PUBLICAÇÃO OFICIAL DO NÚCLEO HOSPITALAR DE EPIDEMIOLOGIA DO HOSPITAL SANTA CRUZ E PROGRAMA DE PÓS GRADUAÇÃO EM PROMOÇÃO DA SAÚDE - DEPARTAMENTO DE BIOLOGIA E FARMÁCIA DA UNISC

ISSN 2238-3360

Revista de Epidemiologia e Controle de Infecção

Original Article

Epidemiological profile of Chagas disease in the North and Northeast regions of Brazil (2018-2022)

Perfil epidemiológico da doença de Chagas nas regiões norte e nordeste do Brasil (2018-2022)
Perfil epidemiológico de la enfermedad de Chagas en las regiones Norte y Nordeste de Brasil (2018-2022)

Site doi: https://doi.org/10.17058/reci.v15i4.20308

Submitted: 04/02/2025
Accepted: 08/19/2025
Available online: 11/02/2025

Corresponding author:
E-mail: mayronhadsd@gmail.com
Address: Vitorino Orthiges Fernandes Street, 6123, Uruguai, Teresina, Piauí, Brazil.

Mayron Henrique Alves De Sá Dantas[1]
Gustavo Fonseca de Moura[1]

[1]Uninovafapi AFYA University Center, Teresina, Piauí, Brazil.

ABSTRACT

Background and Objectives: Chagas disease is a parasitic infection caused by the protozoan *Trypanosoma cruzi* and a public health problem in Brazil. Transmission occurs through the triatomine vector, oral, vertical, transfusional, and accidental routes. This study aims to outline the epidemiological profile of the disease in the North and Northeast regions between 2018 and 2022, analyzing case distribution and sociodemographic factors. **Methods:** This is an epidemiological and descriptive study. Data on confirmed cases of acute Chagas disease in the North and Northeast regions between 2018 and 2022 were collected using secondary data from the Notifiable Diseases Information System (SINAN). The variables analyzed include sex, age group, race/color, and mode of transmission. The data were processed using *Microsoft Excel*® and TABNET. **Results:** The state of Pará accounted for 78.29% of cases. The sex distribution was 52.26% for men and 47.74% for women. The most affected age group was 20 to 39 years (34.69%), and most cases occurred in brown individuals (83.51%). The primary transmission route was oral, associated with the consumption of contaminated food. **Conclusion:** The distribution of cases highlights the predominance of oral transmission, mainly in Pará. The epidemiological profile indicates a higher incidence among young adults and men, reflecting occupational and socioeconomic factors. The reduction recorded in 2020 suggests an impact of the Covid-19 pandemic on case reporting. The study reinforces the need for oral transmission control and expanded epidemiological surveillance.

Keywords: *Chagas disease. Epidemiology. Public Health.*

RESUMO

Justificativa e Objetivos: A doença de Chagas é uma infecção parasitária causada pelo protozoário *Trypanosoma cruzi* e um problema de saúde pública no Brasil. A transmissão ocorre por meio do vetor triatomíneo, via oral, vertical, transfusional e acidental. O estudo tem o objetivo de traçar o perfil epidemiológico da doença nas regiões Norte e Nordeste entre 2018 e 2022, analisando a distribuição dos casos e fatores sociodemográficos. **Métodos:** O estudo é epidemiológico e descritivo. Foram coletadas informações sobre casos confirmados de doença de Chagas aguda nas regiões Norte e Nordeste entre 2018 e 2022, utilizando dados secundários do Sistema de Informação de Agravos de Notificação (SINAN). As variáveis analisadas incluem sexo, faixa etária, raça/cor e modo de transmissão. Os dados foram processados no *Microsoft Excel*® e TABNET. **Resultados:** O estado do Pará concentrou 78,29% dos casos. A distribuição por sexo foi de 52,26% para homens e 47,74% para mulheres. A faixa etária mais acometida foi de 20 a 39 anos (34,69%), e a maioria dos casos ocorreu em indivíduos de raça parda (83,51%). A principal via de transmissão foi a oral, associada ao consumo de alimentos contaminados. **Conclusão:** A distribuição dos casos evidencia a predominância da transmissão oral, principalmente no Pará. O perfil epidemiológico indica maior incidência em adultos jovens e homens, refletindo fatores ocupacionais e socioeconômicos. A redução registrada em 2020 sugere impacto da pandemia de Covid-19 na notificação de casos. O estudo reforça a necessidade de controle da transmissão oral e ampliação da vigilância epidemiológica.

