

A Cross Sectional Observational Study to Assess Clinical Characteristics, Prescription Pattern and Health Related Quality of Life in Migraine Patients at Tertiary Care Teaching Hospital

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ABSTRACT

Objectives: The present study was focused on assessing the clinical characteristics which include the symptom profile, triggering factors, prescription pattern, headache-related disability, and its impact on patients' HRQoL. **Methods:** A cross-sectional observational study was conducted from October 2019 to March 2020 at the Department of Neurology, Dhiraj General Hospital-Vadodara. The data was collected from the prescription prescribed by the respective neurologist and by filling a pre designed questionnaire. All patients who met the inclusion criteria enrolled in a study. **Results:** In this study, the incidence of migraine is higher in females (78%), than males (23%). The majority of patients were having a severe disability and severe impact on HRQoL with high MIDAS (Migraine Disability Assessment Scale) and HIT-6 (Headache Impact Test-6) scores in opposing MSQoL v2.1 [Migraine Specific Quality of Life (Version 2.1)] where the majority of patients gained less score showing poor quality of life. A higher MIDAS score was observed in chronic migraineurs than episodic migraineurs (32.42 ±18.65 and 30.15 ±18.93) while HIT-6 showed a comparable score (63.98 ±6 and 63.38 ±6.29). Unlike MIDAS and HIT-6,

MSQoL v2.1 showed less scores in chronic migraineurs than episodic migraineurs (45.66 ±22.59 and 48.82 ±23.77) which depicts that chronic migraineurs had a poor health-related quality of life than the episodic migraineurs. **Conclusion:** To conclude, healthcare professionals routinely evaluate the quality of life and related disability to determine whether patients are receiving effective treatment and whether any additional treatment strategies are warranted to enhance QOL.

Keywords: Migraine, Health-related quality of life, MIDAS, HIT-6, MSQoL v2.1.

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INTRODUCTION

According to the World Health Organization records, about half of the adults in the whole world experience a headache in any the given year.¹ Approximately 90% of people with headaches have decreased the capacity to function during headaches and 33% require bed rest during headache attacks.² Migraine is characterized by repetitive episodes of headache.³ Findings from the Global Burden of Disease Study found migraine to be the second-highest cause of years lost due to disability, interfering significantly with occupational, educational, household, family, social responsibilities and the second-highest contributor to neurological disease burden, after stroke.⁴⁻⁵ Migraine is more prevalent in women when compared to men.⁶ Defining Quality of life and Health-related Quality of life are a bit confusing. QoL is a broader term that is defined in many ways and covers broader aspects of life. Quality of life implies the general well-being of individuals and societies, delineating negative and positive features of life. It observes life satisfaction, including everything from physical health, family, education, employment, wealth, safety, security to freedom, religious beliefs, and the environment.⁷ In health care, health-related quality of life (HRQoL) is an assessment of how the individual's well-being may be affected over time by a disease, disability, or disorder.⁸ The impact of migraine extends beyond the physical pain of a migraine attack and can have substantial effects on multiple aspects of an individual's life, including day-to-day functioning.⁹⁻¹² In 2009, a study by Bagley C *et al.* reported that higher levels of disability, burden, and reduction in HRQoL were observed in chronic migraine than compared to episodic migraine.¹³ It has been

recognized that headache-related disability is an important factor in the treatment of headache disorders and can aid in devising a better-tailored treatment plan.¹⁴ Numerous measures exist to measure headache-related disability and impact. Such measures include HIT-6,¹² MIDAS, WHODAS, MSQOL (Version1.0, Version2.1), etc.¹³ In this study we have used 3 tools to assess the disability and HRQoL in migraine patients.

Need of the study: Migraine is an extraordinarily prevalent neurological disease that is globally affecting a very large amount of population. Most people don't realize how serious and incapacitating migraine can be and how it can be prevented by proper management not only by medications but also by avoiding the triggering factors. Despite being severe, high prevalence and relevance of health-related problems associated with migraine, there is a lack of information about clinical pattern and management trends in India particularly in Gujarat state no studies are conducted related to the present study. The present study enables to assess and evaluate clinical characteristics, prescription pattern and impact of migraine on HRQoL and help to improve patient's QOL.

MATERIALS AND METHODS

This was a prospective observational study conducted from October 2019 to March 2020 at the Department of Neurology, Dhiraj General Hospital-Vadodara. The study was initiated after getting approval from Sumandeep Vidyapeeth Institutional Ethics Committee (SVIEC/ON/Phar/BNPG18/D19042). All Migraine patients of either gender and age

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≥18 years fulfilling the ICHD-3 criteria (International classification of headache disorders-3rd edition) that visited or admitted to the department of Neurology were enrolled in the study after explaining to the patients the details of the study, the ICF was taken. All the relevant data was obtained from the patients' medical records and through counseling the patients who visited the Out- Patient Department (OPD) or In-Patient Department (IPD). After the data collection, all the data were exported to statistical software for statistical analysis.

