International Journal for Innovation Education and Research *ISSN 2411-2933* *01-05-2022*
DOI: https://doi.org/10.31686/ijier.vol10.iss5.3755

EPIDEMIOLOGICAL PROFILE OF COVID-19 CASES NOTIFIED IN THE HEALTH SECRETARY OF ARAGUARI CITY, MG, BRAZIL

Graciele de Jesus Carvalho[1*]; Dora Inés Kozusny-Andreani [1]; Gisele Herbst Vazquez[1] and Roberto Andreani Júnior [1]

[1] Universidade Brasil, Programa de Mestrado em Ciências Ambientais, Campus Fernandópolis, SP, Brazil

Corresponding author: e-mail address: gracielejesuscarvalho@hotmail.com and doraineska@gmail.com

ABSTRACT

In 2020, Public Health has experienced a period of pandemic with the confrontation against the disease that initially appears in China Popular Republic and spread worldwide population, causing, in addition to major public health disorders, numerous losses with a high rate of deaths caused by the COVID-19 pandemic. The present study aimed to analyze the epidemiological profile of COVID-19 in Araguari city, MG, Brazil, between March 2020 and November 2021. The study was carried out by collecting data on occurrences, deaths, age and sex of those people affected by the disease in the mentioned city. The information was extracted using a control spreadsheet prepared by the Planning and Epidemiology Departments of the Municipal Health Department. The data obtained were tabulated, analyzed and presented in the form of tables and figures. The pandemic triggered moments of fragility in the world health system and, in Araguari, caused high rates of its occurrence with great losses being 19,939 citizens who contracted the disease, with 474 deaths motivated by COVID-19. There was a prevalence of the disease in males and in people between 60 and 89 years old. The analysis of the evolution of COVID-19 cases, in absolute numbers, showed that between May and June 2020 there was an increase in COVID-19 notifications, as well as in the months of January to July 2021, with a reduction in August. Variations in the evolution of COVId-19 cases are probably related to the emergence of new variants of SARS-CoV-2.

Keywords: SARS Cov-2. Pandemic. Coronavirus.

1 INTRODUCTION

Health worldwide has always been shaken by the occurrence of pandemics throughout history, causing several changes in knowledge about the emergence of each disease, its characteristics, forms of prevention and treatments which turned them into a great political and social concern. According to Martins (2020), “health has become a social knowledge to be used in government policies to improve the population’s quality of life, not only restricted to the absence of disease, but also to physical, mental and social well-being”.

Life in society favors the emergence of pandemics. In half of the second decade of the 21st century, the world population experienced a turnaround in health issues, with the beginning of the coronavirus

epidemic, with alert to the World Health Organization (WHO, 2020) that communicated a great number of cases of pneumonia that occurred in the city of Wuhan city/China. The virus quickly spread to others regions of the world. With the first cases confirmed in February, the Brazilian government was alerted to take preventive actions, carried out in an attempt to mitigate the spread of the disease. In Brazil, on February 3, 2020, the disease was declared a Public Health Emergency of National Importance (PHENI), even without confirmation of the first case (BRASIL, 2020a).

The analyzes of cases of contamination by the disease are carried out by the State Health Departments (SHD), carried out since the beginning of the pandemic by the Brazilian Health Ministry (BRASIL, 2022). This allows to knowledge the dynamics of the disease in the country and, consequently, to establish policies to slow the increase in the number of cases to control it.

According to IBGE data (2021a), the country has 5,570 municipalities divided into 27 federative units, grouped into five geographic macro-regions (Midwest, Northeast, North, Southeast and South), with different sociodemographic and health characteristics. This differentiated topography brings difficulty not only to provide health care, but also to control the pandemic.

According to Pontes (2020), the preventive and assistance health provided in Brazil does not correspond to the required demand, as there is a lack of infrastructure and specialized equipment for the care of infected patients, making the State to be obliged to promote emergency actions, such as the implementation of temporary high-complexity hospitals in places such as stadiums, schools, gymnasiums and open areas to care the infected population.

In order to contain the spread of the disease, some methods were used, such as social isolation, lockdown and quarantine, which, despite being constantly used as an alternative to prevent the spread, have not proved to be fully effective in face of numerous public health deficiencies. In order to solve the crisis caused by the pandemic, emergency health committees were created, involving public power spheres, aiming to overcome it successfully or minimize the effects caused by COVID-19. As Otoni (2020) states, the Brazilian public health system is very fragile when facing and fighting the new coronavirus and, in searching to me*et al*l the demand, they generate overcrowding of laboratories, clinics, pharmacies and hospitals and allow rapid contamination of the population by this disease.

