Originalus mokslinis straipsnis / Original Research

Assessment of the Quality of Life in Patients with Migraine

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Summary. *Introduction.* Migraine is one of the most common neurological disorders in the world, affecting around 1.1 billion people worldwide. The disease impacts on both physical and mental health, while also reducing the quality of life. The aim of this study was to evaluate the quality of life of patients with migraine and its association with socio-demographic characteristics.

Materials and Methods. The study was conducted between November 2023 and January 2024. A total of 370 patients with migraine took part in this study. Patients participated in an anonymous online questionnaire survey. The survey consisted of a two-part questionnaire: 1) demographic data; 2) *Short Form 36 Medical Outcomes Study* questionnaire (*SF-36 questionnaire*). Statistical analysis of the data was performed by using *Microsoft Office Excel 2010* and *SPSS (Statistical Package for Social Science) 24.0* software packages. The results were considered as statistically significant at p<0.05.

Results. The majority (95.4%) of the participants were women. The highest scores in the physical health category were physical functioning (77.64±18.95), whereas the lowest scores were given to role limitations due to physical health (38.38±37.99). The highest scoring subscale of mental health was emotional well-being (49.31±18.11), while the lowest scoring subscale was energy/fatigue (43.47±18.20). The quality of life of migraine sufferers is low (48.08±17.85). An older age of migraineurs is correlated with better scores in energy/fatigue (p=0.022) and emotional well-being (p<0.001).

Conclusions. Migraine is most prevalent among women. The older a person is, the more positive they are about their energy levels and emotional well-being. The respondents were optimistic about their physical and mental state. The most negative effects of the disease are the lack of energy and vitality along with limitations in activities due to physical health problems. The overall quality of life of the patients is low.

Keywords: migraine, quality of life, SF-36

Sergančiųjų migrena gyvenimo kokybės įvertinimas

Santrauka. *Įvadas.* Migrena – viena labiausiai paplitusių neurologinių ligų pasaulyje, kuria serga apie 1,1 mlrd. žmonių. Ši liga, paveikdama tiek fizinę, tiek psichinę pacientų sveikatą, blogina gyvenimo kokybę. Šio tyrimo tikslas – įvertinti sergančiųjų migrena gyvenimo kokybę ir jos sąsajas su sergančiųjų sociodemografiniais rodikliais.

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Tiriamieji ir tyrimo metodai. Tyrimas atliktas 2023 m. lapkričio–2024 m. sausio mėnesiais. Anoniminėje internetinėje anketinėje apklausoje dalyvavo 370 sergančiųjų migrena. Tyrimo metu buvo sudarytas klausimynas iš dviejų dalių: 1) demografinių duomenų; 2) Trumpos sveikatos apklausos formos (angl. *Short Form 36 Medical Outcomes Study questionnaire* (SF-36 klausimynas)). Duomenų statistinė analizė atlikta naudojant „Microsoft Office Excel 2010" ir SPSS (angl. *Statistical Package for Social Science*) 24,0 programų statistinius paketus. Statistiškai reikšmingais rezultatai laikyti, kai p < 0,05.

Rezultatai. Beveik visos (95,4 proc.) tyrimo dalyvės buvo moterys. Tiriamieji didžiausiais balais fizinės sveikatos kategorijoje įvertino fizinį aktyvumą (77,64 ± 18,95), mažiausiais – veiklos apribojimą dėl fizinių sutrikimų (38,38 ± 37,99). Geriausiai vertinama psichinės sveikatos subskalė – psichinė būklė (49,31 ± 18,11), prasčiausiai – energingumas (43,47 ± 18,20). Sergančiųjų migrena gyvenimo kokybė yra žemo lygio (48,08 ± 17,85). Vyresnis sergančiųjų migrena amžius susijęs su geresniais energingumo (p = 0,022) ir psichinės būklės (p < 0,001) vertinimais.

