

**ORIGINAL RESEARCH****Prevalence and Trigger Factors of Common Migraine among Patients with Chronic Headache****Dhanya Rajan<sup>1</sup>, Manoj G<sup>2</sup>, Shaiju A<sup>3</sup>**<sup>1</sup>Assistant Professor, Department of ENT, Government Medical College, Trivandrum, India<sup>2</sup>Associate Professor, Department of ENT, Government Medical College, Trivandrum, India<sup>3</sup>Associate Professor, Department of ENT, Government Medical College, Trivandrum, India**ABSTRACT**

**Background:** Headache is the most ancient reported pain in humans. It has significant detrimental effect on the quality of life of the sufferers. Migraine is ranked as the eighth most burdensome disease and the seventh highest cause of disability in the world. India appears to have a very high prevalence of migraine, and of other headache disorders in line with global averages. The prevalence of common migraine among chronic headache patients attending ENT OPD in a tertiary care Centre, Kollam, Southern Kerala and to assess the trigger factors of common migraine was studied.

**Material and Methods:** It was a Prospective observational study conducted at Department of ENT, Government medical college, Kollam for One year. All patients with chronic headache fulfilling the inclusion and exclusion criteria, belonging to either sex between age group of 12 to 50 years coming to ENT opd were studied. The validated structured questionnaire enquired into several aspects of burden. Written informed consent from the patient was taken. Study was approved by Institutional Ethical Committee.

**Results:** The age-standardised 1-year prevalence of migraine was 25.2 %, well above the global average of 14.7 %.<sup>1</sup>The mean age of study participants was found to be 31.10±10 years. The most common position of headache was of one side of forehead seen in 50.6% patients followed by both sides forehead (10.4%). The most common type of headache in migraine was pricking in 58.5% patients followed by pulsatile type in 20.9% and Throbbing in 19.9% patients. But this was not significant (p>0.05). most of the patients had headache for 12-24 hours (87%). common causes were found to be travel (88.3%), smoking (98.3%), anger (88.9%), noise (77.5%), sleepless (65.5%), smell especially soap (75.9%), travel (88.3%) in hot climate.

**Conclusion:** In our study, the prevalence of migraine was high among patients which were in agreement with the findings of other studies. This may be due to their stress, duties and workload. Solutions should be considered since headaches reduce the quality of their work and have detrimental effects on their health.

**Keywords:** Headache disorders, Migraine, Tension-type headache, Medication-overuse headache, Sinusitis.

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**INTRODUCTION**

Headache is the most ancient reported pain in humans. It has significant detrimental effect on the quality of life of the sufferers. Common Migraine is a debilitating neurological condition characterized by primary recurrent headaches lasting 4 to 72 hours with at least two of the

following pain characteristics: unilateral, pulsating, moderate or severe intensity or aggravated by routine physical activity.<sup>[1,2]</sup> In addition, it is often accompanied by nausea, vomiting and sensitivity to light (photophobia) and sound (phonophobia). Chronic Headache by definition occurs 15 days or more a month for longer than 3 months.<sup>[3,4]</sup> Common migraine is migraine without aura. The Global burden of Disease study 2010 found that migraine is the third most prevalent disease worldwide.<sup>[5]</sup> Migraine is ranked as the eighth most burdensome disease and the seventh highest cause of disability in the world. More than 4 million adults experience chronic daily migraine with at least 15 migraine days per month.<sup>[6]</sup> It is a public health concern owing to associated disability and financial cost to the society from lost working hours and reduced productivity. Despite its considerable burden, migraine is underdiagnosed and undertreated.<sup>[7,8]</sup> There is only limited information on prevalence, diagnosis and characteristics of common migraine in developing countries like India especially in Kerala. The trigger factors for common migraine are also not available in Kerala. If trigger factors are identified and patients educated about it, it would enable them to avoid such factors, thereby reducing the frequent attacks of migraine.

## **MATERIAL AND METHODS**

It was a Prospective observational study conducted at Department of ENT, Government medical college, Kollam for One year. All patients with chronic headache fulfilling the inclusion and exclusion criteria, belonging to either sex between age group of 12 to 50 years coming to ENT opd.

### **Inclusion criteria**

All patients with chronic headache satisfying the diagnostic criteria of common migraine. Chronic headache is headache occurring 15 days or more for more than 3 months. The diagnostic criteria for Common Migraine (migraine without aura) are made from the International Classification of headache disorders 3rd edition (ICD-3).

A. At least 5 attacks fulfilling criteria B-D.

B. Headache attacks lasting 4-72 hours (untreated or successfully treated)

C. Headache has at least 2 of the following 4 characteristics-unilateral location, pulsating quality, moderate or severe pain intensity, aggravation by or causing avoidance of routine physical activity (eg: walking or climbing stairs).

