Socio-demographic and clinical characteristics of migraine patients and the effect of treatment on their quality of life

Migrenli hastalarin sosyodemografik, klinik özellikleri ve tedavinin günlük yaşam kalitesine etkisi

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Abstract

Background: Migraine is a common neurological disorder that negatively affects quality of life and daily functioning. This study aimed to evaluate the demographic characteristics, clinical features, triggering factors, and treatment response of patients with migraine.

Materials and Methods: A total of 152 patients diagnosed with migraine, consisting of 89.5% females (n=136) and 10.5% males (n=16), aged between 15 and 55 years, who presented to the Neurology Outpatient Clinic of Kocaeli University Faculty of Medicine, were prospectively evaluated. Patients who met the diagnostic criteria for migraine according to the International Headache Society (IHS) classification and who agreed to participate in the study were included. Patients with secondary headache disorders or incomplete clinical data were excluded from the study. The diagnosis of migraine was established based on the IHS criteria. The findings were statistically analyzed in relation to age, sex, and migraine type (with or without aura).

Results: The mean age of the patients was 36.7 ± 10.0 years (range: 15–55 years). Migraine was approximately three times more frequent in females (n = 136, 89.5%) than in males (n = 16, 10.5%). A positive family history of migraine was present in 83 patients (54.6%). Headache was unilateral in 96 patients (63.2%) and throbbing in 146 patients (96.1%); 61 patients (40.1%) were diagnosed with migraine with aura. The most common accompanying symptoms were photophobia (139 patients, 91.4%), phonophobia (141 patients, 92.8%), and nausea (138 patients, 90.8%). Stress was identified as the most frequent triggering factor in 110 patients (72.4%). After treatment, reductions in attack severity, attack frequency, and migraine-related functional impairment were observed (p < 0.01 for attack-related parameters).

Conclusion: In this study, migraine was most frequently observed in patients between the ages of 20 and 40 and was more common in women. A positive family history, stress, and hormonal factors were frequently identified among the study population. Both prophylactic and acute treatments were associated with a reduction in migraine-related symptoms and functional impairment during the follow-up period.

Keywords: Migraine, Clinical and Demographic Characteristics, Symptoms, Triggering Factors, Treatment Effectiveness.

ÖZ

Amaç: Migren, yaşam kalitesini ve günlük işlevselliği olumsuz etkileyen yaygın bir nörolojik bozukluktur. Bu çalışma; migrenli hastaların demografik özelliklerini, klinik özelliklerini, tetikleyici faktörlerini ve tedavi yanıtlarını değerlendirmeyi amaçlamıştır.

Gereç ve Yöntem: Kocaeli Üniversitesi Tıp Fakültesi Nöroloji Polikliniği'ne başvuran, yaşları 15 ile 55 arasında değişen, %89,5'i kadın (n=136) ve %10,5'i erkek (n=16) olan toplam 152 migren tanılı hasta prospektif olarak değerlendirildi. Uluslararası Baş Ağrısı Derneği (IHS) sınıflamasına göre migren tanı kriterlerini karşılayan ve çalışmaya katılmayı kabul eden hastalar dahil edildi. İkincil baş ağrısı bozuklukları veya eksik klinik verileri olan hastalar çalışma dışı bırakıldı. Migren tanısı IHS kriterlerine göre konuldu. Bulgular yaş, cinsiyet ve migren tipine (auralı veya aurasız) göre istatistiksel olarak analiz edildi.

Bulgular: Hastaların yaş ortalaması 36,7 ± 10,0 yıl (dağılım: 15-55 yaş) idi. Migren, kadınlarda (%89,5) erkeklere (%10,5) göre yaklaşık üç kat daha fazlaydı. 83 hastada (%54,6) pozitif aile öyküsü mevcuttu. Baş ağrısı 96 hastada (%63,2) tek taraflı, 146 hastada (%96,1) ise zonklayıcıydı; 61 hastaya (%40,1) auralı migren tanısı konuldu. En sık eşlik eden semptomlar fotofobi (%91,4), fonofobi (%92,8) ve bulantı (%90,8) idi. Stres, 110 hastada (%72,4) en sık tetikleyici faktör olarak belirlendi. Tedavi sonrası atak şiddetinde, atak sıklığında ve migrene bağlı fonksiyonel bozuklukta anlamlı azalmalar gözlendi (atakla ilgili parametreler için p < 0,01).

