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ORIGINAL ARTICLE

Clinical and sociodemographic aspects of cases of severe acute respiratory syndrome in southern Brazil

Aspectos clínicos e sociodemográficos dos casos de Síndrome Respiratória Aguda Grave no sul do Brasil

Aspectos clínicos y sociodemográficos de casos de Síndrome Respiratorio Agudo Severo en el sur de Brasil

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ABSTRACT
Background and objectives: to compare the clinical and sociodemographic aspects of individuals with SARS reported in the countryside of Rio Grande do Sul in 2020 and 2021. **Methods:** a cross-sectional study, from March 2020 to October 2021. Clinical and sociodemographic variables of individuals with SARS symptoms were analyzed, compared through descriptive, univariate analyses, according to the year of reporting. **Results:** a total of 4,710 cases of SARS were reported; 53.4% were SARS related to COVID-19 in 2020 and 87.5% in 2021 (p<0.001). Comparing 2020 and 2021, the sociodemographic profile changed in terms of age group, skin color and education (p<0.001). Regarding clinical aspects, there was a reduction in prevalence of pre-existing health conditions, except obesity, changes in reported signs and symptoms and reduction in hospital and Intensive Care Unit admissions. **Conclusion:**

the changes in the profile may reflect the effect of the different variants and the start of immunization for SARS-CoV-2.
Keywords: Severe Acute Respiratory Syndrome. COVID-19. Epidemiology.

RESUMO

Justificativa e objetivos: comparar, entre os anos de 2020 e 2021, os aspectos clínicos e sociodemográficos dos indivíduos com Síndrome Respiratória Aguda Grave (SRAG) notificados em uma região de saúde do interior do Rio Grande do Sul. **Métodos:** estudo transversal descritivo, realizado de março de 2020 a outubro de 2021. Foram analisadas variáveis clínicas e sociodemográficas de indivíduos com sintomas de SRAG, comparadas através de análises descritivas, univariadas, conforme o ano de notificação. **Resultados:** foram notificados 4.710 casos com SRAG; 53,4% foram SRAG relacionados à COVID-19 em 2020 e, 87,5%, em 2021 ($p<0,001$). Comparando os anos 2020 e 2021, o perfil sociodemográfico modificou quanto faixa etária, cor da pele e escolaridade ($p<0,001$). Quanto aos aspectos clínicos, houve redução da prevalência de condições de saúde preexistente, exceto obesidade, alterações nos sinais e sintomas relatados e diminuição de internações hospitalares e na Unidade de Terapia Intensiva. **Conclusão:** as mudanças no perfil podem refletir o efeito das diferentes variantes e o início da imunização para SARS-CoV-2.
Descritores: Síndrome Respiratória Aguda Grave. COVID-19. Epidemiologia.

RESUMÉN

Justificación y objetivos: comparar los aspectos clínicos y sociodemográficos de individuos con SARS notificados en el interior de Rio Grande do Sul en los años 2020 y 2021. **Métodos:** estudio descriptivo transversal, realizado de marzo de 2020 a octubre de 2021. Se analizaron variables clínicas y sociodemográficas de individuos con síntomas de SARS, comparadas mediante análisis descriptivos univariados, según el año de notificación. **Resultados:** se notificaron 4.710 casos de SARS; el 53,4% fueron SARS relacionados con COVID-19 en 2020 y el 87,5% en 2021 ($p<0,001$). Comparando los años 2020 y 2021, el perfil sociodemográfico cambió en cuanto a grupo de edad, color de piel y escolaridad ($p<0,001$). En cuanto a los aspectos clínicos, hubo reducción en la prevalencia de condiciones de salud preexistentes, excepto obesidad, cambios en los signos y síntomas reportados y reducción en los ingresos hospitalarios y en la Unidad de Cuidados Intensivos. **Conclusión:** los cambios en el perfil pueden reflejar el efecto de las diferentes variantes y el inicio de la inmunización para el SARS-CoV-2.
Descriptores: Síndrome Respiratorio Agudo Severo. COVID-19. Epidemiología.