RESULTS

Out of 120 participants, 78% ($n=93$) were females and 23% ($n=27$) were males. In this study, the age varies from 18 to 58 years with a mean age of 35.45 ± 8.49 years. The maximum number of patients were from the age group of 29 to 38 years ($n=38$, 31%) followed by age group 18 to 28 years ($n=36$, 30%). Majority of the patients were married ($n=102$, 85%). Family history was present in 23% of cases ($n=28$) Table 1.

In this study, the maximum number of patients were housewives ($n=41$, 34%), followed by people doing service (Job) ($n=34$, 28%), then farmers ($n=17$, 14%), students ($n=14$, 12%), labors ($n=10$, 8%) and lastly least no. of patients were involved in the business ($n=4$, 3%). According to the inclusion criteria, associated comorbid conditions were found in 14 patients (11.67%) which includes 10 patients (8.33%) with Hypertension, 3 patients (2.50%) with Hypertension and Diabetes Mellitus-II and only 1 patient (0.83%) with Diabetes Mellitus-II, other than those 106 patients (88.33%) were not having any comorbid condition Table 2 and Table 3.

In this study, majority of patients were having 1-4 times headache per month ($n=47$, 39.17%), followed by 5-9 times headache per month ($n=27$, 22.50%), then 10-14 times headache per month ($n=16$, 13.33%), then ≥15 headaches per month ($n=15$, 12.50%), and every day ($n=13$, 10.83) and then lastly few of them had <1-time headache per month ($n=2$, 1.67%) Figure 1.

According to ICHD-2 criteria patients with 0-14 headache days per month were considered in the group of episodic migraine and patients with 15 or more headache days per month were included in the group of chronic migraine. It was found in this study that the majority of patients suffered from episodic migraine ($n=92$, 77%), and the remaining ($n=28$, 23%) had a chronic migraine.

Based on the intake of medications, duration, and intensity of headache are divided into 2 classes: Duration and intensity of headache with medication. Duration and intensity of headache without medication

For patients who have taken medication for the headache, it was found that symptoms last <60 min ($n=67$, 55.83%), followed by 1-6 hrs. ($n=47$, 39.17%), then 6-12 hr and 12-24 hr ($n=3$, 2.50%). And for the same patients if they didn't take headache relieving medications their headache lasts for majorly 12-24 hr (58.33%), followed by >24 hrs. (18.33%), then 1-6 hours (17.50%), then 6-12 hr (5.00%), and lastly only 1 patient (0.83%) have had the duration of headache lasting for <60 min.

In terms of intensity of headache, the majority of patients who have taken medications for headache had moderate type ($n=59$, 49.17%), followed by mild ($n=48$, 40.00%), then severe ($n=11$, 9.17) and lastly, only 2 of them had a very severe type of headache which was unbearable. Now if these patients didn't take their headache relieving medications their headache in the majority of patients is unbearable ($n=54$, 45.00%), followed by 51 patients (42.50%) with severe type and lastly, 15 patients (12.50%) had the moderate type with none of them having mild type Table 4.

The majority of the patients were having a unilateral type of headache (47.50%), followed by a combination of both (bilateral sometimes unilateral) (21.67%), then side shifting unilateral (20.00%), and lastly bilateral (10.83%). The majority of patients were having the pulsatile type

of headache (86.67%), and a few of them had the nonpulsatile type of headache (13.33%) Table 5 and Table 6.

In this study we found that all the individuals had more than 1 triggering factors. Most common identified was loud noise ($n=107$, 89.17%), bright light/Sun ($n=100$, 83.33%), lack of sleep ($n=93$, 77.50%), stress ($n=82$, 68.33%), skipping meals ($n=62$, 51.67%), physical exertion ($n=48$, 40.00%), weather changes ($n=47$, 39.17%), odours ($n=43$, 35.83%), fasting ($n=19$, 15.83%), menstruation ($n=12$, 10.00%). Least identified triggers were riding in car (9, 7.50%), foods like pickled foods ($n=8$, 6.67%), caffeinated foods ($n=6$, 5.00%), and sweetened foods ($n=4$, 3.33%), and lastly too much sleep ($n=4$, 3.33%) Figure 2.

Patients were asked if they had experienced any kind of disturbance before the migraine attack i.e., aura symptoms. In this study, the majority had no aura preceding headache accounting for 88 patients (73.33%). Only a few, about 32 patients (26.67%) had an aura. Among that 32 patients, 23 (19.17%) had a combination of visual aura and physical sensations, and the remaining 9 patients (7.50%) had single aura symptoms. All the individuals had more than 1 associated symptom Figure 3.

