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Prevalence of Severe Acute Respiratory Syndrome due to COVID-19 in a Capital City of Northeastern Brazil

Prevalência da Síndrome Respiratória Aguda Grave por COVID-19 em uma Capital do Nordeste do Brasil

Prevalencia del Síndrome Respiratorio Agudo Grave por COVID-19 en una Capital del Nordeste de Brasil

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ABSTRACT

Introduction: Severe Acute Respiratory Syndrome (SARS) caused by COVID-19 represented a major challenge for health systems worldwide, with high hospitalization and mortality rates. In Brazil, the pandemic highlighted regional disparities in access to health services, revealing the clinical and social vulnerability of specific groups. Objective: To analyze cases of Severe Acute Respiratory Syndrome (SARS) due to COVID-19 in a capital city of Northeastern Brazil. Methodology: This was an analytical, cross-sectional study conducted with secondary data from the Influenza Epidemiological Surveillance Information System (SIVEP-Gripe), referring to notification forms of hospitalized individuals with SARS between March 2020 and December 2022. Data were analyzed using relative frequencies to identify associated factors and outcome prevalences according to study variables. Results: A total of 12,792 cases of individuals hospitalized for SARS were recorded, of which 9,183 were due to COVID-19. Most cases were of non-nosocomial origin, did not require ICU admission, presented risk factors, had one or two comorbidities, were of Brown skin color, and were older adults. Lethality was higher among patients submitted to invasive ventilation and those admitted to the ICU. Implications: The study revealed a high prevalence of hospitalizations for SARS due to COVID-19 in a capital city of Northeastern Brazil, highlighting the burden on the health system, the vulnerability of historically marginalized groups, the decisive role of vaccination in mitigating severe outcomes, and the importance of anticipatory strategies.

DESCRIPTORS

SARS-CoV-2; hospital care; lethality; epidemiology

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INTRODUCTION

Severe Acute Respiratory Syndrome (SARS) is one of the complications associated with coronavirus infection and can be defined as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)[1]. This disease triggered a global pandemic, resulting in more than 608 million cases and 6.5 million deaths by September 2022. In Brazil, more than 3 million cases and 685,000 deaths were reported between January 3, 2020, and September 16, 2022, according to the World Health Organization (WHO)[2].

International studies have linked COVID-2019 (COVID-19) to severe clinical outcomes, including cardiac injuries and high in-hospital mortality, especially among men aged 50 to 69 years[3]. Although the disease can affect people of all ages, mortality rises among older adults, even in the absence of comorbidities, due to factors such as immunosenescence and other physiological changes of aging[4].

In Brazil, data from the state of Espírito Santo indicated that 61.7% of infected people presented more than one comorbidity, with higher mortality rates among older adults with comorbidities and patients treated in public hospitals[5]. In addition, sociodemographic and clinical conditions, along with chronic diseases, increase the risk of progression from COVID-19 to SARS[1,6].

Epidemiological surveillance was essential in tackling the pandemic, enabling case analysis and the definition of strategies[7]. In the state of Piauí, a higher prevalence of cases was observed among women aged 30 to 49 years, with greater mortality among older adults with associated comorbidities[8]. At the same time, vaccination played a decisive role, achieving 93.7% coverage in the state by June 2022, while control measures were intensified through testing, state decrees, and sanitary surveillance[9,10].

The city of Teresina adopted strategies such as prioritizing vaccination, making available, in January 2021, more than 11,000 doses of the CoronaVac vaccine for health professionals and high-risk groups, as well as investing in hospital care, surveillance, and telemedicine[9,11]). However, the scarcity of regional studies focusing on SARS due to COVID-19 limited the development of more targeted and timely strategies, especially in the early stages of the health crisis[12].

Considering the context of the pandemic and the social relevance of COVID-19's impact on public health, health systems, and nursing practice, it is essential to understand the evolution of cases. Thus, local analysis contributes to achieving Sustainable Development Goal 3 (SDG 3), Good Health and Well-being, by generating evidence to support public policies and preventive actions.Therefore, this study aimed to analyze SARS cases due to COVID-19 in a capital city of Northeastern Brazil, seeking to contribute to scientific knowledge and the improvement of health actions

METHODS

This is an analytical and cross-sectional study conducted with secondary data from the Influenza Epidemiological Surveillance Information System (SIVEP-Gripe). Notification forms of SARS cases in hospitalized individuals from a capital city in Northeastern Brazil, between March 2020 and December 2022, were used, following the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline[13].

