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Incidence of COVID-19 in the mesoregions of the state of Mato Grosso: confirmed and notified cases

Taxas de COVID-19 nas mesorregiões do estado de Mato Grosso: casos confirmados e notificados

Tasas de COVID-19 en las mesorregiones del estado de Mato Grosso: casos confirmados y notificados

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ABSTRACT

Introduction: The virus (SARS-CoV-2) of the COVID-19 shows high contamination potential, and this disease is already considered a pandemic by the World Health Organization (WHO). The aim of this study was to analyze the COVID-19 rates among mesoregions of the State of Mato Grosso. **Outline:** It is a transversal retrospective study, with analysis of the COVID-19 contamination rates, during the period from March 1 to April 1, 2020. Data were obtained through Epidemiological Bulletin of the State of Mato Grosso and shows the 05 mesoregions starting from the evaluation of confirmed cases; in addition, the most frequent sex (male/female) and age were verified in the State of Mato Grosso. **Results:** The State of Mato Grosso had 28 (100%) of COVID-19 cases; the mesoregion that had the highest infection rate was the Central-Southern Mato Grosso, with 75% of cases; we identified the highest frequency for females (75%) and the average age of 40 years in the State of Mato Grosso. **Implications:** By identifying the risk regions, it is possible to employ preventive measures such as: social isolation, breathing etiquette, and hand hygiene. There are no published studies conducted in the region on the expansion of COVID-19, which makes this study original.

DESCRIPTORS

Epidemiology; Coronavirus; Health Services Research.

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INTRODUCTION

At the end of 2019, in Wuhan, Hubei Province, China, the disease caused by Coronavirus (COVID-19) arose, where, after epidemiological investigation, it was verified that people infected by the virus showed symptoms associated with their exposure at a local market of seafood and live animals available for exotic food for human consumption. In fact, after collecting and analyzing the samples, the Chinese Center for Disease Control and Prevention confirmed the origin of the virus.[1-4]

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first isolated in December 2019, to do so three patients were considered, starting from the sequential genetic analysis of single-stranded RNA, by bronchoalveolar lavage fluid. It was found that the main characteristic of this viral family consists in causing respiratory diseases.[1-2]

The COVID-19 infection symptoms include: fever over 37.8°C, muscle pain, fatigue, cough, and difficulty breathing. Its transmission can be by direct contact through airborne transmission (saliva droplets/aerosols) and indirect through inanimate objects (fomites). So far, the treatment is palliative, there are no vaccines. COVID-19 causes especially respiratory disease, and it is potentially serious and even fatal, mainly in adults over 60 years with preexisting illness (such as diabetes, cardiopathies, pneumopathies, nephropathies), pregnant women, newborns, immunocompromised, cancer and acquired immunodeficiency syndrome (AIDS) patients.[3-6]

The current COVID-19 outbreak resulted in the declaration of a global pandemic by the World Health Organization (WHO), and it is highly pathogenic, with high morbimortality rates, with approximately 64,975 deaths until early April all around the world and a rate of worldwide mortality about 5.85%, with cases reported to the WHO in 146 countries.[2]

Despite the socioeconomic impact and the probability of future outbreaks, the options to prevent or treat COVID-19 infections still remain very limited. This highlights the importance of improving the knowledge about this virus replication and its interactions with the host (man). COVID-19 virus has great interaction with the host, in addition to a large and complex genome, capable of creating an ideal environment for its replication by altering host gene and neutralizing the action of antiviral defenses.[3,5-6]

The infection incidence has been varying according to the country or even regions inside the countries; thereby, by identifying the riskiest regions, it will be possible to establish preventive measures. In this context, the present study aimed to analyze COVID-19 rates in the mesoregions of the State of Mato Grosso.

METHOD

It is a descriptive and cross-sectional study that analyzed and compared the rate of confirmed and reported cases of COVID-19 in the mesoregions of the State of Mato Grosso, in the period from March 1 to April 1, 2020.