Sonuç: Bu çalışmada migren, en sık 20 ile 40 yaş arasındaki hastalarda ve kadınlarda gözlenmiştir. Çalışma popülasyonunda pozitif aile öyküsü, stres ve hormonal faktörler sıklıkla tanımlanmıştır. Takip süresi boyunca hem profilaktik hem de akut tedavilerin migren semptomlarında ve fonksiyonel bozuklukta azalma sağladığı saptanmıştır.

Anahtar Kelimeler: Migren, Klinik ve Demografik Özellikler, Semptomlar, Tetikleyici Faktörler, Tedavi Etkinliği

Highlights

- Migraine is significantly more prevalent in females and is most frequently observed in patients between the ages of 20 and 40.
- Stress is the primary triggering factor, while photophobia and phonophobia are the most common symptoms accompanying migraine attacks.
- Both prophylactic and acute treatments significantly reduce attack frequency, severity, and migraine-related functional impairment.

Introduction

Migraine is a recurrent, idiopathic, episodic headache disorder characterized by attacks lasting between 4 and 72 hours. It is typically unilateral, pulsating in nature, aggravated by physical activity, and accompanied by nausea and/or vomiting as well as photophobia and phonophobia (1–3). The International Headache Society (IHS) classification distinguishes between migraine with aura and migraine without aura based on specific diagnostic criteria (4). Aura consists of fully reversible focal neurological symptoms, most commonly visual disturbances, that usually precede headache onset (1,3).

Migraine is one of the most prevalent neurological disorders worldwide. Population-based studies report a prevalence of approximately 15–17% in women and 6% in men in Western societies (5,6). The prevalence peaks during the third and fourth decades of life and declines thereafter (7,8). Gender differences are well established, with women demonstrating a 3–4-fold higher risk compared to men (7,8). Hormonal influences, particularly fluctuations in estrogen levels, are believed to contribute significantly to this disparity (9).

Although the exact pathophysiology of migraine remains incompletely understood (10), substantial evidence supports the involvement of the trigeminovascular system and cortical spreading depression (CSD) in migraine with aura (11). Activation of trigeminal afferents leads to the release of vasoactive neuropeptides and subsequent neurogenic inflammation, contributing to headache generation (3). CSD is considered the electrophysiological substrate of aura and may also activate central nociceptive pathways (11). Increasing evidence also suggests involvement of hypothalamic regulation and circadian mechanisms in attack initiation (12,13).

Migraine imposes a significant socioeconomic burden due to decreased productivity, absenteeism, and impaired daily functioning (14,15). Even between attacks, patients report reduced subjective well-being and quality of life (10,16). The Migraine Disability Assessment Scale (MIDAS) has been widely used to quantify migraine-related disability and functional loss (17,18).

Various internal and external factors may trigger migraine attacks. Commonly reported precipitating factors include stress, sleep disturbances, fasting, certain foods, environmental changes, and hormonal fluctuations (9,19). Menstrual cycle–related migraine and changes in migraine characteristics during menopause further support the modulatory role of sex hormones (9). Additionally, migraine demonstrates familial aggregation, with first-degree relatives having a two- to four-fold increased risk (7,20).

Effective management of migraine begins with accurate diagnosis and classification. Treatment strategies are generally divided into acute (abortive) and preventive approaches (1,3). Acute therapies aim to terminate attacks or reduce symptom severity and include non-steroidal anti-inflammatory drugs, triptans, antiemetics, and other agents (1,21). Preventive therapies are indicated in patients with frequent or disabling attacks and include beta-blockers, anticonvulsants, antidepressants, and other pharmacological agents (3,21). Beyond reduction of attack frequency and severity, an important therapeutic goal is improvement in functional capacity and quality of life.

Given the variability in sociodemographic characteristics, triggering factors, clinical presentation, and treatment response, regional data remain valuable for understanding migraine patterns in different populations. The present study aimed to evaluate the sociodemographic and clinical characteristics of migraine patients presenting to a tertiary neurology outpatient clinic and to assess the impact of acute and preventive treatments on attack parameters and quality of daily life.

