

# A COMPARATIVE STUDY OF ANXIETY AMONG HEADACHE PATIENTS: INFLUENCE OF SECONDARY VARIABLES

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## **ABSTRACT**

*This study is an attempt at assessing the levels of anxiety in headache patients. A total number of 105 patients (50 M + 55 F) have been purposively selected for the study. Hamilton Rating Scale for Anxiety (1959) has been utilized to assess the anxiety in the sample. The results revealed that patients with cluster type were found to have lesser levels of anxiety and tension type had the highest anxiety. Female patients were found to have higher levels of anxiety compared to male patients. As the age increased, the anxiety level also has increased linearly. Patients with lower level of education had higher level of anxiety and vice-versa. Unmarried patients had significantly higher levels of anxiety.*

**Key words:** Headache, Anxiety, tension, migraine, cluster & psychogenic.

## **I. Introduction**

Of all the painful states that afflict humans, headache is undoubtedly the most frequent and rivals backache as the most common reason for medical / psychiatric consultation. In fact, there are so many vexatious cases of headache that special headache clinics have been established (Adams *et al*, 1997). Headaches are a nearly universal experience, with a 1-year period prevalence of 90% and a lifetime prevalence of 99%. Worldwide, an estimated 240 million persons suffer 1.4 billion migraine headaches yearly. Five percent of the women & 2.8% of men have headaches 180 days or more per year. It is not surprising that headaches are one of the common complaints that headache are one of the most common complains seen by primary-care physicians. (Evans & Mathews, 2000). Herz *et al* (1999), evaluated the relationship between headache frequency and psychosocial factors including anxiety, depression, somatization, and functional status among high school

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students and found that a nonclinical sample of students reporting frequent headaches endorse more symptoms of anxiety, depression, somatization, and functional disability than a matched sample of students with infrequent or no headache. The authors conclude that long-term consequences of this decreased psychosocial functioning likely to exist for students with frequent headaches. Egger, Angold & Costello (1998) examined the association between chronic headaches and psychiatric disorders among children and adolescents. They reported that, girls with depression and anxiety disorders had a significantly greater prevalence of headaches than girls without an internalizing disorder. Conduct disorder was significantly associated with headaches in boys. B. J. Carroll's (1983) theory of dysfunction in central pain regulation as an underlying cause of depression is discussed in relation to the proposed serotonergic dysregulation common to headaches, depression, anxiety, aggression, and pain. Jansdottir, (1997) has differentiated multiple and specific pain experiences (headache, stomach pain and back pain) in schoolchildren and explored their relationship with other discomforts typically viewed as distress symptoms. The results revealed that among subjects experiencing recurrent pain, the most frequent discomforts included anger, anxiety, sadness and sleeping difficulties. However, the discomforts most sensitive to recurrent pain included fatigue, dizziness, tension/restlessness, concentration problems and sadness.

The differential diagnosis of headaches is one of the longest in the medicine, with more than 300 different types and causes. The Psychiatrist must diagnose headaches as precisely as possible. Although, most headaches are of benign and still poorly understood origin, some secondary headaches can have serious and sometimes life-threatening causes (Evans *et al*, 1998). Ten percent of the all the patients report that headache leads to impairment in their daily life. It has dramatic impact on their psychosocial & occupational aspects of their lives.

Anxiety is a normal emotion, a common reaction to the stress of everyday life. At what point does anxiety become pathologic? In order to make this distinction, the Psychiatrist must define the key characteristics of the disorders and recognize that in pathologic anxiety normal psychological adaptive processes have been overwhelmed to the point that daily functioning has impairment. Anxiety is commonly associated with other medical / psychiatric conditions (Ebert *et al*, 2000). Sagduyu & Sahiner (1997) investigated patients who sought neurological services with no organic pathology but complaining of migraine or tension headaches were found to have a ratio 2-3 times higher for depression and anxiety disorders. Somatoform pain disorder was diagnosed in most patients with tension-type headache. The majority of the patients were middle-aged homemakers and moderate or severe disabilities were found in 40%.

The rationale for undertaking this research was that during the course of the day-to-day clinical work a majority of the patients showed non-response to conventional headache treatment. Further, detailed history and clinical assessment reveals psychosocial triggers in the patient's environment serving as precipitating & maintaining factors of headache. Anxiety was found to be a significant component of headache repertoire and sometimes went un / under diagnosed, therefore was not treated. So also, not many research studies are available in Indian setting with headache and anxiety as variables.

