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Effects of migraine on anxiety, depression symptoms and quality of life: A hospital-based study

Anxiety, depression symptoms and quality of life in migraine

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Abstract
Aim: Migraine has a great detrimental effect on the daily life of the patient by making negative effects on socioeconomic functioning and quality of life. In this study, it was aimed to evaluate the symptoms of anxiety, depression and quality of life in patients with and without migraine and to determine the factors affecting them.
Material and Methods: This analytical typed case-control study was conducted on 402 people over the age of 18. 201 of whom had migraine and 201 did not have migraine. Hospital Anxiety and Depression Scale (HADS) and World Health Organization Quality of Life Scale Short Form (WHOQOL-BREF TR) were used to collect data about patients.
Results: In the present study, 90.5% (n=182) of patients with migraine were female, 80.1% were married, 58.2% had secondary school education, 21.9% were smokers. Among the factors that triggered the migraine attack, noise ranked first with a frequency of 78.1% (n=157). Anxiety and depression scores were significantly higher in those with migraine than in those without migraine ($p<0.001$). Quality of life parameters such as physical health, psychological health, social relations and environmental area scores were significantly higher in those without migraine than in those with migraine ($p<0.001$). General health and life satisfaction of the individuals without migraine were significantly higher ($p<0.001$).
Discussion: Migraine must be taken seriously since it has a negative impact on patients' lives. Besides medical treatment, patients should be evaluated carefully for their quality of life and psychiatric conditions. As family physicians, we must approach our patients holistically.

Keywords
Anxiety, Depression, Migraine, Quality of Life

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Introduction

Migraine is a very common neurobiological headache disorder that can affect the daily life of the patient and cause limitations in the activities performed during the day [1-3]. The incidence of migraine in young women is three times higher than in men. It is known that approximately 20% of women and 8% of men suffer from migraine. In addition to headache, symptoms of migraine are hypersensitivity-reactivity, anxiety, depressive mood, decreased attention, stuttering, increased sensitivity to light-sound-smell, abdominal distension, constipation or diarrhea. It affects patients' quality of life and impairs work, social activities, and family life [4-6].

It is known that anxiety and depression disorders are the most relevant psychiatric comorbidities associated with migraine and have been shown to affect the clinical course of the disease and response to treatment. There is limited information on how specific anxiety and depression symptoms are related to migraine [7-12].

Quality of life (QoL) has a broad structure encompassing many aspects of well-being, including physical, psychological, social and environmental components. QoL is the way people evaluate all aspects of their lives in terms of their cultural structures and set of values. Quality of life is a broad concept that includes personal well-being beyond a person's health status. Conditions that cause chronic pain, such as migraine, negatively affect the quality of life. This reduces people's ability to cope with life's difficulties [13-15]. Migraine should be considered with all its consequences, keeping in mind that it is not only a pain but also causes other problems [16].

In this study, it was aimed to evaluate the symptoms of anxiety, depression and quality of life in patients with and without migraine and to determine the factors affecting them.

Material and Methods

Study design, setting, and population

This analytical case-control study was conducted on 402 adult subjects with and without migraine between 01.03.2014 and 06.02.2017. The case group consisted of 201 patients with new and/or previous migraine diagnosis who applied to the neurology outpatient clinic. The control group consisted of 201 people who applied to the family medicine outpatient clinic for any reason and had no migraine complaints. Both groups were kept the same in terms of age and gender. According to the literature, the prevalence of headaches in our country has been reported to be approximately 16.4% [4]. Since the number of individuals in the universe was not known in our study, the number of subjects required to be included in the study was calculated using the formula "$n=t^2.p.q/d^2$." Therefore, 402 people over the age of 18, including with 201 migraine and 201 without migraine, were included in our study.

Ethical Approval

Before the study started, ethical approval for the study was received from the Ethics Committee of Meram Faculty of Medicine, Konya Necmettin Erbakan University (approval number: 2014/597). Participants were informed about the study and their written and verbal consent was obtained according to the principles of the Helsinki Declaration.