Public health data, as well as the COVID-19 incidence in the State of Mato Grosso, are accessible through epidemiological bulletins of the municipalities and state. Initially, epidemiological bulletins of the State of Mato Grosso were consulted, after confirmation of cases, the search was also performed in the bulletins of the municipalities.

For this study, the State of Mato Grosso was selected. The selected variables were the 05 mesoregions of the State: Northern, Northeastern, Southwestern, Central-Southern and Southeastern Mato Grosso. The choose for mesoregions aims to highlight where the disease is proliferating faster and, thus, to enable public health actions addressed to the regions with the highest incidence.

The confirmed cases were analyzed, therefore, by mesoregion. Also, general data from the State in relation to the profile of the confirmed cases were analyzed: sex (female/male) and prevailing age. The inclusion criteria were: COVID-19 cases in the State of Mato Grosso and Midwest region comprised between

March 1 and April 1, 2020 (the period was select in order to evaluate a scenario of the disease in the first month of its emergence); for this study, no case was excluded.

The entering of data was done using the software Tab for Windows - TABWIN (Ministry of Health, Brasília, Brazil), of which data were transcribed into tables and charts, using Microsoft Excel 16.23 - Office 365 2019 (Microsoft Corp., Redmond, USA). The values were presented in percentage, considering the difference among the mesoregions and the study region.

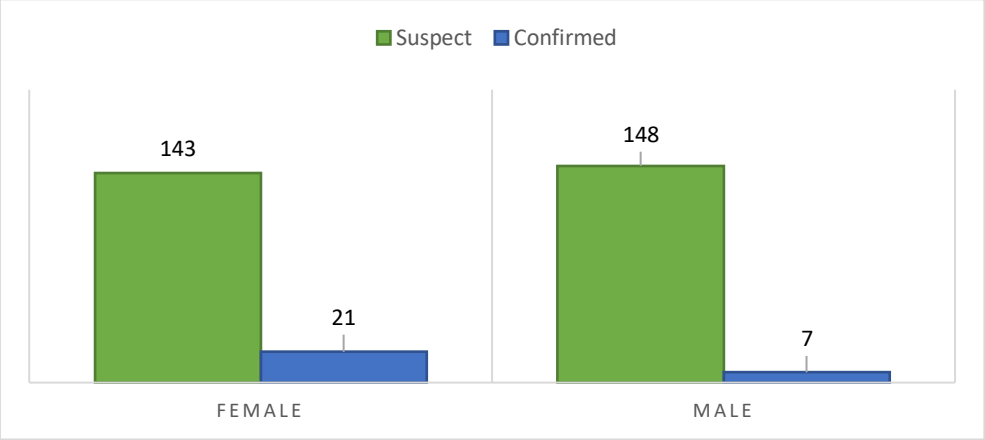
The present study was not submitted to the Human Research Ethics Committee (CEP), according to resolution 466/2012, because it is epidemiological data.

RESULTS

The COVID-19 cases began to be investigated in the State of Mato Grosso on January 31, 2020. The first confirmed case arose on March 20, 2020; in this period, 376 cases were discarded after negative for COVID-19 in the laboratory examination.

The State has 28 confirmed cases until the date of April 1, 2020. Chart 1 shows the relationship between suspect and confirmed COVID-19 cases in the State of Mato Grosso and the most frequent sex (male/female).

