

# Clinical Profile of Primary Headaches and Awareness of Trigger Factors in Migraine Patients

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## Abstract

**Aim:** To classify the patients as per the International Classification of Headache disorders 3<sup>rd</sup> edition Beta version. To study the demographic details and clinical profile. To study the trigger factors in migraine patients. To study the importance of family history in headache patients. **Materials & Methods:** The study was a cross sectional observational study of 300 patients at outpatient clinic tertiary health care center, over a period of two years. Patients diagnosed with primary headache were studied with help of an exhaustive questionnaire which covered the relevant details. **Results:** Our study had 158 migraines (MG), 137 Tension Type Headache (TTH) and 5 Trigeminal Autonomic Cephalgia (TAC) patients. Females are more affected, 1:2.9 in TTH and 1:1.5 in MG. Mean age for MG was 33.37 and for TTH were 36.11. Majority (46-48%) were employed, followed by housewives (43-38%) and students (9-13%) among both the groups. TTH patients had frequency of headache more patients than migraine patients. Family history was positive in 36% in MG and 14% in TTH patients. TTH had dull aching, holocranial pain with pericranial tenderness; whereas migraine had throbbing unilateral pain. Aura was seen only in 21% of MG patients; retinal (67%) being most common. Associated symptoms like nausea, phonophobia, photophobia were seen in 80% of MG patients. Trigger factors on history were present in 64%, which increased to 85% on showing detail list. Most common triggers were climatic, followed by travel, stress and sleep related. Females had hormonal, smell and emotional stress as more common TF. **Conclusion:** Migraine is most common primary headache presenting in clinics. With predominance in females TTH attacks are more frequent than migraine. TTH showed features like dull aching, pressure like and holocranial pain whereas migraine has throbbing and unilateral pain. Pericranial tenderness is more in TTH patients whereas migraine has associated vasomotor symptoms. It is important to have detail list of all Trigger factors for Migraine patients, so that they can avoid them and prevent their attacks, thus reducing analgesic use. Family history has more influence in migraine patients compared to TTH.

**Keywords:** Migraine, Pericranial Tenderness, Tension Type Headache, Trigger Factors

## 1. Introduction

Headache is one of the commonest neurological disorders with wide prevalence in the adult population worldwide. Headaches are broadly divided into primary and secondary. *Primary headaches* are disorders in which

headache and associated features occur without any exogenous cause. These conditions may have a complex interplay of genetic, developmental, and environmental risk factors. They are also called idiopathic by definition. Common primary headaches include migraine, tension-type, and cluster. Neurological examinations and imaging

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tests are usually completely normal in these disorders, no matter how severe the symptoms. Migraine and Tension - Type Headaches (TTH) are the two most common primary headache disorders affecting upto 80% of general population. Phenotypically they are different. Migraine is characterised by unilateral severe pulsating headache accompanied by autonomic symptoms such as nausea, vomiting, photo- and phonophobia. Migraine is often recognized by its specific activators and triggers. In contrast, TTH is characterised by mild to moderate headache intensity and of dull, tightening character without autonomic symptoms. Other types of primary headache like Trigeminal autonomic Cephalgia has defined pattern of symptoms which are rarely seen. There are very few studies in India related to primary headache disorders. The literature on trigger factors of migraine is also sparse. This study gives the cross-sectional prevalence of various types of primary headaches in rural population in India. Also, clinical features and family history of primary headache patients are studied in detail. It highlights the trigger factors in Indian rural and urban population. This helps in listing of all the trigger factors more prevalent to Indian rural population and then patients can be advised to avoid those, which helps them to control their headaches, therefore reducing analgesic burden and improving quality of life. To classify Primary headaches as per International Classification of primary headache. To study the demographic details and clinical profile of primary headache patients. Triggering factors of migraine type headache patients to study importance of family history.

## 2. Material and Methods

This was a cross sectional observational study done in the outpatient clinic where 300 patients who were diagnosed primary headache were asked to complete a Case record form which comprehensively covered symptoms, patterns and demographic details of the patient. An exhaustive list of trigger factors was provided which increased the yield of triggers in migraine patients. The data was collected and further classification and analysis was done. Descriptive statistics were used to represent demographic and clinical characteristics of the sample. Chi Square test for Independence was used for categorical data sets. Data was analyzed using SPSS 11.5.