COVID-19 has become a global public health problem, caused infection in a large part of the population and numerous deaths. This fact justifies studies on the epidemiological profile of the disease, in order to outline strategies to prevent and contain the spread of the disease and new variants. In this context, the objective of this research was to evaluate the epidemiological profile of the COVID-19 pandemic in the Municipality of Araguari, MG, Brazil.

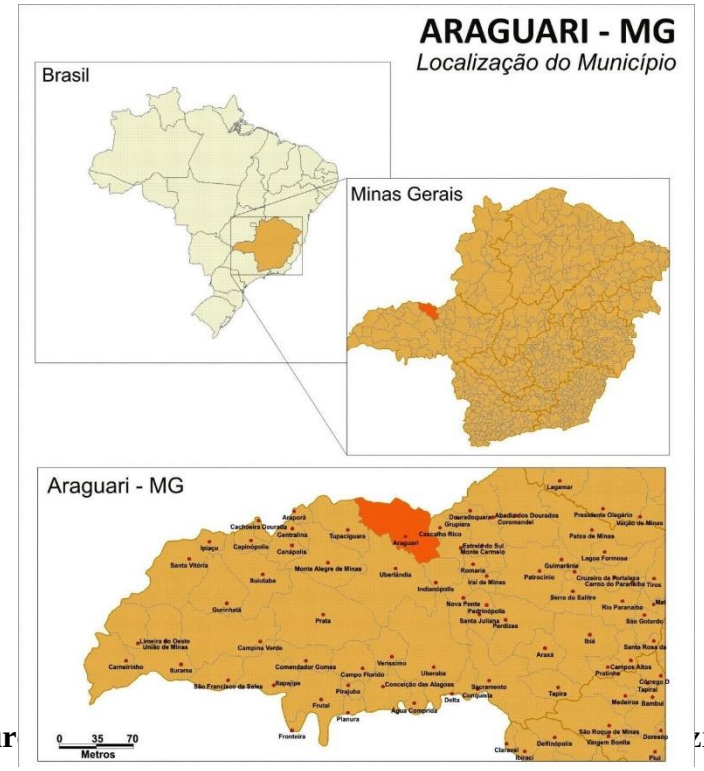
2 MATERIAL AND METHODS

2.1 Study location

According to Araguari (1888) and Barbosa (2008), the history of Araguari begins because of the relevance of its geographical location with important rail and road connections. The city originated from the village of Brejo Alegre, a name possibly referring to a local stream. When acquiring the status of city – Law 3591 of August 28, 1888 – it was renamed Araguari (LIMA, 2021).

The municipality of Araguari is located in the southeast region of Brazil and in the northeast region of Triângulo Mineiro, next to the Jordão River, a tributary of Paranaíba River. Araguari is a Brazilian municipality in the interior of the state of Minas Gerais, Brazil (Figure 1), at an altitude that varies between 940 and 1,087 meters, and an area of 2,729,508 km², with 12,62 km² of urbanized area and 1,481 km² of rural area. The city is also located at a strategic point for transporting production from the Midwest to São Paulo (LIMA, 2021).

Araguari is today the 23rd largest city in the State of Minas Gerais. Its population is estimated in 118,361 inhabitants (in 2021, with 109,801 people in the last 2010 census) and the population density is 40.23 inhab/km² (IBGE, 2021a,b). The municipality presents good development and conquers expressive space in the economy of the state.



Figur zil

Source: Freitas e Ferreira (2011, p. 3)

The city has a high annual gross domestic product (GDP) per capita, which places it as the 66th city in this ranking (OPUS, 2018). For the Ministry of Cities (BRASIL, 2006), Araguari is an important road junction in the region, having one of the largest grain and fertilizer transshipment terminals in Latin America.

Search type

A study of the epidemiological profile of COVID-19 cases reported at the Health Department of the Municipality of Araguari, MG, was carried out. This was a descriptive observational study, and data from 03/01/2020 to 11/21/2021 were analyzed retrospectively

Data collection

The analyzed data were obtained from the database of the website of the municipal government of the city of Araguari, MG, and the frequency of distribution of the variables was observed: confirmed cases, suspected cases, negative cases, total deaths, daily evolution and disposition of beds and wards. Regarding those people affected by COVID-19, race, sex, age and social class were evaluated.

2.2 Data evaluation

The socio-demographic and clinical epidemiological variables were analyzed using descriptive statistical methods, considering the absolute and relative frequencies of the data. The analyzed data were applied in tables and graphs, through of the Microsoft Office Excel 2016 program.

2.3 Ethical aspects

Ethical aspects were also respected considering that the data are available in a public domain information network. All ethical and moral aspects were observed, but in a secondary way because it is an analysis of data already provided by others. According to Resolution n. 466 of the National Health Council, of December 12, 2012 (CNS, 2012), there is no requirement for submission to the ethics committee for this type of research.