Descritores: *Doença de Chagas. Epidemiologia. Saúde Pública.*

RESUMEN

Justificación y Objetivos: La enfermedad de Chagas es una infección parasitaria causada por el protozoo *Trypanosoma cruzi* y un problema de salud pública en Brasil. La transmisión se produce a través del vector triatomino, vía oral, vertical, transfusional y accidental. Este estudio tiene como objetivo delinear el perfil epidemiológico de la enfermedad en las regiones Norte y Nordeste entre 2018 y 2022, analizando la distribución de los casos y los factores sociodemográficos. **Métodos:** Se trata de un estudio epidemiológico y descriptivo. Se recopilaron datos sobre casos confirmados de enfermedad de Chagas aguda en las regiones Norte y Nordeste entre 2018 y 2022, utilizando datos secundarios del Sistema de Información de Enfermedades de Notificación Obligatoria (SINAN). Las variables analizadas incluyen sexo, grupo de edad, raza/color y modo de transmisión. Los datos fueron procesados en *Microsoft Excel*® y TABNET. **Resultados:** El estado de Pará concentró el 78,29% de los casos. La distribución por sexo fue del 52,26% para hombres y 47,74% para mujeres. El grupo de edad más afectado fue de 20 a 39 años (34,69%), y la mayoría de los casos ocurrieron en individuos pardos (persona de ascendencia mixta) (83,51%). La principal vía de transmisión fue la oral, asociada con el consumo de alimentos contaminados. **Conclusión:** La distribución de los casos evidencia el predominio de la transmisión oral, principalmente en Pará. El perfil epidemiológico indica una mayor incidencia en adultos jóvenes y hombres, lo que refleja factores ocupacionales y socioeconómicos. La reducción registrada en 2020 sugiere un impacto de la pandemia de Covid-19 en la notificación de casos. El estudio refuerza la necesidad de controlar la transmisión oral y ampliar la vigilancia epidemiológica.

Palabras Clave: *Enfermedad de Chagas. Epidemiología. Salud Pública.*

INTRODUCTION

Chagas disease, also known as American trypanosomiasis, is caused by the protozoan *Trypanosoma cruzi* and has two phases: acute and chronic. The acute phase is characterized by nonspecific symptoms, such as fever, dysphagia, diarrhea, and abdominal pain, or may be asymptomatic. The chronic phase may also be asymptomatic or manifest with cardiac and/or digestive complications, such as cardiomyopathy, heart failure, megacolon, and megaesophagus. The vector of T. cruzi, the protozoan that causes Chagas disease, is the triatomine bug, popularly known as the "kissing bug", and is frequently found throughout South and Central America. Because of this, the disease is endemic in 21 Latin American countries, including Brazil.[1-3]

Globally, approximately 6 to 8 million people are infected with *T. cruzi*. Although its incidence and mortality rates have declined globally, Chagas disease remains among the four leading causes of death from infectious and parasitic diseases in Brazil. Therefore, it constitutes a significant public health problem and is a mandatory reportable disease in the Notifiable Diseases Information System (SINAN).[3,4]

One reason for the difficult to control of American trypanosomiasis in Brazil is its varied transmission methods. The main route of infection is through the contaminated feces of the "kissing bug", which enters the bloodstream through the bite. However, cases through vertical and oral transmission are increasing. The latter occurs when an individual ingests food or drinks contaminated by the infected vector (açaí or sugarcane juice, for example) and is the main mechanism of transmission in the Amazon region. Therefore, epidemiological studies are highly relevant for supporting preventive and treatment measures against the disease.[5]

