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Longitudinal analysis of morbidity and mortality due to septicemia and comparison with number of beds in Brazilian states

Análise longitudinal da morbimortalidade por septicemia e comparação com número de leitos nos estados brasileiros

Análisis longitudinal de la morbimortalidad por septicemia y comparación con el número de leitos en los estados brasileños

Ana Laura Pelissaro Pereira[1], **Beatriz Orlandi Rodrigues**[1], **Kelser de Souza Kock**[1]

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[1] University of Southern Santa Catarina (UNISUL), Department of Medicine. Tubarão, Santa Catarina, Brazil

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ABSTRACT

Introduction: Sepsis is a serious organic dysfunction triggered by the body's unregulated response to infection, with globally increasing morbidity and mortality rates. In Brazil, challenges such as inequality in bed availability affect management. **Aim:** To analyze morbidity and mortality due to sepsis in 2012 and 2022 in Brazilian states, relating them to the number of hospital beds. **Outlining**: ecological time series study, with data collected from DATASUS. The dependent variables were morbidity and mortality and lethality due to septicemia, and the independent variables included time and number of beds. **Results:** A significant increase in morbidity and mortality cases was observed in Brazil and in most Brazilian states. The average lethality was 45.09%, with extremes in Rio de Janeiro (58.2%) and Roraima (25.9%). Analysis by age range showed an increase with age and similarity between genders. Significant positive correlations were demonstrated between number of beds and morbidity and mortality and negative correlation with lethality. **Implications**: this study provides the basis for implementing measures that aim to improve the care and prevention of septicemia in Brazil, inferring that states with a greater number of hospital beds have better quality and access to care and, therefore, greater diagnostic and treatment capacity.

DESCRIPTORS

Sepsis; Morbidity; Mortality; Hospital Bed Capacity.

Corresponding Author:
Kelser de Souza Kock
Address: 787 José Acácio Moreira Avenue, Dehon. Tubarão, Santa Catarina, Brazil.
ZIP Code: 88704-900 - Tubarão, Santa Catarina, Brazil.
Phone: +55 (48) 3279-1000
E-mail: kelserkock@yahoo.com.br

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INTRODUCTION

As established in the Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3), sepsis is characterized as a life-threatening organic dysfunction caused by a dysregulation in the body's response to infection. This consensus, driven by groups of experts convened by the Society of Critical Care Medicine and the European Society of Intensive Care Medicine, represents the most recent update to the definitions and clinical criteria of sepsis.[1] The proposed modifications aimed to provide greater specificity in differentiating sepsis from the normal response to inflammation and other inflammatory conditions, while also facilitating early recognition of sepsis in the context of everyday clinical practice.[2]

The incidence and mortality rates related to septicemia have shown significant increases in recent decades.[3] Globally, around 31.5 million cases of sepsis and 19.4 million cases of severe sepsis are estimated, with potentially 3.5 million deaths annually.[4] Furthermore, survivors may face a variety of sequelae, including the development of functional limitations, cognitive impairment, mental health disorders, risk of recurrent infections, and worsening of pre-existing medical conditions.[5] Sepsis can also be associated with high late mortality rates, as more than one in five patients who survive the disease end up dying in the following years.[3]

In Brazil, there was a 50.5% increase in the incidence of sepsis between 2006 and 2015, following the similar trend observed in other countries. However, it is possible to observe that mortality rates are remarkably high, reaching 46.3% overall and 64.5% for admissions to Intensive Care Units (ICU). These numbers are higher compared to those found in countries with a Human Development Index (HDI) similar to Brazil.[6] One of the possible explanations is population aging, which is related to increased life expectancy in the country.[7] This is evidenced by the association between age and death (for each additional year, the probability of dying increases by 1.036 times), however, it is worth highlighting that this is not indicated as an isolated factor for worsening mortality. These rates also present significant discrepancies between public (55.5%) and private (37%) hospitals, which could be attributed to possible delays in diagnosis and treatment, as well as the lower availability of resources in Brazilian public hospitals.[6,8]

Studies published in 2018 prove that the average length of stay required for septic patients is 9 days in a ward bed and 8 in ICU beds.[6,9] Based on the scarcity of resources currently experienced by the SUS, the faster these patients are diagnosed and managed, the greater the number of available vacancies. Therefore, the implementation of a protocol that speeds up this process could benefit both the patient's survival and the reduction of hospitalization time. This finding was evidenced by an American study in a hospital in Bogotá, in which the implementation of a package of basic initial care strategies for patients with suspected septicemia reduced the length of hospital stay by 31%.[9]

In addition to the problems related to the prolongation of hospitalization time, sometimes caused by the use of outdated diagnostic techniques, Brazil faces difficulties in providing public beds and resources necessary to receive and treat the sick ones. Research carried out by the Oswaldo Cruz Foundation confirmed a great disparity in resources and beds between the regions of the country, where the regions most provided with public support, the South and Southeast Regions, are also the regions with the highest percentage of health insurance beneficiaries.[6-9,10]