Inclusion criteria considered records of individuals aged ≥ 18 years, hospitalized with SARS-CoV-2 during the defined period. Exclusion criteria included records of individuals not residing in the studied capital and those without the final classification "SARS due to COVID-19" on the notification form.

The variable "final case classification" was categorized as SARS due to influenza, SARS due to other respiratory viruses, SARS due to another etiological agent, unspecified SARS, and COVID-19. For this study, the dependent variable considered only hospitalizations for SARS due to COVID-19.

Variables were organized into three categories: sociodemographic, clinical factors, and risk factors. Sociodemographic variables included sex (male or female), age, race/skin color (White, Black, Yellow, Brown, or Indigenous), and area of residence (urban, rural, or peri-urban). Clinical factors included ICU admission (no or yes), use of ventilatory support (no; yes, invasive; or yes, non-invasive), and nosocomial case (no or yes). Finally, risk factors included puerperium (up to 45 days postpartum), Down syndrome, Diabetes Mellitus, immunodeficiency/immunosuppression, chronic cardiovascular disease, chronic hematologic disease, chronic liver disease, asthma, chronic neurological disease, chronic kidney disease, other chronic pneumopathy, and obesity.

Data were initially organized in Microsoft Excel 2016 and later imported into the Statistical Package

for the Social Sciences (SPSS) for Windows, version 26.0, for statistical analysis. Ignored and unfilled variables were excluded from descriptive analysis.

Variables were described using measures of central tendency (mean, median, and mode) and measures of dispersion (standard deviation, variance, minimum and maximum values, skewness, and kurtosis). Categorical variables were presented as absolute and relative frequencies. Results were organized into tables and figures.

For bivariate analysis between categorical variables, Pearson's chi-square test was applied using contingency tables, with a significance level of 5%. Crude and adjusted prevalence ratios (PR) were estimated with 95% confidence intervals (95% CI) through Poisson regression with robust variance, applied in both bivariate and multivariate analyses. Variables with $p < 0.20$ in bivariate analysis were included in the multivariate analysis (direct entry "enter" method), with those showing $p \leq 0.05$ considered statistically significant.

The lethality rate of hospitalized individuals was calculated as the ratio between the number of deaths and the total number of individuals with known outcomes (death or cure), according to available database records.

The SIVEP-Gripe database presented variables classified as ignored, which were excluded from statistical analysis. The variable "education level" showed the highest percentage of ignored data (53.2%), followed by "race" (23.2%) and "nosocomial case" (15.1%).

Since this study used secondary, publicly available data without participant identification, approval from the Research Ethics Committee on Human Beings (CEPSH) was waived, in accordance with Resolution No. 510, of April 7, 2016, of the National Health Council (CNS). Nevertheless, all phases followed the ethical principles established in Resolution No. 466/2012[14,15].

RESULTS

Between March 2020 and December 2022, 12,792 cases of individuals hospitalized for SARS were recorded according to SIVEP-Gripe. Of these, 3,609 (28.2%) were excluded for not being related to COVID-19. Thus, 9,183 individuals were included in the analysis, with a mean age of 59.72 years, predominantly non-nosocomial cases (83.1%), not admitted to the ICU (69.1%), individuals with risk factors (65.8%), men (56.9%), those with one to two comorbidities (56.6%), Brown skin color (53.4%), older adults (52.0%), and those requiring ICU admission (52.0%). Among the 7,657, 2,212 evolved to death, corresponding to a lethality rate of 28.8% (Table 1).

Table 1. Individuals hospitalized with COVID-19 (n = 9,183) according to sociodemographic characteristics, health conditions, ICU admission, and use of respiratory support in a capital city of Northeastern Brazil, March/2020 to December/2022.

