



**ORIGINAL RESEARCH PAPER**

**Neurology**

**ASSOCIATION OF ANXIETY AND DEPRESSION IN PATIENTS WITH CHRONIC MIGRAINE**

**KEY WORDS:** migraine, anxiety, depression

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**ABSTRACT**  
**Aim:** To study the association of depression and anxiety in patients with chronic migraine leading to disability. **Materials and methods:** The index cases were obtained from patients attending the Neurology Outpatient department of a tertiary care hospital , who satisfied International Classification of Headache Disorder 3 beta criteria for diagnosis of chronic migraine. Patients were subjected to Hamilton depression and anxiety rating scales along with, Migraine Disability Assessment Questionnaire (MIDAS) for assessing disability. **Results:** A total of 120 patients were studied. The associated anxiety and depression symptoms were more prevalent in patients with chronic migraine which increases disability. **Conclusion:** we found more prevalence of anxiety and depression in patients with chronic migraine compared to international literature because of variations in study population. Treating co-existing depression and anxiety in patients with chronic migraine decreases disability and also progression to chronic migraine in patients with episodic migraine.

**INTRODUCTION:**

Migraine is common among the general population with estimated prevalence of 6-28% in women and 2-19% in men and therefore this would suggest a significant level of morbidity(1,2). Major depression was present in 8.6%–47.9% of individuals with migraine in a meta-analytic study(3), while one study found migraineurs to be 4 or 5 times more likely to suffer from generalized anxiety disorder(4). It is essential to identify the patients with comorbid anxiety and depression symptoms, as they are risk factors for conversion of episodic migraine to chronic migraine(5). Associated comorbid depression and anxiety are also associated with poorer long-term headache outcomes, higher medical costs, healthcare utilization, and increased headache-related disability. We hypothesize that anxiety and depression is more common in migraineurs causing more disability(6) than general population. The present study was conducted to assess the anxiety and depression symptoms in patients with migraine.

**MATERIALS AND METHODS:**

The index cases were obtained from patients attending the Neurology Outpatient department of a tertiary care hospital (Government Stanley medical college, Chennai ) during the period from August 01, 2018 to July, 2019. The cases were identified to have chronic migraine by International Classification of Headache Disorder 3 beta criteria.

**Migraine without aura**

**Description:**

Recurrent headache disorder manifesting in attacks lasting 4-72 hours. Typical characteristics of the headache are unilateral location, pulsating quality, moderate or severe intensity, aggravation by routine physical activity and association with nausea and/or photophobia and phonophobia.

**Diagnostic criteria:**

- A. At least five attacks fulfilling criteria B-D
- B. Headache attacks lasting 4-72 hr (untreated or unsuccessfully treated)
- C. Headache has at least two of the following four characteristics:
  - 1. unilateral location
  - 2. pulsating quality
  - 3. moderate or severe pain intensity
  - 4. aggravation by or causing avoidance of routine physical activity (eg, walking or climbing stairs)
- D. During headache at least one of the following:
  - 1. nausea and/or vomiting
  - 2. photophobia and phonophobia
- E. Not better accounted for by another ICHD-3 diagnosis.

**Migraine with aura**

**Description:**

Recurrent attacks, lasting minutes, of unilateral fully-reversible visual, sensory or other central nervous system symptoms that usually develop gradually and are usually followed by headache and associated migraine symptoms.

**Diagnostic criteria:**

- A. At least two attacks fulfilling criteria B and C
- B. One or more of the following fully reversible aura symptoms:
  - 1. visual
  - 2. sensory
  - 3. speech and/or language
  - 4. motor
  - 5. brainstem
  - 6. retinal
- C. At least three of the following six characteristics:
  - 1. at least one aura symptom spreads gradually over ≥5 minutes

2. two or more aura symptoms occur in succession
  3. each individual aura symptom lasts 5-60 minutes
  4. at least one aura symptom is unilateral
  5. at least one aura symptom is positive
  6. the aura is accompanied, or followed within 60 minutes, by headache
- D. Not better accounted for by another ICHD-3 diagnosis.

**Chronic migraine**

**Description:**

Headache occurring on 15 or more days/month for more than 3 months, which, on at least 8 days/month, has the features of migraine headache.

**Diagnostic criteria:**

- A. Headache (migraine-like or tension-type-like) on  $\geq 15$  days/month for  $>3$  months, and fulfilling criteria B and C
- B. Occurring in a patient who has had at least five attacks fulfilling criteria B-D for 1.1 Migraine without aura and/or criteria B and C for 1.2 Migraine with aura
- C. On  $\geq 8$  days/month for  $>3$  months, fulfilling any of the following

1. criteria C and D for 1.1 Migraine without aura
2. criteria B and C for 1.2 Migraine with aura
3. believed by the patient to be migraine at onset and relieved by a triptan or ergot derivative

D. Not better accounted for by another ICHD-3 diagnosis.

Each patient was evaluated in detail using a questionnaire with details regarding the duration of headache, frequency and duration of each episode, site, quality and severity of pain, auras, migraine accompaniments such as photophobia or phonophobia, nausea, vomiting as well as triggers. To assess disability, Migraine Disability Assessment Questionnaire (MIDAS) was applied to all patients. The MIDAS is a well-validated method and consists of five questions to be answered by the patient about the impact of migraine headaches in the past 3 months on their personal, professional and social lives as well another section regarding severity and frequency of these headaches(7). A score of 6 or more is taken as positive with cutoffs for mild, moderate, and severe disability. The presence of concurrent anxiety and depression was assessed by the Hamilton Anxiety Rating Scale (HAM-A) and Hamilton Depression Rating Scale (HDRS) respectively. HAM-A scale consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where  $<17$  indicates mild severity, 18–24 mild to moderate severity and 25–30 moderate to severe. HDRS contains 17 items (HDRS17) pertaining to symptoms of depression experienced over the past week. A score of 0–7 is generally accepted to be within the normal range (or in clinical remission), while a score of 20 or higher (indicating at least moderate severity) is usually considered significant. Neuro-imaging studies (magnetic resonance imaging) were done in all patients to rule out structural lesions.

