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COVID-19: analysis of confirmed cases in Teresina, Piaui, Brazil

COVID-19: análise de casos confirmados em Teresina, Piauí, Brasil

COVID-19: análisis de casos confirmados en Teresina, Piauí, Brasil

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ABSTRACT

Introduction: Coronaviruses are responsible for respiratory infections that can range from asymptomatic to severe. The spread of the virus around the world has led to a pandemic position, which has claimed numerous victims. Given the magnitude of the problem, the study aims to analyze the epidemiological profile of confirmed cases of COVID-19 in Teresina-PI. **Outline**: Descriptive and epidemiological study. The study population consisted of 315 confirmed cases of Covid-19, in individuals residing in the city of Teresina-PI, between March and April 2020. The variables evaluated were: age group, sex, deaths confirmed by Covid-19 and confirmed cases of Covid-19 by area of the city. **Results**: There was a predominance of confirmed cases of Covid-19 in young, female individuals living in an urban area of Teresina. Most deaths occurred in the elderly, being more prevalent in males. **Implications**: Epidemiological monitoring of cases strengthens the need to implement preventive measures, such as social containment. In addition, the expansion of testing in the population is important, to identify asymptomatic cases and, consequently, to prevent the spread of the coronavirus, considering that these cases favor the transmission chain.

DESCRIPTORS

Coronavirus; Coronavirus Infections; Pandemics; Epidemiology.

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INTRODUCTION

The first human coronaviruses were discovered in 1937, which belong to the family *Coronaviridae*. They present themselves as widely varied, positive sense and single-stranded RNA viruses.[1] Therefore, these microorganisms can cause diseases of changeable magnitude in humans and are responsible for causing some serious acute respiratory infections.[2]

The new agent discovered on December 31, 2019, in Wuhan city, China, which is responsible for the pandemic, is part of the group of coronaviruses and causes the disease called COVID-19.[3] In Brazil, the first case of the disease was detected on February 26, 2020 and it was an imported case. Following this first case, about 11 days later, 25 new infections were confirmed.[1]

As for the initial symptoms of COVID-19, these include fever, cough, myalgia, and fatigue. There are less frequent symptoms, such as sputum production, headache, hemoptysis, and diarrhea.[2] However, as can be seen in the current situation, the manifestations can range from asymptomatic to severe.

Transmission occurs from person to person through droplets of saliva or streakers expelled through the respiratory tract of infected people. In addition, fomites are also a source of infectious particles, given that other types of coronavirus may remain for a few days on unhygienic surfaces, thus culminating in infection by contaminated hands.[4] Therefore, hand washing has a significant impact on viral control, in addition to the use of personal protective equipment such as masks and gloves, for example. So far, there is no specific treatment and efforts are being made to develop vaccines.[3]

In view of the above, it is evident that COVID-19 is concerned about the health of the population and demands emergency control and prevention actions, to reduce the spread of the virus, save lives and mitigate the problems resulting from the pandemic. Considering the relevance of the topic today, its projection and effects at a global level, the objective of the study was to analyze the epidemiological profile of confirmed cases of COVID-19 in Teresina-PI.

METHOD

This is a descriptive, epidemiological study, carried out using secondary data extracted from the "COVID-19 Teresina Panel", which is accessible online and free of charge.

The study site was the city of Teresina-PI, capital of the State of Piauí, which, according to data from the 2010 demographic census, had a population of 814,230 people, a demographic density of 584.94 inhabitants / km^2 and the Development Index Human (HDI) of 0.751. The estimated population for the year 2019 was 864,845 inhabitants.

The study population consisted of 315 confirmed cases of COVID-19 in individuals living in the city of Teresina-PI, between March and April 2020, which are available on the website of the aforementioned information panel (http://www.painelcovid19teresina.pmt.pi.gov.br/). The period stipulated by this study is since the first case notified to COVID-19, in the city of Teresina-PI, occurred in March 2020, and that the panel update, until the time of data collection, last happened on April 30, 2020, at 6 pm.

Data extraction was performed on the first day of May 2020. After that, the data were grouped in Microsoft Excel®, in which the descriptive statistical analysis (absolute and relative frequency) was performed. The variables evaluated were: age group, sex, deaths confirmed by COVID-19 and confirmed cases of COVID-19 by area of the city.