## 3. Results

In our study migraine was the most common diagnosis prevalent with 158 migraine patients. Tension type headache was second with 137 patients. Among others we had 2 patients of NDPH, two were having SUNCT and one patient had chronic paroxysmal hemicrania. The patients were diagnosed and classified according to their nature of pain, frequency of attacks and pattern of headache.

**Table 1.** Gender-wise distribution of various headache subtypes

	TTH	MIG	CPH	NDPH	SUNCT
Male	35 (25.5)	59 (37.3)	0	0	1
Female	102 (74.4)	99 (62.7)	1	2	1
	P=0.025	P=0.037			
Total	137(45.6)	158(52.6)	1	2	2

Gender distribution (Table 1) showed that TTH had 35 males and 102 females whereas migraine had 99 females and 59 males. This showed higher prevalence of primary headache in female population. For both Migraine, and TTH, there is significant gender difference with females having higher incidence in both cases (P=0.025; P=0.037 respectively). Two females had NDPH and one of each sex was found to have SUNCT among 300 patients.

Headache was most prevalent among the 21 to 40 age group with 112 patients having migraine and 69 patients with TTH. In age group of 41-60, the number of patient with TTH were twice compared to migraine patient (26 vs 51). Tension type headache was found to be more in the 41 to 60 age group with 51 patients which is double than that of migraine patients. This shows a decline of migraine as age progresses. Mean age of patients with migraine was 33.37 years with a standard deviation of 10.47 and mean age of TTH patients was 36.11 with a standard deviation of 12.46. We had 59% percent of patients overall who were dwelling in urban areas whereas around 40 percent from the rural areas. The study showed number of employed (>45%) patients were more common followed by housewives (40%) and 34% students.

Family history was assessed among the parents, siblings and children. Rare headache patterns did not show any family history. Migraine patients showed higher presence of family history in 58 patients consisting

**Table 2.** Trigger factors in migraine

	Triggers	Frequency	Percent
environmental	Related to lighting	95	60.1%
	weather conditions	27	17.1%
	smokes and odours	49	31.0%
travel related	Bus/taxi	24	15.15%
	Long distance/overnight travel	14	8.9
Related to meals	Specific foods as triggers	11	7.0%
	Skipped meals/fasting	20	12.60%
	Change in meal timing	19	12.04%
Hormonal		13	8.2%
Sleep related Change in sleep timings Oversleep	Lack of sleep	60	38.0%
		12	7.6%
		1	0.63%
Stress Work related stress Physical exertion	Emotional stress	35	22.2%
		5	3.2%
		17	10.7%

of 27 parents, 17 siblings and 14 in children. TTH was on the lower side with only 20 patients showing similar headache patterns in the family ( $P=0.00001$ ). More than half of TTH patients (75), were having dull aching type of headache. 23 patients had band like headache and 18 patients had pressure type symptoms. In migraine 77 percent of patients were showing the classical throbbing type of pain. Rest all were less than 10 patients, each comprising of pulsating, stabbing, pressure or band like. Pericranial tenderness was present in larger percentage among patients with TTH type of headache with 106 (77%) patients. It was present in only 47 (29%) migraine patients. We found chronic TTH in 47% of patients and 23 patients had less than 10 episodes per month. Majority

of migraine patients (53/158 33.6%) had hemicranial headache followed by unilateral temporal in 21 patients. This was followed by occipital in 23 and bitemporal in 20 patients. TTH patients had holocranial distribution of pain was most common in almost 45% of patients, followed by Occipital-neck involvement in 19% of patients. Bifrontal and Bitemporal were seen in 17 patients each. Vertex pain was seen only in 6 patients. Prodromal symptoms like fatigue, irritability, mood changes were seen only in 11 migraine patients. Aura was present in 34 migraine patients. Most common were retinal in form of scintillating scotomas. Brainstem aura in form of diplopia and vertigo were seen in 12 patients. Among migraine patients, more than 80% patients reported phono/

photophobia. 43% patients reported nausea and 28.5% reported vomiting during migraine attacks. Almost more than 50% of migraine patients had 2 to 4 attacks per month. There were 10 patients who had more than 10 attacks per month. On initial history taking, only 64.2% patients could volunteer the history of triggers. However, on showing the detailed questionnaire more (20.6%) patients identified triggers.

