

FREQUENCY OF PATIENTS WITH MIGRAINE AND TENSION-TYPE
HEADACHE PRESENTING IN THE EMERGENCY DEPARTMENTDr. Hafiza Rebia Shahid^{*1}, Dr. Muhammad Shahid Hussain Sial², Dr Naila Amjad Cheema³,
Dr. Tabana Iftikhar Ali Taj⁴, Dr Tabinda Batool⁵, Dr Faiqa Akram⁶^{*1,3,4,5,6}Postgraduate Resident Neurology Department, National Hospital and Medical Center, Lahore²Consultant Neurology Department, Nation al Hospital and Medical Center, Lahore^{*1}rebiashahid5@gmail.comDOI:<https://doi.org/10.5281/zenodo.17359096>**Keywords**Migraine, Tension-type headache,
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Copyright @Author**Corresponding Author: *****Dr. Hafiza Rebia Shahid****Abstract****Background:** Headache is one of the most common neurological complaints encountered in emergency departments, accounting for a significant proportion of acute medical visits.**Objective:** To determine the frequency of patients with migraine and tension-type headache presenting in the emergency department.**Methodology:** This Cross-sectional study was conducted at Department of Neurology, National Hospital and Medical Center, Lahore, from, November 2024 to April 2025. A total of 190 patients presenting with primary headaches in the emergency department were included through non-probability consecutive sampling. Individuals of both genders aged 16 to 60 years were enrolled after obtaining informed consent.**Results:** Out of 190 patients, 82 (43.2%) were diagnosed with migraine and 108 (56.8%) with tension-type headache. The mean age was 33.9 ± 10.4 years. Females (66.3%) were more frequently affected than males (33.7%). The majority of patients (36.8%) were within the 26–35-year age group. Among migraine patients, the most common symptoms were photophobia (75.6%), nausea/vomiting (67.1%), and phonophobia (57.3%), while tension-type headache patients predominantly experienced stress-related pain (75.0%) and sleep disturbance (63.0%). Stress (57.4%) and lack of sleep (48.9%) were the most frequent triggering factors. A statistically significant association was found between gender and type of headache ($p = 0.02$).**Conclusion:** It is concluded that tension-type headache was slightly more prevalent than migraine among patients presenting with primary headaches in the emergency department. Females and younger adults were more commonly affected, with stress and sleep deprivation emerging as the most frequent triggers.**INTRODUCTION**

Headache is a neurological disorder characterized by pain or discomfort in the head or face. It is a common yet often challenging presentation in the emergency department. It may present either as primary disorder like migraine or tension type headache or secondary

manifestation of underline pathology. Headaches can vary in terms of frequency, intensity, duration, and associated features. Patients frequently report vague and nonspecific symptoms, which complicates the diagnosis and appropriate therapeutic management

for healthcare providers. Approximately 95% of the general population experiences headaches at some point in their lives [1]. The most common types are migraines and tension-type headaches, which affect individuals regardless of age, race, or gender. The global prevalence of headaches is 48.9% [2], with 15.8%² of the population experiencing headaches daily. Tension-type headaches affect 26% [2] of the global population, with a prevalence of 23.4% [3] in males and 27.1% in females [4]. Migraines, with a worldwide prevalence of 14%, occur in 8.6% [5] of males and 17.0% of females, typically beginning at puberty and most commonly affecting those aged 30–49 [6].

Both migraines and tension-type headaches significantly impact an individual's well-being, leading to increased absenteeism, frequent hospital visits, unnecessary investigations, overuse of painkillers, and subsequent health and financial challenges for the patient [1]. Despite headaches' prevalence and the availability of guidelines, accurately diagnosing type of headaches, its underline cause, and its treatment remains difficult in the emergency department due to the overlapping symptoms of different headache disorders [7]. In emergency, precise diagnosis is essential to differentiate between headache types, as it can be complicated by the patient's history, symptom variability, and coexisting conditions. Identifying those who require prompt specialized treatment and diagnostic measures is crucial, especially in cases involving secondary causes [5] such as stroke, CNS infections, epilepsy, trauma, structural issues (vascular disorders or tumors), or red flag signs [1] like sudden onset headaches, thunderclap headaches, seizures, altered sensorium, fever, or focal deficits. These cases necessitate urgent referral to specialized care [8]. The burden of primary headaches extends beyond individual suffering to affect families, workplaces, and healthcare systems. In many developing countries, including Pakistan, the prevalence of headache disorders remains under-reported due to limited awareness, lack of specialized headache clinics, and the tendency to self-medicate rather than seek medical advice [9]. This often results in inappropriate analgesic use, contributing to **medication-overuse headache (MOH)** a secondary condition that further complicates clinical management. Moreover, cultural perceptions and social stigmas surrounding headache