INTRODUCTION

Severe acute respiratory syndromes (SARS) can be defined by the presence of fever, cough or sore throat, and dyspnea or O_2 saturation <95%, with hospital admission or death regardless of hospital admission. SARS must be compulsorily reported in the Influenza Epidemiological Surveillance Information System (SIVEP-Gripe - *Sistema de Informação de Vigilância Epidemiológica da Gripe*) or Disease and Reporting Information System (SINAN - *Sistema de Informação de Agravos e Notificações*), databases used for this purpose since the H1N1 influenza pandemic in 2009[1,2], while the e-SUS Notifica system receives reports of suspected and confirmed COVID-19 flu syndrome in Brazil. Regarding etiology, several infectious agents can cause SARS, and between 2010 and 2019, influenza A, influenza B and respiratory syncytial virus were the most reported[2].

Since March 2020, there has been an increase in the number of deaths from SARS in Brazil compared to previous years, with 70% resulting from infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a virus responsible for COVID-19 and 28% were of undefined etiology. However, based on clinical criteria, it was observed that about half of undefined SARS cases could be considered suspicious for COVID-19, therefore increasing the rate of deaths from SARS resulting from infection with the new coronavirus[3].

In Brazil, in 2020, 7.7 million confirmed cases of COVID-19 were recorded, resulting in 196,000 deaths related to the disease. The following year, in 2021, there was a significant increase, with 21.9 million cases and 541,000 deaths reported. In 2022, there was a downward trend, although the numbers are still considerable, with 8.3 million cases and 158,000 deaths recorded. In the year 2023, a progressive improvement was observed, with 1.9 million cases and 33,000 deaths. It is important to highlight that, during these years, Brazil implemented an extensive vaccination campaign against COVID-19, administering millions of doses to its population. Vaccination played a crucial role in reducing the severity of the disease, preventing serious cases and deaths, and contributed to the effective control of the pandemic. Among the 342,636 deaths reported from SARS due to COVID-19 in 2021 up to the 36th Epidemiological Week, 59.5% had at least one pre-existing health condition, with heart disease, cerebrovascular disease, hypertension and Diabetes *Mellitus* being the most reported [4]. Furthermore, respiratory symptoms of COVID-19 are extremely heterogeneous, ranging from mild symptoms to significant hypoxia with SARS[5].

Since the pandemic started, more than 518 million confirmed cases of COVID-19 have been reported worldwide [6]. The SARS-CoV-2 variants of concern (VoCs) such as Alpha (UK), Beta (South Africa), Gamma (Brazil), Delta (India) and Omicron (South Africa) are associated with high transmissibility, virulence and reduced efficiency of public health and social measures[7] as well as the diversity of common symptoms in people infected by different variants. The emergence of more transmissible VoCs and the resulting waves of infection and reinfection renew the need for new studies every day to discuss the characteristics of infected people and the maintenance of strategies to control COVID-19 transmission in the community.

Considering the above, the present study seeks to compare, between 2020 and 2021, the clinical and sociodemographic aspects of individuals with SARS reported in a health region in the interior of Rio Grande do Sul and, thus, analyze the clinical and sociodemographic profile between 2020 and 2021 to help understand SARS.

METHODS

Outline

This is a population-based descriptive cross-sectional study, using sociodemographic and clinical data extracted from SIVEP-Gripe, hospital admissions and deaths from SARS regardless of hospital admission, in which analysis was carried out in municipalities belonging to the 28th Health Region of Rio Grande do Sul, Brazil.

The 28th Health Region is made up of 13 municipalities (Candelária, Gramado Xavier, Herveiras, Mato Leitão, Pantano Grande, Passo do Sobrado, Rio Pardo, Santa Cruz do Sul, Sinimbu, Vale Verde, Vale do Sol, Venâncio Aires and Vera Cruz) (Figure 1), and has an estimated population of 354.888 inhabitants in 2021, according to data from the Brazilian Institute of Geography and Statistics (IBGE - *Instituto Brasileiro de Geografia e Estatística*).

