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Evaluating the prevalence, identifying triggers, and classifying the triggers within the patients suffering from migraine

R Gautham Chakra *[1], B Chandana Priya[2], D Bhuvaneswari[2], P Gowsalya[2], K Likhitha[2], K Pavan Gowtham[2]

[1]Department of Pharmacy Practice, Saastra College of Pharmaceutical Education & Research, Jwalamukhi temple, Varigonda, Thotapalli Gudur mandal, near Varigonda, Nellore, Andhra Pradesh 524311 India.

[2]Saastra College of Pharmaceutical Education & Research, Jwalamukhi temple, Varigonda, Thotapalli gudur Mandal, near Varigonda, Nellore, Andhra Pradesh 524311 India.

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Abstract

Migraine is a neurological condition often presenting as severe, pulsating headaches on one side of the brain. These episodes can last hours or days, significantly interfering with daily activities. This study aimed to evaluate the prevalence, identify triggers, and classify them among migraine patients. A prospective study was conducted in the Neurology Outpatient Department of KIMS Hospital, Nellore, over six months (November 2024 to May 2025). Data were collected via a specially designed questionnaire to obtain baseline information.Results: The study included 103 patients, with 82 (79.6%) females and 21 (20.4%) males. Among them, 61 (59.2%) reported migraines lasting years, 26 (25.2%) for months, and 16 (15.6%) for days. Duration of headache episodes varied, with 64 (62.1%) experiencing headaches for hours, 23 (22.3%) for minutes, and 16 (15.6%) for days. The prevalence rate was 51.5%. Patients identified various triggers, which were classified accordingly.Conclusion: The prevalence of migraines was 51.5%, highlighting a significant burden of this condition. Despite its impact, limited awareness persists. Recognizable triggers identified by patients can guide tailored treatment adjustments. This study equips primary care physicians with valuable insights to educate patients and develop effective management strategies, ultimately improving the quality of life for individuals suffering from migraines.

*Corresponding Author
Name: Dr. R Gautham Chakra
Phone: +91 7674016126
Email: gauthamrowdhra05@gmail.com

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INTRODUCTION

A migraine is a headache that often affects one side of the head and can cause severe pulsating or throbbing pain. Extreme sensitivity to light, sound, nausea, and vomiting are frequently associated with it [1]. The pain from migraine attacks can be so intense that it interferes with everyday tasks, and they can continue anywhere from a few hours to several days. 96% of people get headaches throughout their lifetime, and women are more likely to have them than men [2]. About 40% of

people worldwide get tension-type headaches, and 10% have migraines. Migraine is three times more common in women and most common in those aged 25 to 55. Migraines continue to be underdiagnosed and undertreated even though they significantly impair functioning [3]. Visual phenomena include vision loss and the perception of different shapes, bright spots, or bursts of light.

Sensations of pins and needles in a leg or arm. One side of the body or the face may feel weak or numb. If left untreated, a migraine often lasts four to seventy-two hours. Each person experiences migraines at a different frequency. Migraines can happen infrequently or multiple times per month. During a migraine, you may experience: Usually, one side of your head hurts, although it can happen on both sides [4]. Pain that pulses or throbs. Sensitivity to sound, light, and occasionally touch and scent. Vomiting and nausea. You may feel exhausted, disoriented, and exhausted for up to a day following a migraine attack. Others say they feel elated. A sudden movement of the head could momentarily trigger the discomfort again. Undiagnosed and untreated migraines are common. If you frequently experience migraine symptoms, record your attacks and the ways you treated them [5].

RESEARCH METHODOLOGY

Place of study: The study assessment of "Evaluating the prevalence, identifying triggers, and classifying the triggers within the patients suffering from migraine" was carried out in the department of neurology at Kims Hospital Nellore, DM (neuro) DNB(neuro) PGDCN(neuro) (London) FRCP (Edinburg), MNAMS, FICP, Senior Consultant- Neuro Physician Department of Neurology, KIMS Hospital, Nellore.