This study was motivated by several critical factors related to Chagas disease's persistence and impact in the North and Northeast regions. One of these is the significant presence of precarious housing conditions, such as brick or wattle and daub houses with partially coated walls (or even no coating). These homes often have attached chicken coops, which are also linked to the proliferation of the vector. Furthermore, activities such as deforestation and livestock farming, very common in such areas, promote environmental changes that interfere with the triatomine's natural habitat, resulting in a higher risk of infection. Therefore, the North and Northeast regions constitute areas of high epidemiological concern.[6]

Given that Chagas disease is categorized as a neglected pathology, establishing a comprehensive epidemiological understanding of its presence in the North and Northeast regions is essential for developing effective control strategies.4 Consequently, the main objective of this study is to outline the epidemiological profile of Chagas disease in these regions between 2018 and 2022, analyzing the distribution of cases and associated sociodemographic factors. Our study seeks to contribute to public health in these regions by addressing specific challenges, such as oral transmission and the presence of native triatomines, and improving detection. This includes intensifying the active search for insect vectors, essential for identifying foci of infestation and preventing new cases, especially in more vulnerable areas, as well as improving disease management.[7]

METHODS

This is a descriptive epidemiological study. Reported cases of acute Chagas disease were collected in the North and Northeast regions of Brazil from 2018 to 2022. The combined population of these locations is 72,013,399 inhabitants.[8]

Information on the epidemiological profile of patients was obtained through SINAN, a system provided by the Ministry of Health. The data underlying this information were collected with the use of investigation forms completed by the local health service. Subsequently, data were stored in TABNET, a table generator developed by the Department of Information Technology of the Unified Health System (DATASUS), accessed on September 15, 2024.[22]

The variables of state of infection, year of infection, race, sex, and age group were evaluated after data collection.

The variables were analyzed using Microsoft Excel to perform stratified descriptive statistics. This quantitative approach focused on calculating the frequency of variables and presenting the results in the form of proportions.

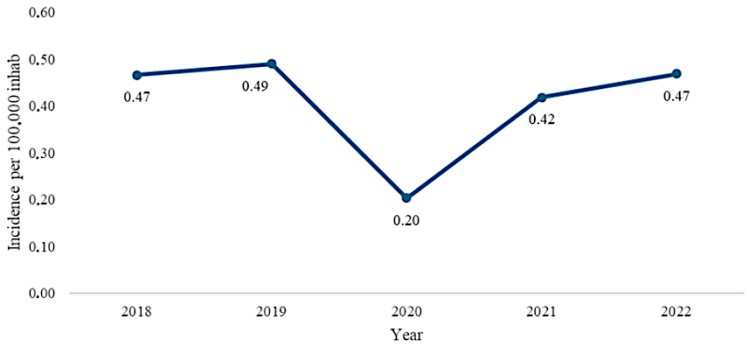
Incidence rates were calculated using TABNET to obtain the number of cases, and the Brazilian Institute of Geography and Statistics (IBGE) demographic census to obtain the resident population. TABWIN was used for this calculation.[8]

Because this is a survey using secondary data publicly available on the DATASUS and SINAN platforms, linked to the Ministry of Health, evaluation for review and approval by the Research Ethics Committee (CEP) is not required, as per Resolution No. 510/16 of the National Health Council.

RESULTS

The study analyzed the annual incidence of Chagas disease in the North and Northeast regions of Brazil between 2018 and 2022. Data over the study period show significant variation in incidence, marked by notable fluctuations (Graph 1).

Graph 1. Incidence of Chagas disease per 100,000 inhabitants in states of the North and Northeast regions, 2018-2022.



Among the metrics obtained, the peak in 2019 (0.49/100,000 population) and the reduction in 2020 (0.20/100,000 population) stand out. This suggests a decrease in the number of new cases, possibly related to the Severe Acute Respiratory Syndrome Coronavirus type 2 (SARS-COV-2) pandemic, which causes Coronavirus Disease 2019 (Covid-19). Furthermore, the fact of the incidence returning to pre-pandemic levels in the following two years reinforces the hypothesis of underreporting to the detriment of an actual decrease in new cases.

