

A Cross-sectional Study on Prevalence of Cluster Headache Among General Population in West Bengal and Its Risk Factors

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ABSTRACT

Background: Cluster headache is a rare but severely painful primary headache disorder often misdiagnosed in the general population. Despite its debilitating nature, there is limited epidemiological data on its prevalence in India, particularly in West Bengal. **Objective:** To determine the prevalence of cluster headache among the general population in West Bengal and evaluate associated risk factors. **Methods:** A cross-sectional study was conducted among 36 participants from urban and rural regions of West Bengal. Data was collected using structured questionnaires, including diagnostic criteria from the International Classification of Headache Disorders (ICHD-3). Risk factors such as smoking, alcohol use, sleep patterns, and family history were assessed. **Results:** Among 36 participants, 5 (13.9%) were diagnosed with cluster headache. The majority of affected individuals were males (80%), smokers (60%), and had poor sleep quality (80%). There was a significant association between smoking and cluster headache prevalence ($p < 0.05$). **Conclusion:** The study reveals a notable prevalence of cluster headache among the general population in West Bengal, especially among males and individuals with modifiable risk factors such as smoking and sleep disturbances. Increased awareness and early diagnosis can significantly improve quality of life.

KEYWORDS: Cluster Headache, Male.

INTRODUCTION

Cluster headache (CH) is a rare but highly disabling form of primary headache, characterized by recurrent unilateral attacks of excruciating pain, typically around the eye. It is often accompanied by autonomic symptoms like tearing, nasal congestion, and restlessness. Despite its severe impact, CH is frequently underdiagnosed, especially in lower and middle-income countries due to limited awareness and lack of trained neurologists[1]. Cluster headaches affect approximately 0.1% of the population. This means that about one in 1,000 people experience them. It's more common in men than women, with a male-to-female ratio ranging from 2.5:1 to 7.2:1. The typical age of onset is around 30 years old[2].

Key points about prevalence: Prevalence: 0.1% of the population. Gender: More common in men than women (male-to-female ratio varies). Age of onset: Typically around 30 years old. Variations: Prevalence can differ

based on region and study methodology. Familial risk: Individuals with a family history of cluster headaches are at an increased risk[3-6].

In India, epidemiological data on CH remains sparse. This study was undertaken to assess the prevalence of cluster headache and identify risk factors such as lifestyle habits and family history among the general population of West Bengal, providing a foundation for early diagnosis and preventive strategies[7-10].

METHODS

This study was conducted in a tertiary hospital. After obtaining institutional ethical committee approval. It was Cross-sectional observational study conducted on 36 patients in the department of General medicine, at a tertiary care centre, from January / 2024 to July/2024

Total 36 participant were approached to project among them No one were excluded in this study and Total 36 Confirmed cases were included on the basis of fulfilling of the eligibility criteria. The institute Ethics Committee approval was obtained before starting the sample collection. A written and informed consent was taken from the patient regarding the study in his/her vernacular language and English. In this study Patients were subjected to: A detailed history of sign & symptoms and its duration. Detailed history of systemic diseases and its duration, medication were noted. Patients were subjected to General physical examination

Study Design and Setting:

- **Type:** Cross-sectional study
- **Location:** Urban and rural sectors of West Bengal
- **Duration:** 6 months
- **Sample Size:** 36 randomly selected individuals aged 18–60 years

Inclusion Criteria:

- Residents of West Bengal aged 18–60
- Willing to provide informed consent

Exclusion Criteria:

- Individuals with secondary headaches or neurological disorders

Data Collection Tools:

- Structured questionnaire based on **ICHD-3 criteria**
- Assessment of risk factors: smoking, alcohol, sleep habits, family history

Statistical Analysis:

- Data entered in MS Excel and analyzed using SPSS v21.
- Chi-square test used for association ($p < 0.05$ considered significant).

RESULTS

In this study we found that Cluster headache (CH) is associated with demographic profile of patient. 41.7% of Cluster headache (CH) is due to 31-45 years age group followed by 33.3 % 18–30 years age group . Age is also associated factors for Cluster headache (CH)

Male are more prone to suffered of cluster headache as compared to female its prevalence 61.1%.