2.4 Expected benefits

With this research, it is expected to define the profile of people affected by COVID-19, in order to establish specific health strategies for the Municipality of Araguari, MG.

3 RESULTS AND DISCUSSION

In the city of Araguari, MG, the first suspected cases of COVID-19 were registered in March 2020. This disease demanded great efforts in all areas of health, especially with the emergence of new cases and the occupation of all available beds for the treatment of the disease.

The new coronavirus, SARS-CoV-2, causes the disease called by the World Health Organization as COVID-19 (WHO, 2020; CDC, 2020). It is a virus that causes acute and severe respiratory syndrome, with variation in the time between incubation and symptoms according to each individual, as well as the aggravation of the disease (JIANG; RAYNER; LUO, 2020).

Typical symptoms of COVID-19 include fever, cough and dry cough, shortness of breath, joint pain, headache and chest pain. Gastrointestinal symptoms such as nausea, vomiting, abdominal pain, diarrhea, and neurological symptoms may also be seen, particularly related to hyposmia and dysgeusia (WHO, 2020; AZER, 2020; SOHRABI *et al*., 2020). Other common manifestations refer to cognitive impairment, memory loss, anxiety and sleep disorders (AIYEGBUSI *et al*., 2021).

Figure 2 and Table 1 show the evolution of COVID-19 in the municipality of Araguari, from 03/01/2020 to 11/01/2021, with 19,393 cases (16.39% of the population) and 474 diagnosed (0.4%) deaths due to the disease. They found that confirmed cases corresponded to 32.55% of suspected cases (n=59,394). The

evolution of COVID-19 in the municipality was gradual without presenting high peaks during the period of this research.

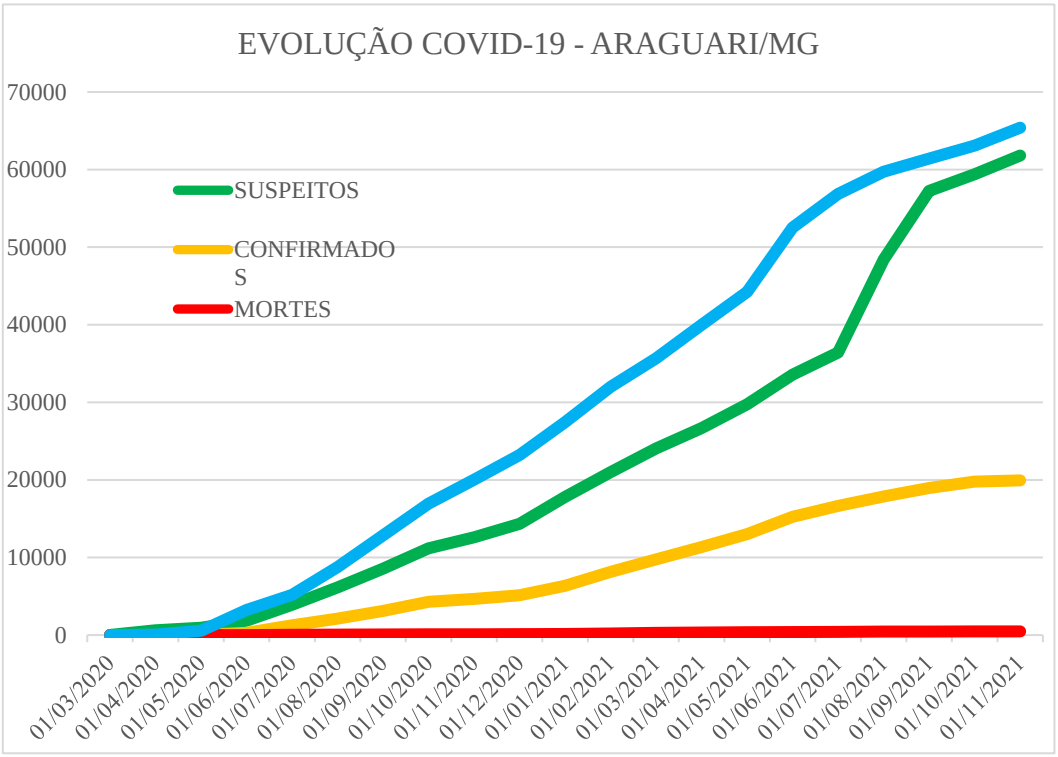


Figure 1 – Number of confirmed COVID-19 cases and deaths from March 2020 to November 2021, in Araguari city, MG, Brazil

Source: Prefeitura Municipal de Araguari, MG (2021)

The growing number of infected people, the wide spread and the emergence of new variants of SARS-Cov-2 characterized the COVID-19 pandemic. In the present study, the evolution of the disease followed the same model of increase of cases and deaths (Table 1). Initially, on March 23, 2020, there were 20 people with suspected cases of the disease, the first case being confirmed on March 30, and the first death for the disease on April 27, 2020, of a patient who had been hospitalized since the 5th of March.