In this way, it is important to analyze the Brazilian situation regarding the availability of access to necessary hospital care, given that 71% of the population has the Unified Health System (SUS) as their only support.[11] Taking into account data from the Brazilian Institute of Geography and Statistics (IBGE) in 2020, there are 22844 public ICU beds for 213.2 million inhabitants, creating a proportion that

is in line with what the World Health Organization (WHO) and the Ministry of Health recommend, 1 to 3 beds per every 10 thousand inhabitants.[12-13] Although the quantity is within standards, the distribution across the national territory is extremely deficient, as less than 10% of municipalities have intensive care units and, in 19 States, there are fewer of beds than indicated by the WHO. This is at odds with the minimum considered suitable for good management of critically ill patients, as a large part of the population will not have immediate access to the necessary treatment, much less have life-sustaining devices available.[10,13]

Regarding the distribution of ICU beds in the national territory, the region that has the largest number of beds is the Southeast, which contains 24 thousand beds, both public and private, where just over 10 thousand are directed to users of the public network.[14-15] Considering that this region is the most populated in the country, where around 60 million people have the SUS as their only health system, the proportions requested by the Ministry of Health are not met in the location with the most patronage and qualified manpower.[13,15] Following the same line is the Midwest region, where there is a high proportion of beds/inhabitants with 2.5 beds/10 thousand inhabitants. However, this indicator can lead to the illusion that basic survival needs are being met.

However, when examining these values in detail, a significant disparity is observed: 1.2 in the public network compared to 8.3 in the private sector. This discrepancy contradicts the principle of universality of SUS, possibly violating the constitutional right that guarantees access to health as a right for all citizens, with the State being responsible for its provision.[13,14-15] The least supported regions, in this sense , are to the Northeast and North, with 1 bed per 10 thousand inhabitants and 0.9 bed per 10 thousand inhabitants.[15] The disparity between what would be ideal and what is offered is the main factor in the issue, disregarding this by analyzing the numbers in a superficial way, is, in addition to being illusory, a great disadvantage for the population.

In this sense, and based on the countless unknowns that involve the rapid unfavorable evolution of septic patients, the high mortality rates and the disparity in the provision of public beds across the country, the aim of the present study was to analyze hospital morbidity and mortality due to sepsis in the period of 2012 to 2022 and compare with the number of beds in Brazilian states. In addition to the above, the study is extremely important due to the high incidence of sepsis in the medical-hospital environment, as well as its ability to promote a deeper understanding of the relationship between the number of beds, hospitalization and clinical evolution in septicemia.

METHOD

Study design

An ecological, time-series study was carried out, using hospital morbidity, mortality and lethality cases from septicemia in the period 2012 to 2022 as a database and comparing them with the number of hospital beds in Brazilian states.

Context

The records on hospital morbidity and mortality from unspecified septicemia (ICD A41.9) were analyzed and collected from the Ministry of Health's DATASUS database, using the TABNET application, using the variables from 2012 to 2022 in the Brazilian states.[16]

Variables

Morbidity and mortality rates due to septicemia were calculated using the ratio between the frequency of hospitalizations and deaths and the estimated population for each year and state of residence, the result multiplied by the constant 100,000 (inhabitants), according to the equations below:

Hospital morbidity rate = (number of hospitalizations carried out each year in a given Brazilian state / estimated population for each year in the same Brazilian state) x 100,000

Mortality rate = (number of deaths registered each year in the Brazilian state / estimated population for each year in the Brazilian state) x 100,000

Population data originated from 2010 census data and intercensal estimates for the other years, provided by IBGE and mirrored by Datasus.[16]

Data on the distribution of morbidity and mortality due to septicemia were collected in the variables sex and age range in the total study period, from 2012 and 2022, in the Brazilian states. Among the exclusion criteria, hospitalizations of non-residents in Brazilian states admitted to hospital units in Brazilian states and cases whose records showed omissions (data ignored or unavailable) in the variables selected for the study were considered.

The dependent variables of the study were hospitalization and mortality due to septicemia (ICD A41.9) and Brazilian federative units of residence (Acre, Alagoas, Amapá, Amazonas, Bahia, Ceará, Distrito Federal, Espírito Santo, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraíba, Paraná, Pernambuco, Piauí, Rio de Janeiro, Rio Grande do Norte, Rio Grande do Sul, Rondônia, Roraima, Santa Catarina, São Paulo, Sergipe and Tocantins). As independent variables, time (years) and number of hospital beds were considered.[16]

Hospital bed rates were calculated using the ratio between hospitalization beds and the estimated population for each year and state of residence, the result multiplied by the constant 100,000 (inhabitants), according to the formula below:

Hospital bed rate = (number of beds each year in the Brazilian state / estimated population for each year in the Brazilian state) x 100,000.

Statistical methods

The data was organized and stored in Microsoft Excel software and analyzed in the Statistical Package for the Social Sciences (SPSS) Version 20.0.[Computer program]. *Chicago: SPSS Inc; 2009*. Quantitative variables were described using measures of central tendency and data dispersion. Qualitative variables were described using absolute and percentage frequencies. Linear regression was performed to analyze the temporal trend of morbidity and mortality due to septicemia in Brazilian states and correlate it with the number of beds. The level of statistical significance adopted was 5% (p value < 0.05).

Ethical and legal aspects

As the proposed study was of an ecological one, the database used as a data source is public domain, free access and does not contain information on the identity of the participants or any personal information that allows individual identification or puts the confidentiality of the data at risk. Due to the above, and as stated in Resolution of the National Health Council (CNS) 510/2016, article 1, Sole Paragraph, Items II, III and V, this project does not fall within the terms of CNS Resolution 466/2012 for registration and analysis by Ethics Committees for Research Involving Human Beings.

