SEVEN
publicações acadêmicas

Epidemiological profile of COVID-19 in the Vale do Aço Region

Crossref doi
https://doi.org/10.56238/innovhealthknow-001

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ABSTRACT

Introduction: The infection caused by the SARS-CoV-2 virus spread rapidly and moved public health teams around the world in search of answers regarding the clinical and epidemiological characteristics of the disease, forms of transmission and prevention. According to the World Health Organization, a strategic plan of preparation, preparedness and rapid response consistent at the national, regional and global levels was needed, which allowed the end of the acute phase of the pandemic, as well as the stabilization of the occurrence of new cases. In this sense, it is essential to understand the epidemiology in the different scenarios to propose strategic measures for the prevention and control of the disease at the different levels of care. Objective: The present study aims to describe the characteristics of severe COVID-19 in the Vale do Aço region – Minas Gerais. Methodology: The research was carried out through a cross-sectional study based on the collection and analysis of secondary data, made available by the Regional Health Secretariat of Coronel Fabriciano, located in the municipality of Coronel Fabriciano, Minas Gerais. These data relate to the confirmed cases of severe COVID-19 that occurred between February 2020 and July 2022, in the cities of Coronel Fabriciano, Ipatinga, Santana do Paraíso and Timóteo. After obtaining these data, they were organized and tabulated in a spreadsheet in the Excel® program, where averages, absolute and relative frequency were calculated. Results: The preliminary results showed that there were 6041 cases of severe COVID-19 in the Vale do Aço region, of these, 56% (n=3374) were from the city of Ipatinga. 54% (n=3269) of the sample corresponded to males, and the mean age was 60.6 years. The symptoms presented by the patients were mainly cough (79.6% - n= 4473), dyspnea (80.1% - n=4442) and fever (61.3% - n=3264), such that about 59% (n=3543) of the sample had a pre-existing risk factor. Regarding the evolution of the cases, about 30% of the individuals died. Conclusion: Given this, it was possible to characterize the individuals who were in a serious condition due to the infection in the region, which may be an aid in the creation of measures to combat it.

Keywords: Coronavirus, Epidemiological profile, COVID-19.

1 INTRODUCTION

With the emergence in December 2019 of the first cases in Wuhan, China, a virus of the Coronaviridae family, called SARS-CoV-2, has put the world on alert with its rapid spread. COVID-19 has affected more than 700 million individuals worldwide, causing more than 7 million deaths, while in Brazil, there have been more than 37 million confirmed cases and more than 690,000 deaths. (LANA et al., 2020; LIMA, 2020; PAHO, 2020; WHO, 2022).

Given the forms of contagion (direct, indirect or close contact with infected people through salivary and respiratory secretions that are eliminated through coughing, sneezing or speech) and the characteristics that the disease demonstrated, epidemiology defined that the best way to prevent SARS-CoV-2, would be social isolation, because it accesses that people become infected at a lower speed and, Thus, the health system can meet the demand presented by each city and state of the countries. In addition, efficient testing and screening demonstrate positivity in controlling the virus, in addition to mass vaccination (MACIEL, 2020; XAVIER et al, 2020).

With the increasing number of people infected by COVID-19, epidemiology has gained great prominence, as it is the part of health science that studies epidemics and factors that are related to the illness of the population, whether they are environmental, social, cultural, genetic factors and exposures to biological or chemical agents. Thus, the same search for more effective responses to emerging health demands and problems (LANA et al., 2020; OLIVEIRA et al., 2015).

Given the data collected and recorded by epidemiology, it is possible to draw an epidemiological profile about a given population and/or disease, thus identifying the points of vulnerability, which consequently need more support from health services and entities. Given this, the design of the epidemiological profile in each region can help in a positive way in reducing cases and combating the pandemic, being a tool of extreme importance for scientific production (OLIVEIRA et al., 2015). Thus, the present study aimed to describe the characteristics of individuals who presented severe COVID-19 in the region of Vale do Aço – Minas Gerais.

2 METHODOLOGY

This is a cross-sectional study conducted through the analysis of data collected through the influenza surveillance system, SIVEP-Gripe, through the regional health of Coronel Fabriciano, Minas Gerais. These refer to confirmed cases of COVID-19 that required hospitalization and/or died in the metropolitan region of Vale do Aço, which comprises the municipalities of Coronel Fabriciano, Ipatinga, Santana do Paraíso and Timóteo.

The data correspond to the severe confirmed cases that occurred between February 2020 and July 2022, and are arranged in an Excel® spreadsheet. For the study, the following variables were used: year of notification, gender (female and male), race/color (brown, white, yellow, black and indigenous), schooling (illiterate/no schooling, elementary school, high school and higher education), city of residence, presence or absence of clinical manifestations, risk factors and evolution of cases (cure or death). Then, the means, relative and absolute frequency of the variables were calculated, thus describing the epidemiological profile of the disease in the region.

The study was approved by the Research Ethics Committee (CEP) of the Centro Universitário Católica do Leste de Minas Gerais, under number 5,559,405 and followed the precepts of Resolution 466/12.

3 RESULTS AND DISCUSSION

Data collection identified 6,041 confirmed cases of severe COVID-19 in the Steel Valley metropolitan region between February 2020 and July 2022. Of these 55.1% (n = 3,374), corresponded to inhabitants of the municipality of Ipatinga, followed by Coronel Fabriciano with 19.4% (n = 1,172), Timóteo with 18.7% (n = 1,132) and Santana do Paraíso with 6.0% (n = 363).

