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ANALYSIS OF THE EPIDEMIOLOGICAL PROFILE OF THE COVID-19 PANDEMIC IN A CITY IN THE INTERIOR OF SÃO PAULO

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Abstract: **Goal:** To analyze the epidemiological behavior of the COVID-19 pandemic in a city in the interior of São Paulo. **Case Details:** Covid-19, a pandemic pathology in the current global context, poses a great challenge to health teams and government authorities. Its erratic, serious and rapidly transmissible behavior makes it imperative to compile epidemiological data and demoGraphics so that a profile of the disease can be drawn, as well as the course of the pathology and its impacts on the population and the health system can be understood. The study was approved by the Research Ethics Committee, under the CAAE number 39721920.0.0000.5384. Final considerations: Knowledge of the implications of COVID-19 and its effects allows better targeting of health system actions, ensuring greater effectiveness of the care offered, as well as promoting improvements in current public health policies both in terms of public health management. for adequacy of expenses involving sequelae arising from the pathology and in preparing to face new health crises.
Keywords: Covid-19, Epidemiology, Pandemics.

INTRODUCTION

On December 31, 2019, the World Health Organization (WHO) was informed about new cases of a pathology that was associated with pneumonia of unknown etiology detected in the city of Wuhan, China. Subsequently, as the studies progressed, it was determined that the etiological agent was the coronavirus (Covid-19) (NETTO, 2020). Over time, due to the increase in the number of cases, due to the high rates of transmissibility and the worsening of the disease in the world, the WHO, in March 2020, decreed a state of pandemic, and advised that all countries in the world make collective health plans with the clear objective of containing the transmission of the virus (WHO, 2020; BRASIL, 2020d).

In Brazil, several measures have been adopted by states and municipalities, such as the closure of schools, shops, parties and other places with greater crowds, that is, that increase the spread of the virus (GARCIA, 2020). The population was instructed to carry out their activities at home and public authorities decreed a total blockade (lockdown) throughout Brazil, with punishments for establishments and individuals that did not comply with the regulations (BRASIL, 2020c).

The transmission of the disease occurs through contact with infected people, directly, through droplets emitted when coughing and sneezing, for example, or indirectly, through contact with contaminated objects and surfaces (BAI, 2020). In addition, the disease can be transmitted even in asymptomatic patients, during the incubation period, that is, these people are infected by Covid-19, eliminating the virus, but have not yet developed symptoms, stating the importance of isolation (JIN, 2020).

The first case of COVID 19 in Brazil was notified in February 2020, and in April 2022, with more than 2 years of the pandemic, almost 30 million and 300 thousand cases were recorded in the country, in addition to the expressive negative mark of more than 661 thousand deaths inherent or related to the disease. Of the deaths that occurred during this period, more than 335,000 occurred in the state of São Paulo (BRASIL, 2020a; BRASIL, 2022).

The clinical picture of Covid-19 infection is very broad and nonspecific, very similar to other viral respiratory infections, such as Influenza, which makes diagnosis difficult (GUAN, 2020). There are common prodromal symptoms of infection also in Coronavirus infection, such as fever, cough, myalgia, diarrhea, headache and odynophagia, but the so-called Gripal Syndrome includes the main manifestations of the disease, which

are: feverish sensation or fever (even if not measured), cough, sore throat or runny nose. Severe forms, with signs and symptoms such as dyspnea, tachypnea and need for oxygen therapy, are classified as Severe Acute Respiratory Syndrome (SARS), which fit the severe form of the disease. In addition, there are asymptomatic patients, who are characterized by a positive laboratory test for Covid-19, without any symptoms (BAI, 2020).

In the municipality of Morro Agudo, a city located in the interior of São Paulo, with an estimated population of almost 34 thousand people, according to data from the IBGE 2021, with a population of 29,166 confirmed in the last census of 2010, 1499 cases were reported, from the beginning of the pandemic in 2020 until the end of March 2021 (BRASIL, 2010).

