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Original research article

Quality of life in patients with migraine

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Abstract
Aim: To assess the quality of life in adult patients with migraine.
Methods: The sample consisted of 194 respondents. The Migraine Specific Quality of Life Questionnaire (MSQ version 2.1) was used for data collection. Data were evaluated using descriptive statistics and correlation analysis.
Results: The sample consisted of 92.3% women and 7.7% men with a mean age of 42.085 ± 10.48 years. The median duration of migraine was 15.70 ± 10.64 years. The majority were those with secondary education (56.2%) and those doing mental work (60.8%). According to the average score achieved in the MSQ version 2.1, patients' quality of life was at average level (M = 50.1). Our results showed that, longer duration ($p = 0.012$), and high frequency of migraine attacks per month ($p < 0.001$) and per year ($p < 0.001$) reduced the quality of life. Meanwhile, the quality of life increased with increasing education. Finally, sex ($p = 0.466$), occupation ($p = 0.079$) and migraine medication use ($p = 0.052$) did not prove to be significant variables in relation to the quality of life.
Conclusion: Understanding the quality of life of adult patients with migraine using the MSQ version 2.1 is important for the effective management of this disease. Nurses and physicians should routinely evaluate the quality of life of patients with severe chronic neurological disease as a complementary assessment of patients with migraine.

Keywords: Migraine; Migraine Specific Quality of Life Questionnaire; Patient; Quality of life (MSQ version 2.1)

Introduction

Migraine is a serious chronic disease with an episodic course, affecting up to 11% of the population worldwide (15–18% women and 6% men) (Klečka, 2019). The disease may affect approximately one billion people worldwide (Shibata et al., 2020; Vacca, 2019). It is a primary headache, affecting 2–3 times more women than men. In women its prevalence decreases after the age of 50 or after menopause (if they do not use estrogen replacement therapy) (Guilbeau and Lenahan, 2015). Migraine onset can appear at any age, but it is most common in the period of early to middle adolescence. It reaches the highest prevalence at the age of 30–39 years (Vacca, 2019). Concerning classification, we differentiate between migraine without aura (75%), with aura (25%), and chronic migraine (Novotná, 2019). Every year, 2.5% of patients with episodic migraine progress to chronic migraine (2.5–6.5 times more frequent in women than in men). According to the WHO, migraine and its chronic form is ranked as the 6th most debilitating diagnosis in the world, with the same level of disability as, for example, dementia, quadriplegia, and acute psychosis (Nežádal, 2019).

In the case of a migraine with aura, it occurs in the form of an attack and has four phases. The first stage is characterized by prodromal symptoms (in 7–88% of patients), which are affective and vegetative symptoms, e.g., increased yawning, irritability, euphoria, drowsiness, restlessness, reduced concentration, stomach problems. In the second stage, prodromes are replaced by auras (in 20–30% of patients), which are transitory focal symptoms. Most often, these are reversible visual and speech disturbances, preceding an immediate headache (Guilbeau and Lenahan, 2015; Klečka, 2019). The third stage is characterized by a headache of varying duration, with the character of recurrent pulsatile hemicrania, also of bilateral occurrence with possible alternation from side to side and worsening with movement. The headache is accompanied by vegetative symptoms such as nausea, vomiting, photophobia, or phonophobia. Other symptoms, such as cognitive dysfunction, feelings of facial pressure, visual and thermoregulatory disorders, muscle stiffness or spasms, dizziness, or emotional imbalance may also be present (Almosaiteer et al., 2022; Klečka, 2019; Nežádal, 2019; Vacca, 2019). The fourth postdrome phase begins after the end of the attack, with the manifestation of fatigue, a feeling of exhaustion and relief (Novotná, 2019; Speck et al., 2019).

The disease significantly affects daily functioning, reduces health-related quality of life, leading to an increased economic burden (Chang et al., 2019; Lipton et al., 2020). Chronic migraine leads to a significant increase in incapacity for work and

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more than a 50% decrease in work productivity, and a decline in school attendance, leisure and social activities (Nežádal, 2019). Patients are often worried and afraid of further pain, which has an impact on familial, occupational, and social relationships and their life. Moreover, the patients may be labeled as unreliable due to the inability to fulfill their work duties due to recurring pains (Speck et al., 2019; Taşkapilioğlu and Karli, 2013).

The aim of study was to assess the quality of life in patients with migraine.

Materials and methods

Group of respondents

The sample consisted of 194 respondents – adult patients with migraine. Intentional selection was based on predefined inclusion criteria: age ≥18 years, medical diagnosis of migraine, willingness to fill in a questionnaire, and signed informed consent. If at least one criterion was unmet, the patient was not included in the sample.

