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Original article

Clinical and epidemiological profile of deaths associated to COVID-19 in Montes Claros-MG from April 2020 to September 2021

Perfil clínico e epidemiológico dos óbitos relacionados à COVID-19 em Montes Claros-MG, entre abril de 2020 a setembro de 2021

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Abstract

Objective: to understand the clinical and epidemiological profile of deaths related o SARS-CoV-2 in Montes Claros-MG from April 2020 to September 2021. **Materials and Methods:** a descriptive documentary research was conducted, using a cross-sectional temporal delimitation. The analyzed documents were Death Certificates in which COVID-19 infection was confirmed through clinical and epidemiological criteria. The project was approved by the Research Ethics Committee of the Educational Association of Brazil. **Results:** in the present study, there was a higher prevalence of deaths in males, with a mean age of confirmed cases being 65 years, 64.78 years for males, and 65.25 years for females. Regarding comorbidities, it was found that 86% of patients who died from COVID-19 had one or more comorbidities. Among these comorbidities, approximately 38.1% of the deaths occurred in patients with Systemic Arterial Hypertension (SAH), 35.1% had some form of heart disease, 32.3% were diabetic, 15.3% were obese, 7.7% had kidney disease, 5.1% had some form of lung disease, and 1.5% were smokers. **Conclusion:** this study underscores the importance of adopting protective measures for the most vulnerable groups in terms of complications and deaths, through early diagnosis and rigorous clinical monitoring.
Keywords: Mortality. COVID-19. Epidemiology. SARS-CoV-2. Pandemic.

Resumo

Objetivo: compreender o perfil clínico e epidemiológico dos óbitos relacionados ao SARS-CoV-2 em Montes Claros-MG, entre abril de 2020 a setembro de 2021. **Materiais e Métodos:** foi desenvolvida uma pesquisa documental descritiva, realizada através de levantamento de dados com delimitação temporal transversal. Os documentos analisados foram as Declarações de Óbitos cuja infecção pelo COVID-19 foi confirmada por critérios clínico-epidemiológico. **Resultados:** houve maior prevalência de óbitos no sexo masculino, apresentando média de idade dos casos confirmados de 65 anos, sendo 64,78 anos para o sexo masculino e 65,25 anos para o sexo feminino. Em relação as comorbidades, ficou constatado que 86% dos pacientes que evoluíram ao óbito por COVID-19 tinham uma ou mais comorbidades. Entre eles, 38,1% possuíam hipertensão arterial sistêmica, 35,1% alguma cardiopatia, 32,3% tinham diabetes mellitus, 15,3% obesos, 7,7% portadores de doença renal, 5,1% possuíam alguma pneumopatia e 1,5% eram tabagistas. **Conclusão:** este estudo reforça a importância da adoção de medidas protetivas dos grupos mais vulneráveis as complicações e óbitos, através de um diagnóstico precoce e o monitoramento rigoroso do quadro clínico.
Palavras-chave: Mortalidade. COVID-19. Epidemiologia. SARS-CoV-2. Pandemia.

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Introduction

Viruses are diseases that cause concern and can cause death. Great attention has been paid to the SARS-cov-2 virus, which, due to its dissemination and pathogenicity profile, was responsible for the COVID-19 pandemic in 2020, causing not only deaths but also various social and economic losses worldwide[1].

Despite the existence of coronavirus variants, only in 2002, the first of these viruses with lethal potential was described: SARS-CoV, the cause of Severe Acute Respiratory Syndrome (SARS). Subsequently, on January 7, 2020, after multiple cases of pneumonia occurred in the city of Wuhan, China, a new coronavirus with lethal potential was identified and named as SARS-CoV2, the etiological agent of COVID-19[2].

It is valid to infer that those who become infected with SARS-COV-2 may present a diversified clinical picture, and may present mild, moderate to severe and rapidly progressive and fulminant manifestations. In this sense, it is necessary to ratify that the symptoms of COVID-19 are nonspecific and the presentation of the disease can vary from the absence of symptoms to severe pneumonia and death[3].

Regarding deaths related to COVID-19, they were heterogeneous between the different cities and regions of the country[4,5].