This study aims to analyze the epidemiological and demographic behavior of the coronavirus in the population of Morro Agudo/São Paulo; was carried out by resident doctors of the Medical Residency Program in Family and Community Medicine at COREME Morro Agudo/SP, undergraduates from the Faculty of Medicine of the Centro Universitário Municipal de Franca-UniFACEF and with the support of Epidemiological Surveillance to obtain data from the municipality studied. Aiming to determine the distribution of diseases or conditions related to health, according to time, place and/or characteristics of individuals, such as age, sex and associated comorbidities.

Due to the implications of Covid-19 and its effects, this study sought to collect data and analyze the epidemiological and demographic behavior of COVID19 in the population of the municipality of Morro Agudo, thus allowing better targeting of health system actions, greater effectiveness of care offered and, therefore, improvements in current public health policies.

METHODOLOGY

The research project of the study was submitted to the Ethics and Research Committee (CEP) of the Centro Universitário Municipal de Franca (Uni-FACEF), through Plataforma Brasil, with approval on November 16, 2020, with CAAE 39721920.0.0000.5384.

1499 medical records referring to the months of May 2020 and March 2021 were analyzed, using epidemiological spreadsheets from the Epidemiological Surveillance of the municipality of Morro Agudo/SP, maintaining the ethical secrecy that scientific research advocates.

RESULTS

Data analysis allowed the elaboration of Graphics and tables presented below, allowing to elucidate the epidemiological behavior of Covid-19 in the analyzed municipality.

Graphic 1 quantifies the proportion of affected patients related to gender; when analyzing it, it is possible to notice that of the 1499 patients studied, 860 were women and 639 men, showing a higher incidence of women affected by the disease in the studied period. When age is evaluated along with sex, we realize that the population between 20 and 50 years old, both male and female, is the most affected by the disease, around 60% of cases. According to the analysis, it is still possible to see that the least affected population, in both sexes, are the elderly over 70 years of age, approximately 7% of cases. During the analysis of the data provided by the Epidemiological Surveillance, information was found without proper completion, which constituted the group of "no data", where patients were confirmed as positive Covid-19, however, in the epidemiological worksheet there was no data, such as gender, age and symptoms. These researchers understood that it was pertinent to attach and present such data, despite the evidenced bias, with

a view to reinforcing the need for adequate completion of medical records and historical and evolutionary spreadsheets of patients.

The epidemiological study also allows the measurement of another very relevant data regarding the number of health professionals who were diagnosed with Covid-19 in this period, as we can see in Graphic 2, 11% of the population affected by the disease during the study period were professionals from the health area, that is, 166 people, and 89%, 1333 people, people who designated themselves related to other professions.

When we analyzed the signs and symptoms, the following were included in the study: sore throat, cough, fever, headache, taste disturbances, olfactory disturbances, runny nose, dyspnea, asymptomatic and others (vomiting, diarrhea, myalgia, dizziness), as shown in the Graphic 3. Among females and males, cough is the main symptom, representing about 60% of reported symptoms. Another very prevalent symptom is fever, which represents approximately 40% in both sexes, and dyspnea, which had an average involvement of approximately 19.5%, followed by the "others" group, which represents approximately 50% in both sexes.

It is noted that asymptomatic patients represented about 8% of the population studied and that among the symptoms with lower rates of involvement are gustatory and olfactory disorders in males corresponding to a rate of 5% of involvement. In the female gender, there was less involvement when it came to symptoms such as a runny nose and gustatory and olfactory disorders, with a correspondence of 6% for each of the symptoms. It is also noted that the women were also less asymptomatic, which also corresponded to a rate of 6% of the women who responded to the study.

