Effects of anxiety and depression levels on migraine

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Abstract: The aim of this study was to determine the levels of anxiety and depression in migraine patients, as well as the relationships between other variables, and to compare them to a control group.

Methods: The research included 20 migraine patients and 20 control patients from Greece in a cross-sectional study. The International Headache Society guidelines were used to make the migraine diagnosis. Patients were asked to fill out a questionnaire that included sociodemographic information, migraine intensity (frequency and visual analogue scale score), and depression and anxiety scales.

Results: The Beck Depression Inventory (BDI) levels were positively associated with anxiety scores, but not with migraine clinical characteristics, according to correlation studies. Anxiety levels, on the other hand, were linked to the number of days with migraine pain and the number of migraine attacks per month. The VAS ratings, on the other hand, were not linked to anxiety levels. The migraine group had higher BDI score, and the control group had higher STAI score.

Conclusions: The migraine group scored higher on depression and anxiety than the control group. The findings back up the theory that anxiety and depression are linked to migraines.

Keywords: Migraine, depression, anxiety.

1. INTRODUCTION

Migraine is a chronic ailment that affects people all over the world [1]. Migraine is a chronic pain condition that normally starts in puberty and lasts a lifetime [2]. It is a major cause of disability for individuals because it has been linked to serious comorbidities including extreme depression and anxiety, as well as negative effects on work and school life [3].

Anxiety and depression are among the primary psychiatric disorders that affect the prognosis, prevalence, treatment process and clinical results of migraine [4]. In migraine patients, depression and anxiety are two to ten times more common than the general population [5]. Moreover, people suffering from pain conditions (including headache) also experience depression and its symptoms at a higher frequency than the general population. These medical disorders have been shown to lead to the production and identification of migraine attacks in effected persons, in addition to being correlated with pain variance and impairment in migraine [6-7]. Anxiety and depression may cause migraine attacks by altering pain perception or decreasing pain tolerance [8].

The aim of this study was to determine the levels of anxiety and depression in migraine patients, as well as the relationships (or lack thereof) between perceived social support and other influences, and to compare them to a control group.

2. METHODS

This was a cross-sectional study including 20 patients, from Greece, with migraine (migraine group) and 20 healthy individuals without migraine or any other type of chronic headache (control group). Migraine diagnosis was established according to the criteria put forth by the International Headache Society in 2018 (12). The criteria for inclusion into the

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study were: being over 18 years of age and accepting to participate in the study. Patients who did not agree to participate in the study and those who were under 18 years of age were excluded. Patients were asked to fill a questionnaire which included the following sections: sociodemographic characteristics, Beck Depression Inventory (BDI), State-Trait Anxiety Inventory (STAI), and Visual Analogue Scale (VAS) for pain.

The BDI was used to determine the level of depression in individuals. The scale consists of 21 items that evaluate common symptoms of depression. Higher scores (from a possible 63) indicate worse depression [9].

State-Trait Anxiety Inventory is used to assess the 'state' and 'trait' anxiety levels of individuals and was developed by Spielbeier et al. [10]. The scale has two sections consisting of 20 items. Total score varies between 20–80 points in both sub-scales of the scale, and the level of anxiety is proportional to the score [10].

Visual Analogue Scale (VAS) was used to determine the subjective pain level of subjects. In VAS, 0 indicates no pain, 5 is the moderate severity of pain and 10 is the worst pain imaginable (sometimes referred to as the worst pain the patient has ever suffered) [11]. Patients were given a paper incremented from 0 to 10 at equal intervals and were asked to mark their perceived pain level during their last attack.

Each questionnaire form took about 25–30 minutes to complete. All data obtained during the study were evaluated in SPSS (Version 25.0). In the evaluation of descriptive data, number (n), percentage (%), mean, standard deviation (SD), median, minimum (min) and maximum (max) values were used. The chi-square test was used to compare the sociodemographic characteristics of migraine and control groups. Mann Whitney U test was used to compare the BDI and STAI scores of the groups. Spearman correlation analysis was used to evaluate the relationship between the parameters studied. The level of statistical significance was accepted as $p < 0.05$.