The majority had nausea ($n=114$, 95.00%), followed by both noise and light sensitivity ($n=108$, 90.00%), then mood changes/ irritability ($n=95.00$, 79.17%), then worsening of pain with movement ($n=82$, 68.33%), then vomiting ($n=71$, 59.17%), and strong smell bothering you ($n=41$, 34.17%). Neck pain and numbness were observed in 26 patients (21.67%) and 2 patients (1.67%) respectively.

Total 468 medications were prescribed among 120 migraine patients and the drug used per patient was 3.89 ± 0.71 . Majority of no. drugs prescribed in a patient were found to 4 (42.50%), followed by 3 and 5 in an equal percentage of 21.67%, then 2 (10.00%) and least no. of patients was found in 6 (4.17%).

Out of 468 drugs prescribed, 147 drugs were prescribed for acute pain relief (acute therapy) and 171 drugs were prescribed for prophylaxis (prophylactic therapy), and the remaining 150 drugs included Pantoprazole and vitamin complex. Amongst all the patients, 113 patients (94.16%) received the combination of both acute and prophylactic therapy whereas the remaining 7 (5.83%) were only prescribed with acute therapy. Precisely, among acute therapy dual therapy of combination of a fixed dose of Naproxen (NSAIDs) and Domperidone (anti-emetic) were prescribed in 94 patients (78.33%) followed by polytherapy prescribed in the remaining 26 patients (21.67%) which included Naproxen+ Domperidone with Rizatriptan ($n=21$, 80.77%), Naproxen+ Domperidone with prednisolone ($n=3$, 11.54%), Indomethacin with Rizatriptan and Naproxen+ Domperidone with Rizatriptan also with Prednisolone ($n=1$, 3.85%) Table 7.

Amongst prophylactic therapy, overall, 56 patients (49.56%) received monotherapy of dosulepin ($n=30$, 53.57%), flunarizine ($n=16$, 28.57%), propranolol ($n=5$, 8.93%), cyproheptadine ($n=3$, 5.36%) and sodium valproate ($n=2$, 3.57%). Other 56 patients received dual therapy of dosulepin and flunarizine ($n=48$, 85.71%), dosulepin with Sodium valproate/propranolol/cyproheptadine ($n=2$, 3.57%) and clonazepam with dosulepin/flunarizine ($n=1$, 1.79%). And only one patient received the polytherapy of flunarizine+ dosulepin+ cyproheptadine. In this study combination of Naproxen and Domperidone ($N=119$, 99.17%) was found to be the most commonly prescribed drug in dual as well as polytherapy, followed by dosulepin ($n=86$, 71.67%), flunarizine ($n=66$, 55%), rizatriptan ($n=23$, 19.17%), propranolol ($n=7$, 5.83%), and the least prescribed were clonazepam ($n=2$, 1.67%) and indomethacin ($n=1$, 0.83%) Figure 4.

Disability due to migraine- MIDAS (Disability Scale): The MIDAS classification of overall patients indicated slightly more than half met MIDAS grade IV i.e., Severe disability ($n=69$, 57.50%), with those

Table 1: Distribution according to Age Group.

Age Range	Total Number of Patients	Percentage (%)
18-28	36	30.00
29-38	38	31.67
39-48	28	23.33
49-58	18	15.00
Total	120	100
Mean (SD)	35.45 ± 8.49	

Table 2: Distribution based on occupation.

Occupation	Total Number of Patients	Percentage (%)
Housewife	41	34
Service	34	28
Farmer	17	14
Student	14	12
Labors	10	8
Business	4	3
Total	120	100

Table 3: Distribution based on co-morbid conditions.

Co-Morbidities	Total Number of Patients	Percentage (%)
Hypertension	10	8.33
Diabetes Melitus -II	1	0.83
Hypertension and Diabetes Melitus -II	3	2.50
None	106	88.33
Total	120	100

Table 4: Pattern of Duration and Intensity.

Durations	With Medication n=120 n (%)	Without Medication n=120 n (%)
<60 min	67 (55.83)	1 (0.83)
1-6 hr	47 (39.17)	21 (17.50)
6-12 hr	3 (2.50)	6 (5.00)
12-24 hr	3 (2.50)	70 (58.33)
>24 hr	0	22 (18.33)
Intensity		
Mild	48 (40.00)	0
Moderate	59 (49.17)	15 (12.50)
Severe	11 (9.17)	51 (42.50)
Unbearable	2 (1.67)	54 (45.00)

Table 5: Distribution Based on Type of headache.

Type	Total Number of Patients (n=120)	Percentage (%)
Unilateral	57	47.50
Bilateral	13	10.83
Side shifting unilateral	24	20.00
Sometimes bilateral and sometimes unilateral	26	21.67
Total	120	100

Table 6: Distribution Based on Character of headache.