This study was not submitted to the National Health Council's Research Ethics Committee system, due to the fact that it used secondary data from a public domain platform with free access, as recommended by Resolution no. 510, of April 7, 2016, of the National Health Council of the Ministry of

Health of Brazil. However, all ethical aspects set out in Resolution no. 466 of December 12, 2012 of the National Health Council of the Ministry of Health of Brazil were respected.

RESULTS

Table 1 shows the predominance of confirmed cases of COVID-19 in economically active individuals, with the 30-39 age group showing the highest concentration of infected individuals, about 101 cases, corresponding to 32.06% of confirmed cases. It is also noteworthy, with greater concentration of cases, female individuals who live in an urban area of the city of Teresina-PI, with 175 (55.56%) and 313 (99.37%) cases, respectively.

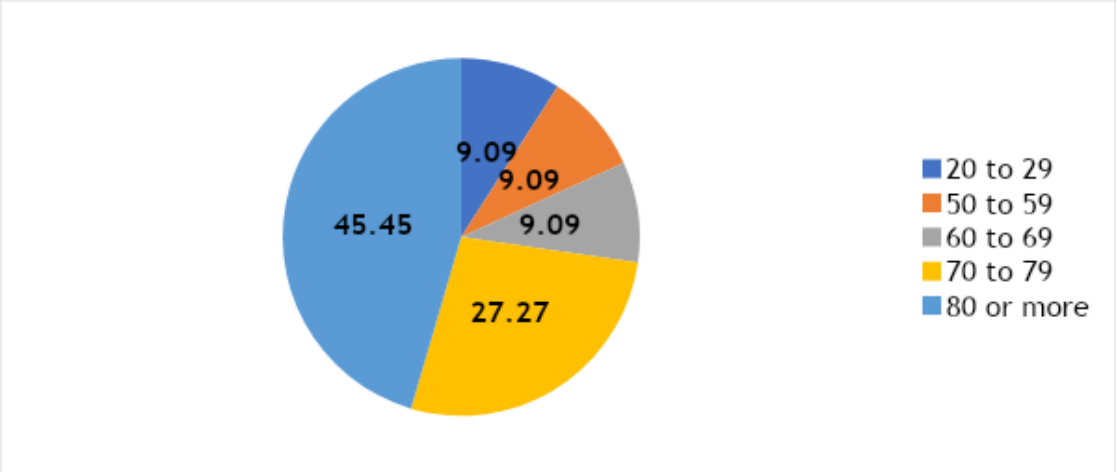
Table 1 – Confirmed cases of COVID-19 by age group, sex and city area. Teresina-PI, Brazil, 2020. (N = 315).

Variable	n	%
Age group (years)		
0 to 9	5	1.59
10 to 19	7	2.22
20 to 29	46	14.60
30 to 39	101	32.06
40 to 49	54	17.14
50 to 59	49	15.56
60 to 69	26	8.25
70 a 79	16	5.08
80 or more	11	3.49
Sex		
Male	140	44.44
Female	175	55.56
City area		
Urban	313	99.37
Rural	2	0.63
Total	**315**	**100.00**

Source: COVID-19 Teresina Panel, Municipal Health Foundation.

It is observed, in Chart 1, that most deaths occurred in individuals aged 60 years or over, which corresponds to 81.81% of all deaths verified in the studied period. It is also observed that the age group of 80 years or more was predominant in deaths by COVID-19 in Teresina, in the analyzed period.

