statement is 3 (3.3%). 33 (36.7%) subjects partially agree with the statement: *I think that healthcare workers provide information clearly and comprehensibly*, while the lowest number of subjects who completely disagree with that statement is 7 (7.8%).

37 of them (41.1%) completely agree that they are able to find social support for health maintenance on their own, while at least 6 (6.7%) do not completely agree with this statement. Equally, the results show that the highest number of subjects who completely agree with the statement that they are able to evaluate health information by themselves is 36 (40%), and the lowest number of subjects who partially agree with that statement is 5 (5.56%). Interestingly, the highest number of subjects, 36 (40%) of them, neither agree nor disagree with the statement: *I believe in the effectiveness of every product that contributes to health.*

When measuring self-assessment of health literacy using electronic sources, the following results were obtained for the question: *how useful do you think the internet is in helping you make decisions about your health* – the most subjects, 40 (44.4%) of them, think that the internet is an unsafe source, while 37 (41.1%) subjects believe that the internet is a useful source in making decisions about health. The arithmetic mean for the given question is 3.52 with a standard deviation of 0.77. For the question: *how important is it to be able to access health resources on the internet*, the arithmetic mean is 3.96 with a standard deviation of 0.86, and 45 (50%) subjects consider this possibility important.

The following is Table 2 with descriptive indicators for the observed questions, displayed frequencies and percentages, arithmetic mean and standard deviation, only for those questions for which the lowest and highest values of the arithmetic mean of the subjects' answers were recorded.

Table 2. **Self-assessment of health literacy using electronic resources**

		N	%	x̄	Sd
I know how to find useful health resources on the internet	Completely disagree	3	3.3		
	Partially disagree	5	5.6		
	Neither agree nor disagree	21	23.3		
	Partially agree	28	31.1		
	Completely agree	33	36.7		
	Total	90	100	**3.92**	1.06
I know how to use the internet to answer my questions related to health	Completely disagree	1	1.1		
	Partially disagree	5	5.6		
	Neither agree nor disagree	21	23.3		
	Partially agree	32	35.6		
	Completely agree	31	34.4		
	Total	90	100	**3.97**	0.95
I am confident in using information from the internet to make decisions regarding health	Completely disagree	4	4.4		
	Partially disagree	15	16.7		
	Neither agree nor disagree	40	44.4		
	Partially agree	23	25.6		
	Completely agree	8	8.9		
	Total	90	100	**3.18**	0.97

The highest value of the arithmetic means of the subjects' answers is recorded for the question: *I know how to use the internet to answer my questions related to health* where the arithmetic mean of the subjects' answers is 3.97, while the standard deviation is 0.95, and for the question: *I know how to find useful health resources on the internet* the arithmetic mean of subjects' answers is 3.92, while the standard deviation is 1.06.

From this set of questions, the lowest value of the arithmetic means of the subjects' answers is recorded for the question: *I am confident in using information from the internet to make decisions regarding health,* where the arithmetic mean of the subjects' answers is 3.18, while the standard deviation is 0.97.

Testing the difference in the observed questions with regard to the subjects' socio-demographic indicators

With the aim of comparing all observed questions/statements, testing was performed with regard to the *level of education* of the subjects (secondary school, associate's degree, or bachelor's degree), where the Chi-square test (with Fisher's exact correction) was used, whereby it was observed that ***p*>0.05** in all observed cases, which means that there is no statistically significant difference with regard to the subjects' *level of education*.

By comparing all observed questions/statements, testing was also performed with regard to the subjects' status (employment, retirement, unemployment), using the Chi-square test (with Fisher's exact correction), whereby a level of significance in the question: *I understand the received information about my illness/treatment without anyone's help, I am able to evaluate information related to health* was observed, where $p<0.05$, which means that a statistically significant difference was observed with regard to the subjects' work status (Table 3).

If we look at the significance level of the question: *How useful do you think the internet is in helping you make decisions about your health,* it can be observed that $p<0.05$, which means that a statistically significant difference was observed with regard to the subjects' age, where the subjects aged 18-29 to

Table 3. **Comparison with regard to the subjects' status**

		What is your status						*p**
		I am employed		I am retired		I am unemployed		
		N	%	N	%	N	%	
I understand the received information about my illness/ treatment without anyone's help	Completely disagree	2	3.6	0	0	1	3.2	**0.027**
	Partially disagree	12	21.8	1	25	4	12.9	
	Neither agree nor disagree	6	10.9	2	50	13	41.9	
	Partially agree	21	38.2	0	0	6	19.4	
	Completely agree	14	25.5	1	25	7	22.6	
	Total	55	100	4	100	31	100	
I am able to evaluate information related to health	Completely disagree	0	0	0	0	0	0	**0.028**
	Partially disagree	5	9.1	0	0	0	0	
	Neither agree nor disagree	7	12.7	0	0	13	41.9	
	Partially agree	20	36.4	2	50	7	22.6	
	Completely agree	23	41.8	2	50	11	35.5	
	Total	55	100	4	100	31	100	