The distribution of confirmed cases of Chagas disease varied between states of the North and Northeast regions. The state of Pará accounted for most cases, highlighting the relevance of environmental and socioeconomic conditions (Table 1).[10]

Table 1. Absolute distribution of confirmed cases of Chagas disease by Brazilian state, 2018-2022.

State	Confirmed cases
Rondônia	4
Acre	41
Amazonas	88
Roraima	2
Pará	1,230
Amapá	103
Tocantins	25
Maranhão	28
Piauí	4
Rio Grande do Norte	1
Paraíba	14
Pernambuco	29
Alagoas	1
Bahia	1

The geographic distribution of the disease was heterogeneous across the states of both regions. Pará accounted for 78.29% (n=1,230) of confirmed cases during the analyzed period, followed by Amapá with 6.56% (n=103) and Amazonas with 5.60% (n=88). In the Northeast, the states of Maranhão with 1.78% (n=28) and Pernambuco with 1.85% (n=29) stood out, although with a smaller proportion of cases compared to the North region.

Regarding the sociodemographic profile of American trypanosomiasis carriers between 2018 and 2022, a slight majority of cases occurred in males, accounting for 52.26% (n=821), while women represented 47.74% (n=750). There was a predominance of individuals aged 20 to 39 years (34.69%) and of brown race (83.51%). This pattern indicates that the economically active group, more involved in rural activities and more exposed to the vector, is the most affected by the disease (Table 2).

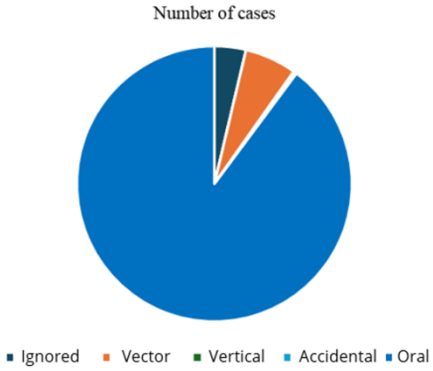
Table 2. Sociodemographic profile (sex, age group, and race) of confirmed cases of Chagas disease in the North and Northeast regions of Brazil, 2018-2022 (n=1,571).

Variables	N = 1,571
Sex	
Male	821
Female	750
Age range	
<1 year	20
1 to 4	68
5 to 9	98
10 to 14	144
15 to 19	136
20 to 39	545
40 to 59	394
60 to 64	55
65 to 69	43
70 to 79	51
80 and +	17
Race	
Ignored	24
White	119
Black	92
Yellow	3
Brown	1312
Indigenous	21

Furthermore, the analysis revealed a significant distribution of cases among children and adolescents under 14 years of age, with 21.01% of cases in this age

group. This finding may be related to vertical transmission (from mother to child) and oral transmission, especially in Amazonian regions, where consumption of contaminated foods such as açaí and sugarcane juice is common (Graph 2).

Graph 2. Modes of transmission recorded in confirmed cases of Chagas disease in Brazil, 2018-2022.



Oral transmission was significant during the study period, and the main route of infection. This type of transmission occurs when infected kissing bugs release parasites (*Trypanosoma cruzi*) into food or beverages that are later ingested by humans.