Exclusion criteria

Those with chronic organic disorders, which can affect life quality (chronic kidney and liver disease, hematologic disease, cancer history, uncontrolled hypertension and intracranial space occupying lesion, etc.), those with psychiatric disease, under the age of 18, those who were mentally retarded and pregnant and the individuals who did not give written consent to participate in the study, were not included in the research.

Collection of data

During the study, patients were briefly informed about the aim of the study, verbal and written consent of the patients was obtained. Questioning of the sociodemographic characteristics of the participants (age, marital status, profession, income level, etc.) was conducted using the face-to-face interview technique. To determine anxiety and depression of the participants, Hospital Anxiety and Depression Scale (HADS) was used. World Health Organization Quality of Life Scale Short Form WHOQOL-BREF TR was used to determine quality of life of the patients.

World Health Organization Quality of Life Scale Short Form (WHOQOL- BREF TR)

WHOQOL-BREF is a 26-question self-report questionnaire developed by the World Health Organization to investigate the quality of life (QoL) [17]. The first question asks about overall QoL, rated from "very bad" (1) to "very good" (5). The second question asks about satisfaction with health, rated from "very dissatisfied" (1) to "very satisfied" (5). The remaining 24 specific questions assess four QoL domains: physical (7 items), psychological (6 items), social relationships (3 items), and environmental (8 items). The score for each domain ranges from 4 to 20; high values represent high QoL. The Turkish validity and reliability study of this questionnaire in our country was conducted by Eser et al. [18].

Hospital Anxiety and Depression Scale

To determine anxiety and depression, the Hospital Anxiety and Depression Scale (HADS) was used. The scale was developed by Zigmoid and Snaith (1983) to determine the risk for the patients in terms of anxiety and depression and to measure the level and intensity [19]. A validity and reliability study of the scale was conducted by Aydemir et al. (1997) in Turkey [20]. For those with physical disease and who apply to primary care health services, it is used not to diagnose but to identify anxiety and depression in a short time and to determine the risk group. The scale contains 14 questions, and odd numbers measure anxiety, even numbers measure depression. The responses are scored in quadruple Likert form and between 0-3. The lowest score that the patients can get from both subscales is 0 and the highest score is 21. The breakpoints of the Turkish form of HADS were determined as 10/11 for the anxiety subscale (HAD-A) and as 7/8 for the depression subscale (HAD-D) [19].

Statistical analyses

SPSS for Windows 20.0 software (SPSS Inc, Chicago, IL, USA) was used for the statistical analysis. Descriptive statistics for continuous variables were given in terms of average and standard deviation, and descriptive statistics for categorical data were given in terms of frequency and percentage. The Chi-square test was used to compare categorical data. The Kolmogorov-Smirnov test was used for the distribution

of quantitative data. Student t-test was used to compare quantitative data in paired groups, as they showed normal distribution. The results were evaluated at a 95% confidence interval, and the significance was p<0.05. Correlation between parameters was performed by Pearson correlation analysis. The correlation coefficient (r) was evaluated as weak between 0.00–0.249; moderate between 0.250–0.499; strong between 0.500–0.749 and very strong between 0.750–1.000.

Results

The mean age of patients with migraine was 35±9.68 years (ranging from 18 to 65 years), 90.5% (n=182) female, 80.1% married, 58.7% (n=118) overweight, 58.2% (n=117) primary school educated, 71.1% (n=143) non-working and 21.9% (n=44) were smokers. The socio-demographic characteristics of the participants were presented in Table 1.

The first-degree relatives of 46.8% (n=94) of 201 migraine patients had migraine. During the attack, 75.6% (n=152) of the patients with migraine used pain medication, and 41.8% (n=84) preferred to stay in a dark room. During migraine attack, 75.1% (n=151) had nausea-vomiting, 74.6% (n=150) had sensitivity to light and sound, and 71.1% (n=143) had insomnia accompanied by headache, respectively. There was a factor that triggered the attacks in 194 (96.5%) of the migraine patients. Among these factors, noise ranked first with a frequency of 78.1% (n = 157). In descending order, 70.1% (n=141) insomnia, 68.7% (n=138) light, 62.7% (n=126) hunger, 45.8% (n=92) stress triggered migraine attacks.

