



## THE EFFECTS OF HEADACHE ON ANXIETY AND DEPRESSION: A SINGLE COHORT STUDY

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### ABSTRACT

**Aim:** Headache, with a high prevalence in general population is a common problem leading to discomfort in daily life. We aimed to examine the relationship between headache, depression and the level of anxiety in this study.

**Materials and Methods:** We included 35 patients in our study suffering from headache admitted to our algology department and control group consisting of 40 patients 20 men and 20 women. Patients were allocated into two groups. Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) tests were used to test the level of depression and anxiety.

**Findings:** BDI scores for men in Group II:  $9.3 \pm 7.3$ , whereas in Group I  $14.6 \pm 13.2$ . ( $P < 0.05$ ) The mean of total scores for BDI in Group II:  $10.4 \pm 6.3$ , and  $15.4 \pm 13.7$  ( $p < 0.05$ ). BDI and BAI scores were found higher in Group I compared to Group II significantly.

**Results:** Anxiety and depression accompany with headache.

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### INTRODUCTION

Headache is a disorder which affects a large part of the population while reducing health related quality of daily life. Remitting headaches have a detrimental effect on the individual's life. More than 80% of people complain about headaches once in their life time (1,2). There is a high cost to society in economic terms (3).

Headache occurs with the stimulation of the pain arising from the sensitive intracranial and extracranial structures (4). The classification of headache in terms of diagnosis, treatment and the differentiation of primary and secondary types are significant. Approximately 90% of headaches are primary headaches. The cause of primary headaches cannot be determined, this situation can be related with the central nervous system's internal physiological conditions. Migraine and tension type of headaches are the most common types of primary headaches. Secondary headache disorders depend on the organic conditions.

Migraine is a primary headache with a prevalence of 5-10% in children and adolescents, whereas 15-20% in adults (5,6). It can be seen in any time at very young age ranges to old age but it is most common at 40 ages. Migraine can be asymptomatic, or in relapsing remitting form usually characterized with a combination of gastrointestinal and neurologic disorders. Patients with chronic migraine have many somatic disorders. These somatic disorders have been usually found related with anxiety and depression (7). There is a directional relation

between migraine and major depression. Stress and anxiety were found higher in people with headache compared to control groups (8). Stress has been found an important factor triggering headache (9). The risk of major depression is three times higher in migraine groups. There are many studies showing 30% of major depression and anxiety in patients with migraine (10). Migraine and tension type headache have been found at higher incidence with more severe and major depressive symptoms in women diagnosed as major depressive disorder (11). In many patients migraine and tension type headache can be seen with different types. 62% of migraine patients suffer from tension type headache, while 25% of tension type headache patients suffer from migraine (12). Tension-type headache is the most common and most important of primary headaches. Its prevalence ranges 30-80% in US and Europe (13). It is more common in women than men and the rate decreases with increasing age (14). It constitutes a significant health problem and socio-economic problems. Despite the most common type of headache seen in community most patients do not apply to physicians in daily. Tension-type headache is defined as a blunt nonlocalised pain. This situation is not accompanied by neurological symptoms. For the separation of the episodic and chronic types of tension type headache frequency of headaches are used. It is named as episodic tension headache if it lasts less than 15 days. Chronic type headaches evolve from episodic headaches and persist more than 15 days (15). Psychological and psychiatric factors play a role in chronic headache. Psychological and psychiatric factors contribute in tension type headaches (16).

Chronic type of headaches with the coexistence of depression facilitate the occurrence of headache. Compared to the healthy group BDI scores have been found higher in chronic tension type headache, and these findings highlight the prevalence of depression in tension type headache (17).

In this study, we aimed to examine the patients with migraine and tension type headache for depression and anxiety.

## MATERIALS AND METHODS

We enrolled 35 patients who admitted to our algology clinic suffering from headache between June - September 2017 after obtaining the written consent and ethical approval. Greater Occipital nerve (GON) blocks planned patients enrolled in the study after examining the Beck depression and anxiety forms. Patients who haven't received any treatments due to headache before, between the ages of 18-65, at least a first grade graduate school, no psychotropic medication taken in the last month involved to the study. Exclusive criteria were, any neurologic illness that may lead to headache, mental retardation, organic mental illness.

To compare the anxiety and depression with respect to healthy population 40 patients whose sociodemographic situation were similar and who had no usage of any psychotropic drugs (20 men, 20 women) enrolled in this study as control group. Written informed consents were obtained before the study.