A study conducted in Brazil revealed a mortality rate of COVID-19 that reached the figure of 119.9/ 100,000 inhabitants. This same study described that COVID-19 mortality in Brazilian states is an important parameter to understand the epidemic pattern. This study infers that the risk of death may be related to different issues, such as: potential for dissemination, places whose population density is higher, greater degree of urbanization, greater income inequality, health coverage in terms of infrastructure and health professionals, among others[2].

Furthermore, there are other individual factors that may increase the risk of deaths caused by COVID-19, especially in elderly individuals, especially those over 80 years of age, patients with comorbidities, men and non-white skin[6]. However, it is worth mentioning that severe disease can occur in healthy individuals with any age, but it predominates in adults with advanced age or underlying clinical comorbidities, such as cardiovascular disease, diabetes mellitus, hypertension, chronic lung disease, cancer, chronic kidney disease, immunocompromised individuals, severe obesity and kidney disease[7].

This study aimed to understand the clinical and epidemiological profile of deaths related to COVID-19 in the city of Montes Claros-MG from April 2020 to September 2021.

Materials and Methods

This is a work characterized by a quantitative, descriptive approach, carried out by means of data collection with cross-sectional temporal delimitation. Data from death certificates in Montes Claros-MG from April 2020 to September 2021 were analyzed.

Montes Claros is located in the north of Minas Gerais, is the headquarters of macro and micro region according to the Regionalization Master Plan of the state, has an estimated population in 2020 of 413,487 people according to the IBGE, being the 6th most populous city in the state, Therefore, the city plays a prominent role with regard to deaths in the state[8].

The inclusion criteria were: a) Patients whose Death Certificate (DC) presented a sequence of events that started with COVID-19 or only stated that the death occurred from COVID-19, and COVID-19 was considered the basic cause (part I) in that document; b) Patients whose DC contains the following codes: B34.2 (Coronavirus infection of unspecified location) and U07.1 (COVID-19, virus identified); c) Deaths in which the certifier considered that COVID-19 has aggravated or contributed to death, being reported as a contributing cause in part II of the DC; d)Patients with negative results for the nasal/oropharyngeal swab, whose case was discussed by the care team, considering the clinic and the results of imaging tests, such as computed tomography, for possible confirmation of death by COVID-19 and, after careful discussion of death, COVID-19 is confirmed by clinical-epidemiological criteria; and) DC consisting of Montes Claros/MG as the location where the death occurred as well as the place of residence of the patient; f) DC with date between April 1, 2020 and September 31, 2021.

The exclusion criteria were: a) Patients whose DC had a sequence of events that begins with SUSPECTED COVID-19 or only states that the death occurred due to SUSPECTED COVID-19, presenting code B34.2 (Unspecified location coronavirus infection) and marker U07.2 (COVID-19, unidentified virus or clinical-epidemiological criterion); b) Patients without the confirmatory laboratory test or with inconclusive investigation of death; c) Patients whose location and residence registered in the DC are divergent from Montes Claros/MG.

The documents analyzed were the Death Certificates (DC) that met the criteria for inclusion and exclusion of the research, as presented.

The following variables were assessed in this study:

a) Block II: Identification

- Date of Death
- Origin

- Sex (female, male, ignored)
- Age

b) Block III: Residence

- City of Residence

c) Block IV: Occurrence

- Place of Occurrence of Death (hospital, street, other health facilities, house, others, ignored)
- City of Occurrence

d) Block VI: Conditions and Causes of Death

- Death in women
  - Death occurred during pregnancy, childbirth and abortion (yes, no, ignored)
  - Death occurred in the puerperium period (yes until 42 days, yes from 43 days to 1 year, no, ignored)
- Diagnosis confirmed by:
  - Complementary test (yes, no, ignored)
  - Necropsy (yes, no, ignored)
- Cause of Death part I: Disease or morbid condition that directly caused death
- Antecedent causes: morbid conditions, if any, that produced the cause recorded above, mentioning the basic cause last.
- Cause of Death part II: other significant conditions that contributed to death and that were not included in the chain above.

The researchers contacted the Epidemiological Surveillance of the Municipal Health Department of Montes Claros and obtained access to the information necessary for data collection.

Data analysis was performed quantitatively by establishing the simple percentage frequency of the variables that were studied and relating them to data already existing in national and international public domain banks. The data were collected, placed in Excel spreadsheets, consolidated and presented through graphs and tables.

