▪ Headache Medicine 2026, 17(2):129-136 ▪ p-ISSN 2178-7468, e-ISSN 2763-6178

Headache Medicine

▪ DOI: 10.48208/HeadacheMed.2026.16

Review

# Cluster headache and rare-disease classification in Brazil: a systematic review and policy perspective

**Ivy Liger Riso[1], Otávio Augusto de Oliveira Franco[2], Arão Belitardo de Oliveira[3], Vanise Grassi[4], Welber Sousa Oliveira[5], Erlene Roberta Ribeiro dos Santos[6], Caio Vinicius de Meira Grava Simioni[3], Elder Machado Sarmento[7], Mauro Eduardo Jurno[8], Mateus Franco[9], Mario Fernando Prieto Peres[3], Vitoria Acar[10]**

[1]São Paulo Headache Center, São Paulo, São Paulo, Brazil
[2]Brazilian Association of Cluster Headache and Migraine, São Paulo, São Paulo, Brazil
[3]University of São Paulo, São Paulo, São Paulo, Brazil
[4]Moinhos de Vento Hospital, Porto Alegre, Rio Grande do Sul, Brazil
[5]Specialized Center for Hypermobility and Pain, Brasília, Distrito Federal, Brazil
[6]Federal University of Pernambuco, Recife, Pernambuco, Brazil
[7]Volta Redonda University Center, Volta Redonda, Rio de Janeiro, Brazil
[8]Minas Gerais State Hospital Foundation, Barbacena, Minas Gerais, Brazil
[9]Jefferson Einstein Hospital, Philadelphia, United States
[10]Perelman School of Medicine at the University of Pennsylvania, Philadelphia, United States

Mario Fernando Prieto Peres
mariop3r3s@gmail.com

**Edited by:**
Marcelo Moraes Valença

**Abstract**

**Background**
Cluster headache is a highly disabling trigeminal autonomic cephalalgia associated with substantial diagnostic delay, severe pain-related disability, and limited access to evidence-based treatments. In Brazil, epidemiological data are scarce, and CH is not formally recognized within rare-disease policy frameworks. Clarifying the available prevalence evidence may help guide surveillance, research priorities, and health-policy planning.

**Objective**
To analyze the prevalence of cluster headache (CH) in Brazil and assess whether the currently available Brazilian population-based evidence is compatible with national rare-disease criteria, while discussing clinical and public-health implications.

**Methods**
We conducted a systematic review of population-based epidemiological studies on CH in Brazilian adults, reported according to PRISMA 2020. Searches were performed in PubMed/MEDLINE, LILACS, and SciELO on March 1, 2026, covering publications from January 1, 2010, to March 1, 2026, with no language restrictions. Eligible studies were original Brazilian population-based studies in adults reporting CH prevalence or providing a denominator allowing prevalence estimation. Diagnosis was required to be based on ICHD-3, ICHD-3 beta, ICHD-2, or clearly described clinical criteria compatible with CH diagnosis. Brazilian Ministry of Health and CONITEC documents were reviewed to identify regulatory definitions and policy criteria for rare-disease classification. Methodological quality and risk of bias were assessed using the JBI Critical Appraisal Checklist for Studies Reporting Prevalence Data.

**Results**
The search identified 19 records. After removal of 12 duplicates, 7 records were screened, 4 full-text articles were assessed for eligibility, and 1 population-based Brazilian study met inclusion criteria. The eligible study, conducted in Barbacena, Minas Gerais, identified 15 CH cases among 36,145 adults, corresponding to a prevalence of 41.4 per 100,000 adults. This estimate is below the Brazilian rare-disease threshold of 65 per 100,000 inhabitants. The best available Brazilian population-based estimate is therefore compatible with CH meeting the Brazilian rare-disease prevalence threshold, although national confirmation requires additional population-based studies.