as a “non-serious” condition delay diagnosis and treatment, particularly among women [10-12].

Objective

To determine the frequency of patients with migraine and tension type headache presenting in emergency department with headache.

Methodology

This cross-sectional study was conducted at the Department of Neurology, National Hospital and Medical Center, Lahore from November 2024 to April 2025. The sample size was determined utilizing OpenEpi software [8], expecting the frequency of migraine at 14% [2] at a 95% confidence interval. A margin of error of 5% was applied, resulting in a calculated sample size of 190. Data were collected through a non-probability consecutive sampling technique.

Inclusion Criteria:

- Individuals of both genders, both male and female.
- Age group: 16 to 60 years.
- Patients presenting with symptoms of headache (migraine or tension-type headache) as defined by operational definitions.
- Patients willing to sign written informed consent to participate in the study.

Exclusion Criteria:

- Patients with red flag signs¹ (sudden onset headache, thunderclap headache, seizures, altered sensorium, fever, focal deficit) or secondary causes⁵ (stroke, CNS infections, epilepsy, trauma, structural lesions like vascular disorder or tumor).
- Patients with a history of substance abuse or psychiatric disorders.
- Patients exhibiting neurological deficits or postural drops during clinical examination.

Data collection

After obtaining approval from the Ethical Review Committee of the hospital, a total of 190 patients who presented with either migraine or tension-type headaches in the emergency departments of Neurology and Medicine at the National Hospital and

Medical Centre, Lahore, were enrolled. Patients who fulfilled the inclusion and exclusion criteria, as defined by the operational definitions, were included after proper counseling. Confidentiality of all participants was maintained throughout the research process. Written informed consent was obtained from each participant before inclusion in the study. A detailed medical history was recorded, and a comprehensive neurological examination was performed by trained clinicians. Data were systematically collected on variables such as age, gender, symptoms, duration, and associated features. Each patient was interviewed using a structured Performa, and the final diagnosis based on the detailed history and clinical examination was documented.

Data Analysis

All collected data were entered and analyzed using SPSS version 27.0. Numerical variables such as age, duration of symptoms, and number of headache episodes were summarized using mean and standard deviation. Categorical variables, including presenting

symptoms and headache types (migraine or tension-type), were expressed as frequencies and percentages. The data were stratified for age, gender, duration of symptoms, and number of episodes. Post-stratification, the Chi-square test was applied, and a *p*-value of less than 0.05 was considered statistically significant.

Results

Data were collected from 190 patients, with a mean age of 33.9 ± 10.4 years. The majority of patients were female (66.3%), and the rest were male (33.7%). Most participants resided in urban areas (71.6%), while 28.4% were from rural areas. In terms of socioeconomic status, 46.8% were from high-income backgrounds, 37.9% from middle-class families, and 15.3% from low-income groups. The average duration of headache episodes was 18.2 ± 9.7 months, and patients reported an average of 5.4 ± 3.2 headache attacks per month, indicating frequent and recurring episodes of headache in the study population.

Table 1: Baseline Characteristics of the Study Population (n = 190)

Variable	Mean $\pm$ SD / n (%)
Age (years)	33.9 ± 10.4
Gender	Male: 64 (33.7%) Female: 126 (66.3%)
Residence	Urban: 136 (71.6%) Rural: 54 (28.4%)
Socioeconomic status	High: 89 (46.8%) Middle: 72 (37.9%) Low: 29 (15.3%)
Duration of headache (months)	18.2 ± 9.7
Frequency of attacks per month	5.4 ± 3.2

Among the 190 patients, 82 (43.2%) were diagnosed with migraine and 108 (56.8%) with tension-type headache. The distribution of headache types by gender showed that migraine was more prevalent in

females (31.1%) than in males (12.1%). Conversely, tension-type headache was more common in males (21.6%) compared to females (35.3%).