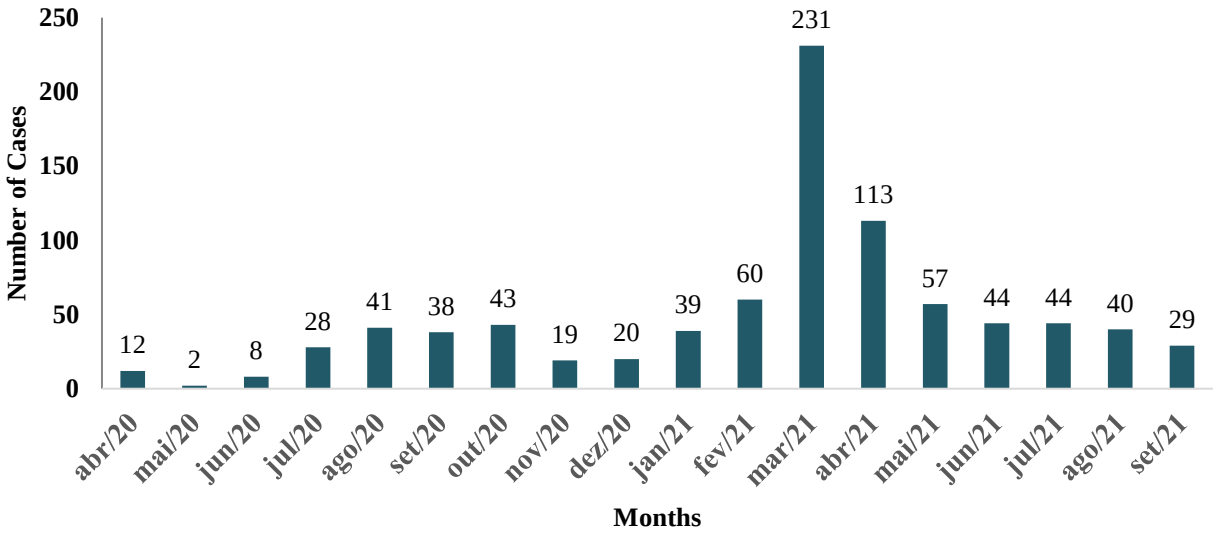
Ethical care

The study was approved by the Human Ethics Committee, by the opinion n. 52950521.0.000005141.

Results

The first reported death in this study occurred in Montes Claros on April 5, 2020 and the last computed death occurred at the end of September 2021 (Figure 1). In the period studied, a total of 868 deaths occurred, of which 211, equivalent to approximately 24.3%, occurred in 2020 and 657, equivalent to 75.7% occurred in 2021.

Figure 1. Monthly distribution of deaths from COVID-19 occurring in Montes Claros-MG, from April 2020 to September 2021, according to the date of occurrence.



With regard to sex, according to Table 1, in Montes Claros, there was a higher prevalence of deaths in males, equivalent to 55% of cases.

Table 1. Distribution of deaths in Montes Claros, according to sex and age group from April 2020 to September 2021.