D. During headache at least one of the following-

1) Nausea and or vomiting

2) Photophobia and phonophobia.

### **Exclusion criteria**

Patients not willing to give informed consent, pregnant patients, suspected psychiatric illness, clinical symptoms of sinusitis, uncontrolled hypertension.

### **Sampling method**

All patients with chronic headache attending ENT OPD fulfilling inclusion and exclusion criteria

### **Sampling size**

Sample size is determined by the formula  $4pq/d^2$  where  $p$ =proportion=100-p,  $d$ =20% of  $p$  (estimate of beta error). Proportion of patients showing prevalence of common migraine among chronic headache patients in the study from Karnataka is 25.2%.<sup>9</sup> Using this as  $p$ , the sample size is calculated as 300. No Indian studies had prevalence and trigger factors

included together in the same study. In another study, the least found trigger factor (menses) p was 39%, so in our study we took the same sample size 300 for both the objectives.

### **Ethical Considerations**

Written informed consent from the patient was taken. Study was approved Institutional Ethical Committee.

### **Methodology**

The study is conducted at the ENT OPD of GMC Kollam a tertiary care center in South Kerala. All patients willing to participate and give informed consent are included in the study. Detailed history of the patient including demographics, medical history, history of trigger factors, clinical examination, required laboratory test (Thyroid function test) are done. A semi structured self-administered questionnaire was used to assess headache features-unilateral/bilateral, pulsating/throbbing, nausea or vomiting, sensitivity to light, sensitivity to sound. The trigger factors of migraine like stress, lack of sleep, hunger/skipping meals, dehydration, high intake of caffeine, chocolate, cheese, alcohol, strong or unusual smell, bright light, loud sound, change in weather, worsened by menstruation, use of oral contraceptives, intense physical activity like exercise, travel, usage of laptop or mobile were also enquired. Patients are asked to keep a diary or notebook to record the frequency of headache, trigger factors and bring it to opd at their next visit. Follow up is done every month up to 6months. In each monthly follow up from headache diary we find out the trigger factors precipitating common migraine in each patient. Modifiable trigger factors are light, sound, stress, caffeine, alcohol, chocolate, cheese, Chinese food, odours. Non modifiable trigger factors are menstruation for females, environmental factors like climate change. By identifying the modifiable trigger factors and avoiding them helps to prevent migraine attacks. Thyroid function test Free T4, TSH is done in the first month only and if found abnormal appropriate treatment is initiated.

### **Statistical analysis**

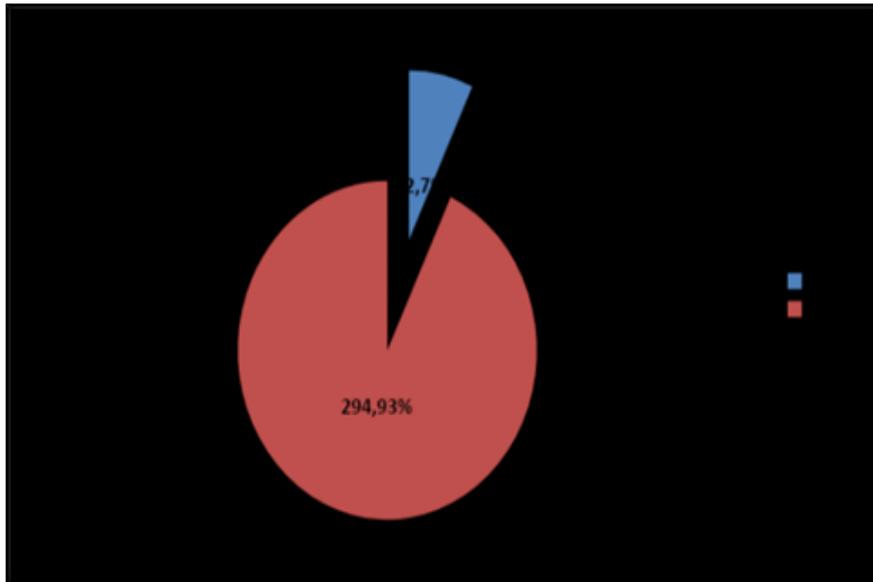
The data was collected, coded and entered in MS Excel and analysed using SPSS (version 22.0). Discrete Variables are assessed in percentages and continuous variables by mean and standard deviation.

## **RESULTS**

**Table 1: Mean Age, TSH and Duration of Headache**

	<b>Age</b>	<b>TSH</b>	<b>T3</b>	<b>Duration of head ache</b>
Mean	31.10	3.12	6.72	5.07
Median	31.00	2.50	8.00	3.00
Std. Deviation	10.159	2.027	4.357	5.080*
Minimum	12	1	1	1
Maximum	50	10	12	30

As per [Table 1] the mean age of study participants was found to be 31.10±10 years. Mean TSH in migraine patient was 3.12±2.07, while mean duration of headache was found to be 5.07±5.08. This was found to be statistically significant.