Still on the symptoms, we can observe them according to the age of the affected
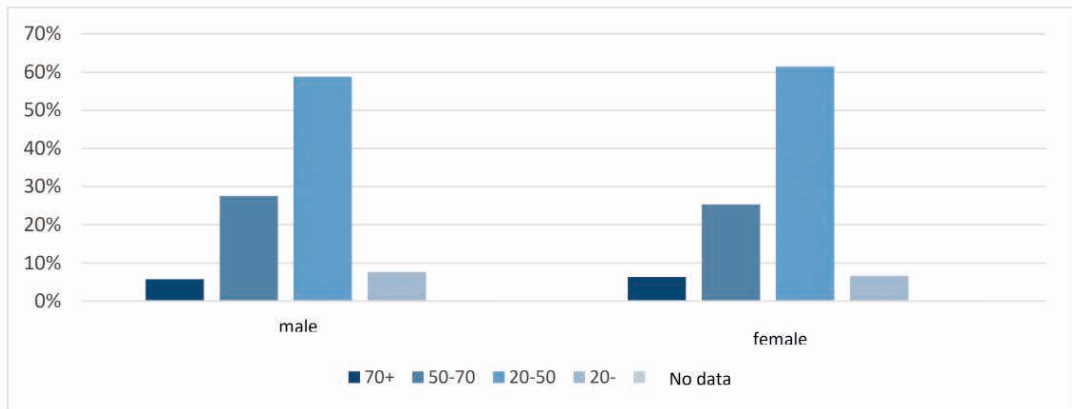
Graphic 1: Percentage of COVID19 involvement based on gender and age in the municipality of Morro Agudo/SP between 2020 and 2021.

Source: Hungaro TA, et al., 2022.
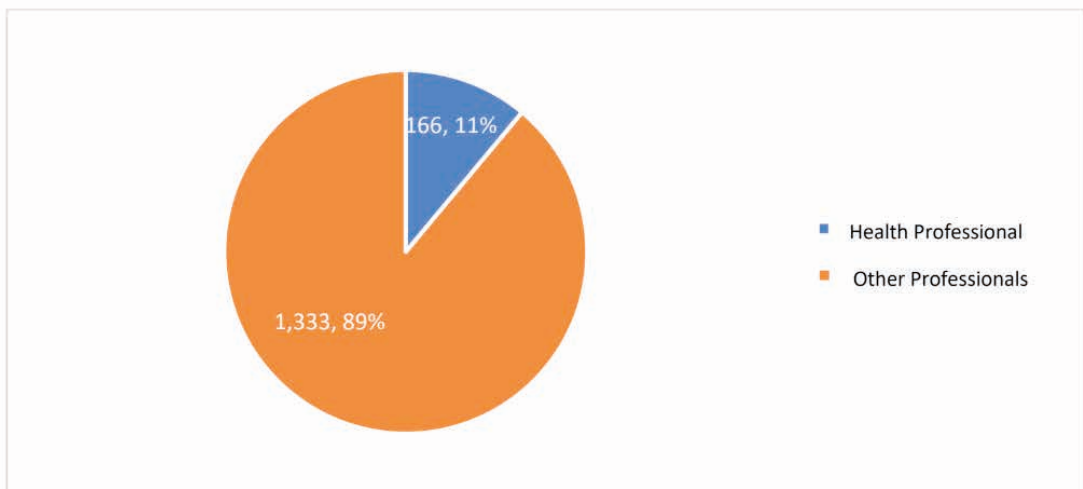
Graphic 2: Percentage of health professionals diagnosed with Covid-19 compared to the rest of the population, in the municipality of Morro Agudo/SP, between 2020 and 2021.

Source: Hungaro TA, et al., 2022.

patients, as shown in Graphic 4. Cough is the main symptom at all ages, especially in those over 70 years old, representing about 78% aged 40-70 years, approximately 62% and in the group of "no data", approximately 67%. Another very common sign/symptom is fever, especially in the group between 40-70 years old, representing 43%. Alarm symptoms such as dyspnea were reported mainly in the population over 70 years old, representing 35%, while in the population under 20 years old, the category that least reported such a symptom, represents about 13%. The least described symptoms are those of the group of olfactory and gustatory disorders, at all ages analyzed, with the most affected age group being between 20 and 40 years old, around 8%.

Such data presented may suggest that due to the increase in comorbidities with age, the symptoms of covid 19 are expressed more intensely in patients with a higher age group, which allows us to establish a link between the risk posed by contamination by Covid 19 it carries when it affects patients with more comorbidities (LI, 2020).

DISCUSSION

With the global impact of the new coronavirus, it is important to highlight that different populations are susceptible to the same infection in the SUS (Unified Health System) and respond to it, according to their characteristics, both in the proportion of involvement and in the severity of the course of the disease (BRAZIL, 2020b).