Materials and Methods

Study Design and Participants

This prospective observational study was conducted on 152 consecutive patients diagnosed with migraine who were admitted to the Neurology Outpatient Clinic of Kocaeli University Faculty of Medicine. The study population consisted of 136 females (89.5%) and 16 males (10.5%), aged between 15 and 55 years. Migraine diagnosis was established according to the International Headache Society (IHS) diagnostic criteria. Inclusion criteria were a diagnosis of migraine according to IHS criteria and willingness to participate in the study.

Exclusion criteria included secondary headache disorders, presence of serious neurological or systemic diseases that could affect headache characteristics, and incomplete clinical data.

Ethical Approval

The study protocol was approved by the Institutional Ethics Committee of the Kocaeli University Faculty of Medicine (Approval number: KAEK 237-3, Dated 19.06.2022). The study was conducted in accordance with the Declaration of Helsinki. Informed consent was obtained from all participants

Data Collection

A detailed medical history and neurological examination were performed for each patient. Clinical, demographic, and headache-related characteristics were recorded using a structured migraine assessment form developed by the department. The form included information on age, sex, educational status, age at onset of migraine, migraine type (with or without aura), headache characteristics (localization, duration, intensity, and frequency), accompanying symptoms, triggering factors, comorbid diseases, family history, and menstrual status in female patients. Imaging and laboratory findings, when available, were also documented. The menstrual cycle, which is closely related to migraine, was also evaluated as one week before menstruation, one day before menstruation, days 0-1, end of menstruation, and post-menstruation. Patients at post-menopausal state were identified, and categories were created for the worsening, improvement, and no change in migraine severity with menopause. Post-menopausal patients receiving hormone replacement therapy were noted as well (9).

The aura assessment, which is an important determinant in migraine classification, was conducted. Aura types were determined as visual, sensory, and both visual and sensory auras. Visual aura was categorized as zigzags, scotoma, hemianopsia, sparkling stars, lines, flashes, and undefined titles. Sensory aura was assessed under headings such as weakness, yawning, and numbness in the arms and legs. Aura durations were evaluated under four headings: <4 minutes, 4-15 minutes, 15-60 minutes, and >60 minutes. Subjects were asked to rate their own pain intensity; accordingly, pain was assessed as mild, moderate, or severe (3,4).

The nature of the pain was determined by asking patients about three categories: throbbing, pressing, and piercing. Pain frequency was assessed by asking whether it occurred daily, more than once a week, between 1 and 4 days a month, once every 3 months, or very rarely. Findings that may accompany headache were determined to be photophobia, phonophobia, nausea, and vomiting. In terms of the onset of pain, if it started mildly and gradually increased, it was classified as "insidious"; if it started intensely and continued at that intensity, it was classified as "sudden". The time to peak intensity of pain was categorized as 1 hour, 2 hours, and more than 3 hours in the study. The time of onset of pain during the day was evaluated under four headings: morning, noon, evening, and night sleep, while the time of resolution of pain was assessed under three headings: within 12 hours, 12-24 hours, and longer than 24 hours. Pain localization, which is important in migraine clinics, was classified as unilateral, bilateral, both unilateral and bilateral, and localized in the back of the head (occipital) (1). Neurological examinations were performed and full blood count, biochemistry, lipid and cholesterol profiles, thyroid function tests, EEG and cranial brain tomography examinations were obtained for each patient. Treatment was planned based on the frequency of attacks, their severity, and the intensity of accompanying symptoms, with prophylactic and acute treatments administered. Propranolol (40-120 mg twice daily for six months) was administered as prophylactic treatment, while naproxen sodium (550 mg) and zolmitriptan (2.5-5 mg) were used for attack treatment, depending on the severity of the pain. Metoclopramide was administered as an antiemetic depending on the presence and intensity of accompanying symptoms, and responses to treatment were evaluated in terms of a reduction in attack frequency, pain intensity, and pain duration. The response time to acute treatment was assessed by evaluating the symptom relief to be within 2 hours or within 4 hours (4). Symptoms accompanying migraine headache were assessed before and after treatment; if the severity was severe before medication, it was scored as 3 points; if moderate, 2 points; if mild, 1 point; and if there were no accompanying symptoms, 0 points. Cases were followed up monthly for 6 months via outpatient clinic or telephone visits.