63.2% Cluster headache (CH) were Predominant among Rural Residence (Table 1)

Demographic Factors Table 1

Variables	Frequency (n=36)	Percentage (%)
Age Group		
18–30 years	12	33.3
31–45 years	15	41.7

Variables	Frequency (n=36)	Percentage (%)
46–60 years	9	25.0
Gender		
Male	22	61.1
Female	14	38.9
Residence		
Urban	20	55.6
Rural	16	44.4

Prevalence of Cluster Headache:

- **Total cases identified:** 5 out of 36 (13.9%)
- **Male cases:** 4 (80%)
- **Age range of CH cases:** 28–49 years

Cluster headache causing factors are Smoking Alcohol consumption Poor Sleep Quality And Family History (Table 2)

Risk Factors Table 2

Risk Factors	Cluster Headache Present (n=5)	No Cluster Headache (n=31)	p-value
Smoking	3 (60%)	5 (16.1%)	0.03*
Alcohol consumption	2 (40%)	7 (22.6%)	0.28
Poor Sleep Quality	4 (80%)	8 (25.8%)	0.01*
Family History	1 (20%)	2 (6.5%)	0.22

*Significant at $p < 0.05$

DISCUSSION

This study highlights a 13.9% prevalence of cluster headache among the sampled population, aligning with global estimates when accounting for underreporting and misdiagnosis [11-14]. The higher male predominance and association with smoking and sleep disorders are consistent with findings from prior literature. Cluster headaches are more common in males, typically onset in the 30s and 40s, and can be influenced by family history and lifestyle factors like smoking and alcohol consumption. While men are generally more affected, recent research suggests that the male-to-female ratio is decreasing, possibly due to increased awareness and changes in lifestyle factors like smoking habits. Detailed Demographic Factors: Sex: Cluster headaches are more prevalent in males, with a historical ratio of 6:1 compared to females [15-18]. However, this ratio is changing, with some studies showing a male-to-female ratio of 2.5:1. Age: The onset of cluster headaches usually occurs between the ages of 20 and 50, with the typical age being around 30 years [19].

In this study we found that Cluster headache (CH) is associated with demographic profile of patient. 41.7% of Cluster headache (CH) is due to 31-45 years age group followed by 33.3 % 18–30 years age group. Age is also associated factors for Cluster headache (CH)

Male are more prone to suffered of cluster headache as compared to female its prevalence 61.1%.63.2% Cluster headache (CH) in Pregnancy were associated with Rural Residence (Table 1

Family History: Individuals with a family history of cluster headaches are at an increased risk, with a 14 to 39 times higher chance of diagnosis if they have a first-degree relative with the condition [20-24]. Lifestyle Factors: Smoking and alcohol consumption are strongly linked to cluster headaches. Many individuals who

experience cluster headaches are smokers. Head Trauma: A history of head trauma can also be a contributing factor. Other Factors: There is a suggested link between cluster headaches and sleep apnoea.

Cluster headaches are characterized by severe, debilitating pain, typically on one side of the head, often around the eye, and are more common in men. Several risk factors are associated with cluster headaches, including age (20-40 years), male gender, smoking, and family history. Certain lifestyle choices like alcohol consumption and exposure to triggers like bright lights, high altitudes, and strong odors can also contribute to attacks[25-28].

Here's a more detailed breakdown: Age: Most individuals experience their first cluster headache between the ages of 20 and 40, though they can occur at other ages. Gender:

Men are significantly more likely to experience cluster headaches than women, with a ratio of approximately 3:1. Smoking: Smoking is a well-established risk factor, and quitting smoking doesn't always eliminate the headaches. Family History: Having a family history of cluster headaches increases the likelihood of developing the condition. Alcohol: Alcohol consumption, particularly during a cluster period, can trigger attacks, according to Apollo Hospitals[29].

Other Triggers: Bright lights, high altitudes, strong odors, and changes in sleep patterns can also trigger attacks. Underlying Conditions: Some individuals with other headache disorders, like migraines, may be at a higher risk. Medications: Certain medications can also trigger cluster headaches[30]. The relatively high proportion of affected individuals in a small sample reflects the need for better screening protocols at the community level. Sleep deprivation and smoking emerged as modifiable risk factors. No significant association was found with alcohol or family history, though these may still play a contributory role in larger populations[31].

One limitation is the small sample size, which may restrict generalizability. Also, diagnosis was based on self-reported symptoms and clinical screening, without neuroimaging confirmation.

CONCLUSION

This cross-sectional study in West Bengal reveals that cluster headaches, though underdiagnosed, affect a notable proportion of the general population. Smoking and poor sleep hygiene were significantly associated with increased risk. Primary care awareness for early screening Health education on lifestyle modification Further large-scale studies with neuroimaging validation

SOURCE OF FUNDING: No

CONFLICT OF INTEREST

The authors report no conflicts of interest

SUBMISSION DECLARATION

This submission has not been published anywhere previously and that it is not simultaneously being considered for any other journal.

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