**Conclusion**
Current Brazilian population-based evidence is compatible with cluster headache meeting the national rare-disease prevalence threshold. However, this conclusion is based on a single population-based study, and further multicenter epidemiological research is required. Formal recognition may be scientifically justified and could support public-health planning, epidemiological surveillance, professional training, and development of national care pathways for diagnosis and treatment.

**Keywords:**
Cluster headache,
Rare diseases,
Epidemiology,
Brazil,
Public health policy,
Systematic review

Received: March 26, 2026
Revised: May 5, 2026
Accepted: June 8, 2026

© Copyright 2025

## Introduction

Cluster headache (CH) is a primary headache disorder characterized by severe unilateral pain, predominantly in the orbital, supraorbital, or temporal region, accompanied by ipsilateral cranial autonomic symptoms such as lacrimation, conjunctival injection, rhinorrhea, nasal congestion, eyelid edema, miosis, ptosis, and/or by restlessness or agitation (1). According to the International Classification of Headache Disorders, 3rd edition (ICHD-3), CH is classified into episodic and chronic forms. Episodic CH is characterized by attack periods separated by remission lasting at least three months, whereas chronic CH occurs without remission or with remission periods lasting less than three months (2).

International epidemiological studies indicate a global prevalence ranging from 41 to 381 cases per 100,000 inhabitants in the adult population, with predominance of the episodic form (85-90%) over the chronic form (10-15%) (1). Despite its relatively low prevalence, CH imposes a considerable socioeconomic burden due to pain intensity, attack frequency, and significant impact on patient's quality of life (4). The psychological toll is severe: up to 55% of patients report suicidal ideation, and 1-2% attempt suicide (5).

Diagnosis remains challenging worldwide. Studies demonstrate diagnostic delays often exceeding five years globally, attributed to limited awareness among healthcare professionals and the complexity of differential diagnosis (6). Current therapeutic approaches include acute treatments with high-flow oxygen and triptans, while prophylactic management primarily relies on verapamil as first-line therapy, followed by lithium in refractory cases (1). Recent advances include anti-CGRP monoclonal antibodies, which have shown promising results in chronic forms (7).

In Brazil, population-based epidemiological data on CH remain scarce, and the condition lacks formal recognition within national rare-disease frameworks. Brazilian Ministry of Health Ordinance No. 199/2014 defines rare diseases as those affecting up to 65 individuals per 100,000 inhabitants. Determining whether the currently available Brazilian evidence is compatible with this threshold has potential implications for surveillance, research funding, referral pathways, clinical protocols, and equitable access to treatment.

This study aimed to systematically review Brazilian population-based epidemiological evidence on CH prevalence and to evaluate whether the available data are compatible with Brazilian rare-disease criteria, while contextualizing the clinical and public-health implications of possible recognition.

## Methods

We conducted a systematic review of population-based epidemiological studies on CH in Brazilian adults. The review was reported according to the PRISMA 2020 statement. Searches were performed on March 1, 2026, in PubMed/MEDLINE, LILACS, and SciELO, covering publications from January 1, 2010, to March 1, 2026, with no language restrictions. The 2010–2026 search window was selected to prioritize contemporary population-based epidemiological evidence using modern headache diagnostic frameworks and methods. Reference lists of relevant articles were also hand-searched.

The search strategy combined controlled vocabulary and free-text terms related to cluster headache and Brazil in English, Portuguese, and Spanish, with syntax adapted to each database. The complete database-specific search strategies are provided in Supplement 1.

Eligible studies were Brazilian population-based epidemiological studies in adults that reported cluster headache prevalence or provided sufficient data for prevalence estimation. Diagnosis had to be based on ICHD-3, ICHD-3 beta, ICHD-2, or clearly described compatible clinical criteria. Non-Brazilian studies, pediatric or non-separable mixed-age studies, clinic-based studies, case reports or series without a denominator, reviews, editorials, letters, insufficient conference abstracts, duplicates, and studies without a clear diagnostic basis were excluded. Records were deduplicated and independently screened by two reviewers, with full-text assessment of potentially eligible articles. Disagreements were resolved by consensus, and data were independently extracted using a standardized form.