*Fisher's exact test

Table 4. **Comparison with regard to the observed age groups**								
		What age group do you belong to						p*
		18 - 29		30 - 49		50 - 69		
		N	%	N	%	N	%	
How useful do you think the internet is in helping you make decisions about your health	Not useful at all	0	0	1	2	0	0	**0.033**
	Not useful	1	3.7	3	5.9	0	0	
	Uncertain	5	18.5	27	52.9	8	66.7	
	Useful	17	63	16	31.4	4	33.3	
	Very useful	4	14.8	4	7.8	0	0	
	Total	27	100	51	100	12	100	

*Fisher's exact test

a much greater extent state that the internet is useful and very useful. In the other observed questions, no statistically significant difference was observed with respect to the subjects' age.

If we look at the significance level of the question: *I understand the importance of taking the prescribed medicine* it can be observed that $p<0.05$, which means that a statistically significant difference was observed with regard to the subjects' marital status, whereby 93.5% of subjects who are married completely agree.

Furthermore, if we look at the significance level of the question: *How useful do you think the internet is in helping you make decisions about your health*

Table 5. **Comparison with regard to marital status**										
		Your marital status								*p**
		Married		Widowed		Divorced		Living alone		
		N	%	N	%	N	%	N	%	
I understand the importance of taking the prescribed medicine	Completely disagree	0	0	0	0	0	0	0	0	**0.003**
	Partially disagree	1	2.2	0	0	1	20	1	2.6	
	Neither agree nor disagree	0	0	0	0	1	20	0	0	
	Partially agree	2	4.3	0	0	2	40	3	7.9	
	Completely agree	43	93.5	1	100	1	20	34	89.5	
	Total	46	100	1	100	5	100	38	100	
How useful do you think the internet is in helping you make decisions about your health	Not useful at all	1	2.2	0	0	0	0	0	0	**0.025**
	Not useful	2	4.3	0	0	0	0	2	5.3	
	Uncertain	27	58.7	0	0	4	80	9	23.7	
	Useful	12	26.1	1	100	1	20	23	60.5	
	Very useful	4	8.7	0	0	0	0	4	10.5	
	Total	46	100.	1	100	5	100	38	100	

*Fisher's exact test

Table 6. **Comparison with regard to the subjects' place of residence**

		Your place of residence						*p**
		City		Countryside		Suburban		
		N	%	N	%	N	%	
I have enough information to actively manage my health	Completely disagree	0	0	0	0	0	0	**0.018**
	Partially disagree	5	9.4	0	0	2	15.4	
	Neither agree nor disagree	4	7.5	6	25	5	38.5	
	Partially agree	26	49.1	7	29.2	3	23.1	
	Completely agree	18	34	11	45.8	3	23.1	
	Total	53	100	24	100	13	100	

*Fisher's exact test

it can be observed that $p<0.05$, which means that a statistically significant difference was also observed with regard to the subjects' marital status. No statistically significant difference was observed in the other observed questions.

If we look at the significance level of the question: *I have enough information to actively manage my health* it can be observed that the value of Fisher's exact test is $p<0.05$, which means that a statistically significant difference was observed with regard to the subjects' place of residence, with 45.8% of the subjects from the countryside completely agreeing. For the other observed questions, no statistically significant difference was observed with regard to the subjects' place of residence.

Discussion

A total of 90 subjects diagnosed with epilepsy, of both sexes and all age groups, members of the Croatian Epilepsy Association, participated in the study. Out of a total of 90 subjects, 79 of them declared that they are of the female gender, while 11 subjects declared that they are members of the male gender, which means that 87.8% of the subjects were female and 12.2% were male. In addition to basic literacy and reading ability, the overall assessment of health literacy emphasizes the importance of assessing the ability of patients to understand information received verbally, how well they know health topics, and how they navigate a large number of information sources. Based on that, our study also aimed to assess certain determinants of health literacy and their connection with sociodemographic indicators. Analysing the results, it can be recognized that the examined group has the skills related to the proper way and awareness of the importance of taking the prescribed medicine. 76 (84.4%) of the subjects believe that they understand the dosage instructions and possible side effects written on the medicine. The same number of subjects, 76 (84.4%), estimate that they are able to read and interpret all terms related to the illness and the therapy they are taking. Given that these questions showed the highest value of the arithmetic mean, the above indicates that the health literacy of all subjects for these items is at a desirable level, regardless of the examined sociodemographic determinants. On the other hand, the study indicates that the subjects assess a reduced skill in the degree of independence in their method of treatment and/or diagnostics, given that the lowest value of the arithmetic mean of the answer to that question was recorded in the examined group. It is possible that these results are expected, given that it is a chronic neurological illness which, according to the guidelines of the profession, requires an individual approach to treatment, and an illness which can be completely put under control i.e. long-term or permanent remission with medication (27). It is important to educate and strengthen the patient's health literacy about the method of treatment, and the aforementioned guidelines emphasize that the