Variables	N (%)	IC-95%	Média (IC-95%)	Dp
Sex				
Female	3957(43,1)	(42,1-44,1)		
Male	5224(56,9)	(55,9-57,9)		
Ignored	2(0,0)	(0,0-0,1)		
Age Group			59,72(59,35-60,08)	17,90
≤19 years	22(0,2)	(0,2-0,4)		
20-59 years	4388(47,8)	(46,8-48,8)		
≥60 years	4773(52,0)	(51,0-53,0)		
Race/Color				
White	1429(15,6)	(14,8-16,3)		
Black	484(5,3)	(4,8-5,7)		
Yellow	224(2,4)	(2,1-2,8)		
Brown	4906(53,4)	(52,4-54,4)		
Indigenous	11(0,1)	(0,1-0,2)		
Ignored	2129(23,2)	(22,3-24,1)		
Nosocomial Case				
Yes	162(1,8)	(1,5-2,0)		
No	7635(83,1)	(82,4-83,9)		
Ignored	1386(15,1)	(14,4-15,8)		
Risk Factor				
Yes	6041(65,8)	(64,8-66,7)		
No	3142(34,2)	(33,3-35,2)		
Number of Comorbidities			1,07(1,05-1,09)	1,00
0	3173(34,6)	(33,6-35,5)		
1-2	5199(56,6)	(55,6-57,6)		
≥3	811(8,8)	(8,3-9,4)		
ICU Admission				
Yes	2400(26,1)	(25,2-27,0)		
No	6350(69,1)	(68,2-70,1)		
Ignored	433(4,7)	(4,3-5,2)		
Respiratory Support				
Yes, invasive	1408(15,3)	(14,6-16,1)		
Yes, non-invasive	4776(52,0)	(51,0-53,0)		
No	2559(27,9)	(27,0-28,8)		
Ignored	440(4,8)	(4,4-5,2)		
Case Outcome				
Cure	5445(59,3)	(58,3-60,3)		
Óbito	2212(24,1)	(23,2-25,0)		
Death due to other causes	51(0,6)	(0,4-0,7)		
Ignored	1475(16,1)	(15,3-16,8)		
Total	9.183(100,0)			

*__Source__: SINAN/DATASUS.

Lethality was higher among patients submitted to invasive ventilation (84.3%), followed by those admitted to the ICU (64.4%), nosocomial cases (50.0%), individuals with three or more comorbidities (46.6%), older adults (38.7%), Indigenous individuals (36.4%), those with risk factors (34.3%), and women (28.7%) (Table 2).

Table 2. Lethality and 95% confidence intervals in individuals with COVID-19 and hospital outcomes (n = 7,657), according to sociodemographic characteristics, health conditions, ICU admissions, and use of ventilatory support in a capital city of Northeastern Brazil, March/2020 to December/2022.

Variables	Total		Cur3		Death	
	N (%)	IC-95%	N (%)	IC-95%	N (%)	IC-95%
Sex						
Female	3356(43,8)	(42,7-45,0)	2372(70,7)	(69,1-72,2)	984(29,3)	(28,7-30,9)
Male	4299(56,2)	(55,0-57,3)	3071(71,4)	(70,1-72,8)	1228(28,6)	(27,2-29,9)
Age Group						
≤19 years	20(0,3)	(0,2-0,4)	17(85,0)	(65,1-95,6)	3(15,0)	(4,4-34,9)
20-59 years	3471(45,3)	(44,2-46,4)	2876(82,9)	(81,6-84,1)	595(17,1)	(15,9-18,4)
≥60 years	4166(54,4)	(53,3-55,5)	2552(61,3)	(59,8-62,7)	1614(38,7)	(37,3-40,2)
Race/Color						
White	1171(20,3)	(19,2-21,3)	802(68,5)	(65,8-71,1)	369(31,5)	(86,2-34,2)
Black	426(7,4)	(6,7-8,1)	290(68,1)	(63,5-72,4)	136(31,9)	(27,6-36,5)
Yellow	166(2,9)	(2,5-3,3)	128(77,1)	(70,3-83,0)	38(22,9)	(17,0-29,7)
Brown	4006(69,3)	(68,1-70,5)	2863(71,5)	(70,1-72,9)	1143(28,5)	(27,1-29,9)
Indigenous	11(0,2)	(0,1-0,3)	7(63,6)	(34,8-86,3)	4(36,4)	(13,7-65,2)
Nosocomial Case						
Yes	132(2,0)	(1,7-2,4)	66(50,0)	(41,5-58,5)	66(50,0)	(66,6-58,5)
No	6347(98,0)	(97,6-98,3)	4541(71,5)	(70,4-72,6)	1806(28,5)	(27,4-29,6)
Risk Factor						
Yes	5170(67,5)	(66,5-68,6)	3399(65,7)	(64,4-67,0)	1771(34,3)	(37,9-35,6)
No	2487(32,5)	(31,4-33,5)	2046(82,3)	(80,7-83,7)	441(17,7)	(16,3-19,3)
ICU Admission						
Yes	2221(30,5)	(29,4-31,5)	790(35,6)	(33,6-37,6)	1431(64,4)	(74,0-66,4)
No	5071(69,5)	(68,5-70,6)	4358(85,9)	(85,0-86,9)	713(14,1)	(13,1-15,0)
Respiratory Support						
Yes, invasive	1329(18,3)	(17,4-19,2)	208(15,7)	(13,8-17,7)	1121(84,3)	(21,8-86,2)
Yes, non-invasive	4041(55,6)	(54,5-56,8)	3200(79,2)	(77,9-80,4)	841(20,8)	(19,6-22,1)
No	1895(26,1)	(25,1-27,1)	1736(91,6)	(90,3-92,8)	159(8,4)	(7,2-9,7)
Number of Comorbidities						
0	2516(32,9)	(31,8-33,9)	2072(82,4)	(80,8-83,8)	444(17,6)	(24,7-19,2)
1-2	4411(57,6)	(56,5-58,7)	2983(67,6)	(66,2-69,0)	1428(32,4)	(31,0-33,8)
≥3	730(9,5)	(8,9-10,2)	390(53,4)	(49,8-57,0)	340(46,6)	(43,0-50,2)