DISCUSSION

The number of new cases of Chagas disease is affected by several factors, such as socioeconomic status, geographic location, housing conditions, and access to health services. Therefore, a detailed study of its epidemiology is important.[2,10]

A decrease in the incidence rate can be observed during 2020. There were changes in the organization of society in this year caused by the Covid-19 pandemic, such as the lockdown, as well as greater awareness of the health-disease process. Therefore, hospital services dedicated most of their financial resources to combating the pandemic, expanding hospital beds and treating a growing number of suspected Covid-19 cases. However, this funding was distributed unevenly, with the minority of resources allocated to the North and Northeast regions. As a result, endemic diseases in these areas — such as American trypanosomiasis — suffered from budgetary constraints, which may have led to underreporting.[11-13]

The state of Pará accounted for the majority of cases (1,230 cases, 78.29% of the total) during the analyzed period. This high percentage is intrinsically related to the açaí cultivation in the region, since Para is the largest producer of this fruit in all of Brazil, with an average production of 120,127.10 tons from 2011 to 2017. During the harvesting and processing of açaí into pulp, there are several stages where contamination by the infected triatomine can occur. For example, nighttime harvesting can render the vector undetectable, generating a cascade of contagion. Therefore, proper sanitary handling of food is essential to reduce the spread of Chagas disease.[10,14]

Regarding the socioeconomic profile of the disease, there was a predominance of male individuals (52.26%) aged between 20 and 39 years (34.69%). Furthermore, 394 cases were recorded in the 40-59 years age group, corresponding to 25.08% of the total. These data confirm a pattern found in the literature: the older the age, the longer the exposure time and consequently, the greater the chance of acquiring American trypanosomiasis. This study also corroborates studies that find a higher prevalence in people of working age (20 to 59 years). Given the above, it is clear that Chagas disease is closely related to a specific pattern of demographic variables.[18,19]

In turn, brown race is the most affected, represented by 83.51% of cases, which may be due to the high percentage of people of this ethnicity in the North and Northeast regions (61.40% of the total population). The white group is the second most affected, as well as the second most self-reported race/color in these areas (25.23% of the total population). Therefore, there is no correlation between a specific ethnicity and more cases of acute Chagas disease, only a simple census.[8]

Oral transmission is also associated with outbreaks of the disease, both in and outside endemic regions. In 2015, 18 new cases occurred in the municipality of Marcelino Vieira (RN), an incidence 17 times higher than the regional average. All those involved reported having consumed sugarcane juice from the same source. This beverage was responsible for another outbreak, this time in Navegantes (SC), in 2005. Finally, the largest outbreak ever recorded, with 103 individuals affected, occurred in Caracas, Venezuela, due to contaminated guava juice. This shows that the range of foods susceptible to contamination goes far beyond açaí, although this is the main one.[15-17]

Another prominent method is vector-borne transmission, in which the triatomine insect inoculates contaminated feces into the individual's bloodstream. The first recorded case of this transmission — and also the first recorded case of the disease — occurred in 1909, in the city of Lassance, state of Minas Gerais. The first suspected case of oral transmission occurred only in 1969, in Belém, Pará, precisely in the state most affected by the disease. This reinforces the data and demonstrates a shift in the pattern of Chagas disease spread: once vector-driven, it is now linked to food.[20]

Finally, vertical transmission is emerging. Although this form of transmission is statistically insignificant, it poses an important public health concern, as the infected fetus will experience consequences after birth. This form of transmission is associated with endemic regions, where prenatal screening for American

trypanosomiasis is recommended. Furthermore, the drug used to treat Chagas disease (benznidazole) is highly toxic, and its administration is recommended only to pregnant women with severe disease and in the acute phase. An existing infection increases the risk of premature birth, premature rupture of membranes, and low birth weight. Given this difficult-to-treat condition with a severe prognosis, preventive measures are essential, both in relation to the vector and food consumption.[4,21]

Chagas disease is a neglected disease in Brazil, and this study highlights the importance of developing a well-defined epidemiological profile to provide data to the appropriate bodies.

Despite the relevant results, limitations were identified in the use of secondary data from SINAN, such as the possibility of underreporting and inconsistencies in records, especially in regions with less infrastructure. Furthermore, the analysis is limited to the acute phase of the disease and may not fully reflect the full picture of the chronic phase. To reduce these limiting factors, it is recommended to strengthen notification systems, train professionals in active search, locate vectors, and expand diagnostic coverage, especially in endemic areas.