Character	Total Number of Patients (n=120)	Percentage (%)
Pulsatile (throbbing)	104	86.67
Non pulsatile	16	13.33
Total	120	100

Table 7: Types of therapy given in migraine population.

Therapy Type	Number (%)	Migraine Specific Drugs	Number (%)
Acute Therapy			
Dual Therapy	94 (78.33)	Fixed dose of Naproxen+ Domperidone	94 (100)
Polytherapy	26 (21.67)	Naproxen + Domperidone + Rizatriptan	21 (80.77)
		Naproxen + Domperidone + Prednisolone	3 (11.54)
		Indomethacin + Rizatriptan	1 (3.85)
		Naproxen + Domperidone + Rizatriptan + Prednisolone	1 (3.85)
		Prophylactic Therapy	
Monotherapy	56 (49.56)	Dosulepin	30 (53.57)
		Funarizine	16 (28.57)
		Propranolol	5 (8.93)
		Cyproheptadine	3 (5.36)
		Sodium valproate	2(3.57)
Dual Therapy	56 (49.56)	Dosulepin + Flunarizine	48 (85.71)
		Dosulepin + Sodium valproate	2 (3.57)
		Dosulepin + Propranolol	2 (3.57)
		Dosulepin + Cyproheptadine	2 (3.57)
		Dosulepin + Clonazepam	1 (1.79)
Polytherapy	1(0.88)	Flunarizine + Clonazepam	1(1.79)
		Dosulepin + Flunarizine +Cyproheptadine	1 (100)

classified as grade III i.e., Moderate disability (n=32, 26.67%), being the next highest. The remaining patients were classified as grade II i.e., Mild disability (n=10, 8.33%) and grade I i.e., Little or no disability (n=9, 7.50%). The distribution across the MIDAS quintiles varied considerably depending on the no. of headache days. As mentioned in (Table 8) more than half of the CM patients (n=22, 78.57) and slightly over half of the EM patients (n=47, 51.09%) indicated that because of headaches they had a severe disability (Grade IV). Whereas only 1 patient (3.57%) among CM

and 8 patients (8.7%) among EM, indicated less or no disability (Grade I). In this study, it was found that patients with CM 32.42(18.65) have more disability compared to patients with EM 30.15 (18.93).

Health-Related Quality of Life- HIT-6 (HRQoL scale): The HIT-6 classification of overall patients indicated that about 99 patients (82.5%) met HIT6 grade IV i.e., Severe impact, with those classified as grade III

i.e., Substantial impact ($n=11$, 9.17%) being next highest. The remaining patients were classified as grade I i.e., Little to no impact ($n=6$, 5%), and grade II i.e., Moderate impact ($n=4$, 3.33%). The distribution across the HIT-6 quintiles as mentioned in (Table 9) varied considerably depending on the no. of headache days. Most of the CM patients ($n=26$, 92.86%), and more than half of EM patients ($n= 73$, 79.35%) indicated that their headaches had a severe adverse impact on their daily life. In contrast, none of the CM patients and about 6 EM patients (6.53%) indicated that their headaches had little or no impact on their daily life. In this study using HIT-6 for assessing the impact of migraine headache on HRQoL, it was found that there was a slight difference observed between chronic migraineurs and episodic migraineurs.

Health-Related Quality of Life- MSQoL v2.1 (HRQoL scale): Comparison of mean score among the subscales: The MSQoL v2.1 scale was assessed by the overall score, the score of 3 domains including Restrictive functioning, Preventive functioning, and emotional functioning. From the HRQoL survey of the MSQoL v2.1 scale, the average mean score was (48.82 ± 4.04). According to MSQoL v2.1, it was found that patients' mean scores for HRQoL were higher for emotional functioning (59.11 ± 14.14), and preventive functioning (49.71 ± 3.54). Whereas the patient's mean score was lower for HRQoL in restrictive functioning (43.90 ± 4.04) as mentioned in (Table 10). From this study, it was found that the patients were suffering more physically than emotionally. They were having limitations in social and work-related activities i.e RR with the highest possible domain which led to a decrease in their HRQoL. Also, they were preventing these activities that are RP that became 2nd possible domain which leads to decrease in their HRQoL which was followed by the least possible domain of emotions associated with a migraine that is ER. Through this study, it was found that limitations in daily social and work-related activities had more, and emotions associated with migraines had the least impact in HRQoL as higher scores indicate better quality of life.

