

**Original Research Article****Awareness of triggers of headache in migraine patients – a study from a tertiary centre from central india****Rahul Jain<sup>1</sup>, Hashash Ishar<sup>2\*</sup>, Dinesh Chouksey<sup>3</sup>, Pankaj Rathi<sup>2</sup>, Sunil Athale<sup>4</sup>, Sodani Ajoy<sup>4</sup>**<sup>1</sup>*Assistant Professor, Department of Neurology, SAMC and PGI, Indore, M.P, India*<sup>2</sup>*Senior Resident, Department of Neurology, SAMC and PGI, Indore, M.P, India*<sup>3</sup>*Assoc. professor, Department of Neurology, SAMC and PGI, Indore, M.P, India*<sup>4</sup>*Professor, Department of Neurology, SAMC and PGI, Indore, M.P, India***Received: 15-07-2020 / Revised: 23-08-2020 / Accepted: 01-09-2020****Abstract**

**Background:** A lot of discrepancies in the number of migraine triggers have been observed in numerous studies. Migraine patients do not recognize easily their headache triggers in clinical practice. Focusing the patient attention on migraine attack triggers is important for management of migraine. Awareness of migraine triggers has not been previously studied in India. Therefore, we planned to study the awareness of triggers of headache among migraine patients from central India. **Materials and methods:** We recruited 180 migraine patients to evaluate the awareness about their headache triggers. Patients were asked to perform two tasks. Task 1 was to report their migraine trigger spontaneously in 2 minutes. Subsequently, Task 2 was to identify common/uncommon known triggers from given lists. Awareness of triggers among population was estimated by difference of distribution of self reported versus identified common/uncommon triggers. **Results:** The average number of self reported triggers among all patients was found to be  $2.21 \pm 1.80$ . Noise (74.4%), Sunlight (70.6%), Smoking (70.0%), Fasting (67.2%) were the most prevalent trigger factors. Difference of distribution between Task 1 and Task 2 was calculated, which showed (200% difference in self reported versus common triggers) and (83.3% difference in self reported versus uncommon triggers). **Conclusion:** Migraine patients have poor awareness of their headache triggers and hardly reports triggers unless asked specifically.

**Keywords:** headache, migraine, triggers, migraine with aura, migraine without aura, awareness of triggers of migraine.

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**Introduction**

A number of intrinsic or extrinsic factors are known to trigger the migraine attack. Underlying trigger factors of migraine vary between individuals and even between attacks in any given patient. The important triggers are stress, weather changes, fatigue, food and beverages, sleeplessness, hunger, and menstruation[1]. The knowledge of triggers is important for proper management of migraine. In the clinical practice, patients with migraine seldom report a precipitant

factor unless asked specifically[2]. This may be the origin of the broad discrepancies in the number of migraine triggers reported in previous studies[3,4]. There is paucity of studies from India investigating migraine triggers[3]. Further awareness about triggers of headache in migraine has not been studied in India previously. Therefore we planned to study the awareness of triggers of headache among migraine patients from central India.

**Materials and Methods****Inclusion criteria**

Patients diagnosed with migraine with or without aura according to the current criteria of the International

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Classification of Headache Disorders,3rd edition (ICHD-3).

#### **Exclusion criteria**

- Recent onset of headaches (<3 months prior to study).
- Presence of Secondary causes of headaches .
- Children below 12 years.
- Non consenting patients.

This cross sectional/observational study was conducted in a tertiary care teaching hospital, and patients were recruited from the neurology outpatient service. The aim of the study was to evaluate awareness of their headache triggers among migraine patients. A total of 180 subjects were enrolled in the study from March 2018 to May 2019. Patients diagnosed with migraine with or without aura according to the current criteria of the International Classification of Headache Disorders, 3rd edition (ICHD-3) were included. Consents from all the subjects were obtained. The migraine triggers were enquired by one of the authors (HI) using a questionnaire during an interview in the clinic. Each patient was asked to perform two tasks. Task 1 was to enumerate self perceived triggers of migraine spontaneously. A time of two minutes was allocated for the same. Afterwards in Task 2 the patients were directed to make a selection from a list of the identified common (n=18) and uncommon (n=11) triggers. The demographic characteristics including name, age, sex, religion, residence, occupation, income of family, education, marital status were recorded in the study proforma. Responses of subjects were calculated and analyzed by using the raw data. Statistical software, SPSS version 17.0 Trial was used for analysis. Descriptive statistics was used to depict the main features and characteristic of the collected samples presented with migraine with or without aura. Prevalence of self-reported/common/uncommon triggers of migraine patients with or without aura was estimated.Karl Pearson's Chi-Square test used to investigate the association of age, sex, income of family, occupation and education of patients exposed to migraine with or without aura with number of self-reported triggers. For estimation of awareness, difference of distribution of self reported versus identified common/uncommon triggers was calculated.

