

**Clinico Epidemiological Profile of Vestibular Migraine****V. K. Sreelatha**

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Conflict of interest: Nil

**Abstract:****Background:** Vestibular migraine (VM) is a frequently diagnosed condition in neurotology, however it has only lately been acknowledged as a distinct disease. The primary aim of this study was to monitor and analyze the clinical and epidemiological characteristics of patients with vestibular migraine.**Methods:** The present cross-sectional study was conducted at department of ENT of a tertiary care center among 90 patients with vestibular migraine symptoms attending the OPD during the study period of one year. Detailed history, sociodemographic details, duration, frequency, family history and precipitating factors of migraine was enquired. Results were analysed using SPSS version 25.0.**Results:** In the present the mean age of patients was 39.4 years. The number of female patients was 94.4% and male patients were 5.6%. Out of 90 patients family history was present in 62% of cases. Tinnitus was the only symptom in 9.2%, hearing loss the only symptom in 10% and both hearing loss and tinnitus were present in 20.8%.**Conclusion:** Vestibular migraine is a disorder that is not diagnosed frequently in India. There is limited research and awareness about this ailment. Therefore, the purpose of this study is to address these limitations. The majority of the patients were women in their middle age. The majority of patients underwent a physical examination, which yielded normal results.**Keywords:** Clinico-Epidemiological, Disorder, Migraine, Vestibular, Vertigo.

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**Introduction**

Vestibular migraine is a neurological disorder that is not often diagnosed but is becoming more recognized. It causes sudden, non-positional, and episodic dizziness with characteristics of migraine.[1] Migraine and vertigo are prevalent medical diseases that impact 14% and 7% of the overall population, respectively. If the events were happening randomly, their simultaneous occurrence would have a probability of 1%. Recent epidemiological research have revealed that a total of 3.2% of the population experience both migraine and vertigo. [2]

Vestibular migraine is an entity first described in 1999 by Dieterich and Brand and corresponds to a variant of migraine whose main symptoms are vestibular.[3] It can manifest in individuals of any age group and is more commonly observed in females than males, with a ratio of up to 5:1. [1,4] It is more prevalent in patients with migraine without aura than to those with migraine with aura.[4]

The temporal correlation between migraine symptoms, such as headache, sensitivity to light and sound, and vestibular symptoms, can vary, even within the same person. Episodes of vestibular

migraine (VM) can be induced by the same conditions that are known triggers for migraine headaches. These factors include the menstrual cycle, irregular sleep patterns, stress, physical activity, dehydration, and specific foods and beverages. Additionally, acute sensory stimulation can also contribute to the occurrence of VM episodes.[5,6]

The diagnostic criteria for VM were initially proposed by Neuhauser in 2001 and later revised in 2012 by the Bárány Society, in collaboration with the International Headache Society.[7] These criteria were included in the appendix of the third edition of the International Classification of Headache disorders in 2018, serving as an initial approach to identifying new medical conditions.[8,9]

The primary aim of this study was to monitor and analyze the clinical and epidemiological characteristics of patients with vestibular migraine. Vestibular migraine is a disorder that is not diagnosed frequently in India. There is limited research and awareness about this ailment. Therefore, the purpose of this study is to address these limitations.

## Material and Methods

The present cross-sectional study was conducted at department of ENT of a tertiary care center among patients with vestibular migraine symptoms attending the OPD during the study period of one year. Ethical clearance was taken from institutional ethics committee before commencement of study. Patients were asked to sign an informed consent form after explaining them the complete procedure.

90 Patients with vestibular migraine symptoms according to ICHD criteria above the age of 13 attending OPD were included in the study.

Vestibular Migraine is defined as the association of giddiness/ vertigo/ disorders of balance associated with migraine. A set of diagnostic criteria has been put forward in Appendix of ICHD 3 [8].

### A1.6.6

Vestibular migraine Previously used terms: Migraine-associated vertigo/ dizziness; migraine-related vestibulopathy; migrainous vertigo.

