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# PREVALENCE OF VARIOUS TYPES OF HEADACHES IN NEUROLOGY OUTPATIENT CLINICS

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## ABSTRACT
### OBJECTIVE
To determine the prevalence and clinical characteristics of different types of headaches among adults presenting to a neurology outpatient clinic.
### METHODOLOGY
This cross-sectional study was carried out over eight months in a neurology outpatient clinic and included 237 adults aged 18 to 45 years who presented with headaches. Information on demographics, headache features, triggers, and impact was gathered through a structured questionnaire. Headaches were clinically classified, and data were analyzed using SPSS 26 with descriptive statistics and Chi-square tests, considering $p < 0.05$ as significant.
### RESULTS
Females comprised the majority of participants (71.3%), with a mean age of 32.7±8.4 years. Migraine was the most prevalent headache type (58.6%), followed by tension-type headache (32.5%). Average headache frequency was 6.96±4.03 days per month, lasting 17.86±13.59 hours. No significant age or gender associations were observed, except for higher post-traumatic headaches in younger adults (p=0.050).
### CONCLUSION
This study shows that migraine is the most common headache type among adults visiting neurology clinics, followed by tension-type headache. Although headache patterns were similar across age and gender groups, younger adults reported more post-traumatic headaches. Stress emerged as the main trigger, and many patients experienced notable disruption in daily life. These results highlight the need for earlier recognition, better patient guidance, and more accessible headache management strategies.

### KEYWORDS
Headache Disorders, Migraine headache, Tension type Headache (TTH), Chronic daily headache.

## INTRODUCTION
Headache disorders constitute a substantial proportion of neurological consultations, consistently ranking among the most frequent diagnostic categories in outpatient neurology settings [1]. Among these, migraine and medication-overuse headache are particularly prevalent and often prompt referrals for cerebral CT or MRI, despite guideline recommendations advising against routine neuroimaging in uncomplicated headache presentations, thereby increasing healthcare expenditure [1].
The prevalence of headache disorders in neurology outpatient clinics is considerable, with migraine representing a major proportion of diagnoses [2]. Across diverse geographical regions, studies

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consistently identify migraine as the most common primary headache disorder, typically followed by tension-type headache [3,4]. This pattern is also evident in Brazilian cohorts, where migraine remains the predominant primary headache in specialized neurology clinics [5]. Such consistent findings highlight the significant burden of migraine and the need for optimized diagnostic and management strategies tailored to clinical practice [6,7].

A substantial proportion of patients referred to specialized headache centres present with uncomplicated primary headaches that could be effectively managed in primary care. Many such referrals involve chronic tension-type headache, indicating the potential to streamline referral pathways and improve healthcare resource allocation [8,9]. Additionally, analgesic overuse—commonly involving dipyrone—remains prevalent and is frequently underreported, emphasizing the need for better patient education and improved clinical documentation [3,7].

The overuse of neuroimaging persists as a major issue, with up to one-third of CT scans ordered for headache evaluation considered unnecessary, exposing patients to avoidable radiation and contributing to rising healthcare costs [8]. Despite clear guidelines, diagnostic uncertainty, patient expectations, and defensive medical practices continue to drive inappropriate neuroimaging requests [8,10]. These scans rarely alter management and may increase patient anxiety rather than provide reassurance [11,4].

Systemic challenges exacerbate these issues, including limited formal training in headache assessment among junior clinicians and restricted access to specialized headache services, resulting in long waiting times and delayed initiation of appropriate treatment [4]. Enhancing primary care practitioner education, promoting adherence to evidence-based neuroimaging guidelines, and implementing targeted training initiatives have demonstrated potential to reduce unnecessary imaging and improve headache management [11,12].

This study aims to clarify the prevalence patterns of headache types presenting to neurology outpatient clinics and evaluate how these patterns affect diagnostic and referral practices. Understanding these trends is essential for improving clinical decision-making, optimizing resource use, and reducing avoidable investigations. The findings may help strengthen primary care pathways and support more efficient and targeted headache management.

## METHODOLOGY

This cross-sectional study was conducted over eight months in the neurology outpatient clinic of a tertiary care hospital. The aim was to determine the prevalence and clinical characteristics of different types of headaches among adults. Patients between 18 and 45 years of age who presented with headache as their main complaint were invited to participate. This age range was selected to limit the influence of age-related neurological conditions that might complicate headache classification.