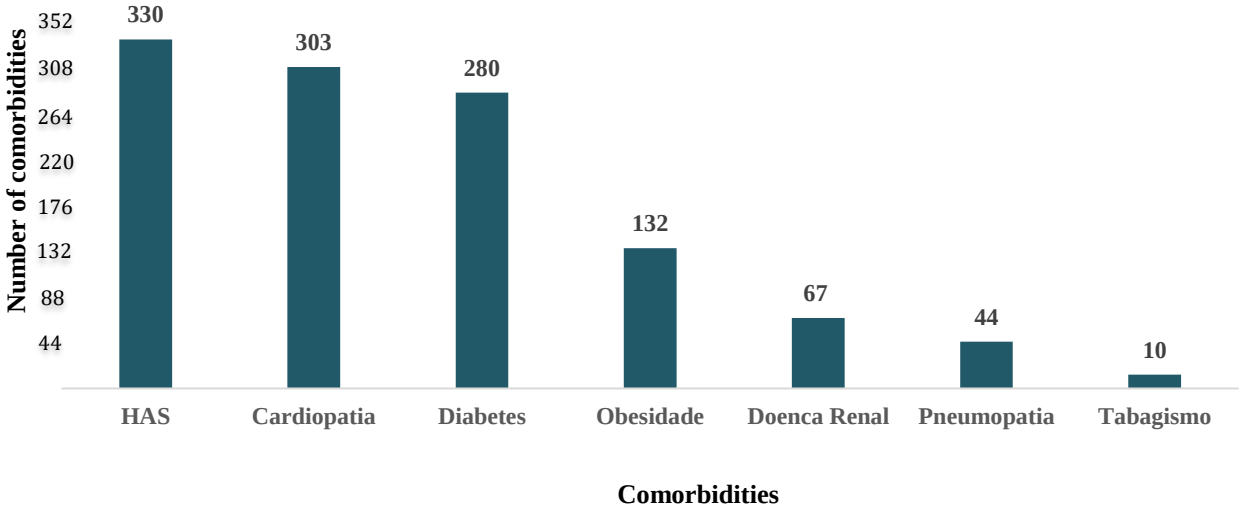
	Population		Female		Male	
Age	**n**	**%**	**n**	**%**	**n**	**%**
0-9 years	01	0.12	0	0.00	01	0.12
10-19 years	02	0.23	01	0.12	01	0.12
20-29 years	11	1.27	04	0.46	07	0.81
30-39 years	52	5.99	23	2.65	29	3.34
40-49 years	101	11.64	42	4.84	59	6.80
50-59 years	124	14.29	61	7.03	63	7.26
>60 years	577	66.47	258	29.72	319	36.75
Total	868	100.00	389	45	479	55

As for the mean age, disregarding sex, it was 65 years. The mean age was 64.78 years for males and 65.25 years for females. In Minas Gerais, the mean age of patients who died was 67 years. Moreover, according to Table 01, 66.47% (n=577) of deaths occurred in people aged 60 years or

older and a direct relationship was found between the increase in age and the increase in the death rate.

According to Figure 2, 38.1% (n=330) of deaths were in patients who had systemic arterial hypertension (SAH), 35.1% (n=303) had some cardiopathy, 32.3% (n=280) were diabetic, and 15.3% (n=132) were obese.

Figure 2. Distribution of deaths from COVID-19 occurring in Montes Claros - MG, from April 2020 to September 2021, according to the associated comorbidity.



Considering the symptoms presented, according to Table 2, 70.83% (n=629) of the patients presented with cough; 59.68% (n=530) dyspnea and 53.94% (n=479) saturation <95%.

Table 2. Symptoms presented by patients who died from COVID-19 in Montes Claros - MG, from April 2020 to September 2021.

Symptoms	n	%
Ageusia	61	6.87
Anosmia	62	6.98
Headache	113	12.73
Runny nose	68	7.66
Diarrhea	80	9.01
Dyspnea	530	59.68
Cough	629	70.83
Saturation < 95%	479	53.94

Discussion

The number of COVID-19 deaths in 2020 and 2021 in Montes Claros, in general, followed the increase in cases identified in the country and in the world[9-14].

The increase in the number of cases was already expected, considering not only the power of dissemination of the disease but also the insertion of diagnostic aid methods in Montes Claros, such as rapid tests, increased testing with a consequent increase in positive cases among close contacts and improvement of methods for reporting suspected cases[15-18].

Still on the analysis, it was found that the months of March and April 2021 were the ones with the highest incidence of deaths. This fact may be related to the greater flexibility of the Municipal Plan Advances MOC with responsibility. There was an increase in cases of death at the end of December, when there was the publication of Decree n. 4,149, of December 17, 2020, which prohibited the holding of commemorative events of any kind by recreational and service clubs, allowing private celebrations in residences, limited to 30 people, and the operation of bars, restaurants and similar respecting the rules of time and operation, without the possibility of holding thematic or outsourced events. New publication took place on December 22 with Decree n. 4155, which extended the declaration of a state of public calamity due to COVID-19.

However, on December 28, with Decree n. 4159, the municipality amended Decree n. 4149, of December 17, 2020, allowing musical shows in bars with up to two artists. These municipal permits increased the exposure of people to conditions that allowed greater dissemination of the virus, which may have favored the increase in cases and deaths related to Covid-19, going against the declaration of state of public calamity decreed 6 days before.