*** Source:** SINAN/DATASUS.
[1]95% CI: 95% confidence interval.
Note: The percentage of deaths already represents the mortality rate.

The comorbidities with the highest lethality were heart diseases (76.8%), asthma (77.6%), diabetes (65.1%), hematologic diseases (64.7%), followed by hepatitis (60.0%), cardiovascular disease (63.9%), and obesity (61.2%) (Table 3)

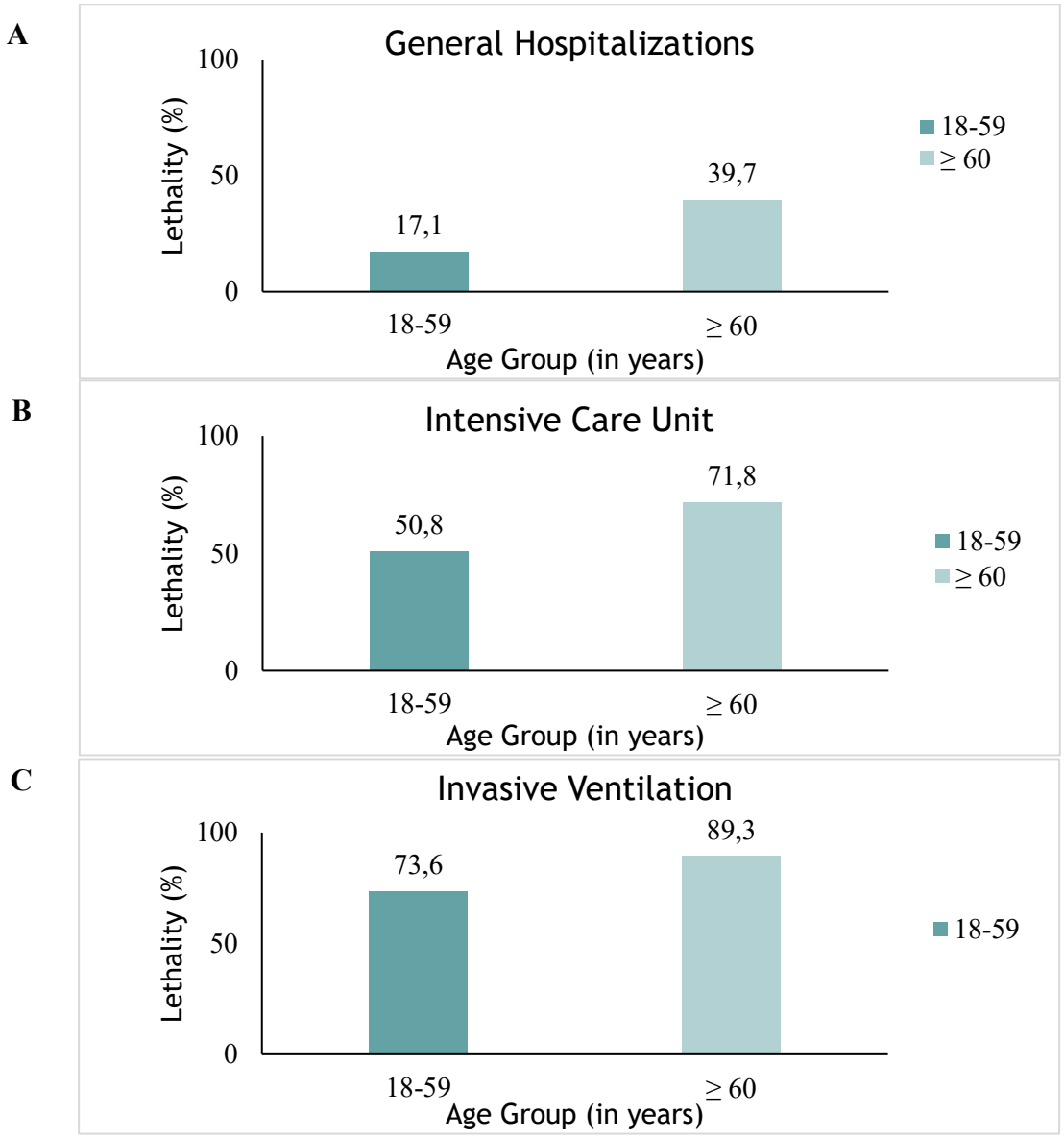
Table 3. Lethality and 95% confidence intervals in individuals with COVID-19 and hospital outcomes (n = 7,657), according to comorbidities, in a capital city of Northeastern Brazil, March/2020 to December/2022.