Study design: A Prospective Study in Neurology.

Study site: The study was conducted at neurology outpatient department

Study Population: 103 patients who are diagnosed with migraine

Study Duration: 6 months

Study Criteria: The patient enrolled in the study based on inclusion and exclusion criteria

Inclusion criteria: Patients of both sexes of > 15 or <75 years who have a history of headaches and are currently diagnosed with migraine with or without Aura and prescribed medications were included in this study [6].

Exclusion Criteria: Patients with other primary and secondary headaches were excluded from this study.

Study materials:

Patient consent was obtained from individual patients before the collection of data. [7] A specially designed patient questionnaire form contains all the relevant information for the study.

Study method:

Once the institutional ethical committee has approved, this study will begin. Once the patients have completed an informed concern form, they will be enrolled in the trial. Inclusion and exclusion criteria were used to determine patient enrolment [8].

The survey approach, ideal for identifying all the required and pertinent baseline data, will be used to gather the data for this study [9]. The data will be collected on a patient questionnaire form that mainly includes age, Gender, patient ID number, disease, Duration of disease, how long the headache lasted?, Comorbidities, categories of the triggers, including food and beverages triggers, odor triggers, environmental triggers, emotional triggers, daily activity triggers, and some other triggers. [10] The prescription patterns of these patients were also collected to find out the possible adverse drug effects in the abortive and prophylactic treatment.

Study procedure:

In the neurology department, a six-month prospective study was carried out. The participants were diagnosed with migraines and enrolled in the trial based on the inclusion and exclusion criteria [11].

We have obtained the information concern form from those willing to participate in the study. The data was collected using the survey method, which used a well-designed patient data collection form [12].

All necessary and relevant baseline information was collected on the patient data collection form, which includes patient demographic characteristics such as

Age,

Gender,

Patient ID Number,

Disease,

Duration Of Disease,

How Long Does The Headache Last...?,

Categorized Triggers Include :

Food And Beverage Triggers,

Odor Triggers,

Environmental Triggers,

Emotional Triggers,

Daily Activity Triggers,

Others,

Co-Morbidities.

The collected data was analyzed on the following basis

Patient data analyzed based on age Patient data analyzed based on Gender. Patient data was analyzed based on the Duration of the disease

Patient data analyzed based on how long the headache lasts for……? Patient data analyzed based on food and beverage triggers

Patient data analyzed based on environmental triggers Patient Data analyzed based on odor triggers [13]

Patient data analyzed based on emotional triggers

Patient data analyzed based on daily activity triggers Assessment of Prevalence rate.

Assessment of the drugs prescribed to the patients Assessment of adverse drug effects [14]

STATISTICAL ANALYSIS:

The percentage method was used to analyze the TRIGGERS. Based on the percentage method, the prevalence was analyzed to find the triggers that most commonly cause migraine headaches.

Drugs and their possible adverse drug effects were analyzed [15].

RESULTS AND DISCUSSION

A prospective study was carried out for 6 months, November 2024 - May 2025, at the neurology OP of KIMS hospitals, Nellore. A total of 103 patients were recruited under inclusion criteria, and they were followed for the study.

Statistical Analysis

The data is presented as mean +_ standard deviation. One-way analysis of variance was used to compare more than two discrete variables, and the paid t-test was used to compare discrete variables. A p-value of less than 0.05 was considered statistically significant for the collected migraine unique data but analyzed based upon the following parameters based on social demographic data.

Patient data analyzed based on Gender

Of 103 patients, 82(79.6%) were female and 21 (20.4%) were male.