**Exclusion criteria were:**

1. Presence of other headaches, both secondary and primary, including tension type headache.
2. Recent onset of headaches within the past 6 months of study inclusion
3. Recent use of hormonal contraceptives
4. Individuals with other medical conditions
5. Individuals previously diagnosed to have psychiatric disease

**RESULTS :**

A total of 120 patients were studied during the study.

Incidence is higher in female patients (n=77, 64.1%) than male patients (n= 43, 35.8%). Maximum patients were within the age group 18-40 (n=89, 74.1%). 82 patients (68.3%) had migraine without aura 38 patients (31.6%) had migraine with aura symptoms. 72.5% (n= 87) patients had nausea and vomiting. 80.8% (n=97) patients had photophobia and phonophobia. 22.5% (n=27) patients had medication over use headache.

As per MIDAS disability assessment 23.3% (n=28) had grade I disability, 14.1% (n=17) had grade II disability, 40% (n=48) had moderate disability and 17.5% (n=21) had severe disability (Table 1).

GRADE SCORE	NO.OF PATIENTS
I (little or no disability)	0-5 28
II (mild disability)	6-10 17
III (moderate disability)	11-20 48
IV (severe disability)	21+ 21

64.1% patients (n=77) had anxiety symptoms of which 37 patients had mild severity ( $\leq 17$ ), 24 patients had mild to moderate severity (18-24), 16 patients had moderate to severe anxiety on HAM-A scale.

53.3% patients (n=64) had depression symptoms of which 28 patients had mild symptoms (10-13), 22 patients had moderate symptoms (14-17) and 14 patients had severe symptoms ( $\geq 17$ ) on HDRS scale.

**DISCUSSION :**

Patient's with migraine are 2.5 times more likely to be depressed compared to people without migraine(8). Migraine patients tend to experience 2-5 times more anxiety symptoms compared to non migraineurs. Indeed, a few studies have not found an association between migraine and depression. This is likely due to differences in the inclusion criteria (for example the presence of other type of concurrent headaches), clinico-epidemiological variations between different geographic populations as well as differences between the different scales used to demonstrate psychopathology.

Similarly, many studies have confirmed the comorbidity of migraine and anxiety disorders. In fact, the association between migraine and anxiety disorders is even stronger than affective disorders. The majority of migraineurs (51%–58%) will meet criteria for at least one anxiety disorder during their lifetime. Many epidemiological studies indicate that anxiety disorders are nearly twice as common among migraineurs as is depression(9,10). Generalized anxiety disorders and social phobia were the most commonest anxiety disorders associated with migraine.

Several authors have proposed that the onset of anxiety disorders precedes migraine which in turn precedes depression onset. Analysis of data obtained from our study confirms our hypothesis. 64.1% of the study population had anxiety and 53.3% had depressive symptoms which is correlating with studies from international literature. In study done by Juliane Prieto Peres Mercante et al., showed Moderate or severe depression, were present in 58.7% of the patients and some degree of depression appeared in 85.8% of chronic migraine patients (11). In the Zurich study, people with migraine had twofold-increased prevalence of major depression (15% versus 7%). However, little is known about the range of severity of depressive symptoms in chronic migraine patients.

An important finding in this study was that comorbid psychiatric disorders when present, adds significantly to migraine-related disability and if not identified and properly treated leads to unsuccessful headache management.

The relationship between mood disorders and migraine

could be multi-factorial. For example, depressive symptoms and anxiety could emerge after recurrent headache episodes or by themselves they could be risk factors for migraine, and finally, they could be associated with some other confounding factor which drives the headache. This has led to the question whether this relationship is unidirectional or bidirectional. In our patients, duration and frequency of headache attacks were found to be more associated with the occurrence of anxiety and depression(12,13).

Anxiety and depression symptoms are overlapping and should be considered as a continuum of affective symptoms, especially in the presence of pain disorders. In this regard, some studies have found a correlation between the frequency of headaches and occurrence of mood disorders in migraine. Indeed, Baldacci et al. have postulated an interesting template for the etiopathology of comorbid mood disorders based on this. They hypothesized that a combination of increased duration of headache attacks and increased sensory sensitivity in migraineurs, which persists at a lower level in between the attacks is associated with mood disorders.

Hence, in migraine, there is dysmodulation of normal sensory processing leading to a state of cortical hyperexcitability for both inherited and acquired causes. They postulate that this hypersensitivity is more pronounced in migraineurs with mood disorders and provide evidence from their study that cutaneous allodynia during headache and higher susceptibility to trigger factors are present more commonly in those individuals with mood disorders(14).

**CONCLUSION :**

We found more prevalence of anxiety and depression in patients with chronic migraine compared to international literature because of variations in study population. Treating co-existing depression and anxiety in patients with chronic migraine decreases disability and facilitates effective management of migraine. Treatment of coexisting mood decreases progression to chronic migraine in patients with episodic migraine.

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