In April of the same year, the city counted with 9 confirmed cases and 620 suspected ones of the disease. There was a significant increase in cases in September 2020, with confirmation of 125 people per day inffected by the disease. With the restrictive measures and actions to contain the public calamity in which the municipality found itself, there was a reduction of cases in December 2020 and January 2021, but returning with a gradual and significant increase in cases in the following month, presenting an alarming rate on February 24, 2021, when 162 cases/day were detected. It is considered that, at the beginning of August 2021, 55,441 cases were negative, 37,420 were considered suspicious, 17,133 confirmed cases of COVID-19 and 428 confirmed deaths, motivated by the disease.

The Epidemiological Bulletin of September 21, 2021 of the municipality updated the data for COVID-19, which presented 3,031 positive cases with tests carried out in laboratories or through rapid tests arranged by the Municipal Health Department, also containing 2,512 cases recovered of patients who tested positive for the disease and are, at the present date, without the symptoms of the illness. In monitoring the disease

are 1,904 cases: 447 tested positive and 1,457 suspected ones for the disease.

Table 1: Analysis of the evolution of COVID-19 in the Municipality of Araguari, MG, Brazil, between March 2020 and November 2021

Date	COVID-19 in Araguari city, MG, Brazil			
	Denied	Suspects	Confirmed	Deaths
03/23/2020	0	20	0	0
04/21/2020	53	588	9	0
05/21/2020	452	892	27	1
06/21/2020	2985	1724	240	3
07/21/2020	5025	3696	1189	31
08/21/2020	8634	6008	2060	56
09/21/2020	12516	8357	3031	72
10/21/2020	16647	10999	4230	86
11/21/2020	19852	12540	4644	110
12/21/2020	23128	14221	5101	117
01/21/2021	26969	17490	6210	135
02/21/2021	31497	20920	8050	208
03/21/2021	35460	23878	9662	276
04/21/2021	39660	26562	11265	325
05/21/2021	43898	29415	12890	364
06/21/2021	49076	33382	15111	395
07/21/2021	53759	36165	16490	420
08/21/2021	56441	37420	17133	428
09/21/2021	59327	39129	18785	451
10/21/2021	63097	57258	19785	471
11/21/2021	65399	59394	19393	474

Source: Prefeitura Municipal de Araguari, MG (2021), adapted by the author

The analysis of the evolution of COVID-19 cases, in absolute numbers (Figure 3), showed that, between May and June 2020, there was an increase in cases of 1,233.33% (May n=18, June n =222); in July compared to June, evolution of 435.59% (n=967) and, in the subsequent months, there was stabilization for new cases. In October 2021, 1,199 cases were reported, an increase of 114.21% when compared to September, while in November of the same year, there was a reduction of 289.61% of cases (n=414).

The month of January 2021 was characterized by an increase in COVID-19 notifications by 244.27% (n=1109), while cases remained stable between 1,379 and 2,221 in the following months,. There was a reduction of 214.46% (n=643) in August 2021, with an increase in confirmed cases in September (n=1652, 256.92%), with a decrease of 255.10% (n=392) in November compared to October of that year (n=1000). The variations in the evolution of COVID-19 cases (Figure 3) are probably related to the emergence of new

variants of SARS-CoV-2. According to Lauring and Malani (2021), as they spread, viruses constantly change through mutations in their genetic code. Most mutations in the SARS-CoV-2 genome do not affect how the virus works. However, mutations in the SARS-CoV-2 spike protein, which links to receptors on cells lining the inside of the human nose, could facilitate the spread of the virus or affect the protection of vaccines. Other mutations can make SARS-CoV-2 less responsive to treatments for COVID-19.

Since the late 2020s, the evolution of SARS-CoV-2 has been characterized by the emergence of clusters of mutations in the context of worrisome variants, which affect the characteristics of the virus, including transmissibility and antigenicity, probably in response to the change in the immunological profile of the virus of human population (HARVEY *et al*., 2021).