The deterioration in the patient's quality of daily life caused by migraine headache was assessed by evaluating the severity of the pain and the functional impairment during the pain; severe pain was scored as 3 points, moderate pain 2 points, mild pain 1 point, and no pain 0 points. Classification was performed both before the treatment and at follow-up visits after treatment. Patients' daily quality of life was assessed before and after treatment using the Migraine In Assessment Scale (MIDAS) (15). The MIDAS questionnaire is a short, seven-item (five of which are scored) questionnaire developed to enhance doctor-patient communication and help identify headache patients with a clear need for treatment. Patients were followed up monthly for six months, either through outpatient clinic visits or telephone interviews. Treatment response was evaluated based on changes in attack frequency, severity, duration, accompanying symptoms, and functional impairment.

Treatment Protocol

Treatment strategies were determined according to attack frequency and severity. Propranolol (40–120 mg/day) was used for prophylactic treatment. Acute attack treatment consisted of naproxen sodium (550 mg) for mild to moderate attacks and zolmitriptan (2.5–5 mg) for severe attacks. Metoclopramide was administered as an antiemetic when necessary.

Statistical Analysis

Statistical analyses were performed using SPSS version 11.5 (SPSS Inc, Chicago, IL, USA). Data distribution was assessed using the Kolmogorov–Smirnov test. Normally distributed variables were expressed as mean ± standard deviation, and non-normally distributed variables as median and interquartile range. Categorical variables were presented as frequencies and percentages. Comparisons between groups were performed using the Student's t-test for continuous variables and the Chi-square test for categorical variables. A p value < 0.05 was considered statistically significant.

Results

The study population comprised 152 patients, with a marked female predominance of 89.5% (n=136) compared to 10.5% (n=16) males. The mean age of the participants was 36.7 ± 10.0 years, with the largest concentration in the 36–45 age group (35.5%, n=54), followed by the 26–35 age group (25.7%, n=39). Regarding educational background, 42.1% (n=64) of the total cases were primary school graduates. In a subgroup analysis, it was observed that 42.6% (n=26) of patients in the migraine with aura group and 41.8% (n=38) in the migraine without aura group held a primary school degree. Statistical evaluations showed that there was no significant difference between migraine with and without aura groups in terms of age distribution, gender, or educational levels (p > 0.05) **(Table 1).**

Table 1. Age and Gender Distribution According to Migraine Aura Status

Demographic Characteristics	Subgroup	Aura Migraine (%)	Migraine Without Aura (%)	Total,(%)
Age Groups	15-25	9(14.8)	14(15.4)	23 (15.1)
	26-35	17(29.7)	22(24.2)	39(25.7)
	36-45	25(41.0)	29(31.9)	54(35.5)
	>45	10(16.4)	26(28.6)	36(23.7)
Gender	Male	9(14.8)	7(7.7)	16(10.5)
	Female	52(85.2)	84(92.3)	136(89.5)

Migraine with aura was diagnosed in 40% (n=61) of the patients. Within this group, visual aura findings were highly prevalent: scotoma was reported in 37.7% (n=23) of cases, while sparkling stars and flashes were each reported in 34.4% (n=21). The duration of these aura episodes was between 4 and 15 minutes for 65.6% (n=40) of the patients.

The clinical hallmark of the headache was its unilateral (one-sided) localization in 63.2% (n=96) of cases and its throbbing nature in 96.1% (n=146). Accompanying symptoms were nearly universal, with photophobia detected in 91.4% (n=139), phonophobia in 92.8% (n=141), and nausea in 90.8% (n=138). The presence of nausea showed a statistically significant difference between age groups (p < 0.01), peaking at 96.3% in the 36–45 age group. The frequencies of photophobia, phonophobia, and pain characteristics (throbbing/unilateral) did not show a significant difference based on gender, age, or migraine subtype (p > 0.05).