Išvados. Migrena labiausiai paplitusi tarp moterų. Kuo vyresnis asmuo, tuo geriau jis vertina savo energingumo lygį ir psichinę būklę. Apklaustieji palankiai vertino savo fizinę bei psichinę būklę. Labiausiai neigiami ligos padariniai yra energijos ir gyvybingumo trūkumas bei atsiradę veiklos apribojimai dėl fizinės sveikatos sutrikimų. Bendra sergančiųjų gyvenimo kokybė yra žemo lygio.

Raktažodžiai: migrena, gyvenimo kokybė, SF-36.

What this paper adds

Our study has important strengths, including its large sample size, its novelty and its relevance as there are not many quality-of-life studies of patients with migraine in Lithuania. Also, the questionnaire used in the study is reliable and suitable for measuring the quality of life in patients with migraine.

Introduction

Migraine is the most common neurological disorder, affecting an estimated 1.1 billion people worldwide in 2019 [1]. It is characterised by headache accompanied by phonophobia, osmophobia, photophobia, nausea and/or vomiting, and, less commonly, by allodynia, sleep, speech and gait disorders, etc. [2]. Migraine also causes less accentuated, non-physical changes in the sufferer's life, such as cognitive difficulties, fatigue, impaired family and social relationships, anxiety and depression, stigma [2]. In a study by Estave et al. (2021), ca. one out of eight (12%) respondents experienced stigma, and slightly over half (52%) were undergoing changes in emotional health [3]. All of these illness-related changes lead to a worsening quality of life.

The quality of life is a subjective concept which describes a person's overall fulfilment, depending on many different factors. In a study by Estave et al. (2021), almost all (90%) migraine sufferers reported that the disease had a negative impact on their lives, i.e., that it made life more difficult and caused disability [3]. A qualitative study by Parker et al. (2023) highlighted very similar problems: experiencing loss due to migraine, the burden of the disease, and the lack of understanding of the social environment [4]. It is evident that migraine affects a person's quality of life.

The management and treatment options for migraine are being developed to find the most effective strategies with the least adverse effects. Migraine sufferers can make a significant contribution to effective management of their disease. The main non-pharmacological treatments and management approaches include lifestyle interventions, such as adherence to a work-rest routine, proper sleep, hygiene, and diet, avoidance of triggers, and the use of psychotherapies [5]. However, such constant self-restraint can also contribute to a deterioration in the quality of

life by causing various difficulties. In a study by Estave et al. (2021), almost one fifth (17%) of the respondents experienced fear of being attacked, pain catastrophising, and the use of avoidance-based coping strategies [3]. Respondents in the study report by Parker et al. (2023), under the category of illness-related losses, noted that migraine causes them to give up on their favourite activities as well as social events, while also reducing their ability to fulfil the role of a family member [4]. In conclusion, the quality of life with migraine is affected both by the manifestation of the disease and by the difficulties in effectively managing and treating it.

The aim of this study was to assess the quality of life of patients with migraine and its association with sociodemographic characteristics.

Subjects and methods

Subjects

The study was carried out between November 2023 and January 2024 on the social networking site *Me and Migraine*, which unites a specific group of patients with migraine. This research design was chosen because of the low number of patients with migraine hospitalisations, the absence of specialised clinics, the relatively low attendance of patients to a neurologist, and the inactivity of patients with migraine association. A total of 370 respondents took part in the study. The inclusion criteria were as follows: 18 years of age or older, agreement to take part in the study, official diagnosis of migraine. Exclusion criteria: lack of ability to answer the questions due to a language barrier, and participation by proxy (i.e., relatives of sufferers were not invited to take part).

Permission No. 15000-KT-324 from the Ethics Committee of Vilnius University, Faculty of Medicine was obtained, and permission from the administrator of the *Me and Migraine* group was also obtained for the study. A quantitative study was carried out, and an online, anonymous survey was developed.