RESULTS

The results of the present study demonstrated that, in 2012, the morbidity rate ranged from 6.0 in Roraima to 76.9 in Paraíba, in 2022, the rate ranged from 26.2 in the State of Maranhão to 117.0 in Rio Grande do Sul. Thus, the predominance of "Increasing" morbidity was demonstrated in most states from 2012 to 2022, a fact that indicates an increase in the incidence of septicemia in the country.

As for the mortality rate, in 2012 it ranged from 2.5 in Roraima to 28.4 in São Paulo. In 2022, the pattern continued in Roraima, which, despite the increase, continued to have the lowest rate, with

6.8, and the peak was in Rio de Janeiro with 48.1. The trend in mortality rates was also generally "Increasing" in most states from 2012 to 2022, indicating an increase in the number of deaths, in line with data regarding morbidity in the same period.

It is important to highlight the "Stability" present in some States in morbidity and mortality rates throughout the period. Table 1 presents information regarding morbidity and mortality rates for different federative units (UF) in Brazil between 2012 and 2022.

Table 1. Hospitalization and Mortality Rates due to septicemia (/100 thousand inhabitants) according to the federative unit and year of occurrence. Brazil, 2012 and 2022.

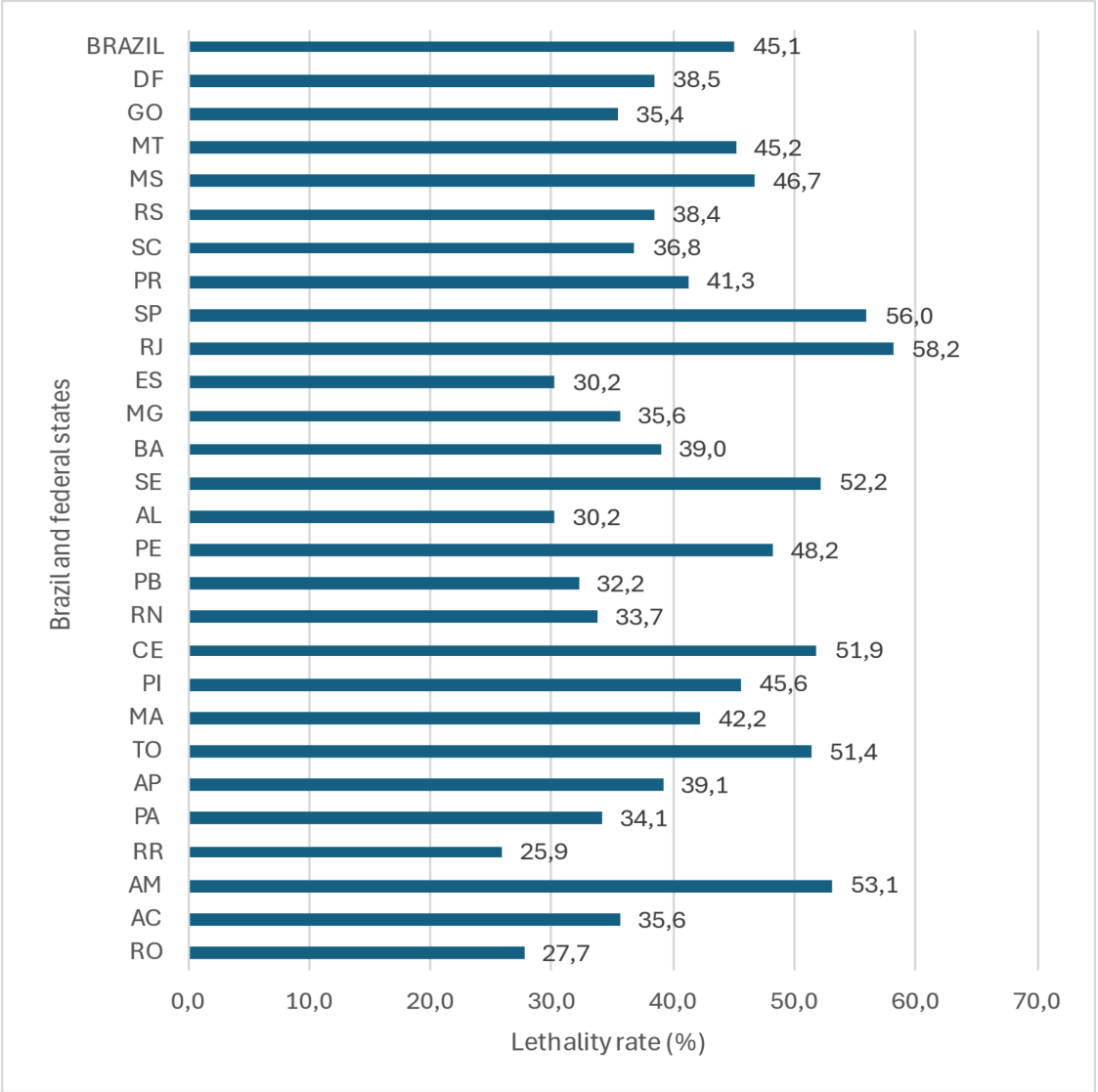
	Morbidity Rates			Mortality Rates		
FU	**2012**	**2022**		**2012**	**2022**	
RO	23,2	84,5	Stability	11,4	17,1	Growing*
AC	14,6	33,1	Growing*	6,3	14,0	Growing*
AM	33,3	51,7	Growing*	15,6	30,7	Growing*
RR	6,0	63,1	Growing*	2,5	6,8	Growing*
PA	27,8	47,3	Growing*	9,1	16,2	Growing*
AP	13,3	29,2	Stability	6,3	13,6	Stability
TO	17,7	36,5	Growing*	6,8	19,7	Growing*
MA	20,1	26,2	Stability	7,9	10,8	Stability
PI	15,4	28,6	Growing*	7,0	12,8	Stability
CE	25,4	73,4	Growing*	13,0	36,7	Growing*
RN	40,3	70,3	Stability	12,6	20,8	Stability
PB	76,9	43,7	Stability	13,3	18,0	Stability
PE	33,9	84,4	Stability	9,4	41,9	Growing*
AL	41,6	32,9	Stability	5,0	11,5	Stability
SE	14,0	43,3	Growing*	7,7	22,0	Growing*
BA	24,8	36,2	Growing*	9,4	14,6	Growing*
MG	64,4	102,5	Growing*	23,0	39,5	Growing*
ES	39,1	69,8	Growing*	12,7	23,4	Growing*
RJ	43,9	82,6	Growing*	21,8	48,1	Growing*
SP	50,7	77,9	Growing*	28,4	42,3	Growing*
PR	54,2	92,3	Growing*	22,4	41,3	Growing*
SC	46,0	82,6	Growing*	16,4	32,8	Growing*
RS	64,7	117,0	Growing*	23,8	46,3	Growing*
MS	13,3	27,1	Growing*	6,1	12,7	Growing*
MT	42,2	59,7	Stability	19,5	23,7	Stability
GO	11,3	36,4	Growing*	4,2	13,5	Growing*
DF	36,6	84,8	Growing*	17,7	25,6	Stability
Brasil	42,4	71,7	Growing*	18,0	32,8	Growing*