Table 2: Distribution of Headache Types by Gender

Headache Type	Male (n = 64)	Female (n = 126)	Total (n = 190)
Migraine	23 (12.1%)	59 (31.1%)	82 (43.2%)
Tension-type headache	41 (21.6%)	67 (35.3%)	108 (56.8%)
Total	64 (33.7%)	126 (66.3%)	190 (100%)

The age-wise distribution of headache types showed that the highest prevalence of both migraine and tension-type headache occurred in the 26–35 years age group, which accounted for 36.8% of the study population. In this group, 17.9% of patients had migraine and 18.9% had tension-type headache. The

second most common age group was 36–45 years, contributing to 25.3% of all cases. The 16–25 years age group accounted for 23.7% of cases, and the least common age group was 46–60 years, contributing only 14.2% to the total number of patients.

Table 3: Age-Wise Distribution of Headache Types

Age Group (years)	Migraine n (%)	Tension-Type n (%)	Total n (%)
16–25	21 (11.1%)	24 (12.6%)	45 (23.7%)
26–35	34 (17.9%)	36 (18.9%)	70 (36.8%)
36–45	18 (9.5%)	30 (15.8%)	48 (25.3%)
46–60	9 (4.7%)	18 (9.5%)	27 (14.2%)
Total	82 (43.2%)	108 (56.8%)	190 (100%)

The most common associated symptoms in patients with migraine were photophobia (75.6%), nausea/vomiting (67.1%), and phonophobia (57.3%). In contrast, patients with tension-type headache most commonly reported stress-related

triggers (75.0%) and sleep disturbances (63.0%). Other associated symptoms for tension-type headache included neck spasm (30.6%), which was significantly more frequent compared to migraine patients (14.6%).

Table 4: Common Associated Symptoms Among Patients

Symptom	Migraine n (%)	Tension-Type n (%)	Total n (%)
Nausea / Vomiting	55 (67.1%)	19 (17.6%)	74 (38.9%)
Photophobia	62 (75.6%)	22 (20.4%)	84 (44.2%)
Phonophobia	47 (57.3%)	15 (13.9%)	62 (32.6%)
Neck spasm	12 (14.6%)	33 (30.6%)	45 (23.7%)
Sleep disturbance	24 (29.3%)	68 (63.0%)	92 (48.4%)
Stress-related trigger	35 (42.7%)	81 (75.0%)	116 (61.1%)

Stress/anxiety was reported by 45.1% of migraine patients and 66.7% of tension-type headache patients, making it the most common trigger for both headache types. Lack of sleep was a trigger for 53.7% of migraine patients and 45.4% of tension-type headache patients.

Other notable triggers included loud noise, bright light/screen exposure, and skipping meals, with menstrual cycles reported as a trigger in 22% of female migraine patients.

Table 5: Triggering Factors Reported by Patients

Trigger	Migraine n (%)	Tension-Type n (%)	Total n (%)
Stress / Anxiety	37 (45.1%)	72 (66.7%)	109 (57.4%)
Lack of Sleep	44 (53.7%)	49 (45.4%)	93 (48.9%)
Loud Noise	26 (31.7%)	18 (16.7%)	44 (23.2%)
Menstrual Cycle	18 (22.0%)	0 (0.0%)	18 (9.5%)
Fasting / Skipping Meals	33 (40.2%)	21 (19.4%)	54 (28.4%)
Bright Light / Screen Exposure	29 (35.4%)	27 (25.0%)	56 (29.5%)

Discussion

This study was conducted to determine the frequency and clinical profile of patients presenting with migraine and tension-type headaches in the emergency department of a tertiary care hospital in Lahore, Pakistan. Out of 190 patients included, 82 (43.2%) had migraine and 108 (56.8%) had tension-type headache. The findings indicate that tension-type headache was slightly more prevalent than migraine in this cohort, consistent with global and regional trends. The overall female predominance (66.3%) observed in this study aligns with prior research showing that primary headaches, particularly migraine, occur more frequently in women than in men (Ahmed, 2012; Stovner et al., 2022). This gender difference may be attributed to hormonal influences, particularly the fluctuating estrogen levels that modulate the trigeminovascular system and pain sensitivity. Studies from Pakistan and neighboring countries have reported similar gender patterns, with female-to-male ratios for migraine ranging between 2:1 and 3:1. The high proportion of female patients also reflects the increased psychological and lifestyle stressors among women balancing domestic and professional responsibilities in urban Pakistani settings [13].