Triggers were seen in 84% of patients. Most common were environmental related; like bright sunlight (60%), heat, humidity and polluted weather due to smoke and odours. 38 patients had triggering of migraine due to travelling in bus, taxi or train. Also, long overnight travel was trigger in some patients. 39 patients had trigger due to fasting or delay in meal timing. Specific food related trigger was seen only in 11 (7%) patients unlike western population where this is seen in high percentage. This may be as our population do not eat chocolate, cheese, wine that commonly. Another major group was sleep related in 46.2%. Stress was trigger in 57 patients in all, most common being emotional stress, followed by physical stress and work (Table 2).

## 4. Discussion

In our study, migraine was the most common cause (52%), followed by TTH (45%). This is similar to the study by Agrawal et al<sup>1</sup> from eastern India where, migraine was the commonest headache type (46%), followed by tension type headache (31.7%). In the epidemiological surveys, TTH is more common than migraine. Ours was a cross sectional hospital survey. As migraine is more disabling and severe compared to TTH, migraine patients tend to seek medical attention more frequently, compared to TTH patients. A population survey in Chile indicated that migraineurs were more likely to consult doctors than TTH patients<sup>2</sup>. The study from Denmark reported that 56% of migraine patients and 16% of patients with TTH were seen by their family practitioner, whereas 16% of migraine and 4% of TTH patients sought specialist consultation<sup>3,4</sup>. This may explain the higher proportion of migraine patients in the hospital based studies. Male to female ratio for patients with TTH was 1:2.9 and for those with migraine was 1:1.6. Both groups had female preponderance but TTH had more females. This is consistent with other studies from India. Female preponderance of 66% is reported from Senthil et al study from Chennai<sup>5</sup>. In a large study from China, female patients (69.1%) predominated across

all headache patients<sup>6</sup>. Females usually outnumber males in TTH and migraine in majority of studies. This may be due to hormonal fluctuations especially estrogen which is closely linked to headache and so there is increased headaches in premenstrual period and during menses. Females also are supposed to have lower threshold for Cortical Spreading Depression (CSD) which is believed to cause migraine. We had majority of patients in young age group. Majority patients were in 3<sup>rd</sup> - 4<sup>th</sup> decade (61%). Mean age for migraine patient was 33.37 (SD±10.47) years and mean age for TTH patient was 36.11 (SD±12.46) years. We had age range 12-59 for migraine & 13-60 for TTH. In study by Kelman *et al.*,<sup>7</sup> on migraine patients, the mean age of patients was 37.67 years, the youngest being 13 years and the oldest 80.5 years. This is similar to our study. In large study of 1683 headache patients from China by Wang et al Mean age for TTH was 44 years and migraine was 42 years<sup>6</sup>.

Out of the 137 patients with tension type headache, majority (54.7%) had dull aching type of pain followed by band like (16.7) followed by pressure like pain (13.1). In the study by Senthil et al, majority of patients with tension headache had pressing type of pain<sup>5</sup>.

Hemicranial distribution among migraine patients was most common 33.6% in our series in contrast to series by Senthil where frontotemporal (55%) most commonly seen. The series of 173 patients by Kalita and Mishra showed results similar to our study; hemicranial was also most common (48%) followed by frontal (15%), frontoparietal (27%), and occipital (5%).

Our study showed 36.7% patients with migraine had family history positive in parents (n=27, 17.1%) or siblings (n=17, 10.8%) or children (n=14, 8.9 %) & only 14.4% patients in TTH group had family history positive. In the study by Agarwal *et al.*,<sup>1</sup> positive family history was seen in 244 migraine patients (26%) and none with TTH. In the study by Kalita and Mishra et al from north India, family history was positive in 44 out of 182 (24.17%) migraine patients<sup>8</sup>. In the Chinese study, family history was positive 161 out of 396 (40.6%) in migraine patients and 96 out of 391 (24%) in TTH group<sup>6</sup>. In the study by Kelman *et al.*,<sup>9</sup> 861 out 1750 i.e., 49.2% of migraine patients had a positive family history. Our study correlates with these studies, showing higher percentage of family history in migraine patients compared to TTH group; showing more genetic influence in migraine. On solely history, trigger was identified in 64.2% patients. This frequency increased to 84.8% when specific detailed