In the present study, the choice to compile epidemiological and demographic data is based on the need to build a disease profile, based on a small sample, which can portray relationships on a larger scale. Despite the growing number of related studies, there are few studies that incorporate the perspective of sex, gender and race, relating them to the risks

of disease and aggravation (MONTILLA, 2008).

In this survey, the prevalence of women affected by the disease in the period studied was observed, similar to that reported by Nascimento (2020), who revealed cases in women being 56.13%, with a male/female ratio of 0.78%. These data may be more related to sociocultural characteristics, given the history of greater search for outpatient and emergency care by women, strengthened by public policies and not necessarily given the greater susceptibility of this population to infection (PARK, 2020).

As for the most affected population, 60% of the cases refer to individuals between 20 and 50 years old, a consistent portion, when we look at studies with a mean involvement of 44.18 years old, with the highest proportion of infected people between 30 and 39 years old. This is the economically active age group that is most exposed at work or social leisure events, which may be the infection factor (RAFAEL, 2020).

In agreement with Sant'ana (2020), the population of health professionals demonstrates a high rate of infection, in the present study 11% of the analyzed population, or 166 individuals. This fact is related to the shortage of personal protective equipment, incorrect use of this equipment, work overload and greater exposure to infected patients (SANT`ANA, 2020).

The symptomatological profile demonstrated in the present analysis is predominantly otorhinolaryngological, which corroborates findings in other studies in the literature (ROTHAN, 2020; VELAVAN, 2020). Cough is the most common symptom, present in 60% of the analyzed cases, followed by odynophagia, with approximately 40% prevalence. Alarm symptoms such as dyspnea were mainly reported in the population over 70 years old, representing 35% of the cases
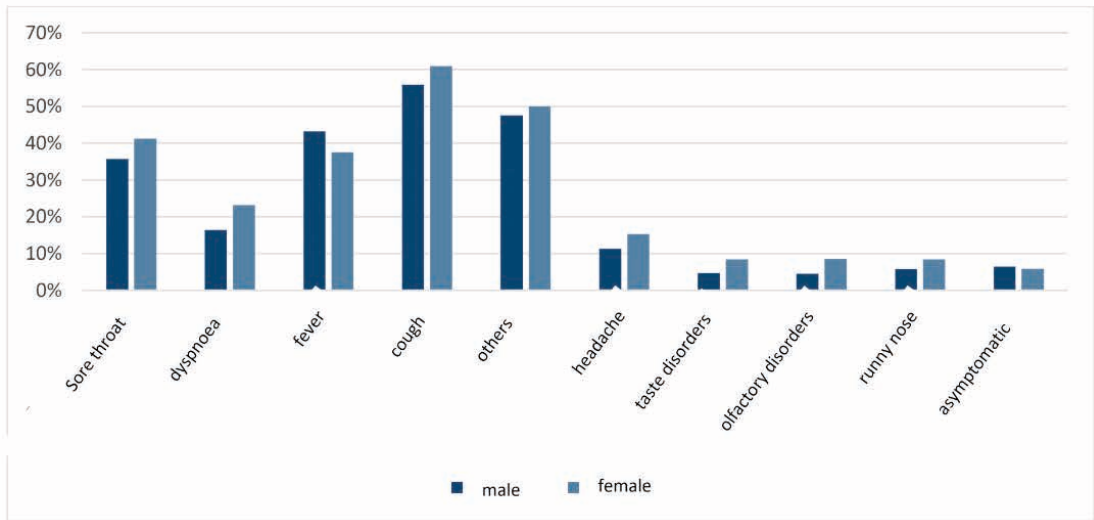
Graphic 3: Incidence of the main symptoms of Covid-19, among males and females, in the municipality of Morro Agudo/SP, between 2020 and 2021.

