CIENT PERIODIQUE

Association of the Profile of People Affected by COVID-19 and Cormobities

Ana Michelle Aniceto Nunes[1], Thiago Alves Xavier dos Santos[2] & Bárbara Kellen Antunes Borges[3*]

[1]Student of the Pharmacy course of Faculdade Integradas do Norte de Minas – Funorte, Avenida Osmane Barbosa, nº11111, Bairro JK, Montes Claros– Norte de Minas Gerais

[2]Graduated in Pharmacy from Faculdade de Saúde Ibituruna –FASI, Master in Animal Production at Universidade Federal de Minas Gerais

[3]PhD in Animal Science from Universidade Federal de Minas Gerais –UFMG, Professor and researcher at Faculdade Integradas do Norte de Minas – Funorte, Avenue Osmane Barbosa, nº11111, JK, Montes Claros– Minas Gerais

*Correspondence to: Dr. Bárbara Kellen Antunes Borges, PhD in Animal Science from Universidade Federal de Minas Gerais -UFMG, Professor and researcher at Faculdade Integradas do Norte de Minas - Funorte, Avenue Osmane Barbosa, nº11111, JK, Montes Claros- Minas Gerais.

Copyright

Abstract

Research on the current pandemic continuously takes on dimensions of immeasurable proportions, especially its effects on public health in the world and particularly in Brazilian territory. Its effects on public health in the world and particular in Brazilian territory. Considering that this virus is responsible for causing respiratory diseases, it causes extremely serious acute infections to the human respiratory tract. Thus, its consequences weaken the body in different ways, some already identified and others still in phases of studies for scientific proof. The virus has installed itself causing unprecedented mortality, and many of these cases were due to the presence of risk factors and comorbidities that act as enhancers of the virus' lethality. In this context, the article sought to

objectively discuss the epidemiological profile of those affected by COVID-19, under the aspect of qualitative analysis to identify the reasons that link the worsening of the disease with the patient's pre-existing comorbidity in the city of Montes Claros - MG. The analysis used here was by sample population, whose observation description was undertaken by cross-section, thus the methodological aspects of the analyzes were based on the Statistical Package for the Social Sciences - (SPSS), version 22.0. Following the guidelines of Resolution 466/12 of December 12, 2012 of the National Health Council. In this sense, the results showed that the predominance of those affected are female (74.8%), whose varying ages comprise the age groups of 19 to 29 years old, corresponding to (53.2%). In addition, the survey presented previous data from participants who underwent COVID-19 tests, 29.7% (RT-PCR - Swab) followed by 40.5% of those who did not, a tiny portion were induced to Ventilation (0.9%). We conclude, therefore, that comorbidities associated with COVID-19 significantly increase morbidity and mortality rates, leaving clear evidence that coronavirus is continuously influenced with regard to diagnoses and new mutations, revealing that new strain variants undergo mutations with severe clinical complications.

Introduction

The new coronavirus pandemic was established on March 11, 2020, however, since January 31, 2020, the World Health Organization (WHO) has already declared the infection by the new Coronavirus as a global emergency and then named it the disease of COVID-19. The Coronavirus Study Group of the International Virus Taxonomy Committee proposed that the virus be designated as SARS-Cov-2 [1].

Human coronavirus is responsible for causing respiratory diseases, being associated with acute and severe infections of the respiratory tract [2]. Acute respiratory infections are major causes of morbidity and mortality worldwide. The new agent of Coronavirus, discovered on December 31, 2019, after cases registered in China, with even hundreds of deaths [3]. From then on, the virus spread across the globe causing a pandemic [2].

Such epidemiological severity has the following factors: high prevalence; wide distribution of Coronavirus; great genetic diversity and frequent recombination of genomes; and increased human-animal interface activities. These issues are also probably responsible for the periodic appearance of new corona viruses in humans [4].

The general clinical picture of COVID-19 is similar to that of other respiratory viruses, namely, fever, usually dry cough, tiredness and, in more severe cases (5%), dyspnea, pulmonary bleeding, severe lymphopenia and renal failure. In 80% of cases, symptoms are mild. The diagnosis of symptomatic cases must be confirmed with the investigation of the virus by nasal swab polymerase chain reaction (PCR)1. However, the increase in mortality is mainly due to the fact that the new Coronavirus causes acute respiratory distress, which can lead to serious infections such as viral pneumonia [5].