It was noted that a higher number of cases occurred among males, 54.1% (n=3269) and the mean age was 60.6 years, of which 56.1% (n = 3,389) were individuals aged 60 years or more, as can be seen in Table 1. According to Drefahl et al. 2020, according to a study conducted in Sweden in 2020, male and older patients had a higher risk of death from the disease (DREFAHL et al., 2020).

Table 1 - Sociodemographic characterization of the sample of severe confirmed cases of Covid-19 in the Vale do Aço region, Minas Gerais between 2020 and 2022.

Variables	**n**	**%**
Gender (n = 6,041)		
Female	2765	45,8
Male	3269	54,1
Ignored	7	0,1
Age group (n = 6,041)		
Children and adolescents	105	1,7
Adult	2547	42,2
Old	2536	42
Long-lived elderly	853	14,1
Race/color (n = 6,039)		
White	856	14,2
Black	254	4,2
Yellow	48	0,8
Pardon	3938	65,2
Indigenous	1	0
Ignored	942	15,6
Education (n = 3,920)		
Higher education	88	2,2
Middle school	494	12,6
Fundamental cycle 2 (6th grade to 9th grade)	478	12,2
Fundamental cycle 1 (1st grade to 5th grade)	590	15,1
Illiterate/unschooled	147	3,7
Not applicable*	15	0,4
Ignored	2108	53,8

Source: Regional Secretariat of Health - Influenza Epidemiological Surveillance Information System, SIVEP-Gripe, 2022.
* Individuals aged < 7 years, therefore, had no measurable schooling.

Regarding race/color, according to table 1, it was observed that the largest number of seriously ill individuals self-declared as mulatto, 65.2% (n = 3,938). Corroborating this finding, a study of the association between neighborhood characteristics and COVID-19 mortality rates in Chicago noted that black residents were at the highest risk of death from COVID-19 (BRYAN, et al., 2021).

Table 2 - Clinical characterization of the sample of severe confirmed cases of Covid-19 in the Vale do Aço region, Minas Gerais between 2020 and 2022.

Variables	**n**	**%**
Clinical manifestations		
Fever (n = 5.325)		
No	1896	35,6
Yes	3264	61,3
Ignored	165	3,1
Cough (n = 5,620)		
No	1041	18,5
Yes	4473	79,6
Ignored	106	1,9
Sore throat (n = 4,715)		
No	3761	79,8
Yes	688	14,6
Ignored	266	5,6
Dispneia (n = 5.545)		
No	993	17,9
Yes	4442	80,1
Ignored	110	2
Respiratory distress (n = 5,072)		
No	1919	37,8
Yes	2926	57,7
Ignored	227	4,5
Low saturation (n = 5,226)		
No	1586	30,3
Yes	3461	66,3
Ignored	179	3,4
Diarrhoea (n = 4,707)		
No	3679	78,2
Yes	762	16,2
Ignored	266	5,6
Vomiting (n = 4,708)		
No	3761	79,9
Yes	680	14,4
Ignored	267	5,7
Risk factor (n = 6,041)		
No	2498	41,14

Yes	3543	58,6
Case evolution (n = 6,038)		
Care	4233	70,1
Death	1790	29,6
Death from other causes	11	0,2
Ignored	4	0,1

Source: Regional Secretariat of Health - Influenza Epidemiological Surveillance Information System, SIVEP-Gripe, 2022.
* Individuals aged < 7 years, therefore, had no measurable schooling.

When talking about clinical manifestations, dyspnea, low saturation and cough were the predominant signs among the individuals, corresponding to 80.1% (n= 4442), 66.3% (n= 3461) and 61.3% (n= 3264) of the cases, respectively, as can be seen in Table 2. This reinforces the study conducted by Abreu et al. 2020, which characterizes COVID-19 in a clinical-epidemiological way, where fever, dry cough and dyspnea, obtained a greater predominance among the confirmed cases for the disease (ABREU et al., 2020).

Analyzing the presence or absence of risk factors, 58.6% (n= 3543) of the cases had some previous comorbidity. The presence of comorbidities remained significant to explain the risk of coronavirus deaths in the study by Galvão et al. 2020, which conducted a survival analysis of individuals notified for COVID-19 in the state of Rio Grande do Norte (GALVÃO et al., 2020).

Finally, 29.6% (n= 1790) of the cases died from severe COVID-19 in the region, while 70.1% (n= 4233) were cured. From the analysis of the data it was possible to better understand the epidemiological profile of the disease in its severe condition, however, some limitations were found in the course of the tabulations and analyses, such as incomplete data or ignored by the inadequate completion of the compulsory notification forms, which hinders the processing of the data. However, the study demonstrates the reflection of the reality of the region studied and follows other national findings.

4 CONCLUSION

The results obtained characterize the epidemiological profile of severe COVID-19 in the metropolitan region of Vale do Aço between 2020 and 2022, characterized by a higher number of cases among men, elderly, self-declared browns, inhabitants of the city of Ipatinga, presence of fever, dyspnea, low saturation and risk factors.

The design and characterization of the course of the disease among individuals affected by COVID-19 in each location can be a tool for planning actions and policies to contain the virus, defining vulnerable and priority groups. In addition, it is worth sensitizing and training health professionals about the importance of properly filling out the compulsory notification forms for decision-making, as well as for understanding the reality of a pathology in each place.

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