The review protocol was not prospectively registered. Methodological quality and risk of bias of the included prevalence study were assessed using the Joanna Briggs Institute Critical Appraisal Checklist for Studies Reporting Prevalence Data. Because meta-analysis was considered appropriate only if at least two comparable population-based studies were identified, the findings were synthesized narratively.

Brazilian Ministry of Health and CONITEC documents were reviewed to identify policy frameworks and regulatory definitions relevant to rare-disease classification. According to Ordinance No. 199/2014, diseases affecting up to 65 individuals per 100,000 inhabitants are classified as rare in Brazil (4,8).

## Results

A total of 19 records were identified across PubMed/MEDLINE, LILACS, and SciELO. After removal of 12 duplicates, 7 records remained for title and abstract screening. Four full-text articles were assessed for eligibility, and 1 population-based study met the inclusion criteria for the final review. Reasons for full-text exclusion included assisted or tertiary/clinic-based design and lack of a population-based denominator appropriate to the review question. The study selection process is shown in Figure 1.

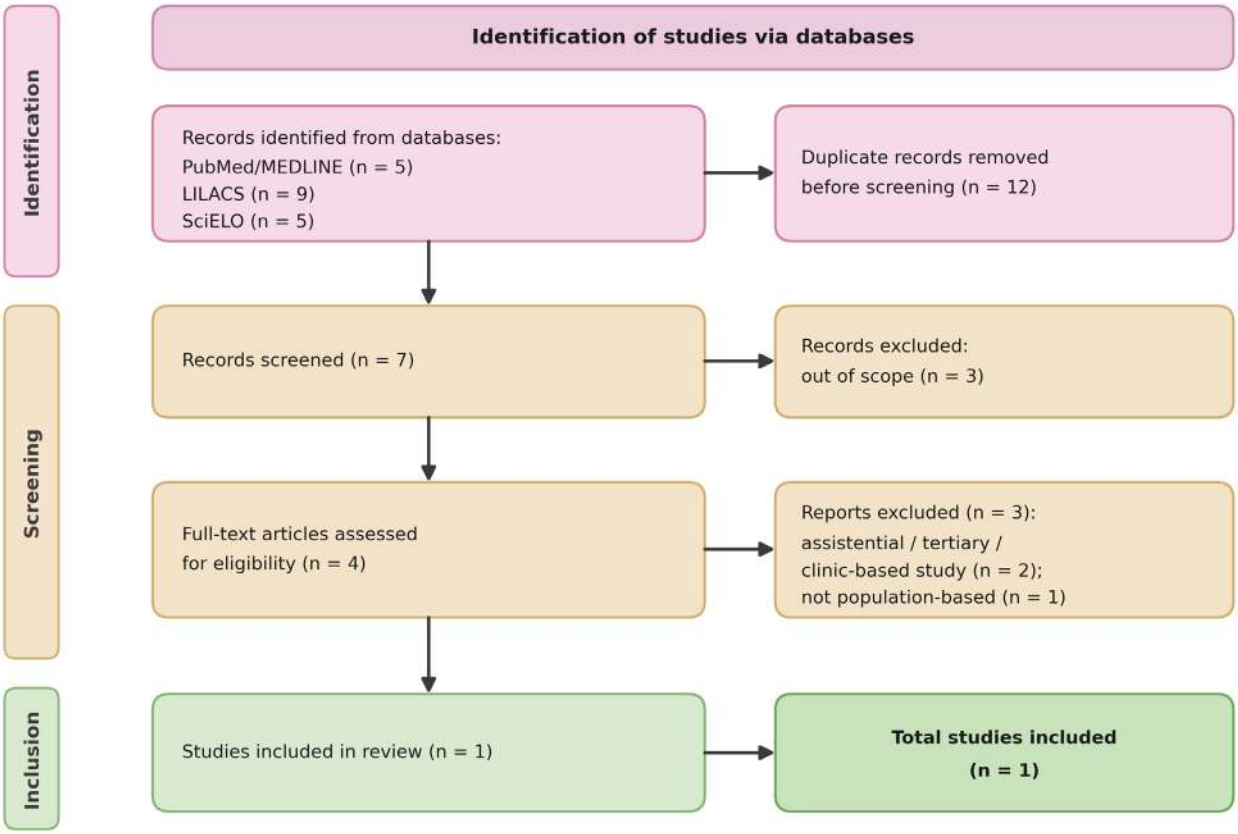



Figure 1. PRISMA flow diagram of study selection.

*Characteristics of the included study*

Only one eligible population-based Brazilian study was identified (Table 1). Jurno et al.(3) conducted a population-based survey in Barbacena, Minas Gerais, using door-to-door interviews and validated diagnostic criteria. The study identified 15 CH cases among 36,145 adults, corresponding to a prevalence of 41.4 per 100,000 adults.

The included study had important strengths, including population-based sampling, direct household assessment, a large denominator, and clinically oriented case ascertainment. The main limitations were the restriction to one municipality, the small absolute number of CH cases, and limited generalizability to Brazil's diverse geographic and socioeconomic regions. Overall, the study provides the best available Brazilian population-based estimate, but the certainty of national inference remains limited.

Table 1. Jurno et al. study

| Study | |
|---|---|
| | Jurno et al.(3), 2018 |
| **Location** | |