Research Instrument

The survey questionnaire consisted of 2 parts: Part I – demographic data, and Part II – the Quality of Life SF-36 questionnaire. The two initial questions were control questions: the first one asked whether the respondent agreed to take part in the study, whereas the second question enquired if they had been diagnosed with migraine. If the answer to either of these questions was negative, the questionnaire was not allowed to be completed.

The questions in Part I were designed to find out the respondents' sociodemographic data including their gender, age, education, and marital status. Part II consisted of the Short Form 36 Medical Outcomes Study questionnaire (SF-36 questionnaire, as developed by Ware Jr. et al. in 1992) [6]. SF-36 consists of 36 questions analysing eight domains of life in the last four weeks: physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, and the general health status. Responses for each domain are converted into numerical values from 0 to 100 (where 100 indicates the best quality of life) [7].

Statistical Processing of Data

Statistical analysis of the data was conducted by using *Microsoft Office Excel 2010* and *SPSS (Statistical Package for Social Science) 24.0* statistical packages. Descriptive statistics, such as percent-

ages, frequencies, means, standard deviations (M±SD), the minimum and maximum values were used to process the data. The Kolmogorov-Smirnov test, asymmetry, and coefficients of variance were used to test the normality of the data. Student's t-tests were used for comparisons between two populations, while ANOVA with Post-Hoc was used between three population groups, cross-tabulations were created to determine the percentage distributions of the nominal variables, and the data were analysed according to the χ^2 criteria. Spearman correlation was used to identify statistical relationships. Values $p<0.05$ were considered to be statistically reliable.

Results

The analysis of the survey results covers 370 eligible questionnaires. 353 (95.4%) of the respondents were women, and only 17 (4.6%) were men (Table 1). The youngest respondent was 18 years old, and the oldest was 69 years old with an average age of 37.46±9.92 years. The respondents were divided into two groups according to age: 35 and under (44.6%), and 36 and over (55.4%).

The majority (51.1%) of those who participated in the study had a university degree, of whom 85 had a bachelor's degree, 101 had a master's degree, and 3 participants had a PhD. Slightly more than a quarter (26.2%, n=97) of the respondents had a higher education college degree. The lowest percentage (22.7%) had a vocational qualification or lower.

Table 1. Demographic characteristics of the respondents

Demographic features		Number of patients (%)
Gender	Male	17 (4.6%)
	Female	353 (95.4%)
Age	≤35	165 (44.6%)
	≥36	205 (55.4%)
Education	Primary school	1 (0.3%)
	Lower secondary school	3 (0.8(%)
	High school	28 (7.6%)
	Vocational education	52 (14.1%)
	Higher Education College	97 (26.2%)
	University (Bachelor's degree)	85 (23%)
	University (Master's degree)	101 (27.3%)
	University (Doctoral degree)	3 (0.8%)
Marital status	Married/living with partner	271 (73.2%)
	Single – never married	64 (17.3%)
	Divorced/separated	34 (9.2%)
	Widowed	1 (0.3%)

Almost three quarters (73.2%) of migraine sufferers are married or in a relationship, less than a fifth (17.3%) are unmarried, and 9.2% are divorced.

The findings show that migraine sufferers have better physical health than mental health. In the physical health category, the physical functioning subscale scored the best, with 77.64±18.95 points, and the role limitations due to physical health scored the worst, with 38.38±37.99 points (Table 2).

Table 2. Results of SF-36 scales in migraine sufferers

Scale		Average	Standard deviation	Minimum value	Maximum value
Physical health	Physical functioning	77.64	18.95	20	100
	Role limitations due to physical health	38.38	37.99	—	100
	Pain	40.93	20.82	—	100
	General health	41.03	20.03	—	100
Mental health	Energy/fatigue	43.47	18.20	—	95
	Social functioning	45.29	22.86	—	100
	Role limitations due to emotional problems	48.56	40.98	—	100
	Emotional well-being	49.31	18.11	—	96
Quality of life		48.08	17.85	13.75	91.19

In the mental health category, the highest score was emotional well-being equalling to 49.31±18.11, whereas the lowest score was given to the energy levels at 43.47±18.20. For the general quality of life, the average score is 48.08±17.85. Thus, the quality of life of the respondents is below 50%, which suggests that the quality of life of the participants in our study can be considered low.