#### **Results**

Demographic characteristics of patients are shown in table I and table II.The age of all migraine patients (N=180) were obtained in the ranges from 12 to 65 years (mean age  $29.68 \pm 10.30$ ). Range of self-reported triggers among all migraines was from 0 to 6 (Average

self-reported triggers  $2.21 \pm 1.10$ ). Range of duration of migraine among all migraines was from 2 months to 18 years (Average duration  $2.61 \pm 2.31$  years) .Table III describes the prevalence of common triggers among migraine patients. Investigation revealed that the noise (74.4%) followed by sunlight (70.6%) were the most prevalent triggers. Smoking (70.0%) was the third most prevalent common trigger followed by fasting (67.2%), sleep deprivation of <6 hours of sleep (62.8%), and exercise/physical activity (58.9%). Stress (58.3%) and fatigue (58.3%) affected more than half of the population of patients living with migraine and that followed by odour (49.4%), travelling (45.6%),weather changes (38.3%), and emotional changes (31.7%) such as sadness, guilt, irritation, aggression, bouts of cry. Stress due to home (27.2%) and spouse (27.2%) were the common triggers that affected more than one-fourth studied patients living with migraine. However, there were some least prevalent triggers such as stress due to work, overeating, menstrual periods, alcohol, cheese/chocolate, sexual activity and stress due to family that affected less than 20.0% of the population of patients living with migraine. Among uncommon triggers smell of petrol/diesel (51.1%) found to be the most prevalent uncommon trigger affected more than half of studied patients living with migraine, followed by lifestyle changes (47.8%), seasons such as summers/winters (35.6%) and motion sickness (31.1%). Further results showed that the eating pattern (26.1%) was the fifth most prevalent uncommon trigger followed by head wash (24.4%) and cosmetics (21.1%). However, foods (15.6%), lunar cycle (13.3%) and cloudy day (10.6%) were the least prevalent uncommon triggers affected patients living with migraine affected less than one-fifth of studied patients (table IV).The clinical and demographic characteristics of migraine patients were explored to observe the significance of relationship with self-reported triggers. The proportional differences in age, sex, and income of family, occupation and education among patients were carried out with respect to number of self-reported triggers (maximum of six triggers opined by studied individuals). Age, gender, income of family, and education of patient didn't have any significant impact on self-reported triggers ( $p>0.05$ ). However Occupations ( $p<0.005$ ) of migraine patients observed a highly significant impact on self-reported triggers. Proportional differences in occupation revealed that housewives followed by students recalled 2 triggers more frequently.The table V highlights the awareness of triggers of headache among studied population. A maximum number of six triggers of headache reported by studied population which were considered as self-

reported triggers, whereas common triggers of headache were eighteen, and uncommon triggers were eleven. Among patients living with migraine, the distribution of common triggers was (51.43%) as compared to uncommon (31.43%) and self-reported (17.14%) triggers. Awareness of triggers among population clearly demonstrated that there is a considerable lack of awareness between self-reported and common triggers (difference of distribution 200.0%), and self-reported and uncommon triggers (difference of distribution 83.3%).

## Discussion

It has been suggested that practically, all migraine attacks are triggered[5]. The prevalence of triggers varies among different studies, according to type of study and method of data collection employed[5-7].The average self reported triggers in our study were  $2.21 \pm 1.10$ , which was consistent with previous studies. In our study the noise (74%) and sunlight (70%) were the two most common reported triggers followed by smoking (70%) , sleep deprivation ( 63% ), fasting (62%), physical activity (58%), weather changes (38%), and menstrual periods (16%). These results are comparable to previous literature except there was lower prevalence of menstruation as a trigger in our study[8-9].This discrepancy appears to be due to conservative and rural background of studied population. Head wash during bathing (24.4%), cloudy day (10.6%), and lunar cycle (13.3%), as a trigger of migraine were seldom reported in previous literature.

