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ORIGINAL ARTICLE

# Prevalence of infectious diseases in a municipal hospital in Belem, northern Brazil

## *Prevalência de doenças infecciosas em um hospital municipal em Belém, Norte do Brasil*

## *Prevalencia de enfermedades infecciosas enun hospital municipal de Belém, norte de Brasil*

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## ABSTRACT

**Background and objectives:** Infectious diseases are still a public health problem in Brazil. Therefore, this study aimed to determine the prevalence of infectious diseases in a reference hospital in the city of Belem, Para, Brazil. **Methods:** From May 2018 to August 2019, the number of cases of individuals with compulsory infections was observed. **Results:** Regarding the research period in which data were obtained from May 2018 to August 2019, a total of 263 cases were affected in the hospital and in 2019 there was an increase in the number of cases and 373 records were reported. The following results were obtained: in 2018, the highest rate of infection was caused by influenza at the rate of 17%, and in 2019 it remained at the same percentage rate and ranked secondly. **Conclusion:** These data are very important for the epidemiological knowledge of the population, elucidating the highest case rates and lowering other diseases related to this study, as well as their harms and treatment.

***Descriptors:*** *Admission. Endemicity. Hospital. Notification.*

## RESUMO

**Justificativa e objetivos:** As doenças infecciosas ainda são um problema de saúde pública no Brasil. Por isso, este estudo teve como objetivo determinar a prevalência de doenças infecciosas em um hospital de referência na cidade de Belém, Pará, Brasil.**Métodos:** Foi observado, no período de maio de 2018 a agosto de 2019, número de casos de indivíduos acometidos com infecções de caráter compulsório. **Resultados:** Em relação ao período da pesquisa, no qual foram obtidos os dados de maio de 2018 a agosto de 2019, os resultados apontam que, nos meses de maio a dezembro de 2018, foram acometidos 263 casos no hospital e, em 2019, houve o aumento do número de casos, sendo notificados 373 registros. Obtiveram-se os seguintes resultados: no ano de 2018, a maior taxa de infecção foi causada pela influenza, com a taxa de 17%; em 2019, se manteve com a mesma taxa de percentual, ficando em segundo lugar. **Conclusão:** Esses dados são de suma importância para o conhecimento epidemiológico



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da população, elucidando sobre os maiores índices de casos e o decréscimo de outras doenças relacionadas a este estudo, bem como seus agravos e tratamento.

***Descritores:*** *Internação. Endemicidade. Hospital. Notificação*

## RESUMEN

**Justificacción y objetivos:**lasenfermedades infecciosas siguensiendoun problema de salud pública en Brasil. Por lo tanto, este estudiotuvo como objetivo determinar laprevalencia de enfermedades infecciosas enun hospital de referenciaenlaciudad de Belém, Pará, Brasil. **Métodos:** desde mayo de 2018 hasta agosto de 2019, se observó el número de casos de personas con infecciones obligatorias. **Resultados:** En cuanto al período de la encuesta en el que se obtuvieron datos de mayo de 2018 a agosto de 2019, los resultados indican que de mayo a diciembre de 2018, 263 casos fueronafectadosenel hospital y en 2019 huboun aumento enel número de casos y se reportaron 373 registros. Se obtuvieronlossiguientes resultados: en 2018, latasa más alta de infecciónfue causada por la influenza a una tasadel 17%, y en 2019 se mantuvoenlamismatasa porcentual y ocupóel segundo lugar. Seguido de tuberculosis, donde el 15% de los casos notificados se registraronen 2018. En comparación con 2019 (19%) hu boun aumento del 4% enel número de personas afectadas, ocupando el primer lugar enel ranking de enfermedades notificadas.Seguido por el virus del SIDA donde se registró el 8% de los casos registrados, en comparación con 2019 (6%) se observó hasta ahora una disminución del 2% en el número de casos. **Conclusión:**Estos datos son muy importantes para el conocimiento epidemiológico de la población, ya que dilucidan las tasas de casos más altas y disminuy en otras enfermedades relacionadas con este estudio, sus enfermedades y su tratamiento.

***Palabras Clave:*** *Internamiento. Endemicidad. Hospital. Notificación*

## INTRODUCTION

Infectious diseases are still a public health problem in Brazil, although the proportion of total deaths from this cause has fallen from 50% to 5% over the past eighty years. A large proportion of deaths from infectious diseases in Brazil are caused by respiratory infections, and deaths from these infections have become more common in adults than in children.[1,2]

Infectious and parasitic diseases are a cause of infant death closely related to socioeconomic and environmental factors. For certain population groups, its occurrence is more significant due to the precarious living conditions. This group of diseases stands out as one of the main causes of hospital admissions and infant mortality in Brazil and worldwide.[3,4-6]

The occurrence of these diseases reveals the population's health and life levels, which can be used as health indicators for the planning of public policies. Information on mortality rates, where they occur and who is most affected provides a crucial contribution to debates on policies, planning, interventions, as well as the prioritization of new research in health technologies, undoubtedly an essential measure for health analysis of a population.[7,8]