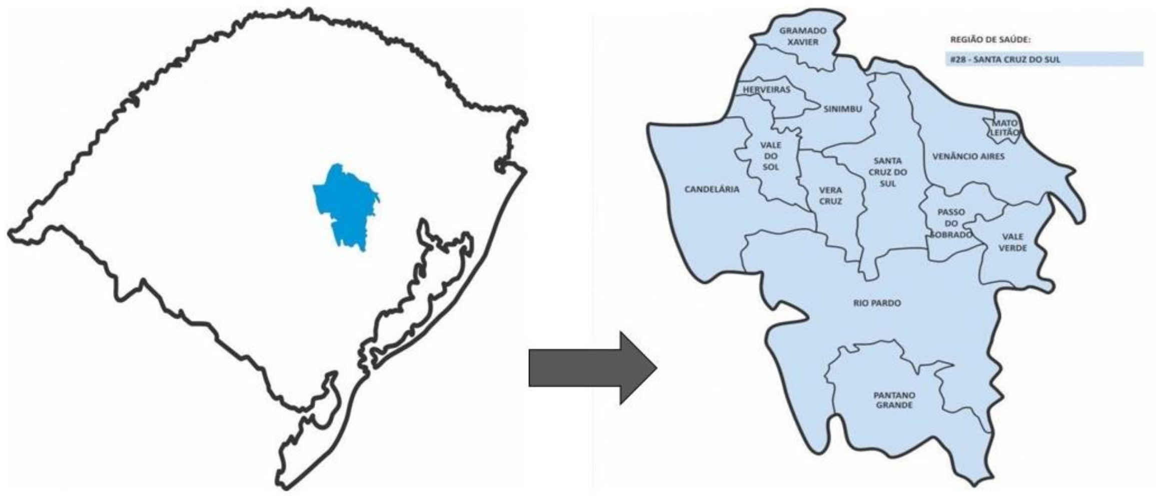

Figure 1. Map of municipalities in the 28th Health Region (State Department of Rio Grande do Sul, 2016)

Data source

Data were extracted from SIVEP-Gripe, whose update brings together all reports from health facilities in the country regarding hospital admissions due to SARS and deaths due to SARS regardless of hospital admission. SIVEP-Gripe data were obtained from the 28th Health Region Epidemiological Surveillance with reports from March 1, 2020 to October 31, 2021. Analyzes were carried out by grouping the cases by year of report (2020 and 2021).

Variables

Sociodemographic variables were extracted from the SIVEP-Gripe database: sex (female, male); age group (years: up to 19, 20 to 49, 50 to 89, 90 or older); self-reported race/skin color (white, black, yellow, brown, indigenous, unknown); self-reported education (illiterate, complete or incomplete elementary school, complete or incomplete high school, complete or incomplete higher education, unknown); residential area (urban, rural, peri-urban). Regarding clinical variables, they were included in the analysis of signs and symptoms (fever, cough, sore throat, dyspnea, respiratory distress, O_2 saturation <95%, diarrhea, vomiting, abdominal pain, fatigue, loss of smell, loss of taste, others); presence of pre-existing health conditions (postpartum woman, cardiovascular disease, chronic hematological disease, lung disease, Down's syndrome, chronic liver disease, asthma, Diabetes *Mellitus*, chronic neurological disease, immunosuppression, chronic kidney disease, obesity; use of ventilatory support devices (invasive, non-invasive); duration of symptoms (time between symptom onset and report); length of hospital stay; length of stay in the Intensive Care Unit (ICU); final classification of the case (SARI due to COVID-19, SARS due to another virus or etiological agent, SARS not specified – ruled out SARS due to SARS-CoV-2); and analysis of outcome (cure, death or death from other causes).

SIVEP-Gripe spreadsheets in Excel® format were analyzed for data consistency, excluding duplicates and inconsistent data.

Statistical methods

For statistical analysis, the Statistical Package for the Social Sciences (SPSS) version 22.0 was used. Descriptive analyzes constituted the calculation of the simple and relative frequencies of studied variables. Categorical variables were reported as absolute numbers and percentages. Continuous variables were described using mean and standard deviation, or median and interquartile range (IQR) according to normal distribution. Bivariate analysis was performed using the chi-square test for heterogeneity of proportions for dichotomous or nominal variables and linear trend for ordinal variables. Statistical significance was represented by a p-value<0.05.