Source: Hungaro TA, et al., 2022.
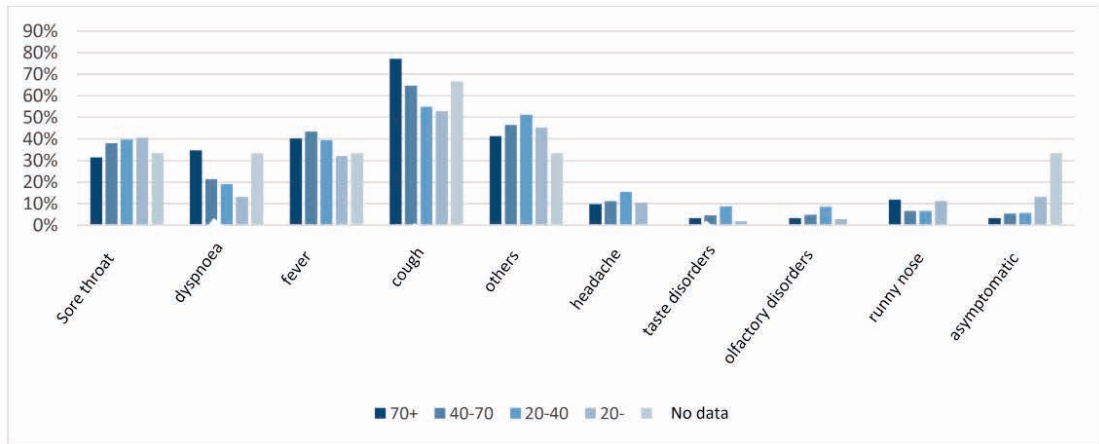
Graphic 4: Prevalence of Covid-19 symptoms according to age, in the municipality of Morro Agudo/SP, between 2020 and 2021. hex

Source: Hungaro TA, et al., 2022.

studied.

The COVID 19 clinic is wide and diverse, and still not very detailed. (ELIBOL, 2021). Asymptomatic cases in the present study accounted for 8% of the general population studied, however data variability, considering the difficulty of diagnosing asymptomatic patients, is an increasingly present bias.

It is inexorable to emphasize that the data analyzed in this work were collected and worked on in a scenario where measures to combat the COVID-19 infection were based on social isolation and the use of protective equipment, at a time when health it was not prepared with resources for the proportion of the infestation (BRASIL, 2020b).

Already with the National Plan for the Operationalization of Vaccination against Covid19 in 2021, and Anvisa's authorization of vaccines for emergency use in Brazil, from Sinovac Life Sciences Co. LTD (inactivated covid-19 adsorbed vaccine -Sinovac/Butantan) and laboratory Serum Institute of India Pvt. Ltd [Oxford] (chAdOx1 nCoV-19 recombinant covid-19 vaccine - AstraZeneca/Fiocruz), on January 17, 2021 and later from Pfizer/Wyeth laboratory on February 23, 2021 and Janssen laboratory on March 31, 2021, and later inclusion in vaccination campaigns, there was a transformation in the epidemiology studied so far (FABRI, 2021).

Thus, the beginning of vaccination in the country had an impact on the reduction of cases in a historical sequence. And this relationship makes room for new studies and survey of this new post-vaccination scenario, also taking into account the factors that influence its effectiveness, such as the time of immunological conversion, associated with age; the logistics of refrigeration, storage, transport and local administration of vaccines, in addition to the reduction in contact care, with less adherence to prevention measures, which can increase viral transmission and delay the end of this nightmare called the Pandemic. Noting that such factors do not take away the need and benefit of vaccination campaigns against COVID-19 in Brazil and in the world (RIBEIRO, 2021).

CONCLUSION

Considering the great impact caused by COVID-19 on the health system, it is extremely important to understand its epidemiological profile in order to devise effective coping strategies. The sample analyzed in the present study points to a greater involvement of females, a higher incidence was also observed between 20-50 years old, thus compromising the economically active population.

The significant incidence of involvement of health professionals reinforces the need to reduce the risks of prolonged exposure, as well as the imperative demand for adequate protective equipment. As in the other scenarios, the most common symptoms were otorhinolaryngological, especially cough and odynophagia; in the most severe cases dyspnoea.

The availability of vaccination against covid 19 brought hope for an improvement in the current scenario and demands the continuation of research to analyze the post-vaccination epidemiological profile. Scientific research allowed the presentation of data obtained to municipal and regional managers, favoring the updating of public policies in force, as well as the creation and adaptation of new ones aimed at supporting the SUS (UNIFIED HEALTH SYSTEM) and bringing excellence to the services.

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