Tuberculosis (TB) is an infectious disease, caused by the bacterium *Mycobacterium tuberculosis*, which mainly affects the lungs and can develop in other organs of the body, such as bones, kidneys and meninges, and the clinical manifestations are directly related to the affected organ.[9]

Meningitis is an infectious disease characterized by inflammation of the meninges, having several causal factors, infectious or not. Among the infectious causes, the main ones are of viral or bacterial etiology.[10]

Chagas' disease belongs to the group of neglected diseases, which are caused by endemic infectious agents, especially in developing countries, in poor populations without adequate basic sanitation. According to data from the World Health Organization (WHO), more than a billion people are infected with one or more etiologic agents that cause neglected diseases, which represents one sixth of the world population.[11]

Dengue, a negligible tropical disease, considered the vector-borne disease with the highest growth in the world, occurs in a total of 128 countries, with about 4 billion people at risk. It is considered a Public Health problem in Brazil and has great epidemic potential, currently affecting all regions of the country, with emphasis on the Northeast.[12-14]

AIDS (Acquired Immunodeficiency Syndrome), transmitted by the HIV virus, is characterized by the weakening of the body's defense system and the appearance of opportunistic diseases. The HIV virus is transmitted through unprotected sexual intercourse (vaginal, anal or oral) with an HIV-positive person, through the sharing of contaminated sharps, such as needles, nail pliers, among others, from an HIV-positive mother without treatment for her child during pregnancy, childbirth or breastfeeding. In Brazil, from 2000 to June 2018, a total of 116 292 pregnant women were notified infected with HIV, of which 7882 notifications occurred in 2017, with a detection rate of 2.8/1000 live births (Department of Surveillance, Prevention and Control of Sexually Transmitted Infections, HIV/AIDS and Viral Hepatitis, from Health Surveillance Secretariat, Ministry of Health).[15,16]

Considering this scenario, this study aimed to determine the prevalence of infectious diseases in a reference hospital in the city of Belem, Para, Brazil.



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## METHODS

A cross-sectional, quantitative study was carried out, in which data were obtained from the Mario Pinotti Municipal Hospital and Emergency Service (HPSMMP), in Belem, in the state of Para.

The analyzes were carried out from May 2018 to August 2019. The results of the testshad been reported in the system, claiming the most current years and the infectious and contagious pathologies. Considering that the data were in a standardized table, it was decided to include the months and periods mentioned.

The diseases observed are of Compulsory Notification at the Epidemiological Surveillance Service: Chikungunya, Dengue, Chagas Disease, Schistosomiasis, Hepatitis, AIDS, Influenza, Exogenous Intoxication, Visceral Leishmaniasis, Leptospirosis, Malaria, Meningitis, Accidental Tetanus, Tuberculosis, Varicella, Violence, Varicella, Interpersonal violence, Zika, Human rabies, Work accident, Whooping cough, Acute flaccid paralysis, Typhoid fever, Measles, Hansen's disease, Toxoplasmosis and Rubella.

The data collected through epidemiological notifications of the diseases and conditions notified by the HPSMMP, referring to infection indicators, were in a Microsoft Office Excel 2007 spreadsheet, for the application of the prevalence rate of the diseases of compulsory notification. As it was a research that had neither access to the patients' medical records nor direct contact with them, it did not need to be submitted to REC. Thus, because these data were only numerical, we do not know their gender, color and age, so there was no need for ICF and TCUD. Data analysis was carried out by promoting the rate calculation (percentage).

## RESULTS

From May to December 2018 and from January to August 2019, a total of 636 individuals with various infections were observed in the HPSMMP, with emphasis on the distribution of the number of diseases according to the Epidemiological Surveillance Service (Figure 1). The analyzes were calculated according to the prevalence percentage, in which the percentage obtained was applied at the percentage rate so that the prevalence of these infections could be identified. It should be noted that the five most frequent diseases were considered, and secondly, diseases caused by bacteria. As an example, tuberculosis cases, which represent 15% of infectious diseases in 2018, are observed.

Only an increase of five of these infections was observed in 2019. Influenza is one of the diseases with a percentage of 17% in 2018, which remained in 2019 with the same percentage rate, ranking secondly. As stated in the method, data were obtained from the Mario Pinotti Municipal Hospital and Emergency Service (HPSMMP), located in Belem, in the state of Para. The comparison of diseases reported in 2018 to 2019 is shown, showing the level of increase and decline regarding some diseases in the different years (Figure 1).

Some diseases were not included in the figure, as they had no comparison from the other year, as Chagas disease and Hepatitis, both with 6% prevalence in 2018.