| | Barbacena, Minas Gerais, Brazil |
| **Design** | |
| | Population-based cross-sectional survey |
| **Sampling method** | |
| | door-to-door household survey |
| **Sample size** | |
| | 36,145 |
| **Diagnostic criteria** | |
| | ICHD 3b |
| **CH cases** | |
| | 15 |
| **Prevalence** | |
| | 41.4 per 100,000 adults |
| **Confidence Interval** | |
| | not reported |
| **Limitations** | |
| | Single medium-sized city; limited regional generalizability; small number of CH cases; no national sampling frame |

Brazilian Ministry of Health Ordinance No. 199/2014 defines rare diseases as those affecting up to 65 individuals per 100,000 inhabitants. The available Brazilian population-based estimate of CH prevalence, 41.4 per 100,000 adults, falls below this threshold (4,8). Therefore, the best available Brazilian population-based evidence is compatible with CH meeting the Brazilian rare-disease prevalence threshold. However, because this conclusion is based on a single population-based study from one city in Minas Gerais, national confirmation requires additional population-based studies across different Brazilian regions.

Brazil currently lacks a CH-specific national clinical protocol or Clinical Protocol and Therapeutic Guideline (Protocolo Clínico e Diretrizes Terapêuticas, PCDT), a structured national referral pathway, and a national registry to monitor prevalence, diagnostic delay, treatment access, and treatment response.

# Discussion

This systematic review identified only one Brazilian population-based study reporting CH prevalence in adults. The reported prevalence of 41.4 per 100,000 adults is below the Brazilian rare-disease threshold of 65 per 100,000 inhabitants. Thus, the currently available Brazilian evidence is compatible with CH meeting national rare-disease criteria. However, the evidentiary basis remains narrow, and the finding should be interpreted as a population-based estimate from one medium-sized city rather than definitive evidence of national prevalence.

This distinction is important for both scientific interpretation and policy translation. The available estimate supports consideration of CH within the Brazilian rare-disease framework, but it does not eliminate the need for multicenter epidemiological studies, regional prevalence assessments, and health-service research.