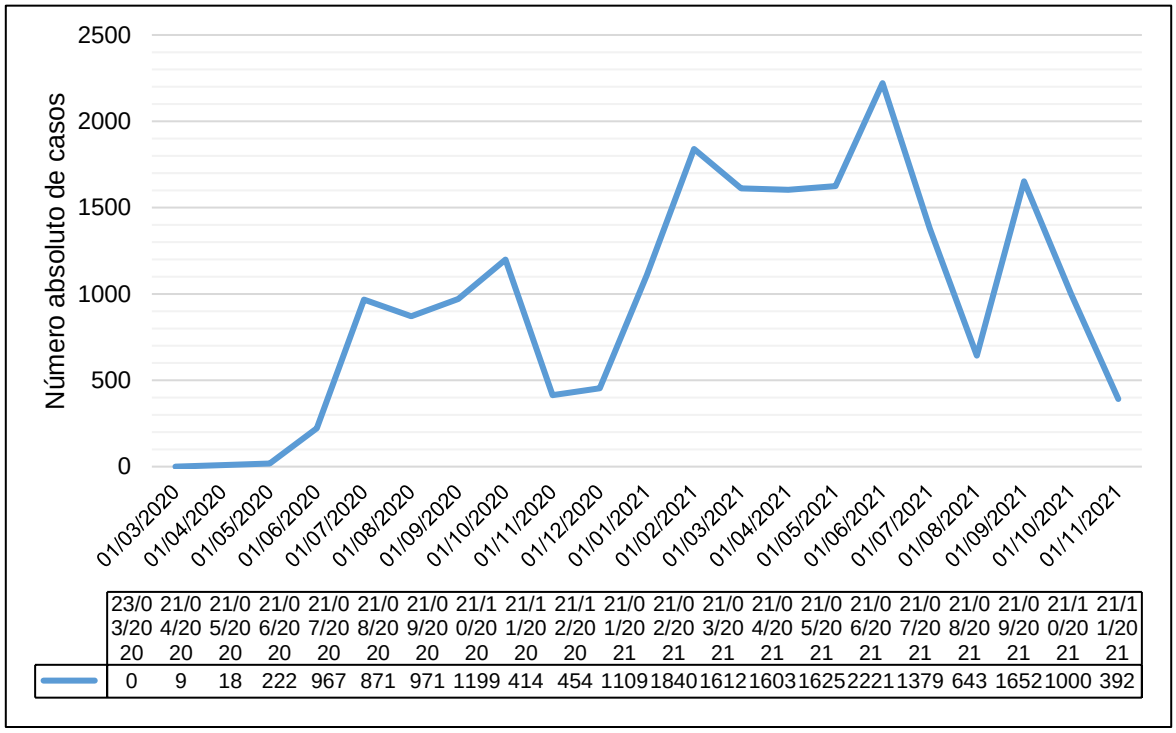


Figure 3 – Analysis of the evolution of COVID-19 cases in absolute numbers in the Municipality of Araguari, MG, Brazil, between March 2020 and November 2021

Source: Prefeitura Municipal de Araguari, MG (2021)

In Figure 4, the results for the sex-related COVID-19 cases for the period from March 2020 to November 2021 are shown. There was a higher incidence of the disease in males, perhaps because they were more exposed to the virus at the workplace, as Araguari is essentially characterized as a developing city, and men occupy most of the jobs.

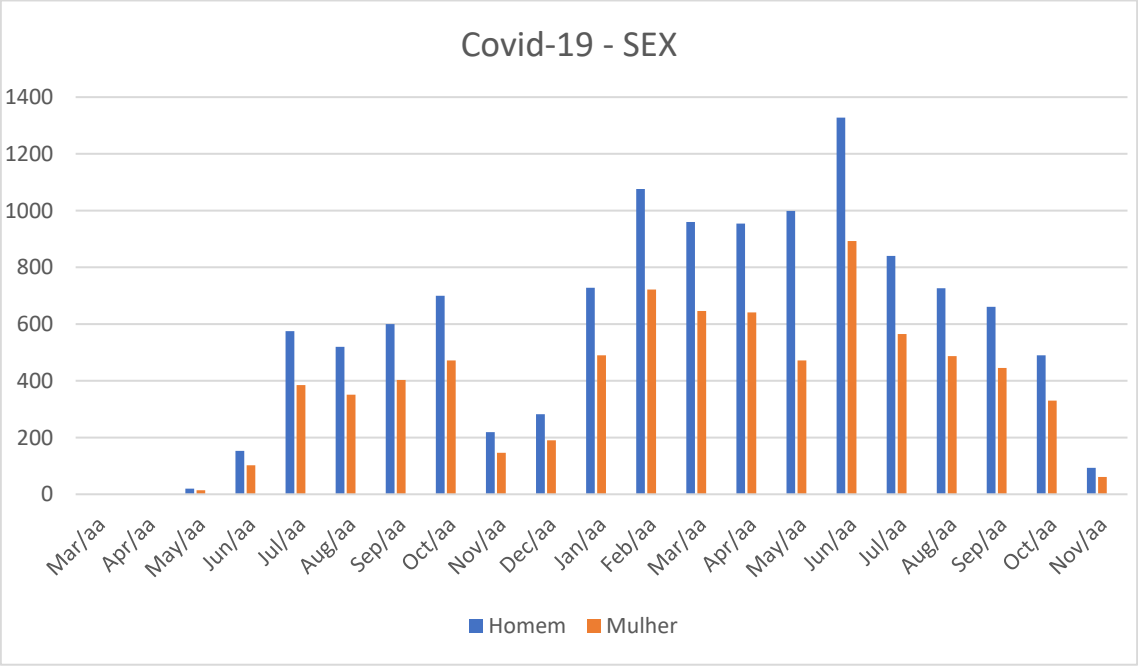


Figure 4 – COVID19 cases related to the sex of the infected people, referring to the months of March 2020 to November 2021, in the Municipality of Araguari, MG, Brazil