Ravishankar et al in his study reported Headwash as a trigger in 24 % patients[10]. Fasting was a common trigger in our study and similar data has been reported in the past studies[11].As far as awareness of triggers of migraine is concerned, our study showed that there are consistent discrepancies between the number of self reported triggers and the total number of identified triggers. Our results demonstrated that there is a considerable lack of awareness of migraine triggers among patients living with migraine.To conclude in India, migraine patients have poor awareness of their headache triggers and hardly recognize a trigger unless asked specifically. Effort should be made towards detailed enquiry into possible headache triggers and to create awareness about these triggers.Alleviating headache triggers by educating the patients and stressing on the importance of their avoidance, is an integral part of migraine therapy to reduce the burden of unnecessary pharmacotherapy. Furthermore, such an information exchange may help patients, as well as physicians, to personalize the therapy. We found some uncommon triggers of migraine like head wash, cloudy day and effect of lunar cycle which were seldom reported in literature previously. To the best of our knowledge this is the first study from India which studied awareness of triggers of headache in migraine patients with large sample size.Few of the limitations of our study were that we didn't investigate a dynamic cause-effect relationship of headache triggers with migraine. Also, we didn't study the impact of various triggers on the frequency and disability due to migraine.

**Table 1:Demographic characteristics of migraine patient**

Characteristics of migraine patient		Frequency(N=180)	Percent(%)
Age	< 30 years	94	52.2
	$\geq 30$ years	86	47.8
Gender	Male	34	18.9
	Female	146	81.1
Area of Residence	Rural	92	51.1
	Urban	88	48.9
Occupation	Self employed	56	31.1
	Employed	25	13.9
	Housewife	87	48.3
	Student	5	2.8
	Unemployed	7	3.9
Education	Primary school	32	17.8
	Middle	16	8.9
	Metric	53	29.4
	Higher secondary	31	17.2
	Graduate	40	22.2

	Post graduate	8	4.4
Marital status	Married	126	70.0
	Unmarried	54	30.0
Diagnosis	Migraine with aura	27	15.0
	Migraine without aura	153	85.0

**Table 2:Descriptive statistics for sexes**

Parameter	Minimum	Maximum	Mean	Std. Deviation	Median
<b>Age (year)</b>					
Male (34)	16	62	29.32	11.36	25.50
Female (146)	12	65	29.77	10.07	28.00
Total (180)	12	65	29.68	10.30	28.00
<b>Self-reported triggers (number)</b>					
Male (34)	0	5	2.35	1.20	2.00
Female (146)	0	6	2.18	1.07	2.00
Total (180)	0	6	2.21	1.10	2.00
<b>Duration of migraine (months to years )</b>					
Male (34)	0.2	15.0	3.24	2.88	3.00
Female (146)	0.2	18.0	2.47	2.14	2.00
Total (180)	0.2	18.0	2.61	2.31	2.00

**Table 3:Prevalence of Common Triggers**

Common Triggers	Response(N=180)	Percent(%)
Stress	105	58.3%
Stress Due to	Home	27.2
	Spouse	27.2
	Family	3.9
	Work	18.9
Excessive sleep (prolonged period of main sleep/naps/poor quality of awakening)	21	11.7%
Sleep deprivation(<6 hours of sleep)	113	62.8%
Exercise/Physical activity	106	58.9%
Fatigue	105	58.3%
Menstrual periods	29	16.1%
Emotional changes (sadness, guilt, irritation, aggression, bouts of cry)	57	31.7%
Weather changes	69	38.3%
Sunlight	127	70.6%
Noise	134	74.4%
Odours	89	49.4%
Fasting	121	67.2%
Overeating	33	18.3%
Smoking	126	70.0%
Alcohol	27	15.0%
Cheese/Chocolate	17	9.4%
Travelling	82	45.6%
Sexual activity	16	8.9%

**Table 4:Prevalence of Novel/Uncommon Triggers**

Novel/Uncommon Triggers	Response(N=180)	Percent(%)
Headwash	44	24.4%
Cloudy day	19	10.6%
Summers/Winters	64	35.6%
Foods	28	15.6%
Mooncycle	24	13.3%
Eating pattern	47	26.1%
Petrol/diesel smell	92	51.1%
Lifestyle	86	47.8%
Motion sickness	56	31.1%
Cosmetics	38	21.1%
Fruits	12	6.2%

**Table 5:Assessment of awareness of triggers of headache among studied population**

Triggers of Headache	Number of Observed Triggers	Awareness of triggers among population		
		Distribution (%)	Differences (%) between	
			Self-Reported & Common	Self-Reported & Uncommon
Self-reported	6 (six)	17.14%	200.0%	83.33%
Common	18 (eighteen)	51.43%		
Uncommon	11 (eleven)	31.43%		
Total	35	100.00	200.0%	83.33%

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**Source of Support:Nil****Conflict of Interest: Nil**