**Figure 1: Gender distribution**

As per [Figure 1] the study was female preponderance the red area of PIE chart showed the female percentage.

**Table 2: Prevalence of Position of Headache during Migraine**

Position of head ache	Frequency	Percentage
One side of forehead	160	50.6
Both sides of forehead	33	10.4
Vault of skull	14	4.4
Total	316	

As per [Table 2] the most common position of headache was one side of forehead. Seen in 50.6% patients followed by both sides forehead (10.4%).

**Table 3: Types of Headache in Migraine**

Types of headache	Number	Percentage
Pulsatile	66	20.9
Pricking	185	58.5
Throbbing	63	19.9
Other types	2	0.6

As per [Table 3] the most common type of headache in migraine was pricking in 58.5% patients followed by pulsatile type in 20.9%. Throbbing 19.9% patients. But this was not significant ( $p > 0.05$ ).

**Table 4: Duration of Pain and Frequency of Migraine episodes**

Frequency and Duration of Pain	Frequency	Percent
12-24 hours	275	87.0
24-48 hours	33	10.4
48-72 hours	4	1.3
more than 72 hours	4	1.3
Total	316	100.0

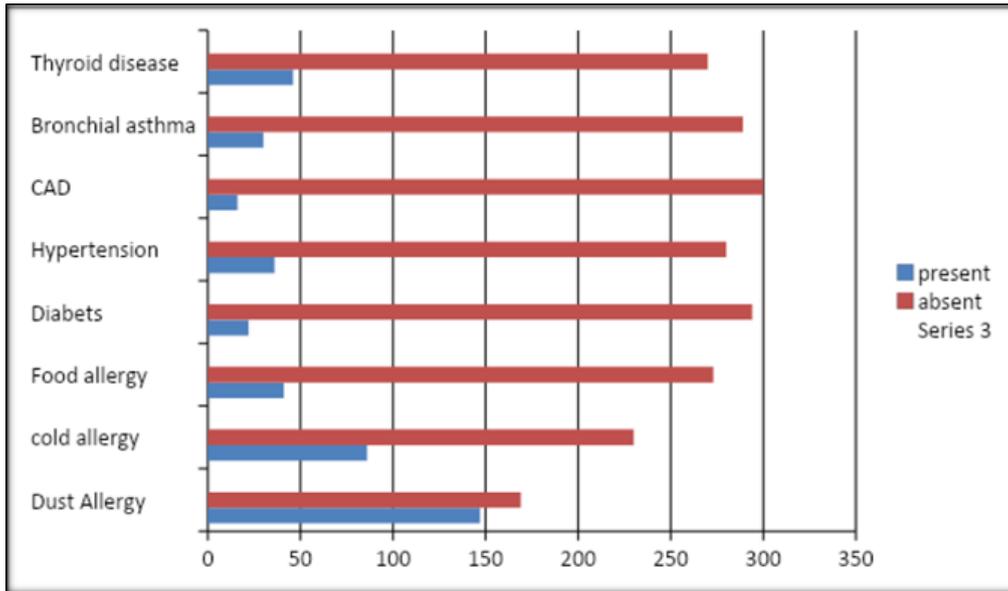
less than 15 days	266	84.2
more than 15 days	48	15.2
7 days	2	.6
Total	316	100.0

As per [Table 5] most of the patients have headache for 12-24 hours nearly all of them (87%). Around 10.4% patients have duration of headache for almost 1-2 days but it was not significant. Around 4 patients have pain for more than 3 days. Around 84.2% patients has single episode of migraine in less than 15 days. But it was not statistically significant. ( $p>0.05$ ).

**Table 5: Symptoms of Migraine and Common Causes**

Symptoms and Causes	Frequency	Percentage (%)
Light irritation	242	76.6*
Noise	245	77.5*
Blurring vision	170	53.8
Flash light	155	49.1
Colours	109	34.5
Vision differentiation	200	63.3
Giddiness	179	56.6
Anger	281	88.9*
Depression	185	58.5
Stress	189	59.8
Work place stress	60	19
Hunger	249	78.8
Sleepless	207	65.5*
More sleep	63	19.9
Coffee	58	18.4
Chocolate	64	20.3
Cheese	28	8.9
Chinese	23	7.3
Alcohol	6	1.9
Smell	240	75.9*
Travel	279	88.3*
Smoking	312	98.3*
Menstrual cycle	134	42.4
Seasonal	142	44.9
OCP	2	1.2
Laptop smartphones	163	51.6*
Exercise	55	17.4

[Table 5] shows the frequent causes of migraine and common symptoms occur during migraine the most common causes were found to be travel (88.3%), smoking (98.3%), anger (88.9%), noise (77.5%), sleepless (65.5%), smell especially soap (75.9%), travel (88.3%) in hot climate, laptop and smartphones (51.6%) are considered as common causes to trigger migraine. And they were found to be statistically significant ( $p<0.05$ ). There are other causes also but they were common but not significant.