Regarding the total number of cases that occurred from the first case notified on February 26, 2020 to October 2, 2021, 234,627,330 cases of COVID-19 were confirmed worldwide. Regarding deaths, 4,797,562 were confirmed worldwide. Brazil is the second country with the highest number of deaths, with a total of 21,459,117 confirmed cases and 597,723 deaths due to COVID-19. It is also necessary to highlight that the Southeast was the region with the highest absolute number of cases and new deaths and Minas Gerais is among the 4 most prominent states in the region. This state, until September 30, 2021, had 2,140,378 confirmed cases with 54,547 deaths[9-14].

One study suggested that the underreporting rate in the state of Minas Gerais would be 16.5 times, and also pointed to a reduction in this rate for Brazil. After the increase in testing, the country dropped from an underreporting rate of 7.7 to 3.6. It is worth noting that the study considered, at the time, that Minas Gerais performed 476 tests per million inhabitants, which improved, since the state began to perform about 10 times more tests, even considering only those of the public network. This analysis suggests that, as more tests are carried out in the country, the validity and reliability of the data are greater, although it is still far from ideal[19].

Moreover, it is also important to clarify that the date of notification of the case does not always correspond to the date of death, since notification is usually performed before the occurrence of death, but can also be performed after. As, in this work, the object of study is mortality, the analysis and interpretation of data considered the date of death.

It is valid to infer that the data found in Montes Claros are compatible with the data from Minas Gerais in which 70% of the deaths occurred among the elderly, confirming that the elderly population is a population with a higher risk of morbidity and justifying the preventive measures initially given in this age extreme[12-14].

Males in Montes Claros were associated with higher mortality in patients diagnosed with COVID-19, following the same pattern identified in other studies[5,7]. In a study conducted in the state of Santa Catarina, men were more affected, accounting for 59.99% of all deaths[5].

It is noted that men had a lower probability of cumulative survival than women, as well as a 45% higher risk of death than women. This finding, in addition to having clinical relevance in relation to the prognosis of the disease, also has relevance to health policy, given that men historically have less access to health services. In addition, the higher probability of death in men can be explained by seeking health services only in more severe cases[7].

Concerning the presence or absence of comorbidities, it was found that 86% of patients who evolved to death from COVID-19 had one or more comorbidities.

In the international scenario, a Chinese study showed that 75% of deaths occurred in people with previous diagnosis of hypertension (41%), diabetes (29%), heart disease (27%), lung diseases (23%) and cerebrovascular diseases (12%)[20].

The data of this study are corroborated by the study conducted in the state of Rio Grande do Norte, in which the presence of comorbidities increased the risk of death by 9.44 times compared to individuals without comorbidity[6]. A study from Paraná showed that the associated conditions most frequently found were also hypertension (23%), diabetes (21%) and heart disease (13%)[21].

In a Brazilian study conducted in the state of Santa Catarina, the number of deaths was higher in more advanced age groups, especially in those over 50 years, which represented 88.96% of deaths. In the age groups below 49 years, 11.04% of all deaths[4]. This study also observed that chronic cardiovascular diseases were the most prevalent in deaths with comorbidities, accounting for 49.58% of cases, followed by diabetes 35.43% and hypertension 26.09% of cases[5].

The present study corroborates what was identified in the study conducted in the state of Santa Catarina, which observed that the most prevalent respiratory system-related symptoms were dyspnea

(83.76%), followed by respiratory distress (72.95%), decreased oxygen saturation (72.04%) and cough (70.80%). Fever was the most common systemic symptom present in 62.42%, accompanied by gastrointestinal symptoms, especially diarrhea, present in 15.11%[5]. On the other hand, the CDC (2021) reported that anosmia and ageusia corresponded to one third of the cases, mainly among women and younger or middle ages[22].

A limitation of this study concerns its sample with only patients from the city of Montes Claros that, in relation to the Brazilian population, which becomes little significant.

Conclusion

Deaths occurred more among male patients, with a mean age of 65 years. The most commonly identified comorbidities were obesity, systemic arterial hypertension, heart disease, pneumopathies and renal failure. The results presented confirm the evidence of other national and international studies on the clinical and epidemiological profile of COVID-19 deaths.