In this study, a comparison was observed between the chronicity i.e., chronic and episodic regarding their quality of life. A significant difference between HRQoL of patients with CM and EM was observed. The comparison as mentioned in (Table 9) showed that the overall HRQoL of patients with EM (48.82 ± 23.77), was better than that of the patients with CM (45.66 ± 22.59). Patients with CM scored significantly lower than the patients with EM in every domain. In both the above-mentioned condition the score was higher for emotional component than physical which indicated that the physical component had a greater impact on HRQoL than the emotional component in both types of patients (CM and EM). The mean score of patients with EM was better in emotional function 59.11 (27.76), followed by role function preventive 49.71 (24.54), and lastly role function- restrictive 43.90 (24.70) than the mean score of patients with CM in emotional function 56.10 (27.34), followed by role function- preventive 46.79 (23.71), and lastly role function- restrictive 40.54 (23.37) as mentioned in (Table 11). In both the type of patients with CM and EM, the highest mean score was observed in emotional function and the lowest score was observed in role function- restrictive. By this comparison, it was found that in both types of patients (CM and EM) the HRQoL was mainly affected by limitation in social and work-related activities and was least affected by emotions associated with migraine.

Correlation analysis among 3 scales: The correlation between MIDAS and HIT-6 as mentioned in (Table 13) was found to be, $r(120) = 0.61365$, p -value = < 0.0001 which was greater than 0.50. The correlation was statistically significant and strongly positive between the 2 scales which means that if the mean of MIDAS will increase it will ultimately lead to an increase in the mean of HIT-6 and vice versa. The correlation between MIDAS and MSQoL (v2.1) or HIT-6 and MSQoL (v2.1) were found to be, $r(120) = -0.79333$ and $r(120) = -0.73982$ respectively which

Table 8: Frequencies and percentages of migraine staging by MIDAS.

Distribution of MIDAS Grade Based on Chronicity		
	Chronic Migraine	Episodic Migraine
Mean (SD)	32.42 (18.65)	30.15 (18.93)
Grade I, N (%)	1 (3.57)	8 (8.70)
Grade II, N (%)	0	10 (10.87)
Grade III, N (%)	5 (17.86)	27 (29.35)
Grade IV, N (%)	22 (78.57)	47 (51.09)

Table 9: Frequencies and percentages of migraine staging by HIT-6.

Distribution Of HIT-6 Grade Based on Chronicity		
	Chronic Migraine	Episodic Migraine
Mean (SD)	63.98 (6)	63.38 (6.29)
Grade I, N (%)	0 (0)	6 (6.52)
Grade II, N (%)	0 (0)	4 (4.35)
Grade III, N (%)	2 (7.19)	9 (9.78)
Grade IV, N (%)	26 (92.86)	73 (79.35)

Table 10: Descriptive statistics for MSQoL v2.1

Domain	Mean (SD)
Overall	48.82 (4.04)
Role function- Restrictive (RR)	43.90 (4.04)
Role function- Preventive (RP)	49.71 (3.54)
Emotional Function (EF)	59.11 (14.14)

Table 11: Comparison of the MSQoL v2.1 based on chronicity.

Domain	Chronic Migraine	Episodic Migraine	p -Value
	Mean (SD)	Mean (SD)	
Overall	45.66 (22.59)	48.82 (23.77)	0.000269
Role function- Restrictive (RR)	40.54 (23.37)	43.9 (24.70)	0.000475
Role function- Preventive (RP)	46.79 (23.71)	49.71 (24.54)	0.000625
Emotional Function (EF)	56.10 (27.34)	59.11 (27.76)	0.001259

Table 12: Overall p -values all the above mentioned 3 scales based on chronicity.

Scale	Chronic Migraine	Episodic Migraine	p -Value
	Mean (SD)	Mean (SD)	
MIDAS	32.42 (18.65)	30.15 (18.93)	<0.00001
HIT-6	63.98 (6)	63.38 (6.29)	0.002713
MSQoL v2.1	45.66 (22.59)	48.82 (23.77)	0.000269

was less than -0.50. The correlations were statistically significant and strongly negative between the 2 scales which means that if the mean of MIDAS or HIT-6 will increase it would ultimately lead to a decrease in the mean of MSQOL v2.1 Table 12.

DISCUSSION

Migraine is a neurological disease that causes severe disability by interfering significantly with occupational, educational, household,

Table 13: Correlation analysis between 3 scales (MIDAS, HIT-6 and MSQoL v2.1).