Variables	Total N (%)	Cure IC-95%	Death N (%)	Variables	Total N (%)	Cure IC-95%
Comorbidities						
Cardiovascular Disease						
Yes	3378(76,0)	(74,7-77,2)	2157(63,9)	(62,2-65,5)	1221(36,1)	(22,5-37,8)
No	1068(24,0)	(22,8-25,3)	749(70,1)	(67,3-72,8)	319(29,9)	(27,2-32,7)
Hematologic Disease						
Yes	51(1,6)	(1,2-2,0)	33(64,7)	(51,1-76,7)	18(35,3)	(38,3-48,9)
No	3201(98,4)	(98,0-98,8)	2085(65,1)	(63,5-66,8)	1116(34,9)	(33,2-36,5)
Down Syndrome						
Yes	20(0,6)	(0,4-0,9)	9(45,0)	(25,1-66,2)	11(55,0)	(33,8-74,9)
No	3213(99,4)	(99,1-99,6)	2095(65,2)	(63,5-66,8)	1118(34,8)	(33,2-36,5)
Hepatic Disease (Hepatitis)						
Yes	60(1,9)	(1,4-2,4)	24(40,0)	(28,3-52,6)	36(60,0)	(26,2-71,7)
No	3181(98,1)	(97,6-98,6)	2080(65,4)	(63,7-67,0)	1101(34,6)	(33,0-36,3)
Asthma						
Yes	156(4,8)	(4,1-5,5)	121(77,6)	(70,6-83,6)	35(22,4)	(15,1-29,4)
No	3118(95,2)	(94,5-95,9)	2022(64,8)	(63,2-66,5)	1096(35,2)	(33,5-36,8)
Diabetes Mellitus						
Yes	2000(51,0)	(49,4-52,6)	1301(65,1)	(62,9-67,1)	699(35,0)	(19,0-37,1)
No	1921(49,0)	(47,4-50,6)	1254(65,3)	(63,1-67,4)	667(34,7)	(32,6-36,9)
Neurological Disease						
Yes	277(8,3)	(7,4-9,3)	146(52,7)	(46,8-58,5)	131(47,3)	(13,6-53,2)
No	3043(91,7)	(90,7-92,6)	2013(66,2)	(64,5-67,8)	1030(33,8)	(32,2-35,5)
Chronic Pneumopathy						
Yes	128(3,9)	(3,3-4,6)	68(53,1)	(44,5-61,6)	60(46,9)	(60,6-55,5)
No	3134(96,1)	(95,4-96,7)	2053(65,5)	(63,8-67,2)	1081(34,5)	(32,8-36,2)
Immunodeficiencies						
Yes	196(6,0)	(5,2-6,8)	104(53,1)	(46,1-60,0)	92(46,9)	(12,4-53,9)
No	3081(94,0)	(93,2-94,8)	2027(65,8)	(64,1-67,5)	1054(34,2)	(32,5-35,9)
Chronic Kidney Disease						
Yes	262(7,9)	(7,0-8,8)	125(47,7)	(41,7-53,8)	137(52,3)	(13,5-58,3)
No	3058(92,1)	(91,2-93,0)	2022(66,1)	(64,4-67,8)	1036(33,9)	(32,2-35,6)
Obesity						
Yes	399(12,0)	(10,9-13,2)	244(61,2)	(56,3-65,8)	155(38,8)	(25,4-43,7)
No	2922(88,0)	(86,8-89,1)	1920(65,7)	(64,0-67,4)	1002(34,3)	(32,6-36,0)
Other Morbidities						
Yes	1565(42,3)	(40,8-43,9)	1000(63,9)	(61,5-66,2)	565(36,1)	(16,0-38,5)
No	2131(57,7)	(56,1-59,2)	1412(66,3)	(64,2-68,2)	719(33,7)	(31,8-35,8)