Spearman correlation analysis was performed to determine the correlation between the quality of life of migraine sufferers and the age and education of the respondents. According to the data presented in Table 3, the older is the person, the higher tend to be the scores on the energy and emotional well-being subscales. No further statistically significant correlations were found.

Table 3. Associations of quality of life with age and education of individuals with migraine

Correlations		Age	Education
Physical functioning	r	-0.059	0.095
	p	0.257	0.068
Role limitations due to physical health	r	0.035	-0.064
	p	0.506	0.217
Pain	r	-0.038	0.001
	p	0.471	0.983
General health	r	0.048	0.055
	p	0.357	0.292
Energy/fatigue	r	**0.119**	-0.020
	p	**0.022**	0.695
Social functioning	r	0.028	0.016
	p	0.594	0.753
Role limitations due to emotional problems	r	0.072	0.013
	p	0.165	0.796
Emotional well-being	r	**0.204**	0.032
	p	**<0.001**	0.538
Quality of life	r	0.076	0.012
	p	0.146	0.818

r – Spearman correlation coefficient, p – statistical significance at p<0.05

To determine the quality of life of patients with migraine across the age groups, Student's t-tests were performed (Table 4). The results showed that younger people (aged 35 and under) had significantly poorer mental health than the participants aged 36 and above (p=0.012). For all other subscales of the questionnaire, there were no statistically significant differences between the two age groups.

Table 4. Comparison of quality of life of individuals with migraine by age

Factors	Age		t	df	p
	≤35 (n=165) m±SD	≥36 (n=205) m±SD			
Physical functioning	78.61±19.04	76.85±18.88	0.884	368	0.377
Role limitations due to physical health	38.79±37.59	38.05±38.39	0.186	368	0.853
Pain	42.80±22.57	39.43±19.21	1.554	368	0.121
General health	41.21±19.90	40.88±20.19	0.159	368	0.874
Energy/fatigue	42.03±18.93	44.63±17.55	-1.370	368	0.172
Social functioning	45.61±23.97	45.04±21.99	0.238	368	0.812
Role limitations due to emotional problems	47.88±40.20	49.11±41.69	-0.286	368	0.775
Emotional well-being	46.69±18.15	51.41±17.84	**-2.512**	**368**	**0.012**
Quality of life	47.95±18.38	48.17±17.46	-0.119	368	0.905

m±SD – mean±standard deviation, n – sample size, t – Student's t-test, df – degrees of freedom, p – statistical significance at p<0.05

To assess the quality of life of the migraine patients by marital status, Student's t-tests were performed. No statistically significant differences were found between those in a marriage or partnership versus those without a partner. ANOVA with post-hoc paired tests was also conducted to determine the dependence of the quality of life of patients with migraine on their education. No statistically significant differences were found between patients with a vocational or lower level of education, versus those with a university degree, or with a higher education college degree.

Discussion

Analysis of similar studies and research implemented in other countries showed that women are by far the more common participants in the migraine research: the share of women participating in migraine studies went as high as 80% [8], or even 89.6% [9]. In our study, women were also the predominant sex, representing 95.4% of the total sample. The higher prevalence of the disease in women has been attributed to the presence of sex hormones which determine various bodily functions, including the release of neurotransmitters, structural changes in the brain and other factors relevant to the mechanism of migraine development [11].

The mean age of participants in similar studies ranged from 21.48 to 47.17 years [8–10, 12]. In our study, the average age was 37.46±9.92 years. This age distribution is due to the fact that migraine attacks tend to be more intense in adolescence and become less frequent, intense, or even disappear after the onset of the menopause [13].