### Psychiatric Evaluation

The severity of depression was assessed using BDI, which is a 21 item self-report scale developed by Beck *et al.* (18). Items in the scale are rated from 0 to 3 in increasing order of severity. Item scores are totaled and can range from 0 to 63. Higher scores correlate with more severe depression. The pathologic cut-off value for the BDI score was determined to be 17 in the Turkish population, which reflects moderate and severe depressive states (19). The validity and accuracy of the BDI in the Turkish population have been studied by Hisli *et al.* (20). Anxiety is measured using the 21-item self-reported BAI (21). Each item is scored from 0 to 3 according to severity. Item scores are totaled and higher scores indicate higher anxiety levels. The pathologic cut-off value for the BAI score was determined to be 16 in the Turkish population; scores above this value reflect moderate to severe anxiety states (19). The validity and reliability of the Turkish version of the BAI have been studied by Ulusoy *et al.* (22).

### Statistics

Student T test was used to compare the anxiety and depression levels between the two groups. Statistical significance accepted at  $p < 0.05$ . For data assessment Statistical Program for Social Sciences (SPSS) for Windows 20 was used.

## RESULTS

### For male gender

The mean age was  $35.9 \pm 9.7$  in group I, whereas  $36.57 \pm 12.6$  in group II. No significant difference was found between the groups ( $p < 0.244$ ). BDI score was measured  $14.6 \pm 13.2$  in group I,  $9.3 \pm 7.3$ . Total mean scores were significantly higher in group I compared to group II. BDI scores for 2 patients in group I and 1 patient in group II were found higher than pathologic cut off value.

Table 1: Beck scores of anxiety/depression in male and female.

BAI total scores in group I is  $15.4 \pm 13.7$ , while  $10.4 \pm 6.3$  in group II. For BAI total scores between the groups found significantly different ( $p < 0.011$ ). BAI scores for 3 patients in group I, and 1 patient in group II were found higher than pathologic cut off value. Findings above the cutoff score were found significant ( $p < 0.001$ ).

### For female gender

In group I mean age was  $30.4 \pm 12.5$ , in group II  $33.2 \pm 9.7$ . Significant difference wasn't detected ( $p < 0.107$ ). Mean BDI scores in Group I  $16.1 \pm 14.3$ , in Group II  $10.6 \pm 8.3$ . Total scores were higher in group I compared to group II ( $p < 0.029$ ). BDI scores for 3 patients in group I and 1 patient in group II were found higher than pathologic cut off value. Findings above the cutoff score were found significant ( $p < 0.001$ ).

	Group 1 average	Group 2 average	p value
Male BDI	$14.6 \pm 13.2$	$9.3 \pm 7.3$	$p < 0.035$
Male BAI	$15.4 \pm 13.7$	$10.4 \pm 6.3$	$p < 0.011$
Female BDI	$16.1 \pm 14.3$	$10.6 \pm 8.3$	$p < 0.029$
Female BAI	$18.2 \pm 17.1$	$11.5 \pm 7.7$	$p < 0.001$

BDI: Beck Depression Inventory

BAI: Beck Anxiety Inventory

## DISCUSSION

Psychiatric disorder is common in patients with headache. It has been shown in some studies that mood and pain are expressed in the same region of the brain (23). Psychiatric assessment is very important in the treatment of headaches. There are many studies showing the relation between the depression, anxiety and headache. Depression and anxiety have frequently accompany with headache and increase day by day.

There have been a lot of studies showing the relation between pain, anxiety and depression. We assume, this is the first study showing the relation between headache and anxiety-depression. In our study we aimed to evaluate the relationship between psychiatric disorder and headache.

As we review our results, the scores of both BAI and BDI of male patients were found higher compared to healthy group significantly BDI ( $p < 0.035$ ). BAI ( $p < 0.011$ ) respectively. BDI and BAI scores of female patients were found higher significantly compared to the male's scores. Respectively BDI ( $p < 0.029$ ), BAI ( $p < 0.001$ ). All these results suggest that headache is effective on anxiety and depression for all male and female. The studies dealing with headache support our results but differ with their construction from our's. Pain impairs the quality of life, and in case it's not treated disrupts the individual's comfort, triggers the anxiety and depression (24).

In a study conducted in Turkey showed that depression and anxiety were risk factors for patients diagnosed as chronic migraine (25). The prevalence of depression was found 33.7% in chronic tension type headache, 78% in migraine patients (26). Psychiatric disorder was found 64% of diagnosed chronic tension type headache patients (27).

Responses given by humans against diseases fear and anxiety overall. Anticipation of symptoms during attacks leads to individual's burden. Headaches reduce social and recreational activities. An important point to emphasize that headache is more common in women than men (28). The onset of headache was higher in women than in men in our study also. The number of women participating in this study could bring

to mind a question like whether men less complain about headache or less refer to the hospital. Women more complain of headache and more psychiatric disorders accompany to them. There are many studies showing how women create methods to overcome these disorders (29). Considering the total number of study women refers often due to the headache. The limitation of our study is the small size of sample. The future studies with larger size sample is needed.

## CONCLUSION

Anxiety and depression beyond pain must be kept on mind with patients admitted to pain clinics. Psychiatric consultations should be requested if required. Headache is relevant with anxiety and depression.

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