Source: Prefeitura Municipal de Araguari, MG (2021)

In Figure 5, the results of the assessment made by the age group of individuals affected by COVID-19 are presented. A higher incidence of the disease was observed in patients between 80 and 89 years old (18.2%), 70 to 79 years old (24.4%) and 60 and 69 years old (23%), suggesting the need for special attention (BRASIL, 2020b) in disease prevention dedicated to the 60 to 89 age group.

SARS-CoV-2 virus can infect people of all ages. However, there are two main groups at higher risk of developing severe disease: the elderly and people with underlying comorbidities such as diabetes mellitus, hypertension, cardiorespiratory disorders, chronic liver disease, and kidney failure. Cancer patients and those receiving immunosuppressive medication, as well as pregnant women are also at greater risk of developing serious illness when infected (WANG *et al*., 2020).

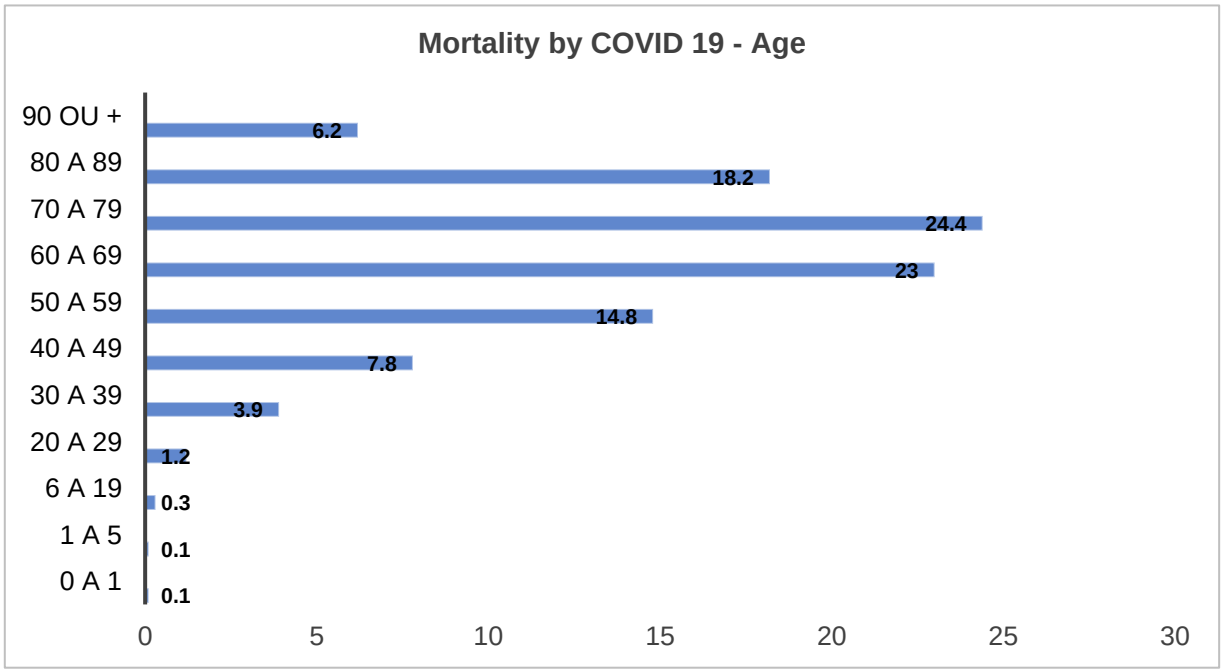


Figure 5 – Number of COVID-19 cases according to age, from March 2020 to November 2021, in the Araguari Region, MG, Brazil

Source: Prefeitura Municipal de Araguari, MG (2021)

The results of this research reflect the information from the epidemiological bulletins that are the reference that have been used to allow a more effective comparison of the occurrences evidenced by the pandemic in the municipality, considering that the episodes of COVID-19 are periodically reviewed, as well as the evaluation of the effects of the restrictive measures that have been applied. In this sense, some limitations must be considered in the interpretation of the data presented in this study: since it is a still new disease, many questions must be elucidated (new signs and symptoms, new variants of the virus and its dissemination, virulence, asymptomatic cases, among others).