### Diagnostic Criteria

- A. At least five episodes fulfilling criteria C and D
- B. A current or past history of Migraine without aura or Migraine with aura
- C. Vestibular symptoms of moderate or severe intensity, lasting between five minutes and 72 hours
- D. At least half of episodes are associated with at least one of the following three migrainous features

(1). Headache with at least two of the following four characteristics

a) unilateral location b) pulsating quality c) moderate or severe intensity d) aggravation by routine physical activity

(2). Photophobia and phonophobia

(3). Visual aura

E. Not better accounted for by another ICHD-3 diagnosis or by another vestibular disorder.

Data was collected through semi structured interview. After getting informed consent from the study subjects, interview schedule was administered. Detailed history, sociodemographic details, duration, frequency, family history and precipitating factors of migraine was enquired. As part of vertigo evaluation, they underwent nystagmus evaluation, head impulse test, fistula test, saccades, pursuit examination, finger nose test, dysdiadochokinesia, Romberg test, tandem gait, supine roll test and dix hall pike test.

### Statistical Analysis

Data was entered in Excel sheet and analysis will be done using SPSS. Association of other variables (family history, precipitating factors etc) with vestibular migraine was found out by applying chi square test. The significance level will be fixed at 5% level.

### Results

In the present the mean age of patients was 39.4 years. The number of female patients was 94.4% and male patients was 5.6%. Maximum patients were educated till secondary class (62%) and most of them (50%) were not doing any job as shown in table 1.

**Table 1 Demographic data of patients**

Variable		Values
Mean age (years)		39.4±4.3
Gender	Male	5(5.6)
	Female	85(94.4)
Education	Secondary	56 (62)
	Senior secondary	13 (14)
	Undergraduate	18 (20)
	Postgraduate	3 (4)
Occupation	Nil	45 (50)
	Student	13 (14)
	Manual labour	14 (16)
	Other/ office	18 (20)

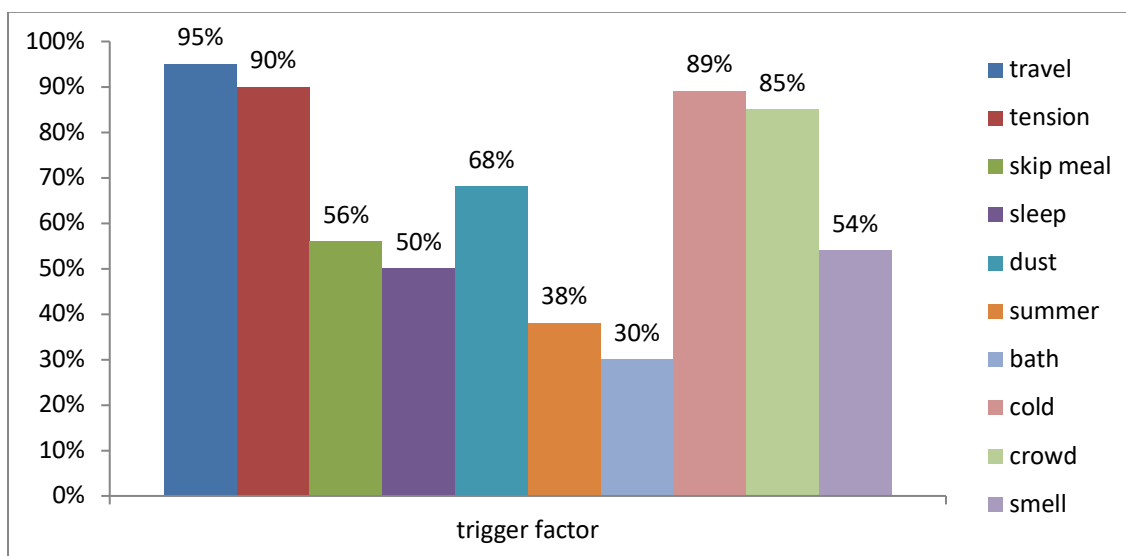
Out of 90 patients family history was present in 62% of cases. Regarding audiological symptoms, tinnitus was the only symptom in 9.2%, hearing loss the only symptom in 10% and both hearing loss and tinnitus were present in 20.8% and 60% patients does not have any symptom. Regarding

frequency 51 patients (56.6%) had more than 3 episodes of vestibular migraine per week and 39 patients (43.4%) had less than 3 episodes per week. Almost half of the patients had disease duration from past 5 to 10 years as shown in table 2.

**Table 2: Clinical profile of patients**

Variable	Frequency (%)
Family history	Present 56 (62)
	Absent 34 (38)
Auditory Symptoms	No symptoms 54 (60)
	Only tinnitus 8 (9.2)
	Only decreased hearing 9 (10)
Duration	Both 19 (20.8)
	Less than 5 years 9 (10)
	5 - 10 years 45 (50)
	More than 10 years 36 (40)

The various trigger factors related to vestibular migraine are shown in figure 1. The most common one was travel (95%) and least common was summer weather (30%).