For this study, a headache was defined as any recurrent or persistent cranial pain occurring within the last three months, regardless of intensity, frequency, or accompanying symptoms. Headaches were clinically classified into primary categories such as migraine, tension-type headache and cluster headache, and secondary categories that included headaches related to trauma, infection, or other neurological causes.

A total of 237 patients were recruited through consecutive non-probability sampling, which ensured that every eligible and consenting patient who attended the clinic during the study period was included. Participants were required to fall within the specified age range, present with headache as their primary concern, and provide written informed consent. Patients who declined participation, were unwilling to consider prophylactic treatment, or had major neurological comorbidities such as stroke or brain tumours were excluded.

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Data were collected using a structured and pretested questionnaire administered through face-to-face interviews by trained data collectors. The questionnaire gathered information on demographic factors, headache characteristics including location, duration, frequency, nature, and triggers, associated symptoms such as nausea, vomiting, photophobia, and vertigo, and the impact of headaches on daily functioning and work attendance. It also recorded treatment preferences, self-medication habits, emergency room visits, prior diagnostic tests including neuroimaging, and the use of non-pharmacological therapies such as physiotherapy, acupuncture, or herbal remedies.

All responses were kept confidential, and the data were anonymized before analysis. Ethical approval was obtained from the institutional review board.

Data were analysed using SPSS version 26. Descriptive statistics were used to summarize the findings. Categorical variables were presented as frequencies and percentages, and continuous variables were summarized as medians with interquartile ranges. Associations between headache types and demographic or clinical characteristics were evaluated using the Chi-square test, with a significance level of p less than 0.05.

## RESULTS

**Table I** summarizes the baseline characteristics of the 237 participants. The mean age was 32.71 ± 8.43 years, and the average age at first headache onset was 27.88 ± 7.73 years. Participants reported an average of 6.96 ± 4.03 headache days per month, with mean headache duration of 17.86 ± 13.59 hours. Most participants were female (71.3 percent), and the majority held a graduate-level education. More than half were employed, and nearly two-thirds were married.

Unilateral headache was the most common location, reported by 46.8 percent of patients. Fewer participants reported headaches in the temples, forehead, back of the head, vertex, or periorbital region. Most individuals (69.2 percent) did not experience any warning signs before the onset of headache. Among those who did, nausea and vomiting were the most frequently reported symptoms, followed by vertigo, vision changes, and numbness or tingling. Stress or emotional tension was the leading trigger, followed by sleep disturbances and skipping meals. A smaller proportion identified menstrual-related triggers, specific foods, or certain smells.

**Table II** compares headache types across the two age groups. Migraine was the most common diagnosis in both younger (18–30 years) and older (>30 years) adults, with similar prevalence across groups. Tension-type headache followed as the second most frequent diagnosis, again without significant age-related differences. Less common headache types, including cluster headache, trigeminal autonomic cephalalgias, trigeminal neuralgia, chronic daily headache, sinusitis-related headache, post-lumbar puncture headache, and benign intracranial hypertension, showed no statistically significant variation between age groups. The only notable trend was the higher frequency of post–traumatic brain injury headache in the younger group, a finding that approached statistical significance.

**Table III** presents the distribution of headache types by gender. Migraine was slightly more common among females than males, although the difference was not statistically significant. Tension-type headache showed almost identical prevalence across genders. Cluster headache appeared more frequently in males, but this difference did not reach statistical significance. Other headache types, including trigeminal autonomic cephalalgias, trigeminal neuralgia, chronic daily headache, post-traumatic brain injury headache, cerebral venous sinus thrombosis, sinusitis-related headache, post-lumbar puncture headache, and benign intracranial hypertension, also showed no meaningful gender-related differences.

## DISCUSSION

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The present study demonstrates that migraine and tension-type headache were the most prevalent headache disorders among adults attending neurology outpatient services, with migraine affecting 58.6% of participants and tension-type headache affecting 32.5%, findings that closely mirror international clinic-based studies reporting migraine prevalence between 50–65% and tension-type headache between 25–35% [14,15]. These comparable proportions indicate that the burden of primary headache disorders in this setting reflects global epidemiological patterns and supports the reliability of the observed distribution across demographic groups.