Parameter	Mean (SD)	Pearson's Correlation
Correlation Between MIDAS and HIT-6		
MIDAS	30.15 (18.93)	0.61365
HIT-6	63.38 (6.29)	
Correlation Between MIDAS and MSQoL v2.1		
MIDAS	30.15 (18.93)	-0.79333
MSQoL v2.1	42.82 (23.77)	
Correlation Between HIT-6 and MSQoL v2.1		
HIT-6	63.38 (6.29)	-0.73982
MSQoL v2.1	42.82 (23.77)	

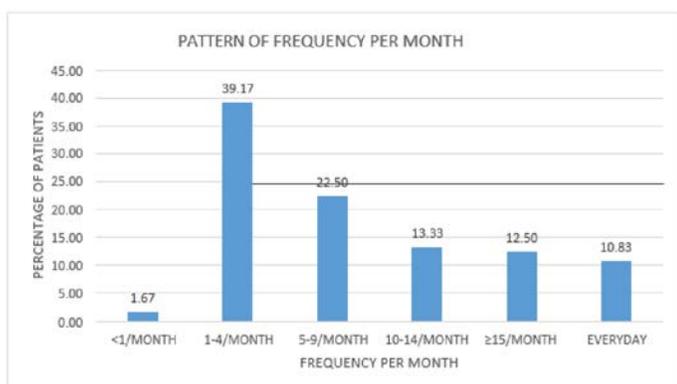


Figure 1: Pattern of Frequency per month.

family, and social responsibilities which ultimately results in poor QOL. The present study showed the prevalence of migraine was higher in females (77%) than in males (27%) which was consistent with the findings of Ramasamy B *et al.*¹⁵ Other studies in India,¹⁶⁻¹⁸ US¹⁹ and Japan²⁰ also showed a higher prevalence of migraine in females than in males. Migraine is found to be more prevalent between the age of 35-45 years.⁶ In the current study also the mean age of the migraine population was found to be 35.45 and more common in the age group of 29 to 38 years (31%) followed by 18 to 28 years (30%) which was consistent with the study done by Singh S *et al.* in which majority of patients were in the age group of 18-40 years.¹⁵ It was found that 23% of patients had a positive family history which was found to be consistent with the study done by Agrawal V *et al.* India, where 26% of patients had a family history of migraine.²¹ This study suggested that the majority of patients (54%) were employed which was found to be in discordance in the study done by Singh S *et al.*¹⁵ Unlike other studies this study was found to be more focused on migraine patients who didn't have other comorbid conditions except for Hypertension and Diabetes Mellitus-II. The frequency of migraine most commonly reported in this study was 1-4/month (39.2%) followed by 5-9/month (22.5%) which was following a study done by Bhatia MS *et al.* which reported 1-2 migraine attacks/week.²² In the present study, the majority of the patients showed a duration of headache lasting for less than 60 min (55.83%) in case if they took medication and if they didn't take the medications their headache lasts for 13-24 hours (58.3%). Concerning intensity, the majority of patients who took medications were found to have a moderate type of pain (49.2%) and if they didn't take the medications the pain was unbearable (45%). Notably, nearly half of the patients (47.5%) in our study had unilateral type of headaches,

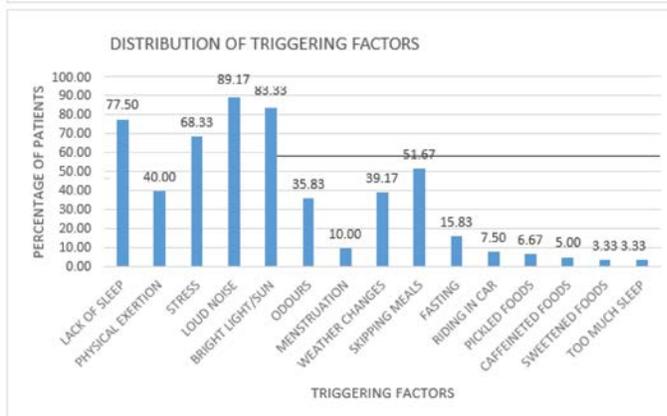
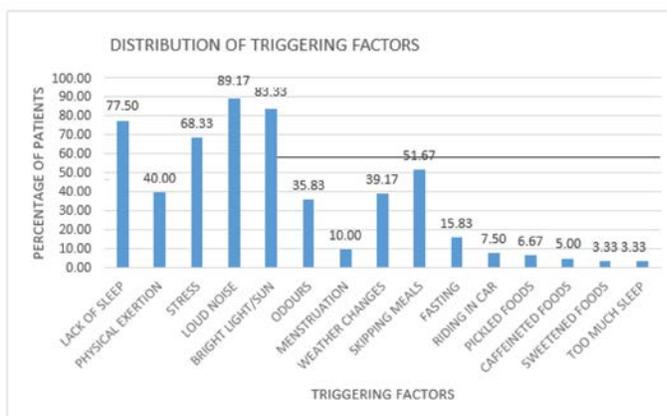


Figure 2: Prevalence of triggers of migraine in the study population.