Table 1 Patient Data Based on Gender

Gender	N=103	(%)
Female	82	79.6
Male	21	20.4

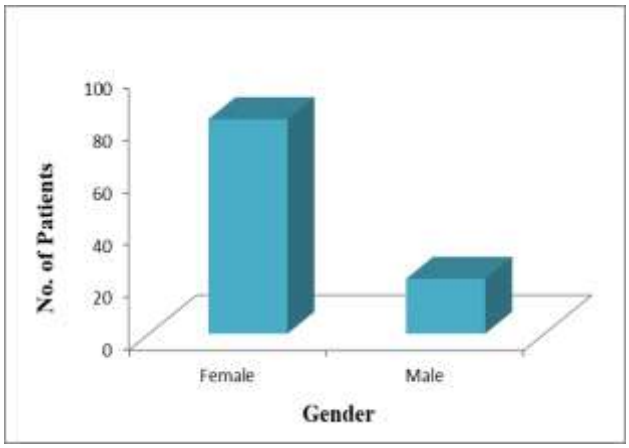

Figure 1 Patient Data Based on Gender

Patient data was analyzed based on the Duration of the disease

Out of 103 patients, 61(59.2%) were suffering from migraine for years, 26(25.2%) were suffering from migraine for months, and 16(15.6%) were suffering from migraine for days.

Table 2 Patient Data Based on Duration of Disease

Duration of Disease	N=103	(%)
Years	61	59.2
Months	26	25.2
Days	16	15.6

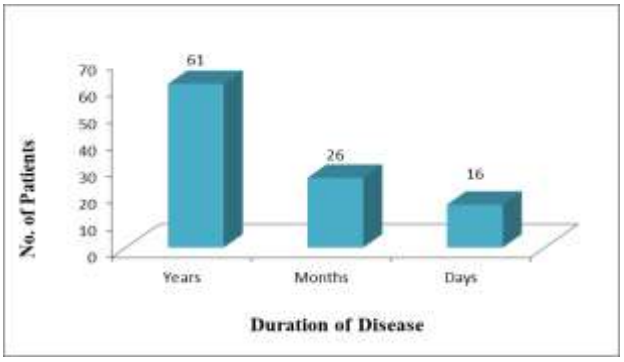

Figure 2 Patient Data Based on Duration of Disease

Patient Data Analyzed Based on how long headache

Out of 103 patients, 64(62.1%) patients had headaches for hours, 23 (22.3%) patients had headaches for minutes, and 16(15.6%) patients had headaches for days.

Table 3 Patient Data Based on How Long Headache

How Long Headache Last….	N=103	(%)
Minutes	23	22.3
Hours	64	62.1
Days	16	15.6

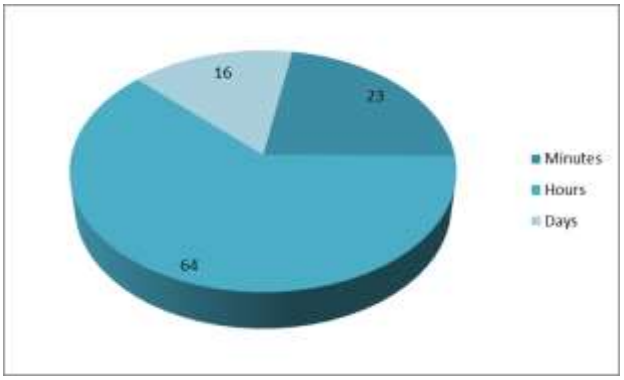

Figure 3 Patient Data Based on How Long Headache

Patient Data Analyzed Based on Triggers

Food and beverage triggers include alcohol 0(0%), pineapple 0(0%), peanuts 0(0%), almonds 0(0%), pickled food 3(2.9%), buttermilk 0(0%), yogurt 1(0.9%), chocolates 0(0%), coffee 0(0%), tea 1(0.9%), smoked or dried fish 0 (0%)and others include cool drinks 3(2.9%), fabulous food 1(0.9%), sweets 1(0.9%), intake a food late 2(1.9%), mutton 1(0.9%), rasam 1 (0.9%), citrus fruits 1(0.9%), oil food 1(0.9%), ice cream 1(0.9%),