## **II. Methodology**

### **Objectives:**

- To assess the levels of anxiety in various types of headache patients.
- To study the influence of secondary variables like sex, age, educational level and marital status of headache patients.

### **Inclusion criteria:**

Headache with onset of more than one month; Evaluated by ENT surgeon / Ophthalmologist / Physician to rule out the causes; No co-morbid medical / psychiatric illness (other than anxiety); Informed consent should be obtained from the patient / family.

### **Exclusion criteria:**

Headache with onset of less than five years; Not evaluated by ENT surgeon / Ophthalmologist; Presence of other co-morbid medical / psychiatric illness; Refusal to be give the consent for the study

### **Sample:**

A total number of 105 patients (50M + 55F) coming to the out-patient Department of Psychiatry have been purposively selected for the study.

### **Tool used:**

1. Socio-demographic data sheet: The researchers prepared tool. This consists of socio-demographic issues like name, age, sex, educational qualification, marital status, type of family, total of number of family members, total amount earned in the family and other details.

2. Hamilton Anxiety Scale (1959): This was developed by Max Hamilton, is the most widely utilized assessment scale for anxiety symptoms. This consists of 14 items, focuses on the somatic symptoms, with a great reliance on the patient's subjective report. Each item is rated on a 0 to 4 scale (0 = not present, 4 = severe) with a final item which rates behavior at interview. The scale is designed to evaluate change in symptoms over time. Strengths of the scale include its brevity and widely accepted use. An interclass correlation coefficient of 0.86 has been reported for this scale.

### **Process of data collection:**

Patients reporting to the outpatient department (of psychiatry) with complaints of headache were classified using the inclusion criteria, was sent to be screened by the ENT surgeon / Ophthalmologist / Physician to rule out the respective causes. The patient was then examined by the Psychiatrist by obtaining the history and clinical assessment was done; the diagnosis of a headache was made using the criteria set by the International Headache Society. Further, those patients who on clinical assessment showed moderate to severe anxiety were

taken up for the study. The informed consent from the patient for the purpose of data collection was obtained. In the first phase, the socio-demographic data sheet was utilized to collect the primary details of the patient, his / her illness and the family. In the second phase, the Hamilton Anxiety Scale was administered to the patient and the data was obtained. The collected data was scored, coded and entered into the master chart. This was fed into computer & using SPSS 24.0.0 version (IBM SPSS Inc, 2019) the data was analyzed by using two-way analysis of variance, Scheffe's test and other descriptive statistics. The various types of headache were classified using the International Headache Society criteria (2000). Nevertheless, for the purpose of statistical analysis and discussion, the tension, migraine, cluster, organic (due to hypertension, seizures & other metabolic diseases) & psychogenic types of headache groups were formed.

### III. Results

The focus of this study was to find out the difference between the various diagnostic groups (tension, migraine, cluster, organic (due to hypertension, seizures & other metabolic diseases) & psychogenic groups along with secondary variables like sex, age, educational level & marital status. Two-way ANOVA was employed in the present investigation all the time keeping diagnostic groups as the first independent variable. Whenever F value was found significant, Scheffe's Post-hoc test performed as individual mean comparisons whenever there were more than 2 groups to be compared. The summary of the results is as follows:

Table 1 Mean Anxiety scores of patients with various types of headache with secondary variables

Variable	Sub groups	Diagnosis					Overall
		Cluster	Migraine	Tension	Organic	Psycho-genic	
Sex	Male	28.93	24.14	38.00	35.60	30.06	30.09
	Female	24.25	34.90	40.75	41.67	41.96	39.24
Age (in yrs)	Below 30	24.38	22.00	40.67	-	34.17	30.42
	31-40	34.50	35.09	39.25	38.75	37.00	36.86
	41 and above	38.00	-	41.50	39.00	45.63	41.95
Edu Level	10 <sup>th</sup> std & below	27.29	34.09	40.06	38.91	41.06	37.38
	12 <sup>th</sup> / ITI / Dip	38.00	29.75	-	-	30.20	31.45
	Degree	-	12.00	-	-	31.50	27.20

	Prof Deg / PG	24.33	-	-	-	14.67	13.60
Marital status	Un-married	25.44	30.20	34.46	-	38.91	51.00
	Married	30.20	27.95	30.47	40.64	38.91	37.43
	Widow	-	-	-	-	31.00	27.76
Overall		27.95	30.47	40.06	38.91	37.43	35.14

Table 2 Results of 2-way ANOVA for Mean Anxiety scores of patients with various types of headache with secondary variables