The growing wave of the disease alarmed the Public Power, leading to the entire municipality of Araguari, MG, the determination of numerous actions enacted in an emergency situation, with restrictive measures of circulation, which could only occur in situations related to essential activities.

These measures were part of some actios such as: curfew between 8 pm and 5 am; prohibition of the movement of people without masks in any public space or collective areas, even if private; prohibition of movement of people with flu symptoms, except for consultations or medical-hospital exams; presence of sanitary surveillance barriers; prohibition of private public events and face-to-face meetings, including people of the same family who do not cohabit.

The closure of non-essential activities, prohibition of use and sale of alcoholic beverages that motivate agglomeration as a factor of transmission of the disease in frightening development, were restrictive measures that intended to help minimize the evolution of the disease in the municipality.

In this scenery, in the Araguari city, the population was immunized through vaccination, initially in elderly people, following the vaccination schedule proposed by the authorities.

4 CONCLUSIONS

Based on the methodology used and the results obtained regarding COVID-19 in the Municipality of Araguari, MG, Brazil, they can conclud that:

- the disease caused high occurrence rates, with 19,939 reported cases and 474 deaths;
- there was a prevalence of the disease in males and in people aged between 60 and 89 years;
- the analysis of the evolution of COVID-19 cases, in absolute numbers, showed that, between May and June 2020, there was an increase in COVID-19 notifications, as well as in the period from January to July 2021, with reduction in August.

5 REFERENCES

AIYEGBUSI, O. L.; HUGHES, S. E.; TURNER, G.; RIVERA, S. C.; MCMULLAN, C.; CHANDAN, J. S.; HAROON, S.; PRICE, G.; DAVIES, E. H.; NIRANTHARAKUMAR, K.; SAPEY, E.; CALVERT, M. J.; Tlc Study Group. Symptoms, complications and management of long COVID: a review. **Journal of the Royal Society of Medicine**, v. 114, n. 9, p. 428-442, 2021. Available from: https://doi.org/10.1177/01410768211032850. Access on: Feb. 24, 2021.

ARAGUARI (City). **Lei 3591**, de 28/08/1888. Eleva à categoria de cidade a vila do Brejo Alegre, com o nome de Araguari. Publicação Livro da Lei Mineira, de 26/09/1888, p. 205, Col. 1. [Extraído de "As denominações urbanas de Minas Gerais]. Palácio da Presidência da Província de Minas Gerais, 28 ago. 1888. Available from: https://www.almg.gov.br/consulte/legislacao/completa/completa.html?tipo=LEI&num=3591&comp=&ano=1888. Access on: Jan. 13, 2021.

AZER, S. A. COVID-19: pathophysiology, diagnosis, complications and investigational therapeutics. **New Microbes New Infect**, v. 37, p. 100738, 2020 Sept. 18 p. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7403867/pdf/main.pdf. Access on: Feb. 24, 2021.

BARBOSA, F. M. T. **Ferrovia e organização do espaço urbano em Araguari – MG** (1896-1978)**.** 2008. 179 f. Dissertação (Mestrado em Geografia) – Universidade Federal Fluminense, Niterói, RJ, 2008.

BRASIL. Ministério das Cidades. **Caderno Saúde do Ministério das Cidades.** Brasília: MCidades/Governo Federal, 2006.

Ministério da Saúde (MS). Portaria MS/GM n. 188, de 3 de fevereiro de 2020. Declara emergência em saúde pública de importância nacional em decorrência da infecção humana pelo novo coronavírus (2019-nCoV). **Diário Oficial da União**, ed. 24-A, seção: 1 Extra, p. 1, de 04/02/2020. Brasília/DF: MS, 2020a. (Saúde Legis - Sistema de Legislação da Saúde).

Ministério da Saúde (MS). Secretaria de Atenção Especializada à Saúde. Departamento de Atenção Hospitalar, Domiciliar e de Urgência. **Protocolo de manejo clínico da Covid-19 na Atenção Especializada**. 1. ed. rev. Brasília: MS, 2020b. 48 p.

Ministério da Saúde. **Covid19 Painel coronavírus**. Coronavírus no Brasil [Internet – atualizado em 9 fev. 2022]. Available from: https://covid.saude.gov.br. Access on: Feb. 10, 2022.

CNS – Conselho Nacional da Saúde. Resolução 466/12, de 12 de dezembro de 2012. Aprova as diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. **Diário Oficial da União**, n. 12, Seção 1, p. 59. Brasília, DF: CNS, 2012.

CDC – Centro de Controle e Prevenção de Doenças. **Morfologia do novo coronavírus:** conhecido cientificamente como 2019-nCoV. Handout: Reuters, 2020.