Table 4 Patient Data Based on Food and Beverages

Triggers	N=103	(%)
Alcohol	0	0
Pineapple	0	0
Peanuts	0	0
Almonds	0	0
Pickled Food	3	2.9
Buttermilk	0	0
Yogurt	1	0.9
Chocolates	0	0
Coffee	0	0
Tea	1	0.9
Smoked Or Dried Fish	0	0
Others		
Cooldrinks	3	2.9
Cool Food	1	0.9
Sweets	1	0.9
In Take Of Food Late	2	1.9
Mutton	1	0.9
Rasam	1	0.9
Citrus Fruits	1	0.9
Oil Food	1	0.9
Ice Cream	1	0.9

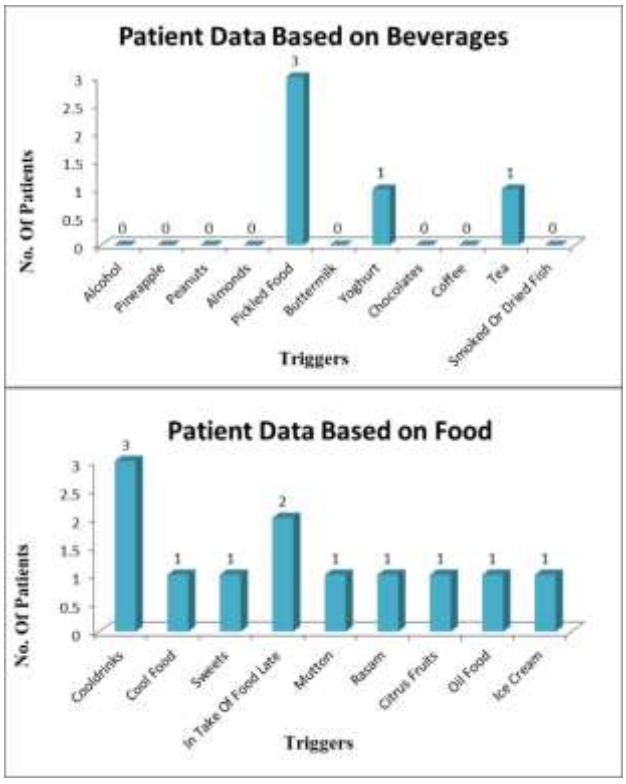

Figure 4 Patient Data Based on Food and Beverages

Environmental triggers:

includes, bright sunlight 34(33%), sun glare 0(0%), extreme heat 12(11%), extreme cold 24(23.3%), wind or stormy weather 0(0%), high humidity 0(0%), air conditioner 10(9.7%).

Table 5 Patient Data Based on Environmental Triggers

Triggers	N=103	(%)
Bright Sunlight	34	33
Extreme Heat	12	11
Extreme Cold	24	23.3
Wind or Stormy	0	0
High Humidity	0	0
Air Conditioner	10	9.7
Sun Glare	0	0

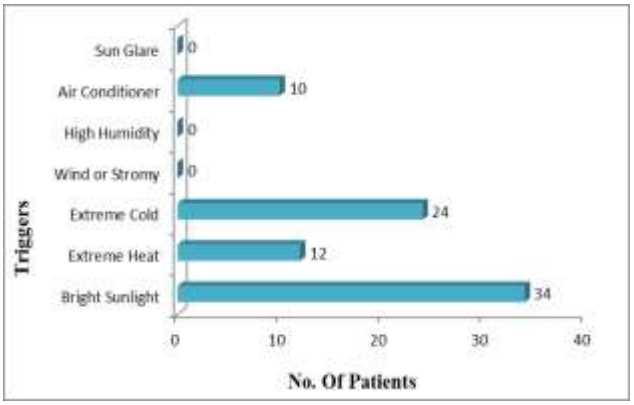

Figure 5 Patient Data Based on Environmental Triggers

Odor Triggers

Perfume 25(24.3%), pesticides 5 (4.8%), detergents 0(0%), nail polish 1(0.9%), paint 2(1.9%), cigarette smoke 3(2.9%), include popcorn smell 1(1.9%), groundnut smell 1(1.9%), petrol 3 (2.9%), car smell 3(2.9%), bad smell 4(3.8%).