The evaluation of factors facilitating migraine attacks identified stress as the primary trigger, affecting 72.4% (n=110) of the total population. Other notable triggers included exercise (24.5%, n=37), hunger (21.1%, n=32), and insomnia (19.7%, n=30). Stress showed a statistically significant correlation with age (p < 0.05), reaching its highest impact in patients over the age of 45 (88.9%, n=32). For the remaining triggers such as exercise and hunger, no statistically significant differences were observed across the different age classifications (p > 0.05) **(Table 2).**

Table 2. Symptoms and Triggers According to Gender and Aura Status

Category	Feature	Group 1	Percentage (%)	Group 2	Percentage (%)	p
Aura Status	Presence of Vomiting	Migraine with Aura	68.9 (n=42)	Migraine Without Aura	49.5(n=45)	p<0.05
Gender	Pain Duration: <12 hours	Female	22.1 (n=30)	Male	62.5 (n=10)	p<0.01

	Duration of pain: 12-24 hours	Female	33.8(n=46)	Male	12.5 (n=2)	
	Pain Duration: >24 hours	Female	44.1 (n=60)	Male	25.0 (n=4)	
Gender	Alcohol Consumption	Male	12.5 (n=2)	Female	0.0 (n=0)	p<0.01
Trigger	Cold	Male	31.3 (n=5)	Female	9.6 (n=13)	p<0.01

Among the female participants, 46.7% (n=71) identified a direct relationship between their headaches and their menstrual cycle. However, when examining the onset of headache at different phases of the cycle, no statistically significant difference was found between age groups (p > 0.05). In contrast, the menopausal transition had a statistically significant impact on headache characteristics (p < 0.001). Among 22 menopausal women, 31.8% (n=7) reported improvement, 27.2% (n=6) reported worsening, and 40.9% (n=9) reported no change in symptoms. The distribution of migraine types (with or without aura) did not differ significantly according to menopause state (p > 0.05) **(Table 3).**

Table 3. Distribution of Symptoms, Triggering Factors, Comorbidity, Family History, and Menopause Period by Age Group

Category	Characteristic	15-25 years old (n=23)	26–35 years (n=39)	36–45 years (n=54)	> 45 years old (n=36)	Total/ Overall (n=152)	p
Symptoms	Presence of Nausea	22 (95.7%)	30(76.9%)	52 (96.3%)	34 (94.4%)	138(90.8%)	p<0.01
	Morning Pain Onset	14 (60.9%)	19 (48.7%)	40 (74.1%)	19(52.8%)	92 (60.5%)	p<0.01
Trigger	Stress	15 (65.2%)	29 (74.4%)	34 (63.0%)	32 (88.9%)	110(72.4%)	p<0.05
Comorbidity	Hypertension	0 0.0%)	0 (0.0%)	0 (0.0%)	8 (22.7%)	12 (7.9%)	p<0.01
	Thyroid Diseases	0(0.0%)	7 (17.9%)	0 (0.0%)	7 (19.4%)	17 (11.2%)	p<0.05
	Epilepsy	2 (8.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (1.3%)	p<0.01
History	Family History Presence	18(78.3%)	14 (35.9%)	32 (59.3%)	19 (52.8%)	83 (54.6%)	p<0.01
Menopause	No change	—	—	—	8 (22.2%)	—	p<0.001

The analysis of migraine onset revealed that 49.7% (n=75) of patients experienced their first symptoms between the ages of 15 and 25, while 35.8% (n=54) started between 26 and 35 years. There was a statistically significant difference in the age of onset relative to current age group distribution (p < 0.01), yet no significant variation was found based on gender or the presence of aura (p > 0.05). A positive family history was reported by 54.6% (n=83) of cases. This genetic factor was significantly more prevalent in the 15–25 age group, reaching 78.3% (n=18) (p < 0.01) **(Table 4).**

Table 4. Distribution of Migraine Onset Age and Family History Source

Feature	Group / Details	Percentage (%)
Age of Onset of Pain	15–25 years	49.7
	26-35 years	35.8
	36-45	11.9
	Over 46 years old	2.6
Family History Source	Maternal (General)	29.6
	(Subgroup: 26-35 years old)	12.8
	From the sibling's side (General)	17.1
	(Subgroup: 36-45 years old)	27.8

The impact of treatment on daily quality of life was notable, as demonstrated by changes in MIDAS categories. Before intervention, 37.5% (n=57) of patients experienced severe functional impairment; following treatment, this proportion decreased to 4.6% (n=7). Improvements in MIDAS categories were observed across genders, age groups, and migraine types.
Prophylactic therapy (Propranolol) was associated with a reduction in attack frequency in 74.0% (n=112) of patients.