Ethical aspects

The present study was carried out with secondary data and complied with the ethical recommendations of the Brazilian National Health Council (CNS – *Conselho Nacional de Saúde*) Resolution 466 of December 12, 2012. It was approved by the Institutional Review Board (IRB) of the *Universidade de Santa Cruz do Sul* on April 6, 2021, Certificate of Presentation for Ethical Consideration (CAAE - *Certificado de Apresentação para Apreciação Ética*) 43906021.0.0000.5343, under Consubstantiated Opinion 4.633.404, and by the IRB of the State Department of Health of Rio Grande do Sul on November 24, 2021, with CAAE 43906021.0.3001.5312, under Opinion 5.124.723.

RESULTS

A total of 4,710 people with SARS symptoms were reported during the study period, 1,313 in 2020 and 3,397 in 2021. In 2020, 701 (53.4%) had SARS due to COVID-19; 604 (46.0%) patients had unspecified SARS; and 4 (0.3%) patients had SARS due to another virus or etiological agent (leptospirosis and dengue). In 2021, there were 2,971 (87.5%) reports of SARS cases due to COVID-19; 404 (11.9%) patients had unspecified SARS; and 5 (0.1%) had SARS caused by another virus or etiological agent (unspecified). Among the reported cases, 2,515 were male (53.4%) and 3,101 (65.8%) were in the age group of 50-89 years. White race/color was predominant (86.9%). Regarding education, 1,574 (57.4%) had elementary school and 3,441 (73.1%) lived in urban areas (Table 1).

When comparing cases of infections with SARS symptoms in 2020 and 2021, it was possible to observe that, in both periods, the most affected age group was 50-89 years (69.1% vs 64.6% p<0.001), with an increase in prevalence in the age group 20-49 in 2021 (22.7% vs 29.8, p <0.001), self-declared white skin color (88.7% vs 86.3%, p <0.001), and the majority of patients (33.4%), regardless of the year, had elementary school (p<0.001). There was no statistically significant difference between gender and area of residence (Table 1).

Table 1. Distribution of cases of respiratory infection with severe acute respiratory syndrome symptoms by sociodemographic characteristics in 2020 and 2021 in the 28th Health Region of Rio Grande do Sul until October 31, 2021

Variables	2020 n (%)	2021 n (%)	Total n (%)	p-value
	N=1313 (27.9)	N=3397 (72.1)	4710 (100)	
Sex				0.430
Female	624 (47.5)	1571 (46.2)	2195 (46.6)	
Male	689 (52.5)	1826 (53.8)	2515 (53.4)	
Age group (years)				<0.001
≤19 years	61 (4.6)	140 (4.1)	201 (4.3)	
20-49	299 (22.7)	1012 (29.8)	1311 (27.9)	
50-89	907 (69.1)	2194 (64.6)	3101 (65.8)	
≥90	46 (3.6)	51 (1.5)	97 (2.0)	
Race/color				<0.001
White	1165 (88.7)	2930 (86.3)	4095 (86.9)	
Black	53 (4.0)	152 (4.5)	205 (4.4)	
Yellow	3 (0.2)	12 (0.4)	15 (0.3)	
Brown	61 (4.3)	112 (3.3)	173 (3.7)	
Education				<0.001
Illiterate	39 (5.3)	77 (3.8)	116 (4.2)	
Elementary school	444 (60.4)	1130 (56.1)	1574 (57.3)	
High school	140 (19.0)	559 (27.8)	699 (25.4)	
Higher education	112 (15.2)	247(12.3)	359 (13.0)	
Residential area				0.234
Urban	942 (77.0)	2499 (77.7)	3441 (73.1)	
Rural	271 (22.1)	694 (21.6)	965 (20.5)	
Peri-urban	10 (0.8)	21 (0.6)	31 (0.7)	

n: absolute frequency, %: relative frequency, p-value: Pearson's chi-square test.