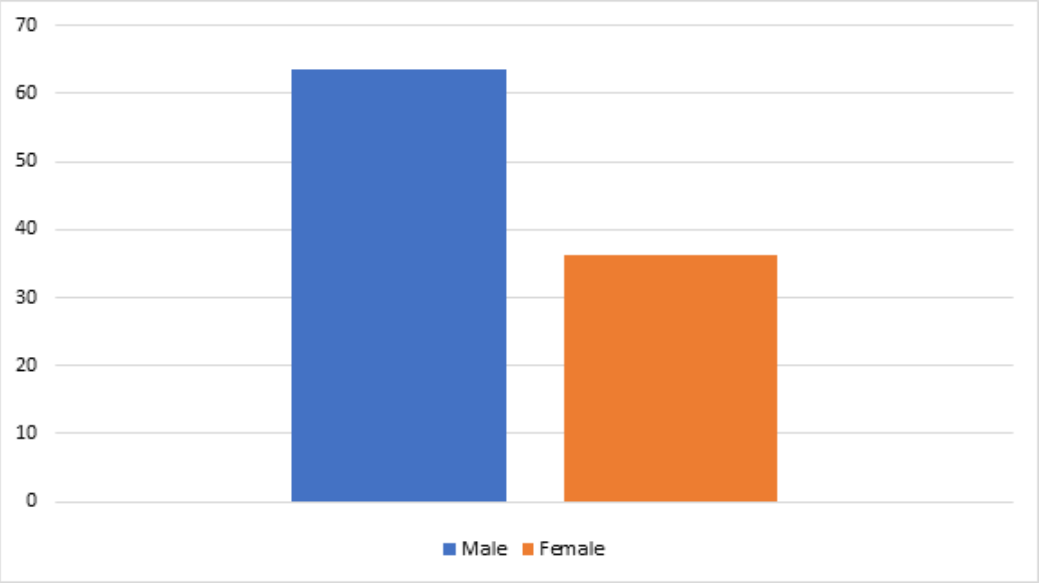
Chart 1 – Deaths confirmed by COVID-19 by age group. Teresina-PI, Brazil, 2020. (n = 11).



Source: COVID-19 Teresina Panel, Municipal Health Foundation.

Chart 2 shows that deaths were more prevalent in males, who accounted for 63.64% of cases.

Chart 2 – Deaths confirmed by COVID-19 by sex. Teresina-PI, Brazil, 2020. (n = 11).



Source: COVID-19 Teresina Panel, Municipal Health Foundation.

DISCUSSION

The predominance of COVID-19 cases in adults in the city of Teresina-PI implies an increase in the number of cases, considering that, in most cases, these individuals are asymptomatic, which favors the spread of the virus and makes it difficult to control the disease in the city. It is important to note that, until the time of data collection, of the 315 confirmed cases with COVID-19, the majority, 204, were undergoing home isolation, another 51 occupied clinical beds and 12 were in intensive care beds. With regard to testing, this was limited, in the period of data collection, to patients who have symptoms of COVID-19, a fact that prevents the real situation of the disease from being traced in the city, as well as denotes underreporting of cases, in view of that there are asymptomatic individuals.

During the period studied, a predominance of COVID-19 cases was identified in economically active individuals. The largest number of infected people was concentrated in the age group of 30 to 39 years, this finding corroborates a study carried out in three hospitals in Beijing, in which the average age of patients was 34 years.[5] This observation, regarding the age group, added to several factors, such as the possibility of asymptomatic infections, high transmissibility, lack of vaccine and evidence of efficacy in drug therapy, have guided decision making to minimize the spread of the virus.[6]

On the other hand, still related to the age group, it was observed that individuals who are between 0 and 9 years old had the lowest frequency of cases, similar to a study that carried out the analysis of the regional panorama of China and also, in isolation, of two cities: Huabei and Wuhan.[7] According to the literature, children are less susceptible to COVID-19 infection.[8] This fact can be justified for a number of reasons, from reduced activities outside the home environment, as well as less time outdoors and fewer trips.[9] In addition, it is important to note that school activities in Teresina-PI are suspended, so children are more restricted to home.

Women have more effective innate and adaptive immune responses than men, this fact makes them more resistant to infections, regardless of their etiology,[10] as well as reduced susceptibility to viral infections due to the protection of the X chromosome and sex hormones, which assist in innate and adaptive immunity,[11] in this study a greater number of cases was observed in females, a fact that corroborates a study carried out in China,[12] but that opposes other Chinese studies,[11,13-14] since, in these studies, the male population was the most affected.