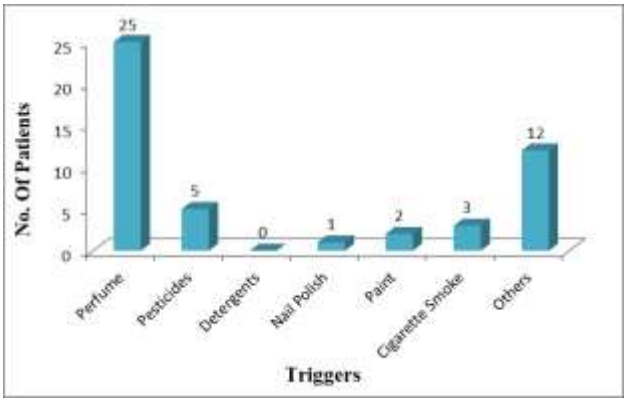

Figure 6 Patient Data Based on Odor Triggers

Table 6 Patient Data Based on Odor Triggers

Triggers	N=103	(%)
Perfume	25	24.3
Pesticides	5	4.8
Detergents	0	0
Nail Polish	1	0.9
Paint	2	1.9
Cigarette Smoke	3	2.9
Others	12	11.6

Emotional triggers

Sadness 34(33%), crying 45(43.6%), stress 26(25.2%), anxiety 28(27.2%), others include thinking 34(33%), shouting 7 (6.7%), angry 3(2.9%), laughing 1(0.9%), excessive talking 1(0.9%), Suicidal thoughts 1(0.9%).

Table 7 Patient Data Based on Emotional Triggers

Triggers	N=103	(%)
Sadness	34	33
Crying	45	43.6
Stress	26	25.2
Anxiety	28	27.2

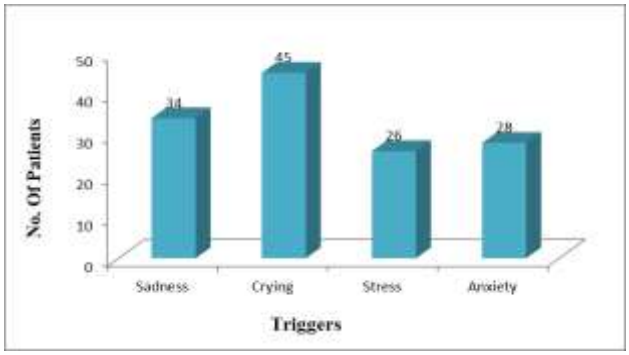

Figure 7 Patient Data Based on Emotional Triggers

OTHERS

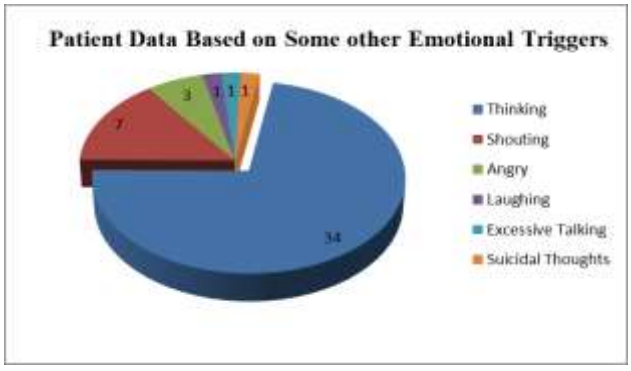

Figure 8 Patient Data Based on Some Other Emotional Triggers

Table 8 Patient Data Based on Some Other Emotional Triggers

Thinking	34	33
Shouting	7	6.7
Angry	3	2.9
Laughing	1	0.9
Excessive Talking	1	0.9
Suicidal Thoughts	1	0.9

Daily Activity triggers

Walking 13(12.6%), exercise 8(7.7%), lack of sleep 62(60.2%), excessive sleep 6(5.8%), sounds 31(30.1%), bending down 24(23.3%), traffic 4(3.8%),for others include Journey 16(15.5%).