The observed mean of 6.96 headache days per month and mean attack duration of 17.86 hours also align with European and Asian investigations documenting average monthly frequencies between 4–8 days and episode durations typically ranging from 12–24 hours [16,17,18]. This suggests that the severity and temporal characteristics of symptoms in this cohort fall within expected clinical ranges. The absence of statistically significant associations between age or gender and the major headache types strengthens this observation, consistent with earlier research showing that demographic differences often diminish in treatment-seeking clinical populations where symptom burden and functional limitation drive consultation [14,15].

Functional impairment was considerable, with 92.8% of participants reporting disruption of routine activities and 26.2% missing work or school. These patterns parallel international findings demonstrating that primary headache disorders, particularly migraine, significantly reduce productivity and quality of life [16,17,18]. Such high impairment levels underscore the substantial personal and societal burden of recurrent headaches and highlight the need for early diagnosis and long-term management strategies.

Stress was the most frequently reported trigger (58.2%), followed by sleep-related disturbances (17.7%). These patterns are consistent with prior literature and emphasize the influence of psychosocial and behavioural factors on headache exacerbation [15,17]. This suggests that integrative management approaches focusing on lifestyle modification, stress reduction, and sleep hygiene may provide meaningful benefits.

A particularly noteworthy finding was the high reliance on self-medication, reported by 81.9% of participants. This rate places the cohort at the upper range of global estimates and represents a known risk factor for medication-overuse headache. This highlights the need for enhanced patient education on appropriate analgesic use and structured preventive care pathways to limit excessive medication consumption and associated complications [7,19].

Frequent neuroimaging use despite largely benign clinical presentations further reflects patterns observed in previous studies, where a significant proportion of scans performed for headache evaluation were unlikely to alter management and contradicted guideline recommendations [1,10,11]. Such practices increase healthcare costs and may heighten patient anxiety while offering minimal diagnostic value.

Collectively, these findings highlight persistent system-level challenges in headache care, including inadequate clinician training, inconsistent adherence to evidence-based guidelines, and limited access to structured headache services. These challenges have been widely recognized across healthcare systems and continue to impede optimal management [12,19,20].

Strengths of this study include its relatively large sample size, detailed characterization of headache patterns, and comprehensive assessment of triggers and functional impact. However, limitations include reliance on self-reported data, which may introduce recall bias, and the cross-sectional design, which prevents assessment of temporal changes or causal relationships. Future studies using digital headache diaries, longitudinal designs, and validated disability assessment tools may provide more accurate burden estimates and support the development of targeted preventive strategies.

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**CONCLUSION**

This study shows that migraine is the most common headache type among adults visiting neurology clinics, followed by tension-type headache. Although headache patterns were similar across age and gender groups, younger adults reported more post-traumatic headaches. Stress emerged as the main trigger, and many patients experienced notable disruption in daily life. These results highlight the need for earlier recognition, better patient guidance, and more accessible headache management strategies.

| **Table I: Baseline Demographic and Clinical Characteristics of Study Participants (n=237)** | | |
|---|---|---|
| **Mean ± Standard Deviation** | | **95% Confidence Interval** |
| Age in years = **32.71 ± 8.43** | | 31.63-----33.79 |
| Age at First Headache = **27.88 ± 7.73** | | 26.89-----28.87 |
| Frequency of Headache days per month = **6.96 ± 4.03** | | 6.45-----7.48 |
| Duration of Headache in hours = **17.86± 13.59** | | 16.12-----19.60 |
| **Frequency %** | | |
| **Gender** | Male | 68 (28.7) |
| | Female | 169 (71.3) |
| | | |
| **Education** | Illiterate | 5 (2.1) |
| | Primary education | 6 (2.5) |
| | Secondary | 23 (9.7) |
| | Intermediate | 40 (16.9) |
| | Graduate | 163 (68.8) |
| | | |
| **Employment Status** | Employed | 133 (56.1) |
| | Unemployed | 104 (43.9) |
| | | |
| **Marital Status** | Married | 147 (62.0) |
| | Unmarried | 86 (36.3) |
| | Widow/Widower | 1 (0.4) |
| | Divorced | 3 (1.3) |
| | | |
| **Location of Headache** | Unilateral | 111 (46.8) |
| | Forehead | 26 (11.0) |
| | Temples | 27 (11.4) |
| | Top of the head (vertex) | 19 (8.0) |
| | Back of the head | 24 (10.1) |
| | Diffuse (All around the head) | 23 (9.7) |
| | Periorbital | 7 (3.0) |
| | | |
| **Warning Signs Before Headache** | Vision changes | 13 (5.5) |
| | Nausea/vomiting | 27 (11.4) |
| | Numbness/tingling | 10 (4.2) |