Variable	Source of variation	Dfs	F value	P value
Sex	Between Groups (A)	4, 95	4.002	.005
	Between Sexes (B)	1, 95	4.808	.031
	Interaction (A x B)	4, 95	1.771	.141
Age	Between age groups (C)	2, 92	4.256	.017
	Interaction (A x C)	6, 92	0.965	.453
Educational Level	Between Educational level (D)	3, 93	7.038	.000
	Interaction (A x D)	4, 93	1.551	.194
Marital status	Between Marital status (E)	2, 95	6.636	.002
	Interaction (A x E)	3, 95	0.951	.419

Table 1 presents Mean Anxiety scores of patients with various diagnostic types with secondary variables. Table 2 shows the analysis of results performed for above mean anxiety scores. Overall, the mean anxiety score of the entire sample was found to be 35.14, which falls under severe level of anxiety.

**a. Diagnostic groups and sex:**

ANOVA revealed a significant difference ( $F = 4.002$ ;  $P < 0.005$ ) between various diagnostic groups in their mean anxiety scores. The respective mean anxiety scores for various diagnostic groups like cluster, migraine, tension, organic & psychogenic groups were 27.95, 30.47, 40.06, 38.91 and 37.43 respectively.

Further, Scheffe's Post-hoc test revealed that cluster type had significantly higher mean anxiety scores and tension headache type had the least.

Between male and female patients also, a significant difference ( $F = 4.808$ ;  $P < .031$ ) was found in their mean anxiety scores, where female patients (mean 41.96) were found to have significantly higher anxiety scores than male patients (mean 30.09). However, the interaction effect between groups and sex was found to be non-significant ( $F = 1.771$ ;  $P < 0.141$ ) indicating that the pattern of anxiety is same among male and female patients irrespective of the diagnostic group they belong to.

#### **b. Diagnostic groups and age:**

Patients with the different age groups differed significantly ( $F = 4.256$ ;  $P < 0.017$ ) in their mean anxiety scores. The mean anxiety scores for patients – below 30 years, 31-40 & 41 & above years were 30.42, 36.86 and 41.95 respectively. We find a linear increase in the anxiety as the age increased. Further Scheffe's Post-hoc test revealed that each age group differed significantly from other age groups. The interaction effect between age groups and the diagnostic groups was found to be non-significant ( $F = 0.965$ ;  $P < 0.453$ ) revealing that the pattern of anxiety is same among patients with different age groups irrespective of the diagnostic group they belong to.

#### **c. Diagnostic groups and educational level:**

ANOVA revealed a significant difference ( $F = 7.038$ ;  $P < 0.000$ ) in the mean anxiety scores of patients with different educational background. Patients with different educational level like 10<sup>th</sup> std and below, 12<sup>th</sup> std, ITI & Diploma, Degree & Higher degrees had the mean anxiety scores of 37.38, 31.45, 27.20 & 13.60 respectively. Scheffe's Post-hoc test indicated that patients with lower educational levels had significantly higher anxiety compared to patients with higher educational levels. However, the interaction effect between diagnostic groups and educational levels is found to non-significant ( $F = 1.551$ ;  $P < 0.194$ ).

#### **d. Diagnostic groups and marital status:**

Patients with different marital status differed significantly ( $F = 6.636$ ;  $P < 0.002$ ) in their mean anxiety scores where unmarried patients were found to have significantly higher levels of anxiety (Mean 51.00) followed by married patients (Mean 37.43) and widow patients had significantly lesser anxiety, which is further confirmed by Scheffe's Post-hoc test. The interaction effect between the diagnostic groups and marital status is found to be non-significant ( $F = 0.951$ ;  $P < 0.419$ ).

## **IV. Discussion**

The main findings of the present study are:

- Overall, the entire sample had moderate level of anxiety.

- Patients with cluster type of headache were found to have higher levels of anxiety and tension type of headache had the least anxiety.
- Female patients were found to have higher levels of anxiety compared to male patients.
- As the age increased, the anxiety level also increased linearly.
- Patients with lower level of education had higher level of anxiety and vice-versa.
- Un-married patients had significantly higher levels of anxiety.

Why so many pains are centered in the head is a question of some interest. Several explanations come to mind. For one thing, the face and scalp are more richly supplied with pain receptors than many other parts of the body, perhaps in order to protect the precious contents of the skull. Secondly, the nasal and oral passages, the eye, and the ear, all delicate and highly sensitive structures, reside here and must be protected; when afflicted by disease, each is capable of inducing pain in its own way. Finally, for the intelligent person, there is greater concern about what happens to the head than to other parts of the body, since the former houses the brain.