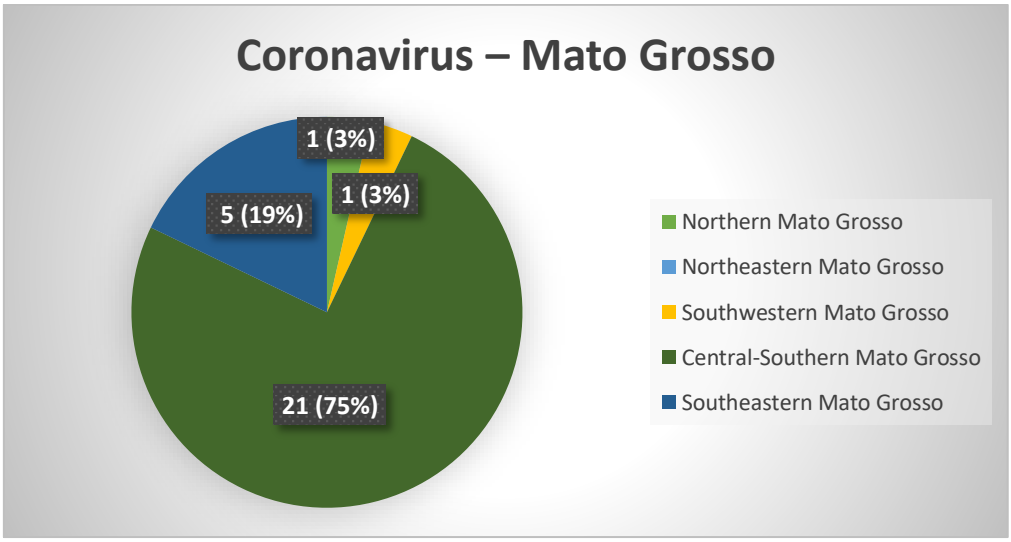
Chart 1 – Relationship between suspect and confirmed COVID-19 cases in the State of Mato Grosso according to sex (male/female). Brazil, 2020.



Source: Epidemiological Bulletin of the State of Mato Grosso / SES-MT, 2020.

Chart 2 shows an analysis of the mesoregions of the State of Mato Grosso, highlighting the confirmed cases in each mesoregion.

Chart 2 – Relationship among the confirmed COVID-19 cases in the mesoregions of the State of Mato Grosso. Brazil, April 1, 2020.



Source: Epidemiological Bulletin of the State of Mato Grosso / SES-MT, 2020.

The most affected mesoregions by COVID-19 are, in descending order: Central-Southern Mato Grosso n=21 (75%); Southeastern Mato Grosso n=5 (18%); Northern Mato Grosso n=1 (3%); Southwestern Mato Grosso n=1 (3%); the Northeastern Mato Grosso region was the only one without confirmed cases for the period. Regarding the age range, most of the study participants were between 40 and 59 years old.

DISCUSSION

In the State of Mato Grosso, the most affected mesoregion during the period of the present study was Central-Southern Mato Grosso. By the way, this mesoregion shows characteristics that can explain that datum: two cities with great number of inhabitants (considering the population pattern of the State of Mato Grosso), Cuiabá, capital of the State, and Várzea Grande - cities with populations over 250 thousand inhabitants each, with international airport and bus stations that give access to other regions, other States of the country and other countries.[7-8]

In this sense, specific actions in this mesoregion are important indicators with a view to seeking to reduce the COVID-19 dissemination rate, as there are many disparities in the mesoregions of the State of Mato Grosso: economic diversity, different levels in health care, in addition to the territorial extension which hinders the identification of new cases in all the municipalities.

Concerning the age range, most of the people stricken with COVID-19 in the State of Mato Grosso were between 40 and 59 years-old. This finding is reiterated by an Australian study that showed an average age of 53 years in 25 patients. This study corroborates the data of the present study, in which the average age is 43 years.[9]

A study published in the prestigious New England Journal of Medicine (NEJM), in January 2020, shows that there was no statistically significant difference in the comparison of those infected with COVID-19 between sexes, with 54% females and 46% males.[9]

Drawing an epidemiological profile of COVID-19 involves systemic conditions, environmental characteristics, and poverty, which would make it possible, in addition to detecting the riskiest areas, to indicate prevention tools, aiming to reduce the rate of spread of the disease.

In this sense, the present study, although very brief, may contribute to the development of preventive measures in the areas that were components of the study, aiming to keep the pace of

organization of the public health system in favor of reducing cases and minimizing the proliferation rate of the disease to other mesoregions and/or regions. We can also emphasize the creation of strategies that can facilitate the identification of new cases.[10-11]

This study allows elucidation of the most affected mesoregions in the State and which sex and age are most affected. This datum indicates the need for more specific and regional studies in high-risk areas in order to monitor and indicate emergency actions and public health policies, aiming to reduce proliferation rates of the disease.