treatment begins with educating the patient about the prognosis and possible outcomes of the illness, possible complications, possible side effects, life restrictions, work activities, self-help, etc. Furthermore, our study showed that the subjects partly or mostly agree with the statements related to their understanding of information, the support they receive from health care providers, and their understanding of the terms related to their condition/illness. Only one person completely disagrees, and a smaller number of subjects partially disagree with those statements. If we look for an answer to the question whether healthcare professionals carry out sufficient education that makes it easier for patients to understand services and information, and analyse the answers to the question "*I think that healthcare workers provide information clearly and comprehensibly*", we can determine that there is still room and a need to strengthen the provision of comprehensible and clear information, given that the answers to that question are equally dispersed from completely disagree to completely agree. As the arithmetic mean of the answers of the interviewed persons showed a high value to the following questions, through our results we can determine that the participants showed an understanding of the needs for preventive programmes (early detection of illness) and the present skills of finding good and valid information about health and maintaining health (Table 1b). Namely, we can be satisfied with the obtained results of these observed items, starting from the fact that understanding how patients value different aspects of public health preventive programmes and how they prioritize when it comes to their health is of great importance, and we believe that our subjects' understanding is an important health resource.

The lowest value of the arithmetic means is recorded in the subjects' answers to the question about confidence in the effectiveness of each product that contributes to health, which can be connected to health literacy and the individual's ability to select products which are on the market, and often as an over-the-counter medicine. Each product does not unconditionally contribute to health, therefore the effectiveness depends on a professional assessment of the justification of using a product, prescribed by an expert.

The levels of health literacy according to Freebody and Luke are: the first is basic literacy, the second is communicational or interactive literacy, those skills that are related to finding and browsing different sources of information and applying those information in a health context, and the third is related to critical reflection on the found information (28). The Internet is an important source of information, and terms from IT literacy are also used for health literacy. Today individuals seek information when they become aware of their own gaps in knowledge when dealing with health and other problems. With this study, we wanted to investigate the information behaviour of our subjects and the trust they have towards certain types of information resources through several questions. The results indicate a high value of the arithmetic means of the subjects' answers to the questions: "*I know how to use the internet to answer my questions related to health*" and "*I know how to find useful health resources on the internet",* therefore it could have been assumed that the subjects use the internet, as we found them through social networks and the internet, and in this way they filled out the survey questionnaire. It is certain that the results of these questions were influenced by the distribution itself, which was via the internet, which left out the part of patients who do not use the internet, and probably the physical distribution of the survey questionnaire would have ensured a more representative sample. Likewise, one of the limitations of this study is the fact that the subjects are patients largely from the younger age group, with an assumption that they use more and have better skills for using IT systems, that they are treated in an out-patient setting and not at a hospital, and that they are members of an Association which primarily provides support for its members. Since membership is voluntary, our subjects belong to the group of patients motivated to control their health and treat their illness. Research shows that all of the above is positively correlated with health literacy.

As our specific goals were to compare the health literacy of the examined group with socio-demographic indicators, we tested the difference in the observed questions from the survey with regard to the subjects' socio-demographic indicators, using the Chi square test (with Fisher's exact correction, where we $p>0.05$ meant that there was no statistically significant difference, and $p<0.05$ that a statistical difference was observed).

The study showed that there is no statistically significant difference with regard to the level of education,

while statistical significance was observed for the question about the information received about one's illness/treatment and understanding it without anyone's help with regard to the subjects' employment status, where the highest number of those who declared themselves neutral on that question (neither agree nor disagree) was among the unemployed – 13 (41.9%). Also, there is statistical significance for the question about the state of independent assessment of health information with regard to the subjects' employment status, where the majority of those who neither agree nor disagree are unemployed (Table 3).

As already mentioned in the discussion, it was to be expected that the younger population is more inclined to use the internet and social networks, so the significance and statistically significant difference with regard to the subjects' age was shown in the question about the opinion on usefulness of the internet in helping to make decisions about one's health, with the subjects aged 18-29 citing the internet as a useful and very useful resource to a much greater extent (Table 4).