Table 1. Sociodemographic features of the participants

	With migraine		Without migraine		x^2	p***
	n	%	n	%		
Gender						
Female	182	90.5	182	90.5	0.001	1.000
Male	19	9.5	19	9.5		
Age						
<34 years of age	87	43.3	104	51.7	2.883	0.090
≥34 years of age	114	56.7	97	48.3		
BMI						
Normal weight *	83	41.3	100	49.8	2.899	0.089
Overweight /obese **	118	58.7	101	50.2		
Marital status						
Married	161	80.1	141	70.1	5.325	0.021
Unmarried	40	19.9	60	29.9		
Education						
≤ Secondary school education	117	58.2	52	28.4	36.479	<0.001
≥ High school education	84	41.8	144	71.6		
Working status						
Working	58	28.9	107	53.2	24.682	<0.001
Not working	143	71.1	94	46.8		
Economic situation						
Income less than expenses	64	31.8	60	29.9	3.056	0.217
Income equal to expenses	120	59.7	113	56.2		
Income more than expenses	17	8.5	28	13.9		
Smoking status						
Smokers	44	21.9	28	13.9	4.331	0.037
Non-smokers	157	78.1	173	86.1		

*Normal weight (BMI: 18.5-24.99 kg/m2), ** Overweight /obese (BMI: ≥25 kg/m2)
****Chi-square test was used.

When HADS scores of migraineurs with attack frequency less than 5 per month (low- frequency group; LFG) were compared to those with attack frequency of more than 5 per month (high- frequency group; HFG), we observed that depression scores were higher in patients with higher attack frequency. Anxiety scores were not significantly different between groups regarding attack frequency.

While the number of migraine attacks was higher in those with a low education level, it was less common in those with a high level of education. This difference was statistically significantly higher (x2=11.061; p=0.001). When the number of attacks per month and age, BMI, marital status, occupation, economic

Table 2. Comparison of HADS and WHOQOL BREF in those with and without migraine

	With migraine		Without migraine		x2	p**
	n	%	n	%		
General health and life satisfaction satisfaction						
Not satisfied	27	87.1	4	12.9	126.097	<0.001
Slightly satisfied	68	86.1	11	13.9		
Neither satisfied nor unsatisfied	69	56.6	53	43.4		
Quite satisfied	34	23.3	112	76.7		
Very satisfied	3	12.5	21	87.5		
General health and quality of life						
Very poor	11	68.8	5	31.2	36.997	<0.001
Slightly bad	24	72.7	9	27,3		
Neither good nor bad	115	59.3	79	40.7		
Very good	44	32.1	93	67.9		
	Mean±SD*		Mean±SD*		t	p***
QoL domains						
Physical health	52,97 ± 17,31		73,91 ± 67,44		-4.266	<0.001
Psychological health	53,65± 18,05		65,57 ± 16,01		-6.998	<0.001
Social relationship	54,43± 21,60		66,98 ± 16,84		-6.498	<0.001
Environment	58,35± 17,62		66,65± 13,79		-52.543	<0.001
HADS scores						
HAD- Anxiety	10.95 ± 4.72		7.06 ± 3.89		9.007	<0.001
HAD-Depression	9.37 ± 4.62		5.5 ± 4.39		8.448	<0.001

HADS: Hospital Anxiety and Depression Scale; SD*=Standard Deviation;nQoL= Quality of Life; **Chi-square test; *** Independent t-test was used.

Table 3. Correlation of depression, anxiety and QoL parameters in migraine patients

		1	2	3	4	5	6
1.HADS-A	r	1					
	p						
2.HADS-D	r	.586**	1				
	p	.000					
3. Physical health	r	-.395	-.467**	1			
	p	.000	.000				
4.Psychological health	r	-.646**	-.665**	.596**	1		
	p	.000	.000	.000			
5. Social relationship	r	-.524**	-.577**	.459**	.674**	1	
	p	.000	.000	.000	.000		
6.Environment	r	-.489**	-.498**	.421**	.620**	.557**	1
	p	.000	.000	.000	.000	.000	

** Correlation is important at 0.05 level.

status and smoking were compared, no statistically significant difference was found (p>0.05).