list was shown to them. Many of our patients had not correlated their migraine to certain triggers as they never thought that these could act as trigger for their migraine attack. Providing a specific list of trigger factors increased the identification rate of triggers in patients with migraine. This was evident in our study as identification of trigger factors increased from 64.2% to 84.8%. This was also found in study by Kelman where it increased from 75% to 95%<sup>9</sup>. This emphasizes the importance of having a list of trigger factors ready while evaluating any patient with migraine. By knowing the trigger factor for oneself; patient can avoid them or try to protect oneself from them. In the study by Kalita and Mishra<sup>8</sup>, migraine triggers (87.9%) included emotional stress (70%), fasting (46.3%), physical exhaustion or traveling (52.5%), sleep deprivation (44.4%), menstruation (12.8%) and weather changes in 10.1% patients. In our study, 134 out of 158 (84.8%) patient had triggers. Majority had more than one trigger. Triggers related to lighting conditions mainly exposure to bright sunlight and heat was the most common trigger. Others included travel related 38 (24.05%), related to meals 50 (31.4%) and fasting related were seen in 20 (12%). Among other triggers; 13 (8.2%) had hormonal, sleep related in 46.2% and stress related in 36.07% were seen. In another Brazilian study out of 200, all patients reported triggers<sup>10</sup>. All of them had atleast one dietary trigger and almost 80% had some sleep related trigger. This was significantly different from our study in which very few patients (11 out of 158 (7%)) had specific food as triggering agent and 46% had sleep related triggers. This may be because of racial difference and difference in diet among the two populations studied. Being in the tropics, heat and light levels are very different from what prevails in the temperate countries and travel conditions are not ideal. Hair-wash leading to migraine headache in some is a trigger that is peculiar to India<sup>11</sup>. There are many religion-based fasting habits that are different. Unlike in the western world, chocolate, cheese, and red wine are not common triggers in the South-East Asia region<sup>10</sup>.

In the Agrawal study, fasting was found to be the most common trigger (32%) for migraine, probably related to the common Indian tradition of fasting during festivals whereas stress (emotional as well physical) being the second commonest trigger (31%) for migraine. We found stress related trigger in 36.1% of our patients. Population based and subspecialty clinic based studies have reported that a stressful event or situation was trigger of migraine

headache in 36% to 42% and 62% to 72%. In<sup>12</sup> a study of 200 children with migraine by A. Chakravarty, factors implicated in exacerbations included, exposure to sun, fasting, physical activity, increased psychological stress, menstruation, being in a crowded place, noise, and lack of sleep. More than one factor seemed to be implicated in all cases.

On comparing the trigger factors between male and female, we found that females had significantly higher percentage of trigger factors compared to males, in categories of travel (31% vs 11%), smoke and odour (47.5% vs 3.4%), hormonal (13.1% vs 0%) and emotional stress (35.4% vs 0%). High percentage of emotional stress as a trigger may be explained by the basic more emotional nature of women in general. Women work more in kitchen and cleaning of home, which may expose them to smoke and odour much more in India. Kelman in his study also found females with migraine had more weather, perfume/ odour and heat triggers than males with migraine<sup>9</sup>.

## 5. Conclusion

Migraine was most common, followed by tension type headache. Patients with migraine, have more severe and disabling pain, so they are more likely to seek medical attention. Primary headaches occur more commonly in females. Primary headaches affect the young age group in 3rd and 4th decade of life. The chronicity of these headaches affects their education, occupation and quality of life during their most productive years. Migraine disorder has more genetic influence compared to TTH. Migraine patients had significant correlation with positive family history compared to TTH. Chronic TTH was more prevalent than other types of TTH.

Majority of migraine patients had frequency of 2-4 attacks per month. Clinical characteristics and history is the mainstay in diagnosis of primary headache. The predominant pattern of headache in TTH was bilateral, with dull aching, pressure or band like character. Migraine presented with unilateral pain of throbbing/pulsating character. Pericranial tenderness is seen more with TTH. Associated features like nausea, phonophobia and photophobia were more common in migraine.

Migraine patients often are not educated about the trigger factors. An exhaustive list of trigger factors helps patients to correlate them with the headache episodes. Identifying and avoiding them can prevent the attacks and reduce the use of analgesics. In tropical country like

India, most common trigger was climatic conditions like sunlight, heat and humid conditions.

Females had significantly more trigger factors compared to males. These were related to travel, smoke and odor, hormonal and emotional stress.

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