Table 2 presents pre-existing health conditions in the general study population. In 2020 and 2021, the most common pre-existing health condition was cardiovascular disease (37.2% vs 25.0%), being significantly higher in 2020 ($p<0.001$), followed by Diabetes *Mellitus* (20.6% vs. 19.3%), significantly higher in 2020 ($p<0.001$). Lung diseases were the third most cited preexisting health condition (13.8%) in 2020, being significantly higher than in 2021 ($p<0.001$). Finally, obesity was the third most cited preexisting health condition in 2021 (8.5%), being significantly higher than in 2020 ($p<0.001$).

Table 2. Distribution of cases of respiratory infection with severe acute respiratory syndrome symptoms according to clinical variables in 2020 and 2021 in the 28th Health Region of Rio Grande do Sul until October 31, 2021

Pre-existing health condition	2020 n (%)	2021 n (%)	Total n (%)	p-value
Cardiovascular disease	489 (37.2)	848 (25.0)	1337 (28.4)	p<0.001
Diabetes *Mellitus*	270 (20.6)	655 (19.3)	925 (19.6)	p<0.001
Lung disease	181 (13.8)	196 (5.8)	377 (8.0)	p<0.001
Obesity	112 (8.5)	519 (15.3)	631 (13.4)	p<0.001
Neurological disease	100 (7.6)	287 (8.4)	387 (8.2)	p<0.001
Asthma	84 (6.4)	122 (3.6)	206 (4.4)	p<0.001
Immunosuppression	78 (5.9)	76 (2.2)	154 (3.3)	p<0.001
Kidney disease	33 (2.5)	72 (2.1)	105 (2.2)	p<0.001
Hematological disease	13 (1.0)	10 (0.3)	23 (0.5)	p<0.001
Postpartum woman	6 (0.5)	10 (0.3)	16 (0.3)	p<0.001
Liver disease	7 (0.5)	19 (0.6)	26 (0.6)	p<0.001
Down's syndrome	4 (0.3)	11 (0.3)	15 (0.3)	p<0.001

n: absolute frequency; %: relative frequency; p-value: Pearson's chi-square test.

In general, the most frequent signs and symptoms were dyspnea, cough, respiratory distress and O_2 saturation <95%. However, statistically significant differences ($p<0.001$) were observed in the prevalence of signs and symptoms between 2020 and 2021. In 2020, the most reported symptoms were dyspnea (74.9%), cough (73.3%) and respiratory distress (69.4%). In 2021, the most frequent symptom was also dyspnea (83.5%), followed by O_2 saturation <95% (80.2%) and cough (73.2%) (Figure 1).