Legend: * $p < 0.05$
Source: DATASUS (2012-2022).

Figure 1A shows the lethality rate due to septicemia in Brazilian states during the period from 2012 to 2022. The lethality rate for "Septicemia" in Brazil was 45.09%. The state of Rio de Janeiro (RJ) had the highest mortality rate from "Septicemia" during the period, at 58.2%. It can be observed that 10 States with rates above the national average: Rio de Janeiro, São Paulo, Amazonas, Sergipe, Ceará, Tocantins, Pernambuco, Mato Grosso do Sul, Mato Grosso and Piauí. And, on the other hand, the state of Roraima (RR) had the lowest mortality rate, at 25.9%.

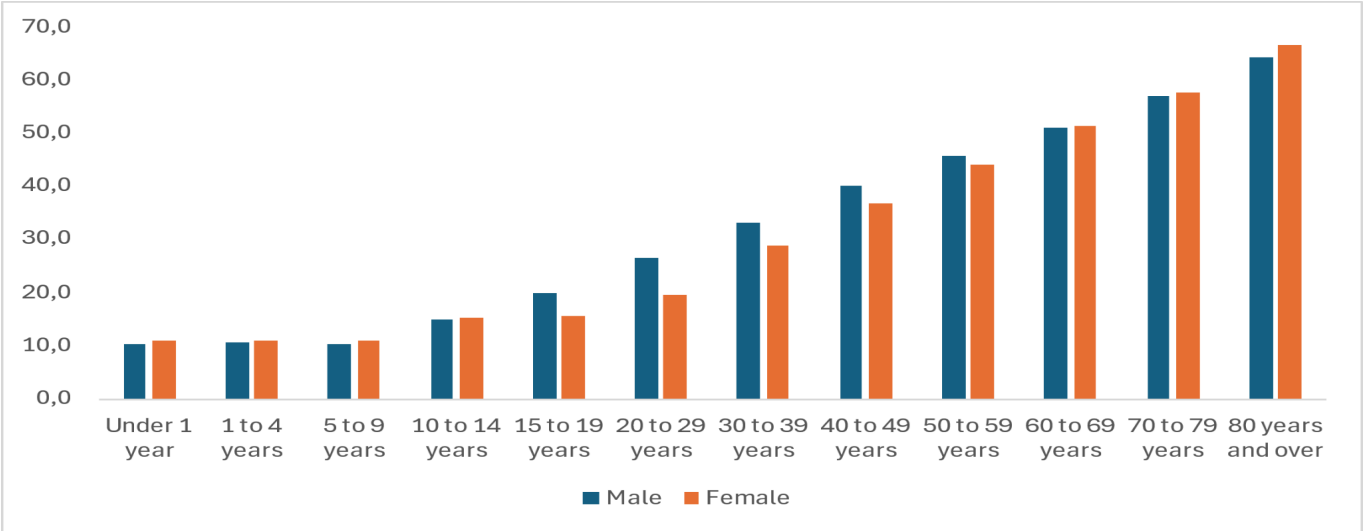
In Figure 1B, the lethality rate was split by age groups and between male and female sex. The age range with lowest mortality rate is "under 1 year", being slightly higher for men. It is noted that mortality rates tend to increase with age. Younger age ranges such as "1-4 years", "5-9 years" have lower rates compared to older age ranges. The "80 years and over" age range has the highest mortality rate at 65.61%. The rates for men and women are relatively close.

Figure 1A. Average lethality rate due to septicemia (%) according to the federative unit in the period 2012-2022.