*Rare-disease classification and international context*

The Brazilian rare-disease threshold of up to 65 cases per 100,000 inhabitants is broadly comparable to thresholds used in other jurisdictions. The European Union defines rare diseases as those affecting no more than 5 per 10,000 people, equivalent to 50 per 100,000, while the United States Orphan Drug Act defines rarity by the absolute number of affected individuals nationwide (6).

Within Brazil, however, the only eligible population-based prevalence estimate falls below the national threshold. This supports the argument that CH may be considered for rare-disease recognition in Brazil, provided the limitations of the evidence base are clearly acknowledged.

Chronic cluster headache represents approximately 10–15% of all CH cases. If this proportion is applied to the Brazilian prevalence estimate of 41.4 per 100,000 adults, the expected prevalence of chronic CH would be approximately 4–6 per 100,000 adults (6). This estimate is well below Brazilian and international rare-disease thresholds.

*Diagnostic challenges in Brazil*

Although diagnostic delay was not derived from the population-based study included in this review, Brazilian clinical data suggest that delayed diagnosis remains a major challenge in CH care. In a Brazilian clinical sample, the mean diagnostic delay was 27.3±13.6 years, markedly longer than the global average of 5–6 years (6,7). This delay represents a critical gap in the Brazilian healthcare system's capacity to recognize and manage CH. Yuan et al.(6) highlight that women and younger patients experience even longer diagnostic delays due to atypical presentations and frequent misdiagnosis as migraine or sinusitis. In Brazil, these challenges are likely amplified by limited specialist availability, particularly outside major urban centers, and insufficient headache training even at the primary-care level (9).

Several factors may contribute to delayed diagnosis in Brazil, including the rarity of cluster headache, symptom overlap with other headache disorders, limited familiarity with trigeminal autonomic cephalalgias outside specialist settings, and restricted access to

structured referral pathways. These barriers are compounded by geographic disparities in the distribution of specialists within the Brazilian healthcare system, with headache expertise concentrated predominantly in the Southeast. In addition, cluster headache is often underrepresented in undergraduate medical curricula and continuing medical education programs, which may further limit awareness and recognition among non-specialist clinicians.

Together, these factors reinforce the need for better professional education, earlier recognition, and clearer referral routes within the health system.

*Socioeconomic burden*

The economic impact of CH, particularly chronic CH (CCH), is substantial. Yuan et al.(6) estimated annual direct costs of €9,158 and indirect costs of €11,809 per CCH patient in Europe, totaling over €20,000 per year. Direct costs include medical consultations, emergency department visits, medications, and hospitalizations, while indirect costs primarily reflect productivity losses due to work absenteeism and disability.

Comparable cost data are lacking for Brazil. However, given the high disease burden, marked diagnostic delay, and restricted access to advanced therapies, the relative economic impact within the Brazilian Unified Health System (SUS) is expected to be substantial. The absence of early diagnosis and standardized management pathways likely amplifies indirect costs through increased emergency department utilization, prolonged work disability, and preventable complications. Moreover, patients may resort to out-of-pocket expenditures for private consultations or medications not available through SUS, creating additional financial burden for families. Formal cost-effectiveness studies are needed to quantify this economic burden and evaluate whether early diagnosis and access to evidence-based treatments could reduce overall healthcare costs.

*Public-health and policy implications*

Recognition of CH as a condition compatible with rare-disease classification in Brazil could have practical public-health implications. It could support epidemiological surveillance, stimulate research funding, improve professional training, and facilitate the development of structured referral pathways and national clinical protocols. At present, SUS does not have a CH-specific PCDT or a national reimbursement pathway for several specialized treatments used in CH management.

Access to evidence-based acute treatments, including high-flow oxygen and subcutaneous triptans, remains limited, particularly within SUS, where oxygen therapy is not widely available and triptans are inconsistently provided. Preventive treatments such as verapamil and lithium also lack standardized monitoring pathways, while newer therapies such as galcanezumab remain largely inaccessible because of cost and the absence of incorporation into public funding mechanisms (3,7,10).