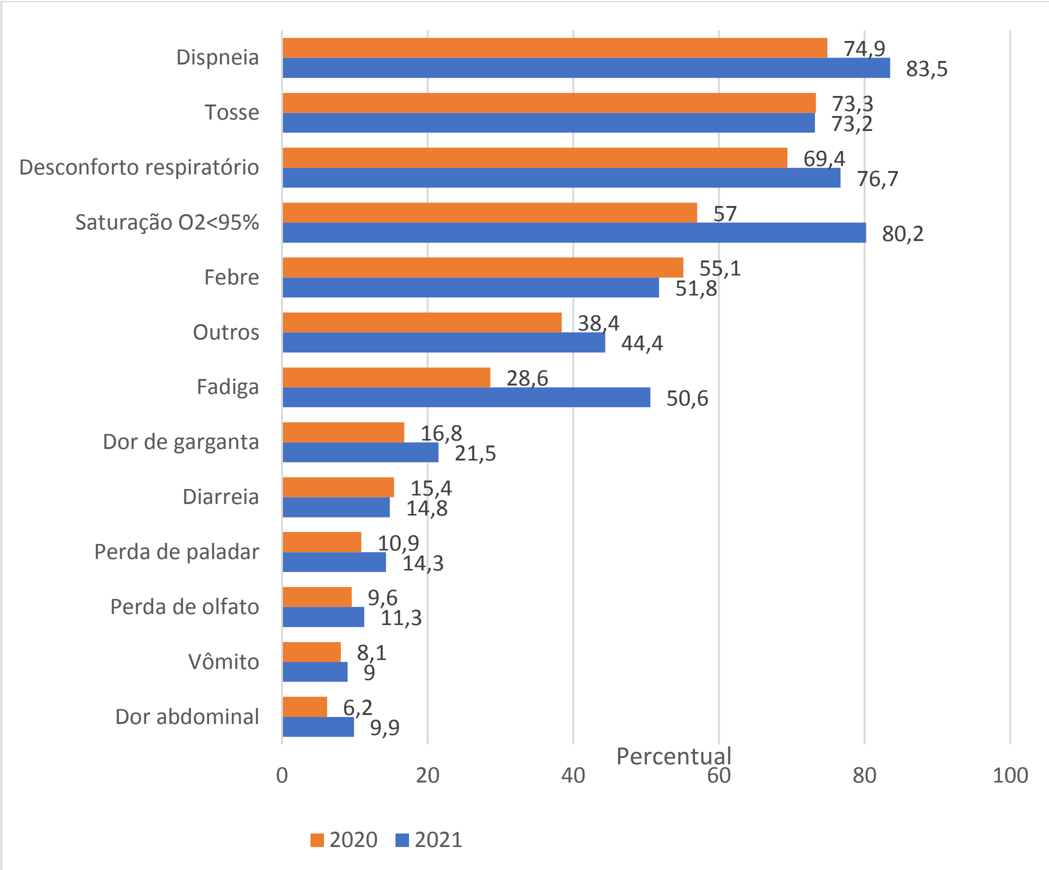

Figure 2. Distribution of cases of severe acute respiratory syndrome by signs and symptoms presented in 2020 and 2021 in the 28th Health Region of Rio Grande do Sul (n=4710, p<0.001 for all signs and symptoms)

Regarding the hospital admission profile, it was observed that, from 2020 to 2021, there was a decrease in the prevalence of hospital admissions (99.3% vs 98.3%, p<0.001), ICU admissions (27.4% vs 23.6%, p<0.001), use of invasive ventilatory support (13.4% vs 12.1% p<0.001). Furthermore, from 2020 to 2021, an increase in the prevalence of death (18.7% vs 22.3%, p<0.001) and SARS reports due to COVID-19 (53.4% vs 87.5%, p<0.001) was observed (Table 3

Table 3. Variables related to hospital admission of individuals with respiratory infection with severe acute respiratory syndrome symptoms in 2020 and 2021 in the 28th Health Region of Rio Grande do Sul until October 31, 2021

Variables	**2020 n (%)**	**2021 n (%)**	**Total n (%)**	**p-value**
Hospital internment	1304 (99.3)	3336 (98.2)	4640 (98.5)	0.015
ICU admission	360 (27.4)	802 (23.6)	1162 (24.7)	<0.001
Use of ventilatory support				
Yes, invasive	176 (13.4)	411 (12.1)	587 (12.5)	<0.001
Yes, non-invasive	695 (52.9)	2364 (69.6)	3059 (64.9)	
No	411 (31.3)	529 (15.6)	940 (20.0)	
Outcome				<0.001
Cure	1029 (78.4)	2498 (73.5)	3527 (74.9)	
Death	245 (18.7)	756 (22.3)	1001 (21.3)	
Death from other causes	22 (1.7)	35 (1.0)	57 (1.2)	
SARS classification				<0.001
SARS by COVID-19	701 (53.4)	2971 (87.5)	3672 (78.0)	
SARS by another virus or agent	4 (0.3)	5 (0.1)	9 (0.2)	

SARI unspecified	604 (46.0)	404 (11.9)	1008 (21.4)

n: absolute frequency; %: relative frequency; SARS: severe acute respiratory syndrome; ICU: Intensive Care Unit; p-value: Pearson's chi-square test.

As for the median time from onset of signs and symptoms to diagnosis, in 2020 it was 5 days (IQR 3–9), while in 2021 it was 9 days (IQR 6-13). In 2020, the observed median length of stay (n=1,304) was 11 days (IQR 6–22) and, in 2021, it was 13 days (IQR 7–29) (n=3,336). Regarding ICU length of stay, in 2020, 359 (360) patients were admitted, and the median length of stay was 8 days (IQR 4–16), while 760 (802) patients were admitted in 2021 and the median was 9 (IQR 4–16) days of hospital admission.