Source: DATASUS (2012-2022).

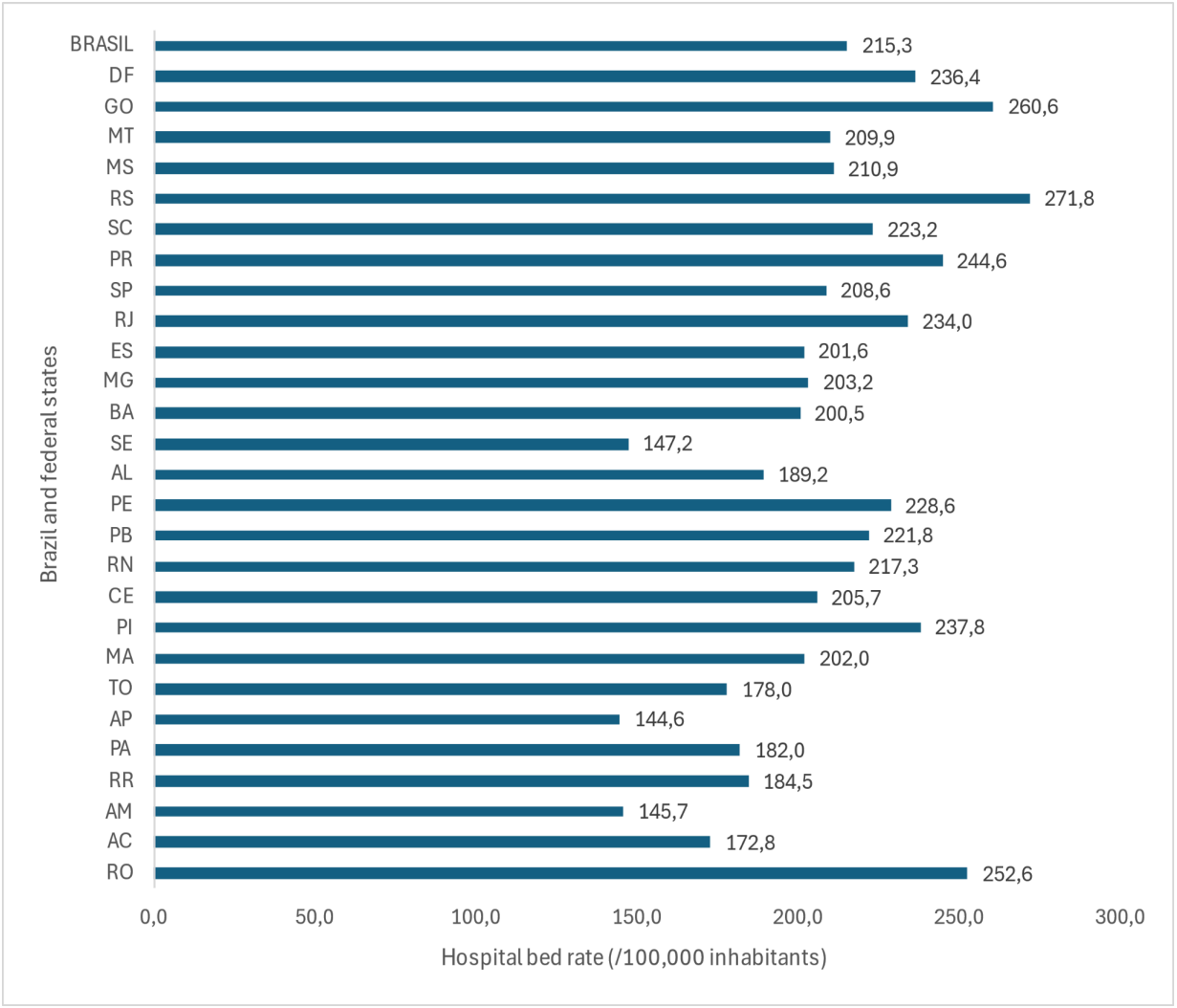
Figure 1B. Average lethality rate due to septicemia (%) according to age range and sex in the period 2012-2022.



Source: DATASUS (2012-2022).

In Figure 2, the data represents the number of hospital beds per 100,000 inhabitants for each state in Brazil, as well as the national average, which was 215.3. The State of Rio Grande do Sul (RS) was the one with the highest rate, with 271.8 beds for every 100 thousand inhabitants. In contrast, there is Amapá (AP) with 144.6 beds for every 100 thousand inhabitants. Furthermore, it is possible to analyze that the lowest rates are concentrated in the North and Northeast regions of the country.

Figure 2. Average number of beds in Brazilian states (/100 thousand inhabitants) in the period 2012-2022.