3. RESULTS

Twenty migraine patients (10 females; 50 percent) and 20 controls (10 females; 50 percent) made up the study group. When we looked at the migraine group's sociodemographic characteristics, we discovered that 10 percent of them were unemployed, 70 percent were married, and 65 percent had at least one child. The control group's sociodemographic characteristics revealed that 25 percent were unemployed, 45 percent were married, and 45 percent had at least one child. Table 1 shows the sociodemographic features of the sample population.

In terms of gender, age group, working status, marital status, and having children, no differences were observed between the BDI and STAI scores of those in the migraine group. Table 2 shows a comparison of migraine category BDI and STAI scores based on sociodemographic characteristics.

We discovered that STAI rating were positively associated with the number of days with migraine pain in a month and the number of migraine attacks in a month when we looked at the correlations between clinical characteristics and scores. Table 3 shows the effects of Spearman correlation studies.

In terms of BDI and STAI there were major variations between the patients and controls (Table 4). The migraine group had higher BDI score and control group had higher STAI score.

4. DISCUSSION

These factors have also been suggested to play a role in migraine development and severity, in addition to the elevated prevalence of depression and anxiety in migraine patients [12]. The migraine group had a mean BDI score of 9.8±2.2 in the current analysis. Previous studies have recorded varying results: Karaca et al. reported 15.10±8.87, Yaşar et al. reported 9.68±8.67, and Perozzo et al. reported 7.50±5.80 [13-15]. The average STAI score (migraine group) was 76.8±4.9, which were close to those recorded in a previous study by Perozzo et al. [15]. Overall, the current study's results were in line with those of other migraine studies.

There were no correlations between BDI scores and gender, age group, employment status, marital status, or having children. Song et al. also found that depression scores in migraine patients were unrelated to gender [16]. Similarly, the BDI score was found to be unaffected by gender or age group, but was higher in married patients [17]. Females' BDI scores were found to be higher in an Iranian analysis [18].

The STAI scores were not found to be linked to gender, age group, working status, marital status, or having children in the current study. In comparison, a study by Yong et al. found that migraine patients under the age of 30 had a higher risk of anxiety (26). Another research found that there was no difference in anxiety levels between men and women [17].

The relationship between migraine and depression has been the subject of many clinical and community-based studies. The incidence of depression/anxiety in migraine patients and the incidence of migraine in patients with depression or anxiety have led to researchers suggesting that migraine attacks may contribute to the development of said conditions. Another viewpoint claims that migraine is a somatic symptom of depression. It has been documented that people who suffer from migraines have a 2.4–5.8–fold increased risk of depression [7, 19-20]. There were no associations between BDI scores and migraine VAS score, number of days with migraine pain, or number of migraine attacks per month in the current research. However, depression symptoms were found to be positively associated with the frequency of migraine attacks in a study by Baldacci et al [8]. Song et al. also discovered that when patients with migraine had depression, the frequency of migraine attacks and VAS scores were higher [21].

Anxiety disorders have been linked to migraine, with the risk of developing one increasing up to 5.3-fold in those who suffer from migraine [7]. There was no association between VAS and STAI scores in this sample. Patients with anxiety, on the other hand, had a higher incidence of migraine attacks and a higher migraine VAS ranking, according to Song et al [21].

STAI score was found to be positively associated with the number of days with migraine pain and migraine attacks per month in the current study, suggesting a clinically significant relationship. In a similar study, Baldacci et al. discovered a connection between anxiety symptoms and the frequency of migraine attacks [8]. Anxiety disorder and migraine were found to have a greater relationship than other psychiatric disorders in a study investigating the relationships between migraine and various psychiatric disorders [22]. Anxiety symptoms are more closely associated with migraine than depression symptoms, according to another study [5, 23]. Migraine attack frequency and VAS score were found to be higher among those who had both anxiety and depression, according to a Korean report. The authors also discovered that those who only had anxiety had higher attack frequency and VAS scores than those who only had depression [23].