Data collection

In the quantitative prospective study, the questionnaire method was chosen. The questionnaire included the self-assessment tool Migraine Specific Quality of Life Questionnaire (MSQ version 2.1), also available in Slovak (GlaxoSmithKline Research and Development Limited, GSK, 1992; distributed by Mapi Research Trust https://eprovide.mapi-trust.org/instruments/migraine-specific-quality-of-life-questionnaire). The tool makes it possible to assess the impact of migraine pain on daily functioning (social and work activities). The questionnaire consists of 14 items divided into three domains: (1) The Role Function-Restrictive domain (RFR, 7 items) measures the functional impact of migraine on daily work and social activities), (2) The Role Function-Preventive domain (RFP, 4 items) measures the impact of migraine through prevention of daily work and social activities, and (3) The Emotional Function domain (EF, 3 items) that assesses the emotional impact of migraine (Chang et al., 2019; Shibata et al., 2020). For each item, the patient chooses one number on a scale from 0–100 that best describes their answer. The higher the score the better the patient's quality of life (QoL). Several items in the questionnaire were devoted to migraine attacks (the duration of one migraine attack, use of pharmacotherapy in migraine, outpatient in the neurological department, frequency of migraine attacks per month and per year). The questionnaire also included selected patient demographic characteristics (age, sex, length of illness, education, type of employment – doing manual or mental work).

Data was collected from September 2022 to January 2023. The pre-test with the participation of six respondents took place in April 2022. Data was obtained in a combined form; online through the questionnaire tool Survio (N = 169), and traditionally, in the form of a printed version in a neurological outpatient department (N = 25) in the district of Žilina (Slovak Republic). We used a combined form of data collection to increase the number of respondents in the sample. Respondents received the same rules for both printed and online questionnaires. The first statement in our questionnaire was related to the question of whether the respondent has a migraine diagnosis assessed by a doctor. Only those who answered positively could continue and fill in the questionnaire. Thus, all the participants were interviewed in a controlled manner to ensure authenticity in our research.

Statistical analysis

All data were coded and recorded using Microsoft Excel. The SPSS Statistics 20 program was used to calculate descriptive statistics, absolute (N) and relative (%) frequency, mean (M), standard deviation (SD), minimum (min.), and maximum (max.) range. Student's t-test for two independent samples was used to determine the relationship between the quality of life according to MSQ version 2.1 and sex, type of employment, as well as use of pharmacotherapy. In this context, the t-test values with the number of degrees of freedom (df) and the value of statistical significance (p) were written into the tables. Kendall tau-b correlation coefficient (τβ) was used to determine the relationship between quality of life and education. The Pearson correlation coefficient (r) was applied to assess the relationship between QoL and interval variables (migraine attack duration, frequency of attacks per month and per year). The correlation value can range from –1 (negative correlation) to +1 (positive correlation). The closer r is to +1, the stronger the relationship between the variables. If r equals 0, it means that there is zero correlation between the variables. The correlation is evaluated as follows: values between 0.01 and 0.30 (–0.1 and –0.30) indicate a weak positive (negative) correlation; values between 0.4 and 0.6 (–0.4 and –0.6) mean a moderate positive (negative) correlation; values between 0.7 and 0.9 (–0.7 and –0.9) indicate a strong positive (negative) correlation; the value +1 (–1) indicates a perfectly linear positive (negative) correlation (Agoklu, 2018). All data were tested at the $p < 0.05$ level of statistical significance.

Results

Group of respondents

A description of the sample of patients with migraine (N = 194) in terms of demographic parameters is presented in Table 1.

According to the results in Table 1, most of the sample were female (92.3%), had completed secondary education (56.2%), and performed mental work (60.8%).

In Table 2, we present selected variables in relation to migraine attacks and their management.

Based on the results presented in Table 2, 85.6% of patients are under the care of a neurologist and 82% of them use migraine pharmacotherapy. The average duration of a migraine attack is 46 hours. Patients reported an average of nearly 7 migraine attacks per month and 68 migraine attacks per year.

Table 1. Selected demographic variables in the sample (N = 194)

Variable	N (%)
Sex	
Female	179 (92.3)
Male	15 (7.7)
Age M ± SD (min., max.)	42.08 ± 10.48 years (min. 19, max. 67)
Education	
Secondary education	109 (56.2
Occupation	
Manual work	72 (37.1)
Mental work	118 (60.8)
Length of illness M ± SD (min., max.)	15.70 ± 10.64 years (min. 1, max. 40)

Note: N – absolute frequency, % – relative frequency, M – mean, SD – standard deviation, min. – minimum value, max. – maximum value.