Source: SINAN/DATASUS. Exported on November 14, 2023.

Among individuals aged 60 years or older, lethality was 71.8% for those admitted to the ICU and 89.3% among those submitted to invasive ventilation. In contrast, among patients aged 18 to 59 years, lethality was 50.8% for ICU admissions and 73.6% for those who underwent invasive ventilation (Figure 1).

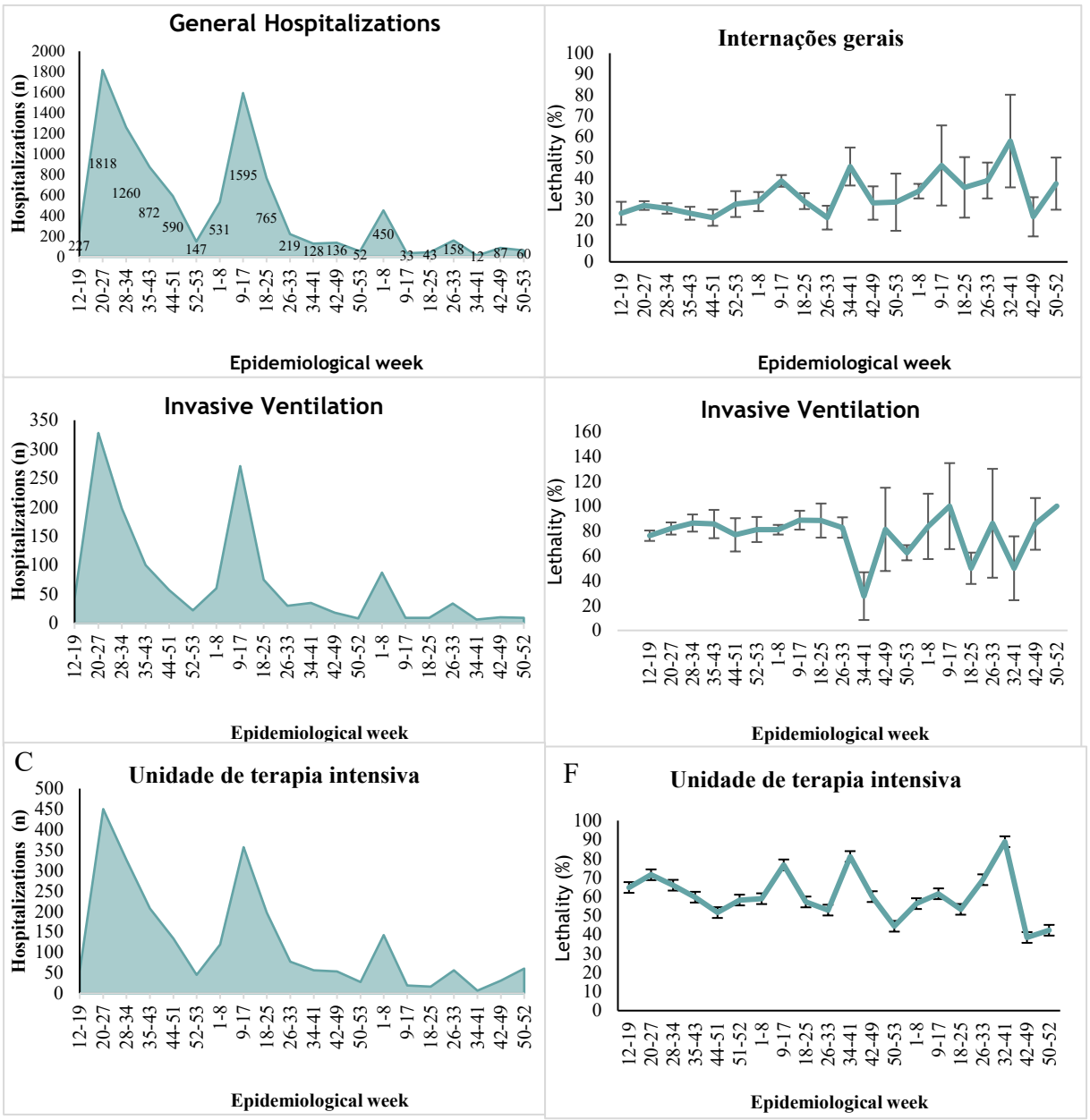
Figure 1. Lethality among individuals with COVID-19 and outcomes (n = 7,657), according to age group (years), ICU admission, and use of invasive ventilation, in a capital city of Northeastern Brazil, March/2020 to December/2022.