Authors' contribution

The authors approved the final version of the manuscript and declared responsible for all aspects of the work, including ensuring its accuracy and completeness.

Conflict of interest

The authors declare no conflicts of interest.

References

1. Nogueira, JVDN, Silva CM. Conhecendo a origem do SARS-COV-2 (COVID 19). RESMA. 2020. 11(2):115-24. Available from:https://periodicos.ufms.br/index.php/sameamb/article/view/10321

2. Sanchez M, Moura E, Moreira J, Lima RB, Barreto I, Pereira C,*et al*. Mortalidade por COVID-19 no Brasil: uma análise do Registro Civil de óbitos de janeiro de 2020 a fevereiro de 2021.SciELO Preprints. 2021. Available from: https://preprints.scielo.org/index.php/scielo/preprint/view/2012/3289

3. Wu D, Wu T, Liu Q, Yang Z.The SARS-CoV-2 outbreak: Whatweknow. Int J InfectDis. 2020;94:44-48. Available from: https://doi.org/10.1016/j.ijid.2020.03.004

4. Ramos RM. Análise do perfil epidemiológico dos óbitos por COVID-19 em Santa Catarina durante a pandemia de coronavírus até a 33ª semana epidemiológica do ano de 2020. [dissertação] [internet]. Florianopolis: Universidade Federal de Santa Catarina; 2020. [citado em 2023 ago. 29]. Available from: https://repositorio.ufsc.br/bitstream/handle/123456789/218111/Covid-19%20SC.pdf?sequence=1&isAllowed=y

5. Ministério Da Saúde (Brasil). Secretaria de Vigilância em Saúde. Boletim epidemiológico especial. Doença pelo Coronavírus COVID-19. Available from: https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/boletins/epidemiologicos/covid-19/2022/boletim-epidemiologico-no-95-boletim-coe-coronavirus.pdf

6. Galvão MHR, Roncalli AG. Fatores associados a maior risco de ocorrência de óbito por COVID-19: análise de sobrevivência com base em casos confirmados. Rev bras. de epidemiol.2020; 23:E200106. Availablefrom: https://doi.org/10.1590/1980-549720200106

7. MCintosh K, Martin SH, Bloom A. Coronavirusdisease 2019 (COVID-19). UpToDate, 2020. In: www.uptodate.com. Traduzido por Programa de Voluntariado Acadêmico da UFPR. Curitiba: Universidade Federal do Paraná; 2020. [citado em 2023 ago. 29]. Available from: http://www.toledo.ufpr.br/portal/wp-content/uploads/2020/04/Doenc%CC%A7a-por-coronvi%CC%81rus-2019-UPTODATE.pdf

8. IBGE. Instituto Brasileiro de Geografia e Estatística. Cidades e estados. Available from: https://www.ibge.gov.br/cidades-e-estados/mg/montes-claros

9. Ministério da Saúde (Brasil). Orientações para codificação das causas de morte no contexto da COVID-19. Secretaria de Vigilância em Saúde Departamento de Análise em Saúde e Vigilância de Doenças não Transmissíveis Coordenação-Geral de Informação e Análises Epidemiológicas. Available from: https://www.gov.br/saude/pt-br/coronavirus/publicacoes-tecnicas/recomendacoes/orientacoes-para-codificacao-das-causas-de-morte

10. Ministério da Saúde (Brasil). Secretaria de Atenção à Saúde. Departamento de Ações Programáticas Estratégicas. Política Nacional de Atenção Integral à Saúde do Homem. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/politica_nacional_atencao_saude_homem.pdf#:~:text=A%20proposi%C3%A7%C3%A3o%20da%20Pol%C3%ADtica%20Nacional%20de%20Aten%C3%A7%C3%A3o%20Integral,o%20sistema%20de%20sa%C3%BAde%20por%20meio%20da%20aten%C3%A7%C3%A3o

11. Ministério da Saúde (Brasil). Secretaria de Atenção à Saúde. Departamento de Ações Programáticas Estratégicas. Perfil da morbimortalidade masculina no Brasil. Brasília : Ministério da Saúde, 2018. Availablefrom: https://bvsms.saude.gov.br/bvs/publicacoes/perfil_morbimortalidade_masculina_brasil.pdf