Table 9 Patient Data Based on Daily Activity Triggers

Trigger	N=103	(%)
Walking	13	12.6
Exercise	8	7.7
Lack of sleep	62	60.2
Excessive sleep	6	5.8
Sounds	31	30.1
Bending down	24	23.3
Traffic	4	3.8
Others	16	15.5

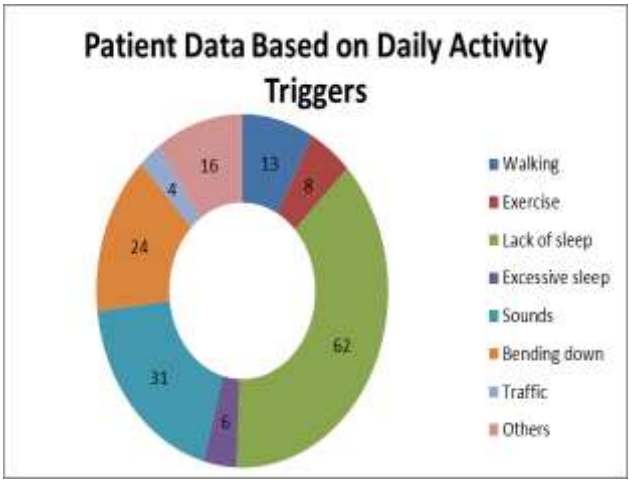

Figure 9 Patient Data Based on Daily Activity Triggers

The most common triggers identified were lack of sleep (60.2%) and migraine, followed by crying (43.6%), bright sunlight (33%), sadness, and thinking (33%)

ASSESSMENT OF PREVALENCE RATE

In our new prospective study, 200 headache patients came to the neurology outpatient department, and 103 patients were diagnosed with "MIGRAINE" with or without Aura. So, the prevalence rate was found to be 51.5%.

ASSESSMENT OF DRUGS PRESCRIBED TO PATIENTS

In our study, out of 103 prescriptions ,the drugs were prescribed as 15(14.5%)n NSAID alone, 25 (24.3%) triptan alone, 10(9.7%) ergotamine alone along with 5(4.8%) steroid 9.7% and 4.8% were combination therapy of NSAID with triptan and with ergotamine respectively.

For some 7.7 % antiemetics in combination was prescribed.

Table 10 Prescription Pattern [Drugs Used in Treatment]

Drugs Prescribed	N=103	(%)
NSAID Alone	15	14.5
Triptan Alone	25	24.3
Ergotamine Preparation Alone	10	9.7
Steroid	5	4.8
NSAIDS With Triptan	10	9.7
NSAIDS With Ergotamine	5	4.8
Antiemetics In Combination	8	7.7

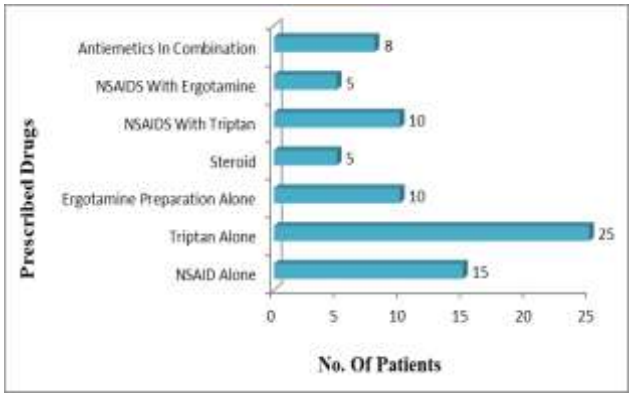

Figure 10 Prescription Pattern [Drugs Used in Treatment]

In our study, out of 103 patients, the drugs were prescribed as beta-blockers 10(9.7%), antidepressants 7(6.7%), calcium channel blockers 5(4.8%), and anticonvulsants 3(2.9%).