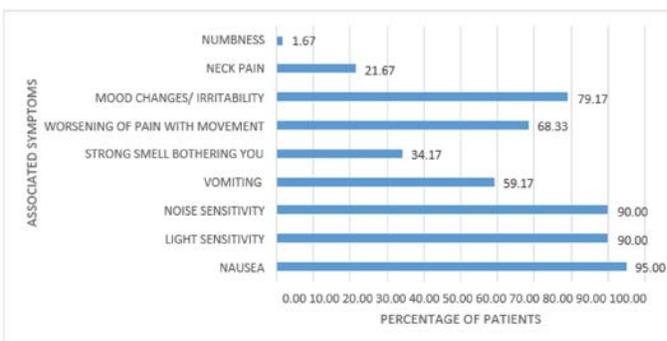


Figure 3: Percentage of associated symptoms in the migraineurs in the study population.

and least of them had bilateral (10.8%) with the remaining belonging to the category of sometimes unilateral sometimes bilateral, and side shifting unilateral. Additionally, the majority (86.7%) of the patients had pulsatile (throbbing) type of headache which was consistent with the study done by Jena SS *et al.*¹⁷ Triggers are important to be identified as it acts as an indicator to treat the cause and the severity of a migraine attack. In the present study, there were more than 1 triggering factor in each patient. Commonly identified triggers were loud noise, bright light/sun exposure, lack of sleep, stress, skipping meals, etc. Some least identified triggers were riding in the car, foods like pickled foods, sweetened foods, and caffeinated foods, and too much sleep. Other Indian studies found that stress, missed meals, sleep deprivation is the primary factors triggering migraine attacks.^{15,23} Present study showed

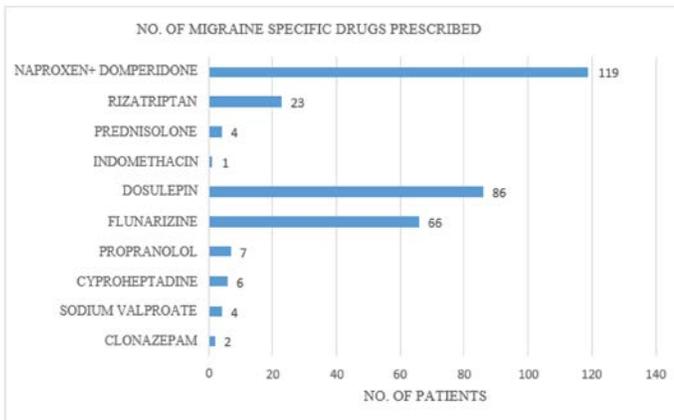


Figure 4: No. of migraine specific drugs prescribed.

migraine without aura was more prevalent than migraine with aura. About 3/4th of patients had migraines without aura with a prevalence of 73.33%. Many previous studies found migraine without aura to be the commonest type of migraine. A review article by Ravishankar K *et al.* also showed the prevalence of visual aura to be the most common aura symptoms followed by the sensory aura and some with speech and language disturbances and lastly motor aura to be rare. And the current study was following the abovementioned review article with the presence of a combination of aura symptoms involving the majority of visual auras followed by physical sensations with none of the patients with speech and language disturbances or motor aura.⁹ It also suggested that nausea (95%), photophobia (90%), phonophobia (90%) to be the commonest type of associated symptoms which was found to be consistent with the study done by Jena SS *et al.*¹⁷ In the current study, for acute attacks, most of the patients (99.17%) were prescribed with the combination of Naproxen (NSAIDs) and domperidone (Antiemetic) and in precisely 1 patient an NSAIDs indomethacin alone was prescribed. Both oral NSAIDs and triptans are recommended for treating migraine attacks as suggested by the European Federation of Neurological Societies (EFNS).²⁴ The following treatments were deemed to be effective acute therapies for migraines based on evidence from the American Headache Society (AHS): triptans, NSAIDs, ergotamine derivatives, opioids, and other combinational medications.²⁵ As per the American Association of Neurology recommendations, Sumatriptan, ergotamine, and its derivatives are more practical than NSAIDs for an acute attack.²⁶ But few RCTs comparing the efficacy between Sumatriptan and rizatriptan, showed rizatriptan to be an improved choice than sumatriptan.²⁷ For acute therapy, rizatriptan (19.17%) alone was the most generally used triptans in our study. There were 4 patients (3.33%) who were prescribed prednisolone in our study acting as an adjunctive therapy. In the current study, for prophylactic therapy majority of the patients were prescribed Dosulepin (71.67%), followed by flunarizine (55%), propranolol (5.83%), cyproheptadine (5%), sodium valproate (3.33%), and clonazepam (1.67%). Studies have shown blockers (60- 80%) were effective in reducing attack frequency by quite 50%. Among antidepressants, amitriptyline is the most generally used drug. Limited clinical trials reviews suggest that amitriptyline is sort of pretty much as good as propranolol although if not better in reducing headache frequency.²⁸ The utilization of other agents like dosulepin, nortriptyline, and imipramine mainly depends on the anecdotal results. A Cochrane Review of AEDs like Topiramate, Sodium valproate, and gabapentin in migraine prophylaxis found that patients were quite twice as likely to have a 50% reduction in their headache frequency on AED treatment than with placebo.²⁹ There was a form of study involving calcium channel