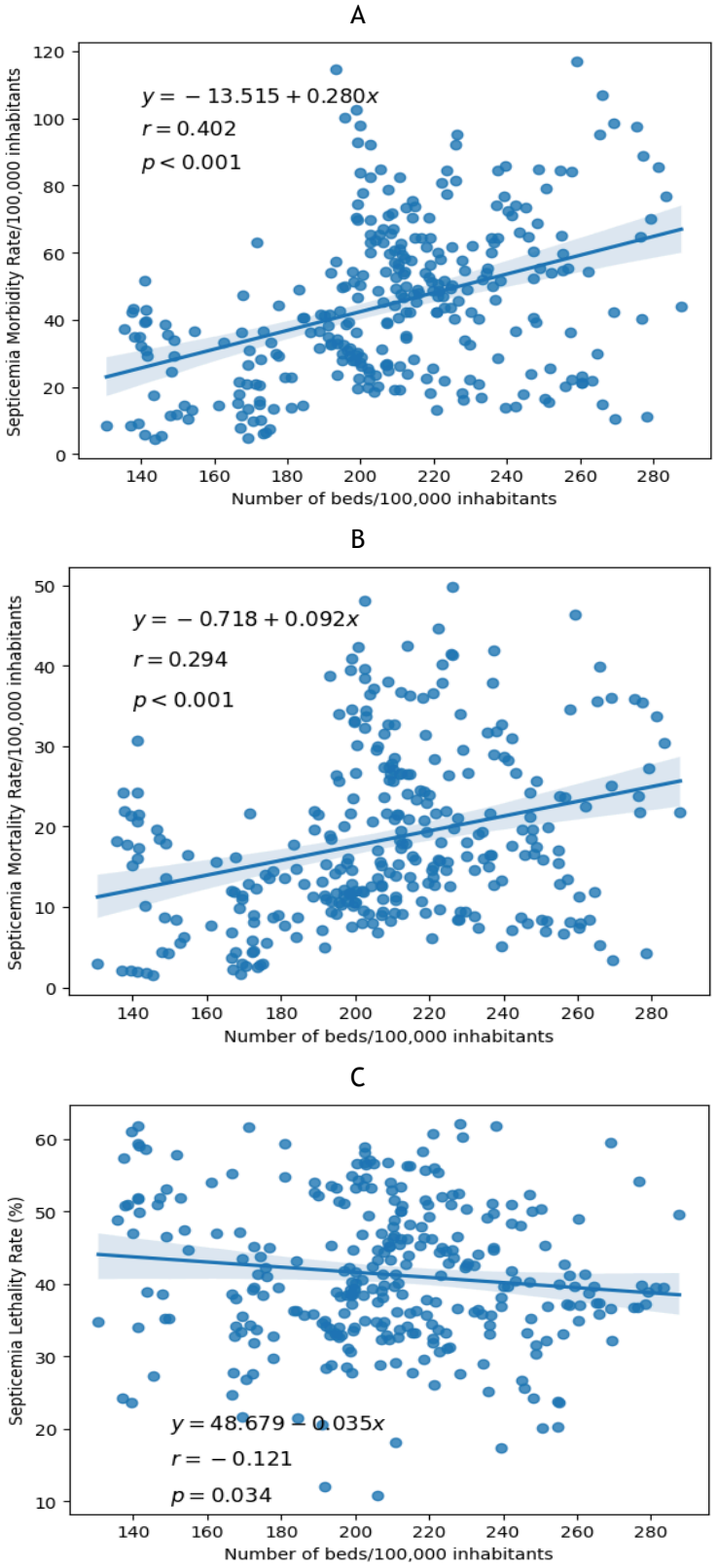
Source: DATASUS (2012-2022).

Figure 3 shows in the form of scatter plots comparing the number of beds in Brazilian states in relation to morbidity, mortality and lethality due to septicemia in Brazil.

In Figure 3A, a significant moderate positive correlation can be observed between number of beds and morbidity due septicemia. The angular coefficient indicates that for each increase of 10 beds/100 thousand inhabitants there is an increase of 2.8 cases/thousand inhabitants of hospitalization due to septicemia.

In relation to Figure 3B, a significant weak positive correlation between number of beds and septicemia mortality can be demonstrated. The angular coefficient indicates that for each increase of 100 beds/100 thousand inhabitants there is an increase of 9.2 cases/thousand inhabitants of mortality due to septicemia. When it comes to Figure 3, a negative weak correlation between the number of beds and lethality due septicemia can be observed. The angular coefficient indicates that for each increase of 100 beds/100 thousand inhabitants there is a 3.5 % reduction of lethality due to septicemia.

Figure 3. Correlation number of beds in Brazilian states x morbidity, mortality and lethality due to septicemia.



Source: DATASUS (2012-2022).

DISCUSSION

This study provided an analysis of morbidity, mortality and lethality resulting from septicemia in Brazil between 2012 and 2022, which made it possible to correlate these findings with the disparity in the distribution of hospital beds between the federative units. The results revealed unequal aspects regarding this distribution, demonstrating the countless realities that exist in the national territory and their different implications for Brazilian public health.

Regarding the analysis of morbidity and mortality related to septicemia, Brazil showed a pattern of growth in almost the entire territory, a situation that is in line with other studies[17-18] that indicate an increase in the incidence of sepsis throughout the world, but with a lower lethality. When it comes to hospital mortality, the findings were similar to the Spread study, which showed a sepsis fatality rate of 55%.[19] However, in a systematic review that evaluated countries in North America, Europe and Australia, a lower mortality rate, of 34.7%, was observed.[20] The disparity in mortality caused by sepsis between rich and poor countries occurs mainly due to lack of access to adequate healthcare and limited financial resources in less developed nations. Furthermore, it is important to comment that the high mortality due to sepsis is multifaceted and can be attributed to several factors. These include delays in early diagnosis and treatment, inconsistent implementation of treatment protocols, growing antimicrobial resistance, the presence of comorbidities and frailty in patients, and the body's exacerbated inflammatory response to infection. Lack of access to quality healthcare in some regions also contributes to adverse outcomes.[19]