Acute treatment (Naproxen/Zolmitriptan) reduced attack severity in 56.8% (n=86) and shortened pain duration in 58.3% (n=89) of cases. Following acute therapy, 68.4% (n=104) of patients achieved a completely pain-free state, and 47.4% (n=72) reported complete resolution of associated symptoms such as nausea and vomiting (p < 0.001) **(Table 5).**

Table 5. Treatment Outcomes and MIDAS Improvements (n = 152)

Category	Outcome	Total (n=152)	p
Prophylactic Therapy	Reduction in attack frequency	112 (74.0%)	p < 0.01
Acute Therapy	Reduction in attack severity	86 (56.8%)	p < 0.01
Acute Therapy	Shortening of pain duration	89 (58.3%)	p < 0.01
Acute Therapy	Completely pain-free after treatment	104 (68.4%)	p < 0.001
Acute Therapy	Resolution of associated symptoms	72 (47.4%)	p < 0.001
MIDAS	Severe functional impairment (Pre-treatment)	57 (37.5%)	—
MIDAS	Severe functional impairment (Post-treatment)	7 (4.6%)	—

Note: Some patients received both prophylactic and acute therapies; therefore, percentages may overlap.

Discussion

In the present study, migraine was most frequently observed between 26 and 45 years of age, with a marked female predominance. This age distribution overlaps with epidemiological data indicating peak prevalence during the third and fourth decades of life (7,22). While this consistency strengthens the external validity of our findings, it is noteworthy that our cohort represents a tertiary referral population, which may partially explain the concentration in economically active age groups. The pronounced female predominance observed in our study parallels prior reports demonstrating a 3–4-fold higher prevalence among women (7,8). Beyond hormonal influences (9), emerging evidence suggests sex-specific differences in trigeminovascular activation and central pain modulation pathways (23), which may further explain the observed disparity.

Educational status did not significantly differ between migraine subtypes in our cohort. Although some regional studies have suggested associations between lower educational levels and migraine burden (24), larger population-based analyses have yielded inconsistent findings (25). The absence of association in our study suggests that socioeconomic indicators may influence healthcare-seeking behavior or disability perception rather than migraine subtype itself.

Migraine with aura was identified in 40% of patients. Although slightly higher than the 18–36% range reported in population-based studies (26), this difference may reflect referral bias inherent to tertiary clinics. Importantly, we did not observe demographic differences between aura and non-aura subtypes, consistent with prior reports (27,28). This finding reinforces the concept that aura represents a neurophysiological phenomenon within the migraine spectrum rather than a demographically distinct clinical entity.

Visual aura was the dominant aura subtype in our study. Previous research consistently identifies visual symptoms as the most prevalent aura manifestation (11,12,29,30). However, the relatively high detection rate in our cohort may reflect structured clinical evaluation rather than true epidemiological variation. Given that aura symptoms are transient and frequently underreported (30), detailed interviewing appears critical for accurate classification.

The majority of aura episodes lasted between 4 and 15 minutes. While IHS criteria define aura duration as 5–60 minutes (1), clinical series often report clustering within shorter intervals (11,31,32). Our findings support the notion that aura duration is typically brief and self-limited, reinforcing its underlying cortical spreading depression mechanism (11).

Headache characteristics in our cohort were highly consistent with established migraine descriptors: throbbing quality (96.1%) and unilateral localization (63.2%) (3,24,33). The predominance of gradual onset further supports classical trigeminovascular activation models (33). The high prevalence of these canonical features suggests diagnostic homogeneity within our sample.

Photophobia, phonophobia, and nausea were reported at high rates, aligning with previous literature (4,34). Nausea was significantly less frequent in the 26–35 age group compared to other age groups (p < 0.01), and vomiting was more frequent in aura patients. These findings may indicate greater brainstem and autonomic involvement in aura-associated attacks, consistent with cortical spreading depression propagation toward subcortical autonomic centers (11). This mechanistic interpretation warrants further neurophysiological investigation.