It is important to emphasize that public health depends on other factors, such as education and infrastructure. Therefore, the information contained in this study can be used by Health Departments to plan Primary Care actions against American trypanosomiasis. Entomological monitoring and surveillance are also strengthened with a focus on combating the triatomine in the North and Northeast regions. Finally, the research data can inform public policies, favoring the allocation of financial resources to areas that most need it. In this way, it may be possible to reduce the incidence and morbidity and mortality of Chagas disease in the North and Northeast regions.

REFERENCES

1. Echavarría NG, Echeverría LE, Stewart M, et al. Chagas disease: chronic Chagas cardiomyopathy. Curr Probl Cardiol [Internet]. Dez 2019:100507. Disponível em: https://doi.org/10.1016/j.cpcardiol.2019.100507

2. Medina-Rincón GJ, Gallo-Bernal S, Jiménez PA, et al. Molecular and clinical aspects of chronic manifestations in Chagas disease: a state-of-the-art review. Pathogens [Internet]. 16 nov 2021;10(11):1493. Disponível em: https://doi.org/10.3390/pathogens10111493

3. Chao C, Leone JL, Vigliano CA. Chagas disease: Historic perspective. Biochim Biophys Acta (BBA) Mol Basis Dis [Internet]. Maio 2020;1866(5):165689. Disponível em: https://doi.org/10.1016/j.bbadis.2020.165689

4. MINISTÉRIO DA SAÚDE. Protocolo clínico e diretrizes terapêuticas da doença de Chagas [Internet]. 30 out 2018. Disponível em: https://www.gov.br/conitec/pt-br/midias/protocolos/pcdt_doenca_de_chagas.pdf

5. de Sousa AS, Vermeij D, Ramos AN, et al. Chagas disease. Lancet [Internet]. Dez 2023. Disponível em: https://doi.org/10.1016/s0140-6736(23)01787-7

6. Lima AF, Jeraldo VD, Silveira MS, et al. Triatomines in dwellings and outbuildings in an endemic area of Chagas disease in northeastern Brazil. Rev Soc Bras Medicina Trop [Internet]. Dez 2012; 45(6):701-6. Disponível em: https://doi.org/10.1590/s0037-86822012000600009

7. Lilioso M, Reigada C, Pires-Silva D, et al. Dynamics of food sources, ecotypic distribution and Trypanosoma cruzi infection in Triatoma brasiliensis from the northeast of Brazil. PLOS Neglected Trop Dis [Internet]. 28 set 2020; 14(9):e0008735. Disponível em: https://doi.org/10.1371/journal.pntd.0008735

8. IBGE. Panorama do Censo 2022 [Internet]. Panorama do Censo 2022. 2022. Available from: https://censo2022.ibge.gov.br/panorama/

9. Brito CV, Formigosa CD, Neto OS. Impacto da COVID-19 em doenças de notificação compulsória no Norte do Brasil. Rev Bras Em Promocao Saude [Internet]. 2022; 35:1-11. Disponível em: https://doi.org/10.5020/18061230.2022.12777.

10. Pacheco LV, Santana LS, Barreto BC, et al. Oral transmission of Chagas disease: A literature review. RSD [Internet]. 2021 Feb.17; 10(2):e31910212636. Available from: https://rsdjournal.org/index.php/rsd/article/view/12636

11. Almeida W da S de, Szwarcwald CL, Malta DC, et al. Mudanças nas condições socioeconômicas e de saúde dos brasileiros durante a pandemia de COVID-19. Rev bras epidemiol [Internet]. 2020;23:e200105. Available from: https://doi.org/10.1590/1980-549720200105

12. Araujo PMC de G, Bohomol E, Teixeira TAB. Gestão da Enfermagem em Hospital Geral Público Acreditado no Enfrentamento da Pandemia por COVID-19. Enfermagem em Foco [Internet]. 2020 Aug 3; 11(1.ESP). Available from: http://revista.cofen.gov.br/index.php/enfermagem/article/view/3650/826