FREITAS, M. P.; FERREIRA D. L. Mobilidade urbana sustentável e a sua viabilidade nas cidades médias: estudo de referência de Araguari/MG. **Revista Geográfica da América Central**, Costa Rica, n. esp. EGAL, p. 1-16, II sem. 2011.

HARVEY, W. T.; CARABELLI, A. M.; JACKSON, B.; GRUPTA, A. K.; THOMPSON, E. C.; HARRISON, E. M.; LUDDEN, C.; REEVE, R.; RAMBAUT, A.; COVID-19 Genomics UK (COG-UK) Consortium; PEACOCK, D. L. SARS-CoV-2 variants, spike mutations and immune escape. **Nature Reviews Microbiology** v. 19**,** p**.** 409–424, July 2021. Available from: https://www.nature.com/articles/s41579-021-00573-0.pdf. Access on: Feb. 24, 2021.

IBGE – Instituto Brasileiro de Geografia e Estatística. **Perfil dos municípios brasileiros:** 2020. Rio de Janeiro: IBGE, 2021a. Available from: https://agenciadenoticias.ibge.gov.br/media/com_mediaibge/arquivos/496bb4fbf305cca806aaa167aa4f6dc8.pdf. Access on: Feb. 13, 2021.

IBGE – Instituto Brasileiro de Geografia e Estatística. **Cidades**: panorama. Rio de Janeiro: IBGE, 2021b. Available from: https://cidades.ibge.gov.br/brasil/mg/araguari/panorama. Access on: Feb. 13, 2021.

JIANG, X.; RAYNER, S.; LUO, M. Does SARS-CoV-2 have a longer incubation period than SARS and MERS? **J Med Virol**, n. 92, p. 476–478, 2020. Available from: https://doi.org/10.1002/jmv.25708. Access on: Feb. 22, 2021.

LAURING, A. S.; MALANI, P. N. Variants of SARS-CoV-2. **JAMA**, v. 326, n. 9, p. 880, Aug. 13, 2021. doi:10.1001/jama.2021.1418. Available from: https://sites.jamanetwork.com/spanish-patient-pages/2021/hoja-para-el-paciente-de-jama-210 Access on: Feb. 24, 2021.

LIMA, Acervo. **Araguari**. Available from: https://wiki.acervolima.com/araguari. Access on: Feb. 24, 2021.

MARTINS, S. P. **Direito da seguridade social.** 39. ed. São Paulo: Editora Saraiva, 2020. 799 p.

OMS – Organização Mundial da Saúde. **Comentários de abertura no *briefing* de mídia sobre COVID-19.** Genebra: OMS, 2020. Available from: https://www.who.int/es/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020. Access on: Feb. 13, 2021.

OPUS. Pesquisa de Opinião. **Pesquisa de mercado em Araguari.** Belo Horizonte: OPUS, jun. 2018. Available from: https://www.opuspesquisa.com/instituto-de-pesquisa-araguari. Access on: Feb. 13, 2021.

OTONI, R. Coronavírus mostra importância do SUS. **Revista online Fórum** [Internet], 13 mar. 2020. Available from: https://revistaforum.com.br/debates/coronavirus-mostra-importancia-do-sus-por-reimont-otoni. Access on: Feb. 17, 2021.

PREFEITURA MUNICIPAL DE ARAGUARI (PMA). **Boletim epidemiológico de saúde.** Araguari: PMA. 2020. Available from: https://coronavirus.saude.mg.gov.br/boletim2020. Access on: Feb. 2, 2021.

PONTES, N. **Sucateado, SUS vive "caos" em meio à pandemia** [Internet], 11 mar. 2020. Alemanha: Deutsche Welle (emissora), 11 mar. 2020. Available from: https://www.dw.com/pt-br/sucateado-sus-vive-caos-em-meio-%C3%A0-pandemia/a-52812503. Access on: Feb. 13, 2021.

SOHRABI, C.; ALSAFI, Z.; O'NEILL, N.; KHAN, M.; KERWAN, A.; AL-JABIR, A.; IOSIFIDIS, I.; AGHA, R.World Health Organization declares global emergency: a review of the 2019 novel coronavirus (COVID-19). **International Journal of Surgery**, v. 76, p. 71-76, 2020. https://doi.org/10.1016/j.ijsu.2020.02.034. Available from: https://www.sciencedirect.com/journal/international-journal-of-surgery/special-issue/10GBFFPQNR5. Access on: Feb. 13, 2021.

WANG, B.; LI, R.; LU. Z.; HUANG, Y. Does comorbidity increase the risk of patients with COVID-19: evidence from meta-analysis. **Aging** (Albany NY). v. 12, n. 7, p. 6049-6057, March 28, 2020. Available from: https://doi.org/10.18632/aging.103000. Access on: Feb. 10, 2021.