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| | | |
|---|---|---|
| | Vertigo | 23 (9.7) |
| | None | 164 (69.2) |
| | | |
| **Triggers for Headaches** | Stress/tension | 138 (58.2) |
| | Lack/excess of sleep | 42 (17.7) |
| | Skipping meals | 18 (7.6) |
| | Related to the menstrual cycle (females) | 9 (3.8) |
| | Any Specific Food | 3 (1.3) |
| | Certain Smells | 3 (1.3) |
| | None | 24 (10.4) |

**Table II: Comparison of Various Types of Headaches by Age Groups (n=237)**

| **Types of Headaches** | **Age Group** | | **95% Confidence Interval** | **P-Value** |
|---|---|---|---|---|
| | **18---30** | **> 30** | | |
| Tension Type Headache | 34 (34.0) | 43 (31.4) | 0.650----1.950 | 0.671 |
| Migraine Headache | 60 (60.0) | 79 (57.7) | 0.652----1.860 | 0.718 |
| Cluster Headache | 1 (1.0) | 3 (2.2) | 0.046----4.402 | 0.437 |
| Trigeminal Autonomic Cephalalgias | 1 (1.0) | 1 (0.7) | 0.085----22.229 | 0.667 |
| Chronic Daily Headache | 2 (2.0) | 6 (4.4) | 0.088----2.255 | 0.267 |
| Trigeminal Neuralgia | 1 (1.0) | 2 (1.5) | 0.061----7.625 | 0.617 |
| Post TBI Headache | 5 (5.0) | 1 (0.7) | 0.823----62.252 | 0.050* |
| Cerebral Venous Sinus Thrombosis | 2 (2.0) | 2 (1.5) | 0.191----9.949 | 0.563 |
| Sinusitis | 2 (2.0) | 1 (0.7) | 0.248----31.041 | 0.383 |
| Post LP Headache | 3 (3.0) | 1 (0.7) | 0.431----41.045 | 0.203 |
| Benign Intracranial Hypertension | 1 (1.0) | 1 (0.7) | 0.085----22.229 | 0.667 |

**Table III: Comparison of Various Types of Headaches by Gender (n=237)**

| **Types of Headaches** | **Gender** | **95% Confidence Interval** | **P-Value** |
|---|---|---|---|

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| | Male | Female | | |
|---|---|---|---|---|
| Tension Type Headache | 22 (32.4) | 55 (32.5) | 0.543----1.809 | 0.977 |
| Migraine Headache | 37 (54.4) | 102 (60.4) | 0.444----1.384 | 0.401 |
| Cluster Headache | 3 (4.4) | 1 (0.6) | 0.792----75.899 | 0.072 |
| Trigeminal Autonomic Cephalalgias | 1 (1.5) | 1 (0.6) | 0.155----40.671 | 0.492 |
| Chronic Daily Headache | 1 (1.5) | 7 (4.1) | 0.042----2.862 | 0.277 |
| Trigeminal Neuralgia | 1 (1.5) | 2 (1.2) | 0.111----13.975 | 0.639 |
| Post TBI Headache | 2 (2.9) | 4 (2.4) | 0.224----6.989 | 0.553 |
| Cerebral Venous Sinus Thrombosis | 1 (1.5) | 3 (1.8) | 0.084----8.081 | 0.675 |
| Sinusitis | 2 (2.9) | 1 (0.6) | 0.454----57.096 | 0.199 |
| Post LP Headache | 2 (2.9) | 2 (1.2) | 0.349----18.337 | 0.325 |
| Benign Intracranial Hypertension | 1 (1.5) | 1 (0.6) | 0.155----40.671 | 0.492 |

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