The main limitation of the present study is the fact that the results presented are still under constant modification, as the COVID-19 proliferation rate is not stable. Furthermore, the data are mostly directed to the cultural characteristics of the State of Mato Grosso.

CONCLUSION

According to the analyzed data, the Central-South mesoregion presents higher values when compared to the other regions of the State of Mato Grosso, with prevalence of females and average age of 45 years.

These results demonstrate the need for constant surveillance of the most affected regions and point to the need for new epidemiological studies on COVID-19, making it possible to identify the riskiest areas and thus promote actions aimed at preventing a future outbreak.

RESUMO

Introdução: O vírus (SARS-CoV-2) da COVID-19 apresenta alto potencial de contaminação, sendo a doença já considerada uma pandemia pela Organização Mundial da Saúde (OMS). Neste estudo, o objetivo é analisar as taxas da COVID-19 entre as mesorregiões do Estado de Mato Grosso. **Delineamento**: Estudo retrospectivo transversal, com análise das taxas de infecção por COVID-19, no período de 01 de março a 01 de abril de 2020. Os dados foram obtidos através do Boletim Epidemiológico do Estado de Mato Grosso e retratam as 05 mesorregiões do Estado referido a partir da avaliação dos casos confirmados; também foram identificados o sexo (masculino/feminino) e idade prevalente no Estado de Mato Grosso. **Resultados**: O Estado de Mato Grosso apresentou 28 (100%) de casos de COVID-19; a mesorregião que apresentou maior taxa de infecção foi a Centro-Sul mato-grossense, com 75% dos casos; foi identificada prevalência do sexo feminino (75%) e idade média de 40 anos no Estado de Mato Grosso. **Implicações**: Ao identificar as regiões de risco, é possível aplicar medidas preventivas como: isolamento social, etiqueta respiratória e higienização das mãos. Não existem estudos publicados realizados na região sobre a expansão da COVID-19, o que confere originalidade a este estudo.

DESCRITORES

Epidemiologia; Coronavirus; Pesquisa sobre Serviços de Saúde.

RESUMEN

Introducción: El virus (SARS-CoV-2) COVID-19 tiene un alto potencial de contaminación, siendo la enfermedad se considera una pandemia por la Organización Mundial de la Salud (OMS). En este estudio, el objetivo es analizar las tasas de COVID-19 entre las mesorregiones del estado de Mato Grosso. **Delineación**: Estudio transversal retrospectivo, que analiza las tasas de infección por COVID-19, del 1 de marzo al 1 de abril de 2020. Los datos se obtuvieron a través del Boletín Epidemiológico del Estado de Mato Grosso y representan las 05 mesorregiones del Estado referido a partir de la evaluación de casos confirmados; también se identificaron el sexo (masculino/femenino) y la edad prevalente en el estado de Mato Grosso. **Resultados**: El estado de Mato Grosso presentó 28 (100%) de los casos de COVID-19; la mesorregión con la tasa de infección más alta fue el Centro-Sur de Mato Grosso, con 75% de los casos; la prevalencia de las mujeres (75%) y la edad media de 40 años se identificaron en el estado de Mato Grosso. **Implicaciones**: Al identificar las regiones de riesgo, es posible aplicar medidas preventivas, tales como: aislamiento social, etiqueta respiratoria e higiene de manos. No hay estudios publicados realizados en la región sobre la expansión de COVID-19, lo que le da originalidad a este estudio.

DESCRIPTORES

Epidemiología; Coronavirus; Investigación sobre Servicios de Salud.

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COLLABORATIONS

FR, WRF: Substantial contributions to work conception or design; to data collection, analysis and interpretation; to writing the article or to its critical review; to the final version to be published. CSM: Substantial contributions to writing the article, to its critical review; and to the final version to be published. All the authors agree and take responsibility for the content of this manuscript version to be published.

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AVAILABILITY OF DATA

Not applicable.

FUDING SOURCE

Not applicable.

CONFLICTS OF INTEREST

There are no conflicts of interest to declare.