BDI score was not associated with clinical characteristics in the current study, but STAI score was associated with the number of days with migraine pain and the number of migraine attacks in a month; thus, the findings indicate that anxiety is more closely associated with migraine clinical outcomes than depression. This theory is backed up by research that indicate clear links between anxiety disorders and a variety of chronic pain conditions, including migraine [8]. However, several previous studies have shown that migraine patients have higher rates of depressive symptoms than controls [6, 15, 24-26]. As a result, further research is needed to assess the relationships between these conditions and to decide if the connection between anxiety and migraine is stronger than that between other conditions like depression.

The current study's biggest drawback is that it is a cross-sectional study. The cross-sectional study design makes it difficult to identify causal relationships precisely. The study's second flaw was that it only included a small number of patients.

5. CONCLUSIONS

The relationship between depression, anxiety, and social support in migraine patients was investigated in this research. There was a strong association between anxiety and migraine severity, number of migraine days per month, and number of migraine attacks per month, but none of these values were associated with depression. This finding supports previous research that suggests the link between migraine and anxiety is greater than the link between migraine and depression. The addition of a control group revealed that patient BDI, STAI-T, and STAI scores were higher than controls. In light of these findings, it was determined that a more thorough evaluation of depression and, in particular, anxiety in migraine patients would be beneficial. The results add to the body of knowledge by presenting evidence to aid in the betterment of migraine patient management.

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Table 1: Sociodemographic characteristics of the study group

		Group			
		Migraine group		Control group	
		n	n %	n	n %
Gender	**Male**	9	45.0%	8	40.0%
	Female	11	55.0%	12	60.0%
Age group	**≤30 years**	6	30.0%	8	40.0%
	>30 years	14	70.0%	12	60.0%
Working status	**Working**	18	90.0%	15	75.0%
	Not working	2	10.0%	5	25.0%
Marital status	**Married**	14	70.0%	9	45.0%
	Single / Divorced	6	30.0%	11	55.0%
Having children	**Yes**	13	65.0%	9	45.0%
	No	7	35.0%	11	55.0%

Table 2: Comparison of BDI and STAI scores of migraine group according to sociodemographic characteristics

			BDI	p	STAI	p
Gender	Male	Percentile 25	2.0	0.490	55.0	0.094
		Median	8.0		67.0	
		Percentile 75	9.0		71.0	
	Female	Percentile 25	6.0		61.0	
		Median	8.0		82.0	
		Percentile 75	13.0		97.0	
Age group	≤30 years	Percentile 25	5.0	0.454	71.0	0.201
		Median	8.5		85.5	
		Percentile 75	17.0		100.0	
	>30 years	Percentile 25	5.0		59.0	
		Median	7.5		67.5	
		Percentile 75	9.0		82.0	
Working status	Working	Percentile 25	5.0	0.567	62.0	0.130
		Median	8.5		72.5	
		Percentile 75	9.0		93.0	
	Not working	Percentile 25	6.0		56.0	
		Median	6.5		57.5	
		Percentile 75	7.0		59.0	
Marital status	Married	Percentile 25	2.0	0.279	56.0	0.509
		Median	7.0		69.0	
		Percentile 75	9.0		89.0	
	Single / Divorced	Percentile 25	7.0		61.0	
		Median	8.5		76.5	
		Percentile 75	13.0		93.0	
Having children	Yes	Percentile 25	2.0	0.424	56.0	0.204
		Median	6.0		67.0	
		Percentile 75	9.0		89.0	
	No	Percentile 25	7.0		70.0	
		Median	8.0		74.0	
		Percentile 75	9.0		100.0	

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Table 3: Results of correlation analyses among the parameters examined in the study group

	BDI		STAI	
	r_s	p	r_s	p
Migraine VAS score	0.161	0.498	0.018	0.939
Number of days with migraine/ month	0.248	0.292	0.813	< 0.001
Number of migraine attacks/ month	0.229	0.330	0.476	0.034

Table 4: Comparison of BDI and STAI scores of migraine and control groups

		Migraine group	Control group	p
BDI	Percentile 25	5.0	1.5	
	Median	8.0	5.0	
	Percentile 75	9.0	8.5	
STAI	Percentile 25	60.0	71.0	
	Median	70.5	80.5	
	Percentile 75	91.0	89.0	

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