Table 11 Drug Classifications for Migraine Prevention

Type of Drugs	(N=103)	(%)
Beta Blockers	10	9.7
Antidepressants	7	6.7
Calcium Channel Blockers	5	4.8
Anticonvulsants	3	2.9

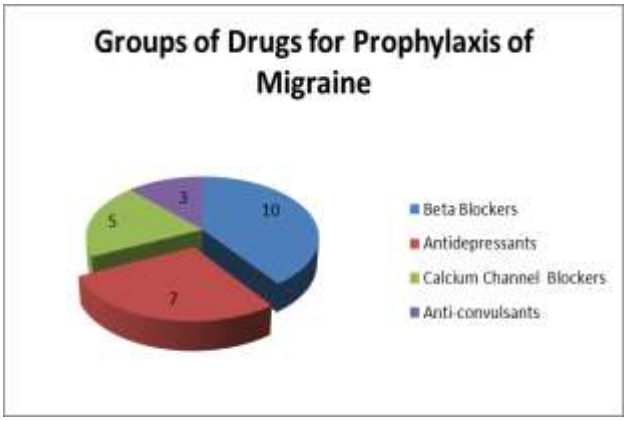

Figure 11 Drug Classifications for Migraine Prevention

ASSESSMENT OF ADVERSE DRUG EFFECTS IN ABORTIVE AND PROPHYLACTIC TREATMENT

In our study, out of 103 patients, 30(29.1%) showed adverse drug effects of NSAIDS, including nausea, vomiting, constipation, GI bleeding, drowsiness, and hypertension, etc.;

Triptans showed 25(24.3%) adverse effects include nausea, vomiting, jaw, neck or chest tightness, tachycardia, fatigue, muscle cramps, etc., Ergotamines showed 13(12.6%) adverse effects includes:

nausea, vomiting, stomach pain, diarrhea, chest pain, dizziness, weakness, drowsiness, seizure, confusion.,

pedal edema, burning, tingling extremities etc., Steroids showed 5(4.8%) adverse effects include:

↑ BP, hyperglycemia, easy bruising, stretch marks, muscle weakness, mood and behavioral changes, gastric ulcers, infection, acne, blurred vision. Antiemetics showed 7(6.8%) adverse effects, including constipation, dizziness, and headache.

Table 12 Adverse Drug Effects

Drug	N=103	No Of ADR With %	Effects
NSAIDS	30	29.1	Nausea, vomiting (NV), constipation, acid peptic disease, GI bleeding, drowsiness, hypertension
Triptans	25	24.3	NV, jaw, neck or chest tightness, tachycardia; fatigue; numbness, tingling (especially face); burning, pain, or soreness in the nose (nasal spray); taste change (nasal spray), dizziness, dry mouth, muscle cramps.
Ergotamines	13	12.6	NV, stomach pain, diarrhea, chest pain, dizziness, weakness, drowsiness, seizure, confusion., pedal edema, burning, tingling extremities
Steroids	5	4.8	↑ BP, hyperglycemia, easy bruising, stretch marks, muscle weakness, mood and behavioral changes, gastric ulcers, infection, acne, blurred vision
Antiemetics	7	6.8	Constipation, dizziness, Headache

Table 13 Adverse Drug Effects

Type of Drug	N=103	(%)	Effects
Beta Blockers	8	7.7	Asthenia, tiredness, postural hypotension, sleep disturbance, depression
Antidepressants	7	6.7	Drowsiness, head reeling, dry mouth, blurred vision, constipation
Calcium Channel Blockers	5	4.8	Weight gain, tiredness, depression, Parenthesis and weight loss, kidney stones, Sedation, cognitive dysfunction
Anticonvulsants	3	2.9	Sedation, dizziness, tremor, ↑appetite, ↑ bleeding time, alopecia, and ↑LFT values.