Min & Lee (1997) has attempted to identify whether there is a lateralized pattern in somatic symptoms related to emotional disturbances. There was no significant difference between left-sided and right-sided groups in demographic variables such as age, gender, marital status, education level, diagnosis, and duration of illness. The scores on Hamilton's anxiety scale or Hamilton's depression scale were higher in the left-sided group than the right-sided group. Results suggest that the right hemisphere of the brain is more involved than the left with somatization symptom formation related to emotional disturbances. Ho, Ong, & Lee (1997) have examined the relationship between depression and headache types and severity. Around 11% (exactly 10.9%) of the Ss had migraine without aura, 29.8% had tension-type headaches, 1.1% had headaches consistent with migraines with aura, and in 56.3% the headaches could not be classified. The lifetime prevalence of headache in this population was 98.1%. Significantly, higher mean Zung scores were found in Ss who had more intense and frequent headaches than in those without headaches and less severe symptoms, although the clinical relevance of this finding is uncertain.

Labbe, Murphy & O'Brien (1997) evaluated psychosocial variables that may contribute to the experience of headache in college adults. Results indicate that level of emotional functioning, perception of stress, and gender were predictive of future headache frequency, intensity, and duration. Family history and health habits did not predict headache activity. These findings are consistent with research investigating psychosocial variables and headache. Co-morbid depression is not a clinically benign condition; it can significantly complicate the acute treatment of the illness or negatively affect its outcome. These patients report increased pain, more severe physical illness, decreased social functioning and increased mortality. The deterioration of functioning associated with depression or depressive symptoms may be equal to or worse than that associated with severe medical conditions. Evidence indicates that the combination of current advanced

coronary artery disease and depressive symptoms can be associated with roughly twice the reduction in social functioning as with either condition alone, suggesting that the effects of depressive symptoms and chronic medical conditions on functioning can be additive. In chronic heart disease, the diagnosis of co-morbid depression may be associated with an increased likelihood of medical complications, a more protracted course and sudden death. It is important to identify such comorbidity early and to treat it aggressively (Ebert *et al*, 2000).

Kentle, (1997) ascertained the elements within the factor of Neuroticism related to headache. Both tension and migraine symptomatology were found to be related to the "tension" items of the Neuroticism scales. Migraine was found to be related to cycles of mood. Neither type of headache was found to be especially related to Depression. The relationship of headache symptomatology to Neuroticism appears to be slight but direct. Spierings, & Van Hoof (1996) examined anxiety and depression chronic headache sufferers. The chronic headache sufferers, both men and women, scored significantly higher on the anxiety and depression scales than the controls. Moderate to severe depression and anxiety were 4-5 times more common in the headache Ss than control Ss, 3-4 times more likely in male headache Ss, and 6-8 times more likely in female headache Ss. The authors conclude that anxiety and depression are common psychiatric co-morbidities in migraine patients.

Tension type headache is precipitated by high levels of anxiety itself, as there is increased perception of stress. Further, the individual is inadequate coping skills, lower frustration tolerance; anticipatory anxiety (acts as a trigger for episodes of headache). One of the biological hypotheses is that the 'adrenaline surge' during phases of 'fight-flight' can lead to headache. All these causes are generally noticed among a major portion of the population and in headache patients, the above causes are found to be faulty or inadequate.

Passchier, Quaak, & Brienen, (1996) investigated the the health-related quality of life (HRQL) of migraine and tension headache patients who consult their general practitioner, and the contributions of the perceptual and emotional components of headaches to the HRQL. The NHP dimensions of pain, sleep, energy, and social isolation revealed that each headache patient group had a lower HRQL than the healthy reference group. There were no differences in HRQL between the headache groups. It was found that the greater the patient's emotional pain, the more problems he or she had with physical mobility and social isolation. Neither the type of headache nor the headache index were related to the HRQL of the patient. Cluster type of headache is triggered off idiopathically, so the element of anxiety is comparatively less when seen with other types of headaches. Other postulates like Para-sympathetic stimulation, disturbances in circadian rhythm & hypothalamic involvement are implied in the causation of this type of headache. Concrete organic evidence for the etiology of cluster headache leading us to infer that psychogenic causes like stress, anxiety and other issues have less contribution to cluster type headache.