## DISCUSSION

In Brazil, in 2009, a total of 88464 cases of Severe Acute Respiratory Syndrome (SARS) were reported, of

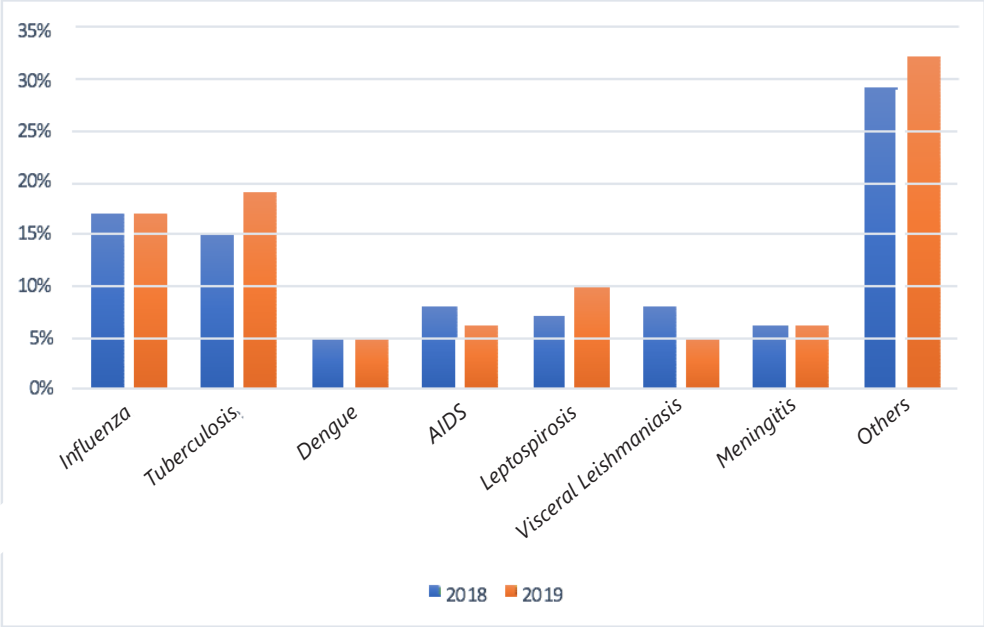


**Figure 1.** Most prevalent diseases with epidemiological notification from May 2018 to August 2019.



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which 50482 were confirmed as influenza A (H1N1), with 2060 deaths.[17] After the pandemic year in 2009, influenza A (H1N1) was more frequent in 2012 and 2013. In the following two years, 2014 and 2015, the predominant influenza virus was influenza A (H3N2). Again, in 2016, influenza A (H1N1) is the main agent, and its circulation occurred before the seasonality period. In 2017, the predominance among influenza viruses was A (H3N2), which exceeded the circulation pattern of 2014 and 2015 (Brazil, 2017).[18] In the state of Rio de Janeiro, there were 5293 cases of SARS, with a total of 2777 confirmed cases.[17] According to the WHO, it is estimated that the occurrence of cases of influenza varies from mild to severe and may even lead to death. Hospitalization and death occur mainly among high-risk groups. Worldwide, these annual epidemics are estimated to result in about 3 to 5 million cases of serious illness and about 290000 to 650000 deaths.[19]

The second disease reported with the highest number of cases observed in 2018 (15%) was tuberculosis. Compared to 2019 (19%), there was a 4% increase in the number of individuals affected, moving to the first position in the ranking of notified diseases. In the country, the disease is a serious public health problem, with deep social roots.[20] In 2017, it is estimated that 10 million people became ill from tuberculosis (TB) and that the disease caused 1.3 million deaths worldwide, which keeps TB among the top 10 causes of death on the planet.[21]

In 2018, the third disease found in greater number was AIDS (8%), compared to 2019 (6%), with a decrease of 2% in the number of cases so far. The latest estimate for the number of people living with HIV and AIDS in the world was approximately 37 million. In 2017, there were at least 1.8 million cases of new infections and a total of 940 thousand deaths among adults and children due to AIDS.[22] From June 1980 to June 2017, 882 810 AIDS cases in Brazil has already been notified to the Ministry of Health, with the highest concentration of cases in the Southeast, South and Northeast, with 52.3%, 20.1% and 15.4%, respectively. The Middle-West and North regions had approximately 6% of the total cases in the period.[23]

As for leptospirosis, a 3% increase in the number of cases was observed in 2019, compared to 2018. This infection is caused by a bacterium of the genus Leptospira, being transmitted to men by the urine of rodents, with a high incidence in certain areas.[24] In a study on the time-space distribution of leptospirosis and risk factors in Belem, the relationship between environmental and socioeconomic risk factors with the occurrence of the disease was reported.[25] This fact confirmed the need for continuity of studies on leptospirosis and its socioenvironmental determinants, regarding its breakdown at local scales, so that it is possible to establish measures to mitigate the disease in its various aspects.

The infectious diseases found in Brazil, which especially affect the North region, are extremely important for the population's epidemiological knowledge. Thus, the data presented here can contribute to actions for the prevention of these diseases, elucidating the highest rates of cases and the decrease in other diseases related to this study, its problems and treatment, so that society know about the diseases that most affect the population.

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**Jhuly Leal Souza** and **Gleycy Kelly Vinagre Melo** contributed to the design, statisticsand analysis of the article;

**Laura Maria Costa Correa** contributed to the organization and synthesis of the article.

**Carla de Castro Sant' Anna** organization, supervision and editing of the manuscript

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