Table 2. Selected variables related to migraine attacks and their management in the sample (*N* = 194)

Variable	*N* (%)
Outpatient in the neurological ambulatory practice yes	166 (85.6)
Pharmacological treatment for migraine yes	159 (82)
The duration of a migraine attack in hours M ± SD (min., max.)	46.20 ± 34.55 hours (min. 3, max. 120)
Frequency of migraine attacks per month M ± SD (min., max.)	6.80 ± 5.16-times (min. 1, max. 20)
Frequency of migraine attacks per year M ± SD (min., max.)	68.50 ± 54.96-times (min. 4, max. 200)

Note: N – absolute frequency, % – relative frequency, M – mean, SD – standard deviation, min. – minimum value, max. – maximum value.

In Table 3 we present the mean score of the overall QoL of patients with migraine according to the MSQ version 2.1 and in its three domains.

The results in Table 3 show that the lowest values of the average score are in the Role Function-Restrictive domain (M = 43.7). The overall quality of life received half of the possible point score (M = 50.1).

Table 3. Average QoL score according to the MSQ version 2.1 in the sample (*N* = 194)

Domain of the MSQ version 2.1	M ± SD
1. Role Function-Restrictive (RFR, 7 items)	43.7 ± 19.3
2. Role Function-Preventive (RFP, 4 items)	57.6 ± 26.5
3. Emotional Function (EF, 3 items)	54.9 ± 26.1
Overall QoL according to MSQ version 2.1	50.1 ± 20.4

Note: M – mean, SD – standard deviation.

In Table 4 we present the relationship between the quality of life in terms of sex, types of occupation, and the use of migraine pharmacotherapy.

The results in Table 4 show that male respondents had a slightly higher QoL, but the difference is not statistically significant (p = 0.466). Employers doing mental work had a slightly higher QoL, but the difference is also not statistically significant (p = 0.079). Patients using pharmacotherapy had a slightly lower quality of life; the difference, however, is not statistically significant (p = 0.052). With higher education, the quality of life increased (positive weak correlation τβ = 0.136, which was statistically significant p = 0.021). With longer duration of migraine attacks, QoL was lower (negative weak correlation r = –0.179, which was statistically significant p = 0.012). A higher frequency of migraine attacks during the month and year was associated with a lower quality of life (negative weak correlations r = –0.288, r = –0.266), which are statistically significant (p < 0.001).

Table 4. Relationship between QoL and selected demographic variables in the sample according to the MSQ version 2.1 (*N* = 194)

Sex	*N*	M	SD	*t*	df	*p*
Male	15	51.60	14.02	0.731	192	0.466
Female	179	48.78	14.41			
	N			τβ		*p*
Education	194			0.136		**0.021**
Types of occupation						
Manual work	72	46.85	14.19	–1.769	188	0.079
Mental work	118	50.58	14.09			
The use of migraine pharmacotherapy						
Do not take medication	35	53.26	14.78	1.954	192	0.052
Take medication	159	48.06	14.14			
	N			*r*		*p*
The duration of a migraine attack in hours	194			–0.179		**0.012**
Frequency of migraine attacks per month	194			–0.288		**<0.001**
Frequency of migraine attacks per year	194			–0.266		**<0.001**

Note: N – absolute frequency, M – mean, SD – standard deviation, *t* – Student's *t*-test, df – degrees of freedom, τβ – Kendall tau-b, *r* – Pearson correlation coefficient, p < 0.05.

Discussion

The aim of the study was to assess the quality of life of migraine patients using the Migraine Specific Quality of Life Questionnaire, MSQ version 2.1 (also available in Slovak). First, we assessed QoL according to the overall mean score and the mean score in particular domains. According to our results, the overall QoL, as well as the scores in particular domains, were evaluated as average. The Role Function-Restrictive domain was rated the lowest (Table 3). Our results are comparable to those in the study by Kim et al. (2021) and Almosaiteer et al. (2022). Compared to other studies, the lowest average point score was achieved in the Emotional Function domain,

however, the average point score for all domains were similar to our study (cf. e.g., Al Ghadeer et al., 2021; AlHarbi and AlAteeq, 2020; Kasem et al., 2023). In a study by Rendas-Baum et al. (2013), overall mean score was similar to our results; however, the lowest mean score was achieved in the Role Function-Preventive domain. On the other hand, in a study by Alkahtani et al. (2022) the highest mean score was observed in the Emotional Function domain. Although particular domains of the MSQ version 2.1 instrument achieved different mean scores, all studies came to the same conclusion that migraine affects QoL.