12. Secretaria da Saúde (Minas Gerais). Boletim epidemiológico. COVID-19: Doença causada pelo coronavírus – 19. Cenário em Minas Gerais - COVID-19 coronavírus. Available from: https://coronavirus.saude.mg.gov.br/images/2021/09/30.9_COVID-19_-_BOLETIM20210930.pdf

13. Secretaria da Saúde (Minas Gerais). COES MINAS COVID-19. Boletim epidemiológico, assistencial e laboratorial COVID-19. Nº 04, Semana Epidemiológica 20. Available from: https://coronavirus.saude.mg.gov.br/images/boletim/05-maio/20052020_Boletim_epidemiologico_COVID-19_MG-Edicao-Especial-No4.pdf

14. Secretaria da Saúde (Minas Gerais). Subsecretaria de Gestão Regional. Ajuste do Plano Diretor de Regionalização de Saúde de Minas Gerais (PDR/MG). 1. ed. Belo Horizonte: SES-MG, 2020. Availablefrom: www.saude.mg.gov.br

15. Secretaria da Saúde (Montes Claros-MG). Decreto 4.176, em 23 de fevereiro de 2021. Institui medidas extraordinárias de prevenção e enfrentamento da COVID-19 no município de Montes Claros e dá outras providências. Available from: https://portal.montesclaros.mg.gov.br/decreto/com-numero/decreto-n-4176-de-23-de-fevereiro-de-2021

16. Secretaria da Saúde (Montes Claros-MG). Decreto n. 4.149, de 17 de dezembro de 2020. Dispõe sobre a implementação de novas medidas para de prevenção da COVID-19, no município de Montes Claros e dá outras providências. Available from: https://portal.montesclaros.mg.gov.br/decreto/com-numero/decreto-n-4149-de-17-de-dezembro-de-2020

17. Secretaria da Saúde (Montes Claros-MG). Decreto n. 4.170, de 8 de fevereiro de 2021. Dispõe sobre a implementação de novas medidas para de prevenção da COVID-19, no período de carnaval, no município de Montes Claros e dá outras providências. Available from: https://portal.montesclaros.mg.gov.br/decreto/com-numero/decreto-n-4170-de-08-de-fevereiro-de-2021

18. Secretaria da Saúde (Montes Claros-MG). Decreto nº 4159, de 28 de dezembro de 2020. Altera dispositivo do decreto nº 4149, de 17 de dezembro de 2020 e dá outras providências. Availablefrom: https://portal.montesclaros.mg.gov.br/decreto/com-numero/decreto-n-4159-de-28-de-dezembro-de-2020

19. Ribeiro LC, Bernardes AT. Estimate of underreporting of covid-19 in brazil byacute respiratory syndrome hospitalization report. Cedeplar, Universidade Federal de Minas Gerais; [citado em 2023 ago. 29]. Available from: https://ideas.repec.org/p/cdp/tecnot/tn010.html

20. Sun YJ, Feng YJ, Chen J, Li B, Luo ZC, Wang PX. Clinical featuresof fatalities in patientswith COVID-19. Disaster Med Public Health Prep. 2020;15(2):e9-e11. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7443557/

21. Fredrich VCR, Nasr AMLF, Champion L, Mello TPC, Silva JVA, Ziak ML *et al.* Perfil de óbitos por COVID-19 no Estado do Paraná no início da pandemia: estudo transversal. Rev. Saúde Pública Paraná. 2020;3(1):62-74. Available from: http://revista.escoladesaude.pr.gov.br/index.php/rspp/article/view/409

22. CDC - Centers For Disease Control And Prevention. Orientação clínica provisória para o manejo de pacientes com doença coronavírus confirmada (COVID-19).Traduzido por Programa de Voluntariado Acadêmico da UFPR. Curitiba: Universidade Federal do Paraná; 2020. [citado em 2023 ago. 29]. Available from: http://www.toledo.ufpr.br/portal/wp-content/uploads/2020/05/Orientac%CC%A7a%CC%83o-cli%CC%81nica-proviso%CC%81ria-para-tratamento-de-pacientes-com-doenc%CC%A7a-confirmada-por-coronavi%CC%81rus-COVID-19-1.pdf