In this study, it was found that the elderly population is more prone to death by COVID-19, which was found in other studies conducted in China[15] and the United States.[16] This is justified by the metabolic changes related to the aging process that prevent the proper functioning of T and B cells, in addition to increasing the production of type 2 cytokines. Therefore, in cases of viral infection, there will be no effective control during the replication of the virus, as well as the prolongation of the pro-inflammatory response that makes this group at greater risk of death.[17]

Health indicators show the existence of a notable difference between the mortality of men and women, with male mortality being the highest in almost all ages, and in most causes.[18] In this study, it was found that men are more susceptible to death. This reality was like a study carried out in China, which is related to the fact that the male population is more prone to comorbidities, as well as to the development of critical conditions during their hospitalization.[19]

This study has limitations related to the underreporting of cases and the use of secondary data, which, daily, may change.

CONCLUSION

From the results presented, there was a progression in the number of infected, regardless of sex and age, as well as in the number of deaths, which affect, above all, the elderly population. There is a similarity between the findings of this study and the reality of other countries, in studies carried out during the progression of the disease. Thus, it is necessary to implement strategies for the control of the coronavirus, such as measures of social distancing, increased testing for the virus, and promotion of notions of hygiene, to reduce the transmissibility of the virus in the studied reality.

RESUMO

Introdução: Os coronavírus são responsáveis por infecções respiratórias que podem variar de quadros assintomáticos a graves. A disseminação do vírus pelo mundo conduziu para uma posição de pandemia, a qual tem somado inúmeras vítimas. Mediante a magnitude da problemática, o estudo tem como objetivo analisar o perfil epidemiológico dos casos confirmados de COVID-19 em Teresina-PI. **Delineamento**: Estudo descritivo e epidemiológico. A população do estudo foi composta por 315 casos confirmados de COVID-19, em indivíduos residentes na cidade de Teresina-PI, no período entre março e abril de 2020. As variáveis avaliadas foram: faixa etária, sexo, óbitos confirmados por COVID-19 e casos confirmados de COVID-19 por área da cidade. **Resultados**: Observou-se a predominância de casos confirmados de COVID-19 em indivíduos jovens, do sexo feminino e que residem em área urbana de Teresina. A maioria dos óbitos ocorreu em idosos, sendo mais predominantes em indivíduos do sexo masculino. **Implicações**: O monitoramento epidemiológico dos casos fortalece a necessidade da implementação de medidas preventivas, como a contenção social. Somado a isso, a ampliação da testagem na população é importante, a fim de identificar casos assintomáticos e, consequentemente, evitar a disseminação do coronavírus, tendo em vista que esses casos favorecem a cadeia de transmissão.

DESCRITORES

Coronavirus; Infecções por Coronavirus; Pandemias; Epidemiologia.

RESUMEN

Introducción: Los coronavirus son responsables de las infecciones respiratorias que pueden variar de asintomáticas a graves. La propagación del virus en todo el mundo ha llevado a una posición de pandémica, que ha contado con innumerables víctimas. Dada la magnitud del problema, el estudio tiene como objetivo analizar el perfil epidemiológico de los casos confirmados de COVID-19 en Teresina-PI. **Delineación**: Estudio descriptivo y epidemiológico. La población de estudio consistió en 315 casos confirmados de COVID-19, en individuos que residían en la ciudad de Teresina-PI, entre marzo y abril de 2020. Las variables evaluadas fueron: grupo de edad, sexo, muertes confirmadas por COVID- 19 y casos confirmados de COVID-19 por área de la ciudad. **Resultados**: Se observó un predominio de casos confirmados de COVID-19 en individuos jóvenes que residían en un área urbana de Teresina. La mayoría de las muertes ocurrieron en los ancianos, siendo más frecuente en los hombres. **Implicaciones**: El monitoreo epidemiológico de casos fortalece la necesidad de implementar medidas preventivas, como la contención social. Además, la expansión de las pruebas en la población es importante para identificar casos asintomáticos y, en consecuencia, evitar la propagación del coronavirus, ya que estos casos favorecen la cadena de transmisión.

DESCRIPTORES

Coronavirus; Infecciones por Coronavirus; Pandemias; Epidemiología.

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COLLABORATIONS

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DISPONIBILIDADE DOS DADOS

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Not applicable.

CONFLICTS OF INTEREST

There are no conflicts of interest to declare.