The mean age of 33.9 ± 10.4 years indicates that primary headaches predominantly affect individuals in their productive age group, a finding consistent with global epidemiological data. Stovner et al. (2022) reported the highest prevalence of migraine between the ages of 30 and 49 years, which coincides with our findings. This age group typically experiences high occupational and emotional stress, irregular sleep patterns, and exposure to digital screens all recognized headache triggers in modern urban populations. In this study, migraine accounted for 43.2% of cases,

while tension-type headache made up 56.8%, suggesting a modest predominance of tension-type headache in emergency presentations [14]. A similar pattern was reported by Munoz-Ceron et al. (2019), who found tension-type headaches to be more frequent than migraine in hospital-based populations. However, in contrast, community-based studies in Western countries have reported higher migraine prevalence, possibly due to differing diagnostic criteria, genetic predispositions, and environmental stressors. The relatively high proportion of tension-type headaches in our study could also be attributed to the sociocultural environment in Pakistan, where emotional distress, sleep deprivation, and psychosocial strain are prevalent among young adults [15].

The most frequent symptoms reported among migraine patients were photophobia (75.6%), nausea/vomiting (67.1%), and phonophobia (57.3%), whereas tension-type headache patients most often experienced stress-related episodes (75.0%) and sleep disturbances (63.0%). These findings align with the diagnostic criteria established by the International Headache Society (IHS, 2018), which define migraine as a pulsatile, moderate-to-severe headache often accompanied by sensory hypersensitivity and autonomic symptoms. In contrast, tension-type headache is typically described as a bilateral, non-pulsating, and pressure-like headache associated with muscle tension and fatigue rather than sensory phenomena [16-18]. The urban predominance (71.6%) of headache patients in this study mirrors trends in other Pakistani research, where access to tertiary healthcare facilities is higher in metropolitan areas. However, this may also reflect the rising prevalence of lifestyle-related headache triggers such as excessive screen time, dehydration, and exposure to

environmental pollutants. Rural populations may underreport headaches due to limited healthcare access or reliance on self-medication and traditional remedies, which can mask the true burden of the disease. Comparing our findings with previous international literature, Kelman (2006) reported that migraine symptoms and frequency often evolve with age, whereas in our study, migraine frequency peaked in the 26–35 age group, likely due to sociocultural differences and environmental factors [19,20]. Likewise, similar hospital-based studies from India and Bangladesh have shown comparable distributions, reinforcing the regional consistency of headache epidemiology across South Asia. Limitations of this study include its single-center design, non-probability sampling, and reliance on self-reported triggers, which may introduce reporting bias. The exclusion of secondary headaches limits generalizability, and longitudinal follow-up was not performed to assess recurrence or treatment outcomes. Despite these limitations, the study provides valuable local data on the frequency and characteristics of primary headaches in a tertiary hospital emergency setting in Pakistan.

Conclusion

It is concluded that tension-type headache was slightly more prevalent than migraine among patients presenting with primary headaches in the emergency department. Most patients were females and belonged to the young to middle-aged population, indicating that hormonal fluctuations, occupational stress, and sleep deprivation play significant roles in the onset of primary headaches. Migraine was more common among females, whereas tension-type headache was observed more frequently in males and individuals engaged in stressful professional or academic environments. Stress, lack of adequate sleep, and lifestyle-related factors were found to be the major precipitating triggers for both headache types. The predominance of urban patients suggests that modern lifestyle factors such as screen exposure, irregular routines, and environmental stressors contribute to the growing burden of headache disorders in Pakistan.

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