**Figure 1: Trigger factors related to vestibular migraine patients**

All patients had negative results on the fistula test and head impulse test. Horizontal and vertical saccades were normal in all patients, and pursuit testing was normal in both horizontal and vertical directions. Finger nose test and dysdiadochokinesia test were normal in all patients. Dix Hallpike test and supine roll test were normal in all patients.

**Discussion**

One possible explanation for vertigo in vestibular migraine is the reduced blood flow to the inner ear during migraine attacks. This is caused by the narrowing of blood vessels (vasospasm), which leads to symptoms affecting the vestibular system. Therefore, vestibular migraine is a frequent cause of recurring vertigo. [1]

Vestibular migraine can manifest in individuals of any age group and is more commonly observed in females than males. [4] According to the study conducted by Ligia et al, there was a higher proportion of females (94.1%) than males (5.9%) with vestibular migraine. The prevalence of vestibular migraine was shown to be higher among females in their fifth and sixth decade of life, with

an average age of 46.1 years. [2] Our observational study reveals a higher frequency among females, particularly between the ages of 30 and 40. The higher prevalence of females is typically caused by the autosomal dominant inheritance pattern, which accounts for the lower occurrence in males due to decreased penetrance. [9] Additional literature conducted on vestibular migraine confirms comparable findings. [10]

In our study only tinnitus was present in 9.2% of patients only decrease in hearing (10%), both hearing loss and tinnitus (20.8%) and 60% patients does not have any symptom. Similar findings were reported by Radtke et al., who attributed to VM a much slower hearing loss when compared to that observed in Meniere's disease. [11]

Vestibular migraine is a condition characterized by episodes that occur intermittently. However, the duration of these episodes can vary from a few seconds to many days. [5] In our study most of the patients were suffering from this disease since 5 to 10 years. In a study done by Joy D et al all patients experienced episodic vertigo. [12] The duration of vertigo episodes in this study is brief, lasting only a

few seconds in 50% of patients and a few minutes in 45% of patients. Vertigo attacks exhibit significant heterogeneity in the duration of each episode. [13]

The most common trigger factor in our study was travel (95%) and least common was summer weather (30%). Shin et al conducted a retrospective study involving 131 patients and found that stress, strong lights, weather changes, and sleep deprivation were the most prevalent triggers for vestibular migraine. [14]

The diagnostic challenge we often encounter is distinguishing between vestibular migraine and Meniere's disease due to the similarity in clinical presentation of these individuals. The distinguishing characteristic is evident in the research undertaken by Radtke et al, who ascribed vestibular migraine to a significantly slower decline in hearing compared to that reported in Meniere's illness. [11]

In this study, patients reported experiencing giddiness after completing saccades during evaluation. Oculomotor impairments are frequently observed in individuals with vestibular migraine, however the underlying mechanisms are still unclear. Numerous studies have been undertaken to investigate this phenomenon. Wesbuthand et al. conducted a retrospective cohort study that included all patients diagnosed with vestibular migraine and probable vestibular migraine. The study compared the results of videonystagmography (VNG) in these patients with a control group. The VNG test revealed the following anomalies: 21.7% of individuals experienced spontaneous nystagmus, 33.3% had positional nystagmus, largely of central origin, 26.7% showed optokinetic nystagmus, 56.7% had abnormalities in smooth pursuit eye movements, and 70% had abnormalities in the saccade test. [15]

Vestibular migraine is a disorder that is not diagnosed frequently in India. There is limited research and awareness about this ailment. Therefore, the purpose of this study is to address these limitations. The majority of the patients were women in their middle age. The majority of patients exhibited normal results in both physical and audiological examinations.

Only 90 patients are included in the study, hence a higher sample size is needed for data extrapolation. No objective studies were conducted on the patients as the primary objective was to establish the clinic-epidemiological profile of patients with vestibular migraine.

### Conclusion

Vestibular migraine primarily affects middle-aged women who have a previous history of vertigo, with the initial episode occurring at an earlier age.

Vestibular migraine is still not accurately identified in India. This study aims to analyse the clinic-epidemiological patterns in vestibular migraine in order to determine the demographic that is most susceptible to this condition.

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