In addition, the increase in the population's life expectancy in recent decades stands out, which explains why death rates increase with increasing age and reach the highest levels after the age of 70, without showing a large difference between males and females. Population aging amplifies the prevalence of elderly people in society and, consequently, an increase in the frequency of chronic diseases and immunodeficiencies, which are risk factors for prolonged hospitalizations, as nosocomial infections are the most frequent cause of sepsis in the elderly.[19,21] Moreover, the absence of intermediate care units in Brazilian hospitals leads to a longer stay of patients in the ICU, culminating in greater exposure and prevalence of sepsis.[19]

That said, another significant factor for this growth would be the improvement of medicine in the face of the concept of sepsis, which can currently be diagnosed based on a set of signs and symptoms specifically tabulated by the SOFA score.[1] Which, in addition to facilitating the practice clinic, facilitated diagnosis and treatment. However, even though it is beneficial to public health by contributing to better management and rapid and effective treatment of patients, which tends to save more lives, incidence rates end up revealing another side of this situation, as they have increased in the last decade. This is because the expansion of the “sepsis” category and the greater ease of diagnosis means that patients who were previously underdiagnosed and died, not being part of the morbidity and mortality rates, are now classified correctly, increasing the percentages and creating a false image that a decade ago cases of septicemia were less frequent.[19,21]

Still regarding morbidity and mortality, this research highlighted regions of Brazil where rates remained stable during this period. A fact that can be legitimized by the geographic characteristics of the states, where it is possible to observe a rural profile and a high concentration of large properties, which means that there is a higher percentage of low-income individuals with little access to quality health care.[22-23]

When discussing the number of hospital beds, it is important to consider its connection to sepsis. The number of beds available in a healthcare system can directly impact the diagnosis, treatment and management of sepsis, affecting the ability of hospitals to deal with a large number of cases of this potentially fatal condition. Ainda pode estar relacionado com o tamanho do hospital e a disponibilidade de programas formais de sepse.[24] In a report of North American hospitals carried out by the Centers of Disease Control and Prevention (CDC), in 2022, the sepsis program was present in 53% among hospitals with 0–25 beds and 95% among hospitals with >500 beds.[25]

When it comes to data collection for the present study, it was demonstrated that in some

states, such as Rio Grande do Sul (RS), there are 271.8 hospital beds available for every 100 thousand inhabitants, while in states such as Amazonas (AM) , this number is only 145.7 beds for the same proportion of inhabitants. This discrepancy is closely related to the disparity observed in septicemia lethality rates, since Amazonas records a rate of 53.1%, while Rio Grande do Sul has a rate of 38.4%. Thus, in regions with lower hospital bed rates, lethality percentages tend to be higher.

These findings follow the trend observed in other studies that point to the availability of health services and their variability in different regions as an important predictor of mortality. Furthermore, they highlight the precision of efficient management of health resources, highlighting the importance of the hospital bed indicator in the evaluation and planning of services. This method is vital for an effective organization of the budget allocated to each hospital setting. It offers crucial information about the capacity needed for each hospital, taking into account regional demand, as excess beds generate unnecessary costs and burden the health service. Therefore, it is necessary to efficiently establish this indicator in order to guarantee the effectiveness of health services, contributing to patient safety and survival.[26-27] In this way, it can be inferred that states that have a greater number of hospital beds have better quality and access to care at this level of complexity and, in turn, greater diagnostic and treatment capacity. Thus, the positive correlation with morbidity and mortality and the negative correlation with lethality due to septicemia are justified.

This regional disparity in the availability of hospital beds is accompanied by similar differences in morbidity and mortality rates, which also varied according to each region. The results referring to these data demonstrated that states such as Roraima, Maranhão and Goiás have lower morbidity and mortality rates when compared to states such as São Paulo, Rio de Janeiro and Rio Grande do Sul, whose values remained high throughout the analyzed period. The discrepancies found can be justified by profound inequalities in the socioeconomic sphere, where economically less favored regions face significant financial restrictions, affecting infrastructure, medical response capacity and compromising diagnoses and treatments.[28]

In this context, Brazil's vast geographic extent presents an additional challenge in accessing medical care in remote areas and demographic diversity. For example, the Southeast region, which alone concentrates 41.8% of the population, while other parts of the country constitute what are considered demographic voids. These factors, together, elucidate the need to find approaches that allow overcoming geographic challenges, to better balance the supply of medical assistance in different areas, in search of promoting equity in the distribution of resources.[29]

Furthermore, the study presents an important analysis of the relationships between morbidity and mortality due to sepsis, the availability of hospital beds and regional disparities in Brazil.

Limitations

The data used, coming from health records and population estimates, may contain errors, omissions and inaccuracies that affect the quality of the analysis. Furthermore, the ecological approach, which focuses on population rather than individual relationships, restricts the ability to analyze other individual factors that may influence outcomes. The study also covers a period of one decade (2012-2022) without taking into account possible significant changes in the healthcare system over this period. Relevant variables, such as quality of care, availability of effective treatments and socioeconomic factors, were not adequately addressed. The simplified analysis of the correlation between beds and morbidity and mortality may overlook important nuances, and although the study provides correlations, it cannot establish definitive causal relationships. In summary, although the study

offers valuable information, it is essential to interpret these results with caution, considering the limitations inherent to the approach and data used.