Source: SINAN/DATASUS. A) Overall lethality by age group (in years); B) Lethality in intensive care units by age group (in years); C) Lethality among individuals who received invasive ventilation by age group (in years).

Temporal analysis identified peaks of ICU admissions and invasive ventilation use during epidemiological weeks 20 to 27 in 2020 and 9 to 17 in 2021. The highest hospital lethality was recorded between weeks 32 and 41 of 2022 (57.9%; 95% CI 35.7–80.1). In the same period, lethality among ICU-admitted individuals reached 88.9% (95% CI 68.5–109.3). Among those who used invasive ventilation, lethality remained above 76.2% (95% CI 72.2–80.2) during almost the entire period analyzed, reaching 100% at two critical points in 2022 (weeks 9 to 17 and 50 to 52) (Figure 2).

Figure 2. Temporal variation in the number of hospitalizations (n = 9,183) and lethality among individuals with outcomes (n = 7,657), in a capital city of Northeastern Brazil, March 2020 to December 2022.



Source: SINAN/DATASUS. A) Temporal variation in the number of COVID-19 hospitalizations; B) Temporal variation in individuals with COVID-19 submitted to invasive ventilation; C) Temporal variation in the number of individuals with COVID-19 admitted to the ICU; D) Temporal variation in lethality among hospitalized individuals; E) Temporal variation in lethality among individuals submitted to invasive ventilation; F) Temporal variation in lethality among individuals admitted to the intensive care unit

DISCUSSION

Analyses of hospitalizations for SARS caused by COVID-19 in a capital city of Northeastern Brazil allowed for the characterization of the hospitalized population, with a higher prevalence among men, older adults (aged ≥ 60 years), individuals with Brown skin color, of non-nosocomial origin, presenting risk factors, and with one or two associated comorbidities.

A higher concentration of cases was observed in 2020, with synchronization between hospitalization curves, ICU admissions, and use of invasive ventilation. However, over time, there was a progressive increase

in lethality, mainly among patients submitted to invasive ventilation. In this context, it is relevant to consider changes in the availability of COVID-19 beds and invasive ventilatory support, factors that may have influenced the clinical outcomes observed.

The epidemiological profile identified is consistent with previous studies using the SIVEP-Gripe database, which highlighted a higher proportion of male patients, with a mean age close to 60 years, Black or Brown skin color, and the presence of one or two comorbidities. Such findings reflect the clinical and social vulnerability of these groups, especially in the context of structural inequality in Brazil[16].

Hospital lethality in the capital (28.9%) was lower than the averages observed in Brazil (38%) and in the Northeast (48%), but ICU rates (64.4%) and invasive ventilation rates (84.3%) were high, exceeding those of international multicenter studies[16,17,18]. This finding may reflect limitations in hospital response capacity and in the availability of specialized resources, such as trained teams and advanced life support.

In addition to biological factors, such as the presence of comorbidities (cardiopathies, diabetes, hypertension, obesity), it is necessary to consider the overload of the health system, which may have contributed to high lethality. A national study revealed a significant impact of COVID-19 on the increase of acute myocardial infarction (AMI) cases, associated both directly, through myocarditis, and indirectly, by worsening pre-existing diseases[18,19].