The clinical and psychological consequences of delayed diagnosis are substantial. Patients with unrecognized CH may undergo unnecessary investigations, receive inappropriate treatments, and experience prolonged suffering. Given the extreme pain intensity and increased suicide risk associated with CH, reducing diagnostic delay should be considered a public health priority (5).

Brazilian patients with CH face challenges comparable to those reported internationally, including psychiatric comorbidities, occupational impairment, and reduced quality of life, but within a healthcare system that still lacks adequate infrastructure to support their care (4). Additional Brazilian real-world data, including those reported by Karnieg et al.(11), further support the functional, psychosocial, and socioeconomic impact of CH in the country. Building on international experience and on the framework proposed by Yuan et al.(6), four strategic pillars appear particularly relevant for advancing CH care in Brazil: research funding, policy advocacy, clinical training, and the establishment of national disease registries

*Research and implementation priorities*

Targeted funding for CH and other rare primary headaches is currently absent in Brazil. Establishing dedicated research lines could enable multicenter studies addressing diagnostic pathways, treatment outcomes, health service utilization, and economic impacts. Building a national database integrating epidemiological, clinical, and pharmacoeconomic information would support more accurate disease burden estimations and inform policy decisions. Such infrastructure could be modeled after successful international registries and integrated with existing Brazilian health information systems.

Research priorities should include: (1) multicenter prevalence studies in diverse geographic regions; (2) real-world effectiveness studies of available treatments; (3) cost-of-illness analyses; and (4) investigation of barriers to diagnosis and treatment access, particularly in underserved regions. These data would be invaluable for policy makers considering investment in specialized headache services and inclusion of CH-specific treatments in national formularies.

*Policy advocacy and regulatory framework*

Formal recognition of CH as a rare disease under Ordinance No. 199/2014 could provide a regulatory gateway for its inclusion in the Clinical Protocols and Therapeutic Guidelines (Protocolos Clínicos e Diretrizes Terapêuticas – PCDTs) of SUS. This would align Brazil with rare disease policies adopted by the U.S. Food and Drug Administration (FDA) and European Medicines Agency (EMA), both of which use rarity status to incentivize orphan drug development and facilitate reimbursement (6).

Such recognition could attract pharmaceutical interest in the Brazilian market and facilitate compassionate-use or expanded-access programs for novel therapies. Moreover, designation of CH as a rare disease would prioritize it for inclusion in CONITEC's evaluation agenda, allowing systematic assessment of technologies and development of public funding mechanisms for advanced treatments.

From a broader policy perspective, integrating CH within national strategies for Non-Communicable Diseases (NCDs) and pain management could ensure long-term sustainability and intersectoral coordination (8). This integration would also strengthen patient advocacy efforts, enabling collaboration between professional societies, government bodies, and patient associations to improve awareness and access to care.

*Clinical training and capacity building*

Brazilian clinical data suggest that diagnostic delay remains one of the most critical gaps in CH care, highlighting major deficiencies in awareness and recognition outside specialized setting (7). This delay far exceeds the global average, highlighting severe deficiencies in awareness and diagnostic training. Integrating CH and other trigeminal autonomic cephalalgias into medical school curricula, continuing education programs, and primary-care protocols is urgent.

Educational initiatives should emphasize recognition of key clinical features (unilateral orbital pain, cranial autonomic symptoms, circadian rhythmicity), and application of ICHD-3 diagnostic criteria (2). Training programs must target multiple levels of the healthcare system: medical students, primary care physicians, emergency department personnel, and neurologists. Particular attention should be given to emergency department training, as these settings frequently represent the first point of contact for patients during acute attacks.

Establishing clear referral pathways between primary care and tertiary headache centers would optimize timing of specialist consultation and reduce misdiagnosis. Telemedicine platforms could help overcome geographic barriers to specialist access, particularly in underserved regions. Development of clinical decision support tools and diagnostic algorithms adapted to Brazilian healthcare settings could also facilitate recognition of CH in primary care.