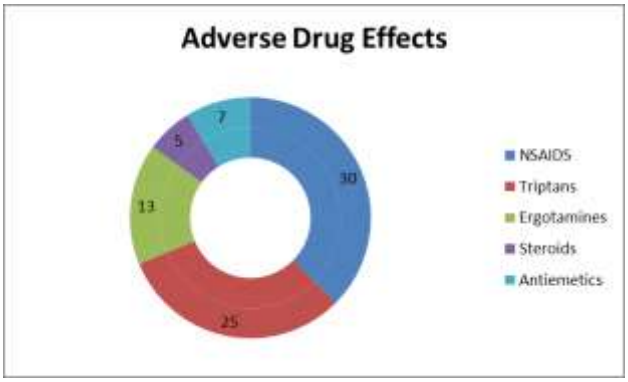

Figure 12 Adverse Drug Effects

In our study, out of 103 patients, 8(7.7%) beta-blockers showed adverse effects like asthenia, tiredness, postural hypotension, sleep disturbance, and depression.7(6.7%) antidepressants showed adverse effects like drowsiness, head reeling, dry mouth, blurred vision, and constipation.5(4.8%) showed adverse effects like Weight gain, tiredness, depression, Parenthesis and weight loss, kidney stones, Sedation, cognitive dysfunction.3(2.9%) showed adverse effects like Sedation, dizziness, tremors, ↑appetite, ↑ bleeding time, alopecia, and ↑LFT values

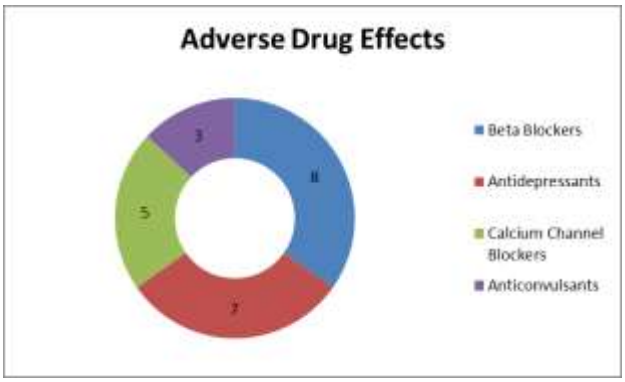

Figure 13 Adverse Drug Effects

CONCLUSION

Primary care physicians will benefit from this study by being better equipped to educate patients and help them manage their migraine headaches. Prescribers must take the intensity of the pain into account while choosing the best drug for the preventive treatment of migraines. Simple analgesics or NSAIDs are frequently effective in treating patients with mild-to-moderate migraine attacks; triptans or ergots are saved for patients with moderate-to-severe pain. For specific individuals, combination therapy was required, and in cases of resistant migraine, triptans or ergots taken in conjunction with NSAIDs or other potential drugs provided additional benefits. We conclude that some patients also require preventative pharmacotherapy. However, the course of treatment for episodic migraine varies from patient to patient. Physicians should not rely solely on their clinical experience when making drug selections; they should also be well-versed in the various drug categories, their efficacy, and their side effects profiles. The patient can evaluate the triggers that caused their symptoms and enhance their preventative efforts.

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Author Contribution

All authors made substantial contributions to the conception, design, acquisition, analysis, or interpretation of data for the work. They were involved in drafting the manuscript or revising it critically for important intellectual content. All authors gave final approval of the version to be published and agreed to be accountable for all aspects of the work, ensuring its accuracy and integrity.

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