The association between aging, comorbidities, and severe outcomes highlights the importance of care strategies directed at the older population. At the same time, the higher lethality observed among individuals with Black skin reinforces the influence of social determinants of health, such as unequal access to quality services, institutional prejudice, and economic barriers[20,21,22].

A study that analyzed Potential Years of Life Lost (PYLL) due to COVID-19 in Brazil identified greater vulnerability among Indigenous and Black populations, especially younger people, as a result of structural racism and precarious living and health conditions in these groups. These factors amplified the effects of the pandemic on historically neglected populations[23].

COVID-19 lethality is determined not only by factors intrinsic to the individual but also by contextual factors, such as the structure of hospital services, the organization of the care network, the response time to the pandemic, and the public policies implemented.

In the present study, a higher concentration of cases was observed between epidemiological weeks 20 and 27 of 2020, followed by a progressive decrease until the end of the year. However, new peaks were observed between epidemiological weeks 9 and 17 of 2021. These findings reflect the cyclical pattern of the pandemic, coinciding with periods of greater viral circulation and possibly with the relaxation of social distancing measures[16].

National data from 2020 indicated higher death rates in Piauí between epidemiological weeks 13 and 15, and a shift in the pandemic's epicenter from the North, Northeast, and Southeast regions (with a peak between weeks 19 and 29) to the Central-West and South regions (weeks 27 to 30)[24].

In the studied capital, vaccines were gradually expanded from priority groups to non-priority groups, as recommended by the Ministry of Health. By March 20, 2021, more than 61,000 doses had been administered, most of them first doses. Temporal analysis suggests that vaccination was decisive for local pandemic control, especially from the second half of 2021, with more than 921,000 doses administered by September, contributing to a decline in hospitalizations[25].

The role of nursing professionals was essential throughout the entire cycle of care, from admission to rehabilitation, with emphasis on the implementation of biosafety protocols, the appropriate use of PPE, and the systematization of care. Valuing the nursing team is fundamental for strengthening the response to public health emergencies[26].

In this study, between weeks 1 and 8 of 2022, a peak of 450 hospitalizations was observed. Another study identified a peak of cases and hospitalizations caused by the Omicron variant in the capital between the last week of January and the first week of February. The same study reported a 99.8% lower risk of death among individuals vaccinated with a booster dose and a 65% lower risk compared with those who received two doses of a double-dose regimen (AstraZeneca, CoronaVac, and Pfizer) or a single dose (Janssen). This reinforces the importance of the population seeking booster doses[27].

This study has limitations related to the use of secondary data, which are subject to underreporting, delays, and incomplete records. A high percentage of missing data was observed for the variables "education level," "race/skin color," and "nosocomial case." The first variable was removed from the study, which may have compromised the analysis of health inequalities. Nevertheless, the SIVEP-Gripe database is an important

national surveillance tool, mandatory to fill out and widely used in epidemiological studies.

LIMITATIONS

Due to the origin of the notification forms, secondary data may be subject to biases such as underreporting, incorrect or incomplete records, and changes in diagnostic criteria over time. It is recognized that such limitations may compromise the validity of the results. As a control strategy, incomplete records were excluded, and standardized criteria were adopted.

CONCLUSION

The study revealed a high prevalence of hospitalizations due to Severe Acute Respiratory Syndrome (SARS) caused by COVID-19 in a capital city of Northeastern Brazil, with a predominance of cases among men, older adults, individuals with Brown skin color, and those with associated comorbidities. Lethality was higher in patients submitted to invasive ventilation, admitted to the ICU, and in nosocomial cases, highlighting the vulnerability of historically marginalized groups. The results provide evidence to improve planning and response to future public health emergencies, reinforcing the need for public policies that address health inequalities and ensure equity in care.

Temporal analysis revealed peaks in ICU hospitalizations and the need for ventilatory support coinciding with periods of greater pressure on the health system, as well as a decrease in hospitalizations associated with expanded vaccination. This highlights the decisive role of vaccination in mitigating severe outcomes and the importance of anticipatory strategies, such as increasing bed capacity and **enhancing staff training.**

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ORIGIN OF THE ARTICLE

Original Article.

AUTHOR CONTRIBUTIONS

All authors contributed equally to the conception, design, analysis, and writing of this manuscript.

CONFLICT OF INTEREST

The authors declare no conflict of interest.