Implications for Practice

In this scenario, there is an urgency for new investigations that include evaluating the quality of care for these patients, addressing early diagnosis, treatment, administration of antibiotics and clinical results in public and private hospitals. It is also important to identify specific risk factors for sepsis in the Brazilian context, considering groups with greater vulnerability and exposure factors. The analysis of sepsis prevention strategies, such as awareness campaigns, training of health professionals and hospital hygiene practices, is essential to reduce its incidence. These pieces of research have the potential to improve the understanding of sepsis in Brazil, highlighting critical areas that require intervention to improve bed availability, prevention, diagnosis, treatment and equity in care across the country.

CONCLUSION

The results of the present study revealed an alarming increase in hospital morbidity and mortality rates over this period, along with notable regional disparities. Highlighting that some states, such as Rio de Janeiro and São Paulo, emerged with rates above the national average, while states such as Roraima and Goiás were at the opposite end of the spectrum. There was also a variation in sepsis lethality rates according to age range, where, notably, as age advances, these rates tend to increase. Furthermore, it is important to note that mortality rates between men and women are relatively close, suggesting that, in this context, gender may have a less pronounced influence than age.

It was possible to identify a relationship between the distribution of beds in the federative units and the rates of morbidity and mortality due to septicemia, highlighting the importance of equitable allocation of resources and targeted health policies. Through these comparisons, this work not only informs public health decision-making, but also indicates the importance of actions to reduce sepsis rates and improve hospital care in Brazil.

In summary, this study contributes to the understanding of the complex dynamics of sepsis and its relationship with the availability of hospital beds, highlighting the critical importance of health policies focused on the prevention and treatment of sepsis. The conclusions of this work can serve as a solid basis for formulating strategies aimed at a fairer distribution of health resources and the reduction of morbidity and mortality rates due to sepsis across the country.

RESUMO

Introdução: Sepse é uma grave disfunção orgânica desencadeada pela resposta desregulada do corpo à infecção, com taxas de morbimortalidade globalmente crescentes. No Brasil, desafios como a desigualdade na disponibilidade de leitos afetam o manejo. **Objetivo:** Analisar a morbimortalidade por sepse de 2012 e 2022 nos estados brasileiros, relacionando-a ao número de leitos hospitalares. **Delineamento**: Estudo ecológico de séries temporais, com dados coletados a partir do DATASUS. As variáveis dependentes foram morbimortalidade e letalidade por septicemia, e as independentes incluíram tempo e número de leitos. **Resultados**: Foi observado aumento significativo nos casos de morbimortalidade no Brasil e na maioria dos estados brasileiros. A Letalidade média foi de 45,09%, com extremos no Rio de Janeiro (58,2%) e Roraima (25,9%). Análise por faixa etária mostrou aumento com a idade e semelhança entre gêneros. Foram demonstradas correlações significativas positiva entre número de leitos e morbimortalidade e negativa com letalidade. **Implicações**: Esse estudo fornece alicerce para implementação de medidas que visam melhorar o cuidado e prevenção da septicemia no Brasil, inferindo-se que estados com maior número de leitos hospitalares apresentam melhor qualidade e acesso ao atendimento e, desta forma, maior capacidade de diagnóstico e tratamento.

DESCRITORES

Sepse; Morbidade; Mortalidade; Número de Leitos em Hospital.

RESUMEN

Introducción: La sepsis es una disfunción orgánica grave desencadenada por la respuesta no regulada del cuerpo a la infección, con tasas de morbilidad y mortalidad en aumento a nivel mundial. En Brasil, desafíos como la desigualdad en la disponibilidad de camas afectan la gestión. **Objetivo:** Analizar la morbilidad y mortalidad por sepsis en 2012 y 2022 en estados brasileños, relacionándola con el número de camas hospitalarias. **Delineación:** Estudio de series de tiempo ecológicas, con datos recopilados de DATASUS. Las variables dependientes fueron morbilidad y mortalidad por septicemia, y las variables independientes incluyeron tiempo y número de camas. **Resultados:** Se observó un aumento significativo de los casos de morbilidad y mortalidad en Brasil y en la mayoría de los estados brasileños. La letalidad promedio fue del 45,09%, con extremos en Río de Janeiro (58,2%) y Roraima (25,9%). El análisis por grupos de edad mostró un aumento con la edad y similitud entre géneros. Se demostraron correlaciones positivas significativas entre el número de camas y la morbilidad y mortalidad y correlaciones negativas con la letalidad. **Implicaciones:** Este estudio proporciona una base para la implementación de medidas destinadas a mejorar la atención y la prevención de la septicemia en Brasil, infiriendo que los estados con mayor número de camas hospitalarias tienen mejor calidad y acceso a la atención y, por tanto, mayor diagnóstico y tratamiento.

DESCRIPTORES

Sepsis; Morbilidad; Mortalidad; Capacidad de Camas en Hospitales.

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COLLABORATIONS

ALPP, BOR e KSK: Substantial contributions to study conception, data analysis and interpretation, writing and/or critical review of the content. KSK: contributions to data collection, final review and approval of the final version. ALPP and BOR: contributions to the discussion of results. **All authors agree and are responsible for the content of this version of the manuscript to be published.**

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AVAILABILITY OF DATA

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CONFLICTS OF INTEREST

There are no conflicts of interest to declare.