The SF-36 questionnaire is widely used to measure the health-related quality of life in patients with migraine. The data obtained from the subscales of the SF-36 questionnaire were compared with five similar research studies of migraine patients [8–10, 12, 14]. Analysis of the similarities

and differences between the physical health category results reported in the literature and those reported in our study revealed a tendency for physical functioning to receive the highest scores of all SF-36 subscales. This distribution of scores could be related to the fact that migraine does not cause more pronounced changes in physical health during the remission periods from one attack to the next, whereas attacks heavily impair the daily activities and the quality of life [2]. In our study, the worst-rated physical health subscale was role limitations due to physical health (38.38±37.9), with similar results in the Spanish population with chronic migraine (20.65±31.76) [14] and in Croatia (median 25 (0–50)) [9]. This distribution could be explained by the fact that, during a migraine attack, the intensity of symptoms tends to increase with daily physical activities such as walking, bending, climbing stairs, etc. [15]. To avoid worsening the condition, patients with migraine choose to restrict activities that may aggravate their symptoms.

In our research, in the mental health category emotional well-being was the one with the highest score (49.31±18.1), and the results of the study by Acikgoz et al. (2022) were similar (56.85±20.47). The high scores on the emotional well-being subscale in our and Acikgoz et al.'s (2022) studies may be related to the predominance of respondents in romantic relationships (73.2% in our study, 67.5% in Acikgoz et al. (2022)) [8]. Migraine commonly produces negative emotions such as guilt, feelings of isolation and loneliness, anxiety, depression, nervousness and low self-esteem [3]. Support, understanding and help from the loved ones is an important aspect of coping with the mental health changes brought about by the illness. In our study, the respondents scored the lowest in the mental health category on the energy subscale (43.47±18.20). This is confirmed by other studies: the energy subscale was also rated the lowest in Turkey (41.50±21.42) [8], Croatia (median 45 (35–60)) [9], Denmark (three groups of patients according to migraine intensity 55.44±15.11; 50.44±15.37; 44.57±21.37) [10]. It can be assumed that patients with migraine suffer from lack of energy due to the specific mechanism of migraine. This disease is denoted by specific cycles of manifestation, such as prodromal, aura, headache, postdromal, and interictal [2]. During all these phases, a spectrum of symptoms is experienced, varying in intensity, which may persist during more than one of the stages. The pain cycle itself lasts on average 4–72 hours, but there is no precise time limit on how long all the preceding and following phases can last [2, 15]. As a result, migraine sufferers may experience a wide range of symptoms over a long period of time, or even for several days, which consequently reduce their energy, ability to perform daily activities, and the overall quality of life.

Upon analysing the correlations between the different variables and the subscales of the SF-36 questionnaire, the key findings have been found to relate to the patients' age. An older age was associated with higher scores on the dimensions of energy and emotional well-being. These results may be associated with the fact that the frequency of migraine attacks tends to decrease at older ages, thus reducing the burden of the disease [13]. In addition, older age groups have a better understanding of their illness, such as the factors that can trigger an attack, the most effective non-pharmacological and pharmacological treatments, as well as psychotherapeutic coping strategies, which leads to better management of the disease and its consequences [8]. It is clear that age-related experience of migraine is a significant factor contributing to the quality of life of patients with migraine.

Limitations

The power of our study is limited due to some data characteristics. The criteria for diagnosing migraine were not detailed precisely. As a result, a single control question might have been in-

sufficient. In addition, no questions on the type of migraine, the duration of its bouts, the attack frequency and intensity were included. The control group was not included, either.

Conclusions

1. Migraine is more prevalent in women than in men.
2. The data sourced from the SF-36 questionnaire suggest that an older age is correlated with higher scores on the energy and emotional well-being subscales. Other sociodemographic factors, such as the marital status and the education level, do not affect the quality of life.
3. Physical functioning scored the highest in the physical health category, whereas role limitations scored the lowest due to the aspect of physical health. The emotional well-being subscale was the highest scoring subscale in the mental health category, whereas the lowest scoring subscale was the energy subscale.
4. The overall quality of life of migraine sufferers is below 50% and is therefore considered to be at a low level.

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