A significant gender difference in pain duration was observed, with women experiencing longer attacks. Prior data similarly suggest prolonged migraine duration in females (35). While estrogen withdrawal remains a widely cited explanation (9), sex-specific differences in central sensitization and inflammatory mediator response may also contribute (24). Our findings add clinical support to the biologically mediated sex-difference hypothesis.

Morning predominance of headache onset was observed in our study. Previous chronobiological research implicates circadian rhythm influences and early-morning cortisol fluctuations in migraine initiation (12,13). Our findings are

compatible with this framework, suggesting a potential interaction between hypothalamic regulation and trigeminovascular activation.

Stress emerged as the most prominent triggering factor (72.4%), consistent with existing evidence identifying psychosocial stress as a major migraine precipitant (19). While causality cannot be established in this design, the statistically significant distribution across age groups highlights the importance of stress-modulation strategies in migraine management.

Hormonal modulation was further supported by the relationship between migraine attacks and menstrual cycle, as well as significant alterations during menopause. Previous literature confirms the modulatory role of estrogen fluctuations in migraine pathogenesis (9). Our findings reinforce the clinical relevance of hormonal status assessment in female migraine patients.

Family history was present in 54.6% of patients and was significantly associated with younger age groups. Familial aggregation is well documented, with first-degree relatives demonstrating a two- to four-fold increased risk (7,20). The higher prevalence of positive family history in younger patients may suggest stronger genetic penetrance in early-onset cases, although genetic subtyping was beyond the scope of this study.

Comorbid conditions including hypertension, thyroid disease, and epilepsy were observed in our cohort. Migraine comorbidity patterns have been extensively described (36), and shared pathophysiological pathways—particularly involving ion channel dysfunction and vascular regulation—may explain these associations. Recognition of comorbidity burden remains essential for optimized treatment planning.

Our findings demonstrated a substantial improvement in quality of life following treatment, as reflected by the marked reduction in severe MIDAS categories. Preventive therapy was associated with a decrease in attack frequency, whereas acute treatment appeared particularly effective in reducing attack severity and shortening pain duration (1,3,21). Additionally, a considerable proportion of patients achieved complete pain relief and resolution of accompanying symptoms after acute therapy. These findings support the complementary roles of preventive and acute treatments in migraine management and are consistent with previous literature emphasizing their differential therapeutic benefits (17,18).

Overall, our findings are consistent with established migraine epidemiology and clinical characteristics, while contributing region-specific data derived from a university hospital–based patient cohort. The structured evaluation of aura features and the comprehensive assessment of treatment response represent notable strengths of the study. Preventive and acute therapies demonstrated complementary roles in migraine management, underscoring the importance of individualized treatment strategies. Future research incorporating longer follow-up periods, neurobiological biomarkers, and controlled comparative treatment designs is warranted to further refine migraine subtype differentiation and optimize personalized management approaches.

Study Limitations

This study has several limitations. First, it was conducted at a single tertiary care university hospital involving patients presenting to the neurology outpatient clinic. Consequently, as patients seeking care at a specialized university clinic typically present with more severe symptoms, the findings may not be fully generalizable to the general migraine population. Second, a portion of the data—specifically regarding triggering factors and historical attack characteristics—relied on self-reporting and patient recall. The structure of the questionnaire may have introduced response bias; while it focused patients' attention on their symptoms, it may have also inadvertently influenced them to report symptoms they perceived were expected. Third, the follow-up period was limited to six months; longer follow-up studies are required to evaluate the long-term efficacy and sustainability of the treatment. Finally, the study did not include a placebo control group, and treatment regimens were determined based on the patients' clinical needs (attack frequency and severity) rather than randomization, which limits the ability to perform a direct randomized comparison between the treatment groups.

Conclusion

This prospective study aimed to evaluate the sociodemographic and clinical characteristics of migraine patients and the effects of acute/preventive treatments administered. Migraine was observed most frequently between the ages of 20 and 40 and was more common in women. Positive family history, stress, and hormonal factors were observed to have a significant relationship with migraine occurrence. Both prophylactic and acute treatments were associated with reductions in migraine-related symptoms and functional impairment.

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