*Disease registries and health-system monitoring*

Developing a national CH registry represents a cornerstone for advancing CH care in Brazil. Inspired by successful international models such as the Italian RegistRare Network (12), a Brazilian registry would enable systematic data collection on demographic characteristics, diagnostic delays, treatment response, comorbidities, and healthcare service utilization. Integration with existing rare disease registries within the DATASUS (Department of Informatics of SUS) or SIP-DR (Information System for Rare Diseases) platforms could ensure interoperability and sustainability.

Beyond epidemiological surveillance, registries would facilitate pragmatic research and real-world evidence generation, providing regulators with data to guide technology incorporation decisions and cost-effectiveness analyses. Such registries would serve as collaborative tools linking tertiary headache centers nationwide and enabling participation in international research networks. Patient registries could also support quality improvement initiatives by monitoring diagnostic delays, treatment patterns, and patient-reported outcomes across different healthcare settings.

*Future directions*

Several key actions should be prioritized to improve CH care in Brazil. First, advocacy for formal designation of CH as a rare disease through appropriate governmental channels should be pursued by professional societies and patient organizations. Second, development of a national clinical protocol for CH diagnosis and management should be initiated through CONITEC, following established procedures for PCDT development. Third, pilot implementation of a national CH registry in major headache centers should be undertaken, with plans for subsequent expansion. Fourth, educational programs targeting primary care physicians and emergency department staff should be developed and disseminated.

Collaboration between Brazilian headache specialists, patient advocacy groups, and international organizations could accelerate progress in these areas. Participation in international research consortia would enable Brazilian centers to contribute to and benefit from global advances in CH understanding and treatment. Finally, engagement with pharmaceutical companies and regulatory agencies could facilitate access to novel therapies through clinical trials, expanded access programs, or incorporation into national formularies.

*Study limitations*

This review has several limitations. The analysis relies on a single eligible population-based study conducted in Barbacena, Minas Gerais. Although the study used a large denominator and population-based methods, its findings may not be generalizable to Brazil as a whole. Regional variation in demographics, healthcare access, ethnicity, socioeconomic conditions, and diagnostic awareness may influence prevalence estimates and case detection.

Also, the absolute number of CH cases identified in the included study was small, which increases statistical uncertainty. No meta-analysis was possible because only one eligible popula-

tion-based study was identified. Diagnostic delay, treatment access, economic burden, and quality-of-life outcomes were not available from the included population-based study and therefore had to be discussed using complementary clinical and international literature.

These limitations do not negate the relevance of the available Brazilian estimate, but they require cautious interpretation. The evidence supports compatibility with rare-disease classification under Brazilian criteria, but not definitive nationwide confirmation.

## Conclusion

The best available Brazilian population-based estimate reports CH prevalence of 41.4 per 100,000 adults, which is below the national rare-disease threshold of 65 per 100,000 inhabitants. Current Brazilian evidence is therefore compatible with CH meeting rare-disease prevalence criteria in Brazil. However, this conclusion rests on a single population-based study, and national confirmation requires additional epidemiological research across diverse Brazilian regions.

Formal recognition of CH within rare-disease policy frameworks may be scientifically justified and could support public-health planning, surveillance, clinical training, care-pathway development, and more equitable access to evidence-based diagnosis and treatment.