blockers in migraine prevention. A recent study showed that flunarizine was the third most typically prescribed drug for the prevention of migraine in adult patients after propranolol and pizotifen within the European nation.³⁰ An RCT conducted by Rao BS *et al.* showed that cyproheptadine was as effective as propranolol in reducing migraine severity and frequency it also showed the efficacy of the combination of cyproheptadine and propranolol.³¹ MIDAS questionnaire was used to measure disability or limitations in one's life which occurs because of headache in particularly 3 domains (paid work, household work, and non-work or social activities). It not only captures the number of missed days but also the days when productivity is substantially reduced in the form of readily interpretable units (lost days). A study done by Lipton RB *et al.* indicated that how MIDAS scores are correlated with physician judgment of pain, disability, and medical care.³² In this study, the MIDAS questionnaire classified a significant proportion of patients into severe disability (57.5%), followed by moderate disability (26.67%), mild disability (8.33%), and little or no disability (7.5%). The group with severe disability reported a significantly higher MIDAS score which depicts a higher no. of days with less than 50% productivity at work, school, home, or social gatherings. Overall mean MIDAS score was comparable between chronic and episodic migraineurs. However, in our study, it was found that patients with CM (32.42) showed a higher mean MIDAS score than the patients with EM (30.15). This result was consistent with the studies conducted in Malaysia,³³ Taiwan,³⁴ the USA,³⁵ Italy.³⁶

HIT-6 questionnaire was used to measure the impact of headache in a person's HRQoL in aspects of pain, social functioning, cognitive functioning, and psychological distress. In this study, the HIT-6 questionnaire classified a significant proportion of subjects into very severe impact (82.5%), followed by substantial impact (9.17%), little or no impact (5%), and lastly moderate impact in 3.33% of the total population. The group with very severe impact reported a significantly higher HIT-6 score which shows that their HRQoL was severely affected due to headache. The mean score for HIT-6 was >60 in both chronics and episodic migraineurs which showed that the majority of patients were having a very severe impact on HRQoL due to headache. This study was consistent with the study done by Magnoux E *et al.* where a large number of migraineurs either chronic or episodic were having a very severe impact on HRQoL.³⁷

MSQOL v2.1 questionnaire was used to measure HRQoL which measures the impact of headache on particularly 3 domains including Role Function- Restrictive (RR), Role Function-Preventive (RP), and Emotional Function (EF). In the current study, it was found that the patients were suffering more physically than emotionally. The mean score for the emotional function was higher than the other 2 domains which indicate that patients are suffering more physically than emotionally because higher the score determines better HRQoL. Comparing the overall mean score in migraineurs based on the frequency of headache days, patients with CM (45.66) have scored less mean score than the patients with EM (48.82) which indicates that chronic migraineurs have poor HRQoL than episodic migraineurs. This study was consistent with the study done by and Blumenfeld AM *et al.* and Kim SY *et al.* which showed that CM is more disabled and has poor HRQoL than the EM.^{35,38} The present study found that MIDAS total scores and HIT-6 total scores are positively correlated (Pearson's correlation coefficient=0.61365). In contrast both MIDAS and HIT-6 scales are negatively correlated to MSQoL v2.1 (Pearson's correlation coefficient= -0.79333, -0.73982 respectively). Ultimately this showed that MIDAS and HIT-6 were somewhat similar with some undetermined differences and a higher score in both of them depicts severe disability. This result was under a study done by Sauro

KM *et al.* where HIT-6 and MIDAS were compared to determine the disability due to headache.³⁹ Whereas the MSQoL v2.1 scale depicted higher scores better than the HRQoL and vice versa. So, it means that higher the scores in disability scales like MIDAS and HIT-6, and lower the score in MSQoL v2.1 leads to poor HRQoL and hence chronic migraineurs have a higher disability and poor HRQoL than the episodic migraineurs.

CONCLUSION

Migraine is the most common primary headache with a high prevalence in females and the younger age group. Early detection of migraine and its effective treatment is important to help reduce the disability suffered from migraine and to improve the quality of life of the migraineurs. It is important that healthcare professionals routinely evaluate the quality of life and related disability to determine whether patients are receiving effective treatment and whether any additional treatment strategies are warranted to improve HRQoL.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

Ethical approval

The study was approved by the Sumandeep Vidyapeeth Institutional Ethics Committee, Vadodara (reference number SVIEC NO: SVIEC/ON/Phar/BNPG18/D19042).

Informed patient consents

The purpose and protocols of the study were explained to patients, and written consent was obtained.

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