13. Santos PPGV dos, Oliveira RAD de, Albuquerque MV de. Desigualdades da oferta hospitalar no contexto da pandemia da Covid-19 no Brasil: uma revisão integrativa. Saúde em Debate [Internet]. 2022;46(spe1):322–37. Available from: https://www.scielo.br/j/sdeb/a/cWGSkGP9WTZSznYjf7tPhwc/?lang=pt&format=pdf

14. D'Arace LMB, Pinheiro KAO, Gomes JM, et al. Produção de açaí na região norte do Brasil. Revista Ibero-Americana de Ciências Ambientais [Internet]. 2019 Oct 12; 10(5):15–21. Available from: http://www.sustenere.co/index.php/rica/article/view/CBPC2179-6858.2019.005.0002/1728

15. Vargas A, Malta JMAS, Costa VM da, et al. Investigação de surto de doença de Chagas aguda na região extra-amazônica, Rio Grande do Norte, Brasil, 2016. Cadernos de Saúde Pública [Internet]. 2018 Feb 5;34(1). Available from: https://www.scielo.br/j/csp/a/tvPCWVCKVkW96nr7WVDxQnt/?lang=pt&format=pdf

16. Dias JCP. Doença de Chagas: sucessos e desafios. Cadernos de Saúde Pública. 2006 Oct;22(10):2020–0. Available from: https://doi.org/10.1590/S0102-311X2006001000001

17. Alarcón de Noya B, Díaz-Bello Z, Colmenares C, et al. Large Urban Outbreak of Orally Acquired Acute Chagas Disease at a School in Caracas, Venezuela. The Journal of Infectious Diseases. 2010 May;201(9):1308–15. Available from: https://doi.org/10.1086/651608

18. Silva GG e, Aviz GB de, Monteiro RC. Perfil epidemiológico da Doença de Chagas aguda no Pará entre 2010 e 2017. Pará Research

Medical Journal. 2019;4. Available from: http://dx.doi.org/10.4322/prmj.2019.029

19. Lemos de Souza Macedo T, Marques dos Santos SC, Baptista dos Reis Rosa R, et al. Análise do perfil epidemiológico da Doença de Chagas no Brasil. Período entre 2001 e 2018. Revista de Saúde. 2021 Nov 16;12(3):42–9. Available from: https://doi.org/10.21727/rs.v12i3.2514

20. Muniz A, Silva F, Bruno V, et al. PERFIL DE TRANSMISSÃO DA DOENÇA DE CHAGAS NO BRASIL: 2008 A 2020. Revista Presença [Internet]. 2020; 7(15):22–42. Available from: https://sistema.celsolisboa.edu.br/ojs/index.php/numerohum/article/view/354

21. MANUAL DE GESTAÇÃO DE ALTO RISCO Brasília -DF 2022 MINISTÉRIO DA SAÚDE [Internet]. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/manual_gestacao_alto_risco.pdf

22. Brasil. Ministério da Saúde. Doenças e Agravos de Notificação – SINAN (a partir de 2007) [Internet]. Brasília: Ministério da Saúde; 2024. Disponível em: https://datasus.saude.gov.br/acesso-a-informacao/doencas-e-agravos-de-notificacao-de-2007-em-diante-sinan/

AUTHORS' CONTRIBUTIONS

Mayron Henrique Alves De Sá Dantas was responsible for data collection and table preparation, and contributed to writing the introduction, methodology, results presentation, discussion, and reference formatting. **Gustavo Fonseca de Moura** was responsible for defining the title, project layout and graph preparation, and contributed to writing the introduction, methodology, results presentation, discussion, and reference formatting.

All authors approved the final version to be published and are responsible for all aspects of the work, including ensuring its accuracy and integrity.

Please cite this article as: Dantas MHAS, de Moura GF. Epidemiological profile of Chagas disease in the North and Northeast regions of Brazil (2018-2022). Rev Epidemiol Control Infect [Internet]. 2025 Nov. 2;15(3). Available from: https://seer.unisc.br/index.php/epidemiologia/article/view/20308