Female patients with headache are found to have higher levels of anxiety compared to male patients, mainly because of the physical & psychosocial life events / issues like stigma about being a girl, menstruation, childbirths, marital issues, rearing / educating children, occupational stress, empty nest syndrome and other issues. Further, the perception of stress is more in women than in men; so also, there may be role overload – as a homemaker, executives & managing self. Majority of women may be vulnerable to harbor guilt & feelings of inferiority about petty / minor issues. Zwart, Ellertsen, and Bovim, (1996) examined the relationship between



Minnesota Multiphasic Personality Inventory (MMPI-2) scales, pain characteristics, sick-leave, and psychosocial factors. The results revealed that anxiety seemed to be more pronounced in tension-type headache Ss, while somatization seemed to be the most characteristic feature in cervicogenic headache Ss. There was a strong relationship between elevation of the neurotic scales of the MMPI-2 and number of days with headache per month. Furthermore, Ss on sick leave showed an elevation of the neurotic scales compared to patients at work, regardless of the diagnosis. Nylander, *et al* (1996) studied the personality profile and reveals that no significant between-group difference was found in the higher order dimensions of temperament and character. However, on the subscale level, novelty seeking showed a slightly higher average in exploratory excitability and a significantly higher average in impulsivity. Somatic anxiety was positively correlated with novelty seeking, and especially impulsivity. These results show a tendency of this personality profile, and may suggest an association between migraine and somatic anxiety.

As an individual ages, his / hers responsibilities also increases socially, financially, occupationally, familiarly, and in almost all the other areas of life. So also, the need to achieve things in life also increases. The individual's normal reaction towards these increased responsibilities are perceived as a burden and the issue of being buried under its weight, weighs heavily on the individual's mind leading to an increase in anxiety levels and thus headache. Ukestad & Wittrock, (1996) investigate headache sufferers and headache-free controls differ in their responses to acute pain. Headache sufferers reported more discomfort during both tasks; however, the two groups did not differ in the number of facial expressions of pain displayed during the tasks. Headache sufferers reported a tendency to catastrophize during both tasks; positive coping did not differ between the groups. These results offer evidence that recurrent tension headache sufferers are more sensitive to both painful and nonpainful stimuli and that they cope differently from controls with these physical stressors. Martin & Seneviratne (1997) sought to validate two self-reported trigger factors of headaches, namely negative affect (anxiety, depression, and anger) and hunger, and to investigate whether these triggers activated the same or different physiological mechanisms. The findings were consistent with self-reports that hunger and negative affect can precipitate headaches in individuals who suffer from both migraine and tension-type headaches. The physiological responses to the experimental conditions differed, but the findings were not conclusive with respect to whether the trigger factors operated by means of a common biological pathway. Breslau, *et al*, (1997) examined prospectively whether higher levels of neuroticism, signaled increased risk for first incidence of migraine during a 5-yr follow-up interval. Neuroticism predicted the first incidence of migraine in females. Neuroticism did not predict migraine in males, although the results in males were limited greatly by the small number of incidence cases. Neuroticism might be causally related to migraine, or alternatively, might be an early correlate with shared etiologies.

Un-married patients to begin with are prone to be lonely with access to certain people in certain situations only; they are not able to share their intimate feelings, thoughts, wishes, desires and other personal issues as they lack confiding & sustaining relations. Further, they may be vulnerable because of inadequate social support network. So also, all the life events are faced single-handedly; there is also a need to prove themselves in eyes of societal members – familial, occupational and social. Therefore, we see an increase in the levels of anxiety. Cathcart, & Pritchard (1998) report that tension and tiredness during pain-free periods was significantly lower than when experiencing headache, and tension was correlated with all headache variables

(tension, duration, frequency, intensity). Headache Ss were also higher on measures of depression and anxiety. Results support R. E. Thayer's (1989) biopsychological model of mood and arousal, and are discussed in terms of the model's heuristic value for general arousal and headache research. Leijdekkers *et al* (1990) investigated the hypothesis that migraine has a detrimental effect on cognitive functioning. No significant difference in test performance between groups was found. There was no relation between the length of migraine history or medication use and the level of impairment of cognitive abilities. Patients reported higher trait and state anxiety levels, higher debilitating anxiety and state depression, and less vigor. The results suggest that the general population of female migraine patients shows no indication of cognitive impairment.

To conclude, the implications of management of anxiety among headache patients can delineated as follows;

1. Psychosocial intervention should be an integral part in the management of chronic headaches.
2. This further aids & abets the fact that human mind has significant bearing on initiating & maintaining physical symptoms.
3. We see a positive correlation between a physical symptom like headache & psychological symptom like anxiety.

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