DISCUSSION

The present study describes the clinical and sociodemographic characteristics of 4,710 people reported that they had a respiratory infection with SARS symptoms in a health region in Rio Grande do Sul. The population studied was mostly men, white, aged 50-89 years, similar to studies carried out in Argentina, China and Brazil (Minas Gerais, Rio Grande do Sul and São Paulo)[8–10]. The majority had a basic level of education and were residents of urban areas. Pre-existing health conditions were similar to those described by other authors in reports of SARS due to COVID-19, such as obesity and Diabetes *Mellitus*[9,10]. The most frequent signs and symptoms were dyspnea, cough, respiratory discomfort and O_2 saturation <95%. Loss of smell and taste were reported in less than 15% of cases, reinforcing the findings of other published cohorts[9–11].

Regarding classification, the frequency of SARS due to COVID-19 was higher in 2020 and 2021 (53.4% vs 87.5%), while unspecified SARS had rates of 46% in 2020 and 11.9% in 2021. This finding can be explained by the lack of or unavailability of tests at the beginning of the pandemic, since the distribution of diagnostic kits and the availability of free tests were still deficient, and the amounts charged for carrying them out in the private sector were high.

The highest frequency of cases was found in older age groups in 2020 and 2021: 50-89 years old (69.1% vs 64.6%). The pandemic revealed that older adults were more vulnerable to infection, whose natural decline in physiological functions is related to aging, having repercussions on these individuals' daily lives and resulting in a greater frequency of chronic diseases, which cause susceptibility. The more vulnerable older adults are, the greater the risk of developing severe SARS due to COVID-19 and dying[12]. A small but significant change in the age group was also observed between 2020 and 2021, with an increase in cases among the 20-49 age group. Findings from another study demonstrated an increase in the proportion of young adults without comorbidities with severe COVID-19 during the second wave (February 2021), shortly after confirmation of local circulation of the Gamma variant[13].

The most common pre-existing health conditions, such as cardiovascular disease (37.2% in 2020 vs 25.0% in 2021), Diabetes *Mellitus* (20.6% in 2020 vs 19.3% in 2021), lung disease (13.8% in 2020) and obesity (15.3% in 2021), had rates similar to those reported in Chinese and American studies[9,14]. The frequencies found for the different pre-existing health conditions reported are consistent with the findings of a study carried out in China[4]. It was found that the majority of SARS deaths due to COVID-19 occurred in men (73%) who were diabetic (13%), while another study[15] reported that, of the total deaths from SARS due to COVID-19, 62% were men, 19% had Diabetes *Mellitus* and 8% had cardiovascular disease. Physiologically, all of these conditions are related to a greater risk of complications from COVID-19 and can coexist in the same individual. SARS-CoV-2 uses the angiotensin-converting enzyme 2 (ACE2) as a receptor to invade the body's cells[16].

COVID-19 acts on alveolar epithelial cells, causing more severe respiratory symptoms in people with cardiovascular diseases, a fact that may be related to the increased secretion of ACE2 in these patients[17]. In diabetic people infected by SARS-CoV-2, an increase in the levels of interleukin-6 and C-reactive protein was observed so that the pro-inflammatory state of diabetes may favor the cytokine storm and the systemic inflammatory response, accompanying acute respiratory distress syndrome in patients with COVID-19[18], progressing to more serious conditions. ACE2 is highly expressed in adipose tissue, and patients with obesity tend to have more adipose tissue than the general population. This may explain why obese and diabetic people are more likely to have serious clinical outcomes[19].

Regarding the symptoms described in this study, in 2020, the most frequent signs and symptoms upon admission were dyspnea (74.9%) and cough (73.3%), and, in 2021, the most observed were dyspnea (83.5 %) and respiratory discomfort (76.7%), which were also described by other authors in studies carried out in China, the United States, Spain, Italy and the United Kingdom[9,11,14,15]. The SARS-CoV-2 virus causes dysregulation of the renin-angiotensin-aldosterone system, which can cause lung damage due to inflammatory cascade activation[20], with consequent apoptosis of alveolar cells. Despite this, only 5% of cases evolve into critical conditions[21]. The median time from the onset of signs and symptoms to hospital admission was 5 days (IQR 3–9) in 2020 and 9 days (IQR 6–13) in 2021, a finding that was similar to that published in a study carried out in Argentina, which lasted 5 days (IQR 2-7)[22].