The results of our study did not show any significant difference between QoL in men and women. Men scored higher on average than women (Table 3), although male participants were disproportionately underrepresented (Table 1). First, the higher number of women in the sample may be due to the fact that the prevalence of migraine in adulthood (between 20 and 50 years of age) is up to 3–4 times higher in women compared to men (Rossi et al., 2022). Second, the occurrence of migraine is also related to physiological and hormonal changes, which are particularly common in women, especially in the above-mentioned age group (Alkahtani et al., 2022). Third, as the distribution of the questionnaire was mainly online, we assume that higher female participation in the study may also be related to higher activity of women on social networks, as reported by Dermitzakis et al. (2023). Concerning the sex variable, our results are comparable to those of AlHarbi and AlAteeq (2020) and Almosaiteer et al. (2022).

Migraine patients doing mental work had a higher QoL than physically working patients, but the difference between the groups was not statistically significant in our study (Table 4). This fact may be related to incorrect posture in the workplace, and thus muscle discomfort in the neck and upper back, which provokes or worsens the headache (Rossi et al., 2022).

Surprisingly, the results of our study showed a higher QoL in patients who do not take medications prescribed by a doctor (Table 4). Our findings may be related to the fact that, despite prescribed medical treatment, the expected and desired effect may not always be achieved. In our study, we did not investigate the pharmacotherapy used in the treatment of migraine patients. According to the results of several studies, e.g., Hirata et al. (2023), patients report high migraine burden and poor treatment efficacy despite prescribed treatment, such as triptans. According to Al Ghadeer et al. (2021), respondents who did not take pharmacotherapy for migraine treatment exhibited higher QoL scores.

In the MSQ version 2.1 questionnaire in our study, respondents with higher education achieved higher QoL scores. Compared to other studies, we may encounter opposite results for this variable. In the studies of Al Ghadeer et al. (2021) and AlHarbi and AlAteeq (2020), on the other hand, respondents with lower education achieved higher QoL scores.

The study confirmed a significant relationship between QoL and the duration of one migraine attack and the frequency of migraine attacks over a certain period (month, year). Regarding the results related to the average duration (almost two days) and frequency of migraine attacks (almost 7 per month and 69 per year) (Table 2), Dermitzakis et al. (2023) speaks about a low frequency episodic migraine lasting 4–7 days per month. Dermitzakis et al. (2023) classifies high frequency episodic migraine as lasting 8–14 days monthly, as well as chronic migraine lasting more than 15 days monthly. Our study results concerning the maximum duration and frequency of migraine attacks (Table 2) also include respondents who report such a headache disorder. In this context, it is understandable that the respondents in our study reported a lower QoL with a longer duration of the migraine attack, and more frequent migraine attacks during one month and one year. Similarly, a study by AlHarbi and AlAteeq (2020) showed a lower QoL in patients with a higher frequency of migraine attacks.

Limitations

The data cannot be generalized due to the small size of the research sample. In a future content-oriented study, it would be appropriate to use mix-methods as part of the research methodology; a combination of questionnaire (quantitative method) and in-depth semi-structured interviews (qualitative method of data collection and evaluation using interpretive phenomenological analysis, IPA) for a better understanding of the presented issue.

Conclusion

In our study results, the duration of a migraine attack, and the frequency of occurrence of migraine attacks over a certain period (per month and per year) were factors that significantly reduce the quality of life of patients suffering a chronic neurological disease with an episodic course. On the contrary, QoL in this group was significantly higher in participants with a higher level of education. No significant impact on QoL was confirmed in relation to sex, type of work, and use of medication in the treatment of migraine.

The results of this study can be considered as a starting point for further research. Since migraine also occurs in younger age groups, it is necessary to carry out a further study on a larger research sample, which would also include respondents under the age of 18. Moreover, we see the possibility of further testing the MSQ version 2.1 questionnaire for routine use in nursing clinical practice, especially in neurological nursing. In our future research, we would like to achieve a better knowledge and understanding of the issue, using a combination of quantitative and qualitative data collection methods. The results of the study also have a direct impact on the education and further practice of future nurses. Thus, our conclusions can be applied in the undergraduate and postgraduate professional training of nurses, focusing on the topics of providing care to patients with seizures, which can significantly improve the patient-centred approach.

Ethical considerations

To use the Migraine Specific Quality of Life Questionnaire (MSQ version 2.1) tool in the setting of our study, we obtained approval from the Mapi Research Trust, which allowed us direct access to the questionnaire and its use on 24 March 2022.

The study research was approved by the Ethical Committee of Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava (No. 37/2022). The questionnaire also included informed consent. The respondents' participation in the research was anonymous and voluntary, and they could withdraw from the study research at any time.

Statement

All the above mentioned authors declare that they contributed to the formal and content aspects of the paper. The authors confirm that all conditions for submitting the manuscript for publication in the journal Kontakt have been met.

Ethical aspects and conflict of interest

The authors have no conflict of interest to declare.

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