**Figure 2: Comorbidities associated with Migraine**

As per [Figure 2] different comorbidities are associated with chronic headache in which allergy was the most common followed by thyroid disease and hypertension.

**Table 6: MIDAS SCORE**

MIDAS SCORE	Frequency	Percent	Cumulative percent
Grade 1	304	96.2	96.2
Grade 2	12	3.8	100

As per table 6 MIDAS score has two grades and The MIDAS test is designed to assess the impact of migraines in daily life, mostly patients has score between 0-5 which was grade 1 seen in 96.2% of patients.

## DISCUSSION

Migraine is the most prevalent type of headache. Its high prevalence among students and its negative effects on their lives and daily activities show the importance of migraine as a case study. This study assessed the prevalence of migraine among hospital patients visiting ENT OPD. Two-thirds of the patients in our study were females, and about 87% of the participants were single. We observed that these data represented, for the time being, the best information available for the entire country and its more than 1.2 billion people.<sup>[9]</sup> The age-standardised 1-year prevalence of migraine, at 25.2 %, was well above the global average of 14.7 %.<sup>1</sup> The estimated prevalence of all headache occurring on  $\geq 15$  days/month was 3.0 %, equal to the global mean,<sup>[7,8]</sup> while that of pMOH was 1.2 %, within the range of most national estimates of 1– 1.5 %.<sup>10</sup> Headache treatment on the whole, is somewhat different in India than in the west in the sense that the entire environment is different, doctors in general are hard pressed for time due to acute patient load, paucity of neurologists vis-a-vis population rise and patients in general are reluctant to use drugs for their ailments. In relation to migraine, the last factor is somewhat beneficial as we tend to see lesser number of analgesic overuse headaches,<sup>[9,18]</sup> but on the other hand, this imposes greater responsibility (and longer time) on doctors (especially neurologists) to impress on patients regarding the various modes of non pharmacologic management. Here lie the importance of identifying trigger factors as avoidance of 'controllable' triggers may be a corner stone in prophylactic non pharmacologic

management of migraine. Controlled studies in this respect are, however, sparse, and most triggers are often environmental, social or behavioral and difficult to avoid. The importance of these findings may seem self-evident for this very large population, but becomes much highlighted when burden data are added to them. Migraine, so highly prevalent, and the other headache disorders no less common than elsewhere in the world, generate commensurately heavy burdens. Among these are symptom burden – giving rise to health-care demand, disability, personal financial burden, and huge consequential losses in productive time – a large part of which translate into losses from gross domestic product (GDP).<sup>[9,10]</sup> The high prevalence of migraine among patients in our study can be related to stress, inadequate sleep, and their heavy workload. Reading and migraine precipitation is a unique feature highlighted in the study. This suggests an element of ‘stresses in the genesis of the headaches and not solely visual stimulation. However, many of these also had migraine precipitated by bright light including sun exposure. Therefore, we feel, although visual stimulation may have a role in the genesis of the headache induced by reading, the final clinical expression is determined by the associated stress factor.<sup>[19]</sup>

Stress thus appears to be a determinant factor in many children with migraine, and the effect of school and parental stress, need not be further elaborated. Proper counseling of children and their parents seems to be the only reasonable solution.<sup>[11]</sup> Only 17 patients (19.8%) in our study had visited a physician for their headache, which may be due to their workload and inattention to their own health issues. This percentage was reported as 17.7% in a study in Tabriz and 18% by Wang et al.<sup>[12,13,14]</sup> The prevalence of migraine was higher in females than in males in our study. Some studies have reported higher rates of migraine among women while others reported that there is association between migraine and gender.<sup>[15,16,17]</sup> Different from some other studies conducted in Iran.<sup>[11,14]</sup> We found no difference in the rates of migraine between single and married and our findings were in agreement with the results of a study conducted by Vox T et al.<sup>[18]</sup>

**Principal Limitation inherent in this study-** Our data were gathered in a cross-sectional survey, by questionnaire, from what we believe were a representative sample, but dependent on recall – in many case. The error associated with recall has not been established but there is no reason to suppose that it results in over- rather than underestimation. Relative importance of individual environmental and stress factors could not be assessed, as it seemed, they operate concurrently quite often.

## CONCLUSION

Prevalent headache disorders, especially migraine, give rise to commensurately heavy burdens. Limited access to health care fails to alleviate these. Structured headache services, with their basis in primary care, are the most efficient, effective, affordable and equitable solution. They could be implemented within the health-care infrastructure of Kerala and are likely to be cost-saving.

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