As for the category of marital status, in the survey we classified these indicators into four groups (married, widowed, divorced and living alone). Analysing the results, we determined that there are statistically significant differences in the questions about understanding the use of prescribed medicines and the question about the usefulness of the internet in helping to make decisions about personal health with regard to these categories. 46 (93.5%) married subjects answered that they completely agree to the question about taking medicines, although 38 (89.5%) of those who live alone gave the same answer to the same question. The number of subjects who are widowed or divorced was incomparably smaller, i.e. only 6 people, and we realised that it is difficult to assert that there is truly a statistically significant difference with regard to the subjects' marital status. For the same reasons, although a statistically significant difference was obtained because the test showed $p<0.05$, we cannot confirm the significance between the marital status and the subjects' answer that the internet is useful in helping to make decisions about health. In Table 5, it can be seen that the answers of both those who are married and those who live alone to this question are mostly unsafe and useful. 27 (58.7%) of those who are married think that it is unsafe, and those who live alone think more that it is useful.

If the results are compared with regard to the subjects' place of residence, the level of significance in the question: "*I have enough information to actively manage my health*", it is observed that the value of the test is $p<0.05$, which means that a statistically significant difference was also observed with regard to the subjects' place of residence, with 45.8% of the subjects from the countryside completely agreeing, and 49.1% of the subjects from living in cities partially agreeing with that statement.

According to Kickbusch, health literacy is not only an individual's trait but a key determinant of population health which is influenced by many factors, and as a measure of the outcome of health promotion and disease prevention activities, and as such is becoming increasingly important for social, economic and health development (29). Thus, in the objectives of this paper, three hypotheses were set, with the aim of determining the connection of certain factors with health literacy in the studied population. According to the obtained results and the presented statistical processing, it can be determined that the set hypotheses were rejected.

H1 - We do not confirm that health literacy is better in married patients.

H2 - Patients from rural areas have poorer health literacy than patients living in urban areas – this hypothesis was not confirmed.

H3 - Persons with a higher level of education show greater health literacy – based on the results obtained, the hypothesis was rejected.

Although there are limitations to this study, for example in the number of subjects and the method of data collection, the use of a self-made questionnaire with selected questions for the assessment of health literacy, it can still serve as a platform for subsequent research which would include a larger number of subjects/patients and those undergoing hospital treatment, creation of a rapid assessment model, literacy of other important components in the treatment of epilepsy, such as compliance with the treatment, satisfaction with care and support for the patient, use of health resources, and for example, determining the impact of health literacy on the quality of life, etc.

Conclusion

The results of this study conducted on patients suffering from epilepsy indicate satisfactory health literacy, they also indicate that health literacy is not influenced by the level of education, marital status, and that there is no statistical significance whether a person lives in a rural or urban area.

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ZDRAVSTVENA PISMENOST KOD KRONIČNIH BOLESNIKA OBOLJELIH OD EPILEPSIJE

SAŽETAK

Pregledom literature mnogi autori zdravstvenu pismenost navode kao jedan od najjačih prediktora zdravstvenog stanja, pojedinca i zajednice. Prema podacima Svjetske zdravstvene organizacije iz 2000., zdravstvenu pismenost predstavljaju osobna, kognitivna i društvena umijeća koja određuju sposobnost pojedinca da dođe do informacije te razumije i upotrebljava informacije kako bi unaprijedio i održao zdravlje, te se navodi kao jedan od važnih ciljeva javnog zdravlja za 21. stoljeće. Svrha ove studije presjeka bila je procijeniti razinu zdravstvene pismenosti među bolesnicima oboljelima od epilepsije i ispitati povezanost između zdravstvene pismenosti i mekih sociodemografskih pokazatelja. Primijenjen je strukturirani anketni upitnik modificiran prema upitniku Compliance Questionnaire for Rheumatology (CQR5) i upitniku eHealth za procjenu korisnosti zdravstvenih informacija dobivenih putem elektroničkih izvora. U studiju je bilo uključeno N = 90 ispitanika oba spola, a najzastupljenija dobna skupina bila je u dobi od 30 do 49 godina. Analiza podataka uključivala je deskriptivnu statistiku, a za testiranje je primijenjen hi-kvadrat test s Fisherovom egzaktnom korekcijom. Rezultati su ukazali da postoji statistički značajna razlika između zdravstvene pismenosti i nekih sociodemografskih pokazatelja te da mlađa populacije prepoznaje internet kao koristan izvor podataka koji pomažu pri donošenju osobnih odluka o zdravlju. Ovim istraživanjem nije dokazana statistički značajna razlika kod bolesnika između zdravstvene pismenosti i stupnja obrazovanja, kao ni da bolesnici iz ruralnih krajeva imaju lošiju zdravstvenu pismenost.

Ključne riječi: bolesnik, epilepsija, mjerenje, zdravstvena pismenost