## References


1. Hoffmann J, May A. Diagnosis, pathophysiology, and management of cluster headache. Lancet Neurol 2018;17:75–83. Doi:10.1016/S1474-4422(17)30405-2.
2. Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd edition. Cephalalgia 2018;38:1–211. Doi:10.1177/0333102417738202.
3. Jurno ME, Pereira BSR, Fonseca FAS, Teixeira GA, Maffia LQ, Barros MRA, et al. Epidemiologic study of cluster headache prevalence in a medium-size city in Brazil. Arq Neuropsiquiatr 2018;76:467–72. Doi:10.1590/0004-282x20180065.
4. Brasil. Ministério da Saúde. Portaria no 199, de 30 de janeiro de 2014: Institui a Política Nacional de Atenção Integral às Pessoas com Doenças Raras, aprova as Diretrizes para Atenção Integral às Pessoas com Doenças Raras no âmbito do Sistema Único de Saúde (SUS) e institui incentivos financeiros de custeio. Diário Oficial da União 2014.
5. Steinberg A, Josefsson P, Alexanderson K, Sjöstrand C. Cluster headache. Neurology 2019;93. Doi:10.1212/WNL.0000000000007787.
6. Yuan H, Hoffmann J, Ruiz de la Torre E, Marmura MJ, Peres MFP. Chronic cluster headache is a rare disease: Implications for diagnosis, treatment and public health. Cephalalgia 2025;45. Doi:10.1177/03331024251369752.
7. Krymchantowski A, Jevoux C, Piovesan ÉJ, Valença MM, Kowacs F, Kowacs PA, et al. Cluster headache and galcanezumab: the first real-world Brazilian study and an expert consensus on its use among other treatments. J Headache Pain 2024;25. Doi:10.1186/s10194-024-01909-w.
8. CONITEC. Relatório de recomendação: Priorização de Protocolos e Diretrizes Terapêuticas para Atenção Integral às Pessoas com Doenças Raras . Ministério Da Saúde 2015:1–33.
9. Felício AC, Bichuetti DB, Santos WAC dos, Godeiro Junior C de O, Marin LF, Carvalho D de S. Epidemiology of primary and secondary headaches in a Brazilian tertiary-care center. Arq Neuropsiquiatr 2006;64:41–4. Doi:10.1590/S0004-282X2006000100009.
10. Lamas Pérez R, Millán-Vázquez M, González-Oria C. Efficacy and safety of galcanezumab as chronic cluster headache preventive treatment under real world conditions: Observational prospective study. Cephalalgia 2024;44. Doi:10.1177/03331024231226181.
11. Karnieg T, Vincent M, Martinez J, Whitton W, Hargreaves L, Papadimitropoulos E. Clinical Characteristics and Patient Burden of Cluster Headache in Brazil: A Real-World Study. Adv Ther 2026;43:583–99. Doi:10.1007/s12325-025-03424-z.
12. Lupi C, Evangelista L, Favoni V, Granato A, Negro A, Pellesi L, et al. Rare primary headaches in Italian tertiary Headache Centres: Three year nationwide retrospective data from the RegistRare Network. Cephalalgia 2018;38:1429–41. Doi:10.1177/0333102418768824.

Ivy Liger Riso
https://orcid.org/0000-0003-4652-681X
Otávio Augusto de Oliveira Franco
Arão Belitardo de Oliveira
https://orcid.org/0000-0001-6408-0634
Vanise Grassi
https://orcid.org/0000-0002-9859-9167
Welber Sousa Oliveira
https://orcid.org/0000-0001-7644-508X
Erlene Roberta Ribeiro dos Santos
https://orcid.org/0000-0003-3334-3408
Caio Vinicius de Meira Grava Simioni
https://orcid.org/0000-0001-7118-663X
Elder Machado Sarmento
https://orcid.org/0000-0003-4500-1376
Mauro Eduardo Jurno
https://orcid.org/0000-0002-8743-9395
Mateus Franco
https://orcid.org/0000-0003-0699-7975
Mario Fernando Prieto Peres
https://orcid.org/0000-0002-0068-1905
Vitoria Acar
https://orcid.org/0000-0003-0135-9851

**Author's contribution:** All listed authors contributed substantially to the manuscript.
**Conflicts of interest:** The authors declare no conflicts of interest.
**Funding:** This study received no specific funding.