When patients with and without migraine were compared in terms of general health and quality of life, it was found that the control group was better. This relationship was statistically significant (x2 = 36.99; p<0.001). When we compared the two groups in terms of general health and life satisfaction, we found that life satisfaction of the individuals without migraine was significantly higher (x2= 126.097; p<0.001) (Table 2). QoL parameters such as physical health, psychological health, social relations and environmental area scores were significantly higher in those without migraine than in those with migraine (p<0.001). The comparison of domain scores of WHOQOL-BREF in the migraine and not migraine is shown in Table 2. Anxiety and depression scores were significantly higher in those with migraine than in those without migraine (p<0.001) (Table 2).

Correlation of depression, anxiety and QoL parameters such as physical health, psychological health, social relations and environmental in migraine patients is shown in Table 3.

Discussion

It was discovered in clinical and population-based studies that people with migraine have higher levels of psychiatric disturbances such as depression, anxiety and post-traumatic stress disorder [21]. In a study by Senaratne et al., migraine prevalence and its characteristics were investigated on 206 patients who applied to an anxiety disorder clinic and migraine prevalence was found to be 67%. In this study, it was shown that migraine frequency in anxiety disorder patients increased compared to the general population [22]. In a study performed by Sharma et al. in India on 71 migraine patients using HADS scale, depression and anxiety were more common in migraine patients [13]. In this study conducted on migraine patients using the HADS anxiety depression scale, more depression and anxiety were found in migraine patients than in the control group. Similarly, our results showed that migraine patients had significantly higher depression and anxiety symptoms than healthy controls. Also, depression frequency was significantly higher in married and non-working women with low educational level compared to working women, suggesting that well educated and working women might have developed better skills to cope with anxiety or depression.

In clinical trials, not only headache severity but also headache frequency increases depression and anxiety disorders. In a study performed by Smitherman et al. (2013), it was stated that migraine causes an increase in other physical psychiatric comorbidities depending on headache frequency [23]. Similarly, in our study, depression was seen more often in migraineurs with frequent attacks. However, no difference was observed between migraineurs with high and low frequency attacks in terms of anxiety. In alignment with our results, Irimia et al found that even low frequency headache sufferers showed increased risk of anxiety [24].

Different studies suggest that the risk of depression is increased in patients with frequent migraine attacks. However, the cut-off point for an increased risk of depression might differ between studies. Contrary to our results, Irimia et al. (2021) found a high headache day threshold for depression, far exceeding the threshold for headache chronicity. We observed that our patients' threshold of attack frequency for developing depression is much lower than this, even below the frequency threshold per month for chronic migraine. This result is in accordance with several studies suggesting that migraine patients are at risk of depression when the cut-off point for attack frequency is below 15 attacks per month [24].

Like all chronic diseases, migraine negatively affects the quality of life and reduces the individual's taste of life, negatively affecting social and physical functions. In our study, the mean score in migraine patients in all domains of WHQOL was significantly lower than in those without migraine. In a study by Sharma et al. (2013) on 71 migraine patients who had just been diagnosed, it was found that life quality was worse than in the control group in all subscales of SF 36 [18]. In another study conducted in Malaysia, females with migraines had significantly lower total, physical and psychological WHOQOL-BREF scores than healthy controls. Contrary to our results, which demonstrated significantly lower scores on social relationship and environmental domains, they reported still lower but not statistically significant scores on both of these domains [25]. The lower WHOQOL scores in our study could be ascribed not only to poor management of migraine attacks, but also to higher anxiety and depression scores in migraineurs.

In conclusion, migraine is not a simple complaint of a headache but it is an important health problem affecting the quality of life with frequent psychiatric diseases. For this reason, psychiatric complaints in patients with migraine diagnosis should be questioned and both diseases should be taken into account during treatment plan if a psychiatric disease has occurred. Psychiatry, neurology and family practice branches should work together in the development of overcoming stress. The goal in the treatment of migraine should not be only to relieve of headache but also to increase the life quality of the patients.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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