In 2020, 13.4% of the total sample analyzed in this study required invasive ventilatory support and 52.9% used non-invasive ventilatory support, corroborating data from a study carried out in Argentina, in which 12% of the total required invasive ventilatory support and 49% required non-invasive ventilatory support[22]. In 2021, 69.6% of patients required invasive support and 12.1% required non-invasive support in 2021. Patients with pre-existing health conditions presented the most severe form of the disease, with a greater need for ICU admission as well as an association between the use of ventilatory support and ICU admission for patients with cardiovascular disease and SARS infection due to COVID-19, corroborating the findings of this study. Several factors may be associated with this result, such as decreased access to health services and reduced availability of supplies and health professionals trained to treat individuals with SARS due to COVID-19 and its complications during 2020, especially at the beginning of the pandemic, with health sectors unprepared for the scenario, with restrictions on the number of beds available and the need to reorganize hospital infrastructure and health professionals to meet demand. Furthermore, specialized services in the countryside, in general, have fewer professionals specialized in this care, which has been associated with higher in-hospital mortality[23].

In the present study, the frequency of deaths from SARS due to COVID-19 was 18.7% in 2020 and 22.3% in 2021, which is close to what was observed in other studies, such as in New York (21%)[14] and Wuhan (28.3%)[15]. In the United Kingdom (37%)[24] and in Italy (43,6%)[25], the frequency of deaths was higher than that found in this study. Multicenter retrospective study in Spain [11] showed a death rate from SARS due to COVID-19 of 21% and ICU admission of 8.3%, while our study showed a hospital admission rate of 27.4% in 2020 and 23.6% in 2021 in ICU. The higher rates may be explained, in part, by differences between health systems and the ratio of ICU beds to hospital beds between countries[24].

The limitations of this study concern the quality of information, since it was based on secondary data from reports, mainly because it is an event of great magnitude, with incomplete data and non-standardization of its completion. The possible underreporting and under-registration of data ends up restricting the use of important variables to describe the sociodemographic and epidemiological profile, including the possibility of loss of cases resulting from inconclusive laboratory results. When analyzing self-reported information, accuracy may be compromised.

Considering the pandemic context, SIVEP-Gripe’s limitations are also faced with regard to the correction of duplications, the delay in updating the closure and the evolution of cases, in addition to health teams’ work overload, compromising the adequate operationalization of this information system. However, this does not invalidate the importance of using data from

SIVEP-Gripe, as this system makes it possible to analyze the profile of serious cases of the disease in the country.

Thus, when comparing cases of infections with SARS symptoms in 2020 and 2021, it was possible to observe changes in the sociodemographic and clinical profile of individuals. Highlights include an increase in SARS in the 20-49 age group, a reduction in pre-existing health conditions, except obesity, changes in reported signs and symptoms, and a decrease in hospital admissions and ICU admissions. An increase in the prevalence of death and SARS reports due to COVID-19 was also observed. These changes may reflect the effect of different variants of SARS-CoV-2, which have emerged over time, associated with the fact that the population has incomplete or no immunization, contributing to greater chances of presenting more serious clinical conditions.

The set of clinical and sociodemographic information increases the current evidence, adding important data capable of benefiting the conduct of health professionals and hospital management, demonstrating the importance of an efficient system for reporting and monitoring health problems.

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AUTHORS' CONTRIBUTION

Beck PB, Possuelo LG, Renner JDP contributed to study conception or design, work data interpretation, preparation of preliminary versions and critical review of important intellectual content. **Carneiro M, Gregiani, Schneider APH, Valim, ARM**, contributed to data analysis, work discussion and formatting and critical review. All authors approved the final version of the manuscript and declare themselves responsible for all aspects of the work.