In this sense, the outbreak was recognized as a Public Health Emergency of International Importance (ESPII) [6]. Great difficulties are encountered, so far there is no known treatment, measures were adopted all over the world until vaccines were created, although with little availability for the immunization of the

world population. Isolation and social distancing measures have been widely used around the world to minimize the speed of viral spread, thus increasing the time for more enlightening research on the etiological agent, symptomatology, prevention and combat of COVID-19 [3].

The mortality and lethality of COVID-19 have increased a lot since the appearance of the virus. In many cases, it is possible to perceive the presence of potential risk factors and the involvement of comorbities, which seem to act as enhancers of the virus's lethality. Among these factors, the following stand out: heart disease, such as hypertension; diabetes; advanced age; obesity; immunosuppressed people; kidney, liver, hematological and respiratory disorders [7].

In order to clarify these issues, this study aims to know the epidemiological profile of those affected by COVID-19 in Montes Claros-MG and to verify the correlation with the comorbities associated with the patients. The purpose of the research is to serve as a basis for questions and notes for health management regarding the new Coronavirus.

Methods

Sample

As study methods, it was chosen to use descriptive with a qualitative observational and cross-sectional focus. Whose study population for this article was composed of people affected by COVID-19 in Montes Claros/MG. Being these individuals diagnosed with the disease, of both sexes, aged over 18 years, who met the inclusion criteria regarding pre-existing comorbities.

In this sense, an exploratory, which sought to analyze the meanings attributed by patients regarding their comorbities and their repercussions on treatments against COVID-19. Thus, the organization of the literature review for this research was carried out based on six steps: definition of the research question; search in scientific literature; categorization of studies; evaluation of the studies included in the review; interpretation of results and synthesis of knowledge about its review, based on the authors [1-7].

Variables

The collection of information via was carried out from February to May of 2021 through an electronic form on the Google Forms platform sent to the e-mails and WhatsApp of the participants linked to the research object of this study. These members, however, were chosen through a personal source of the authors of this article, with indication of the first interviewees in a susceptible way, a methodology called the "Snowball sampling" method.

In this sense, the data collection instrument consisted of 17 multiple-choice and open-answer questions, all of which were related to COVID-19, in addition to filling in personal data essential to the identification of each of those involved in the research. This non-probabilistic sampling method is based on the use of chains of reference in which individuals selected within the sample invite new participants, from their own personal network, to also participate in the research, and so on [8].

Statistical Analysis

The information collected from the participants' responses, which were automatically redirected to the questionnaire, went on to tabulation in the Excel software spreadsheet and later transported the data to the Statistical Package for the Social Sciences tabulation program (SPSS), version 22.0, for descriptive and analytical analysis of information. It is noteworthy that sample elements were considered, only the participants who accepted the items proposed in the Informed Consent Form (FICF).

Through the convergence of data and evidence collected, it became possible to weave a critical analysis, as the work of this study, in addition, the limits defined here in the quantitative research, did not intend to exhaust the universe of existing comorbidities, focused only on the association of those affected by COVID-19 with their pre-existing comorbidities, in order to understand the nuances capable of contributing to a better collective health in the country.

Ethical Aspects

The project was approved and executed according to the guidelines and norms that govern research involving human beings and animals (Resolution 466/12 of December 12, 2012 of the National Health Council). With approval of the Ethics Committee of SOEBRAS - Associação Educativa do Brasil, nº: 4.587.150 and CAAE 40664920.0.0000.5141.

Results

A total of 111 people participated in this study, with a predominance of females (74.8%). The average age was between 19 and 29 years (53.2%), in relation to marital status, singles predominated in 61.3%, followed by married in 32.4%. As for ethnicity, among the group of 111 participants, 54.1% reported being brown; and 39.6% were white, according to (Table 1).

Table 1: *Distribution of sociodemographic variables of respondents, 2021.*

Variables	Patients	
	n	**%**
Sex		
female	83	74,8
male	28	25,2
Race/color		
Yellow	5	5,7
White	39	32,3
Mulatto	1	22,4
Black	6	0,1
Brown	60	39,4

Age group		
< 18 years old	8	7,2
19 to 29 years old	51	45,9
30 to 39 years old	29	26,1
40 to 49 years	12	10,8
> 50 years	11	9,9

Source: Prepared by the authors from data extracted from the research. (2021)

With regard to professional aspects, 20.7% are students, followed by 15.3% female teachers, 38.7% have variable income between one and two minimum wages and 55.9% live in the municipality of Montes Claros. Among the survey participants, the predominant index of those who had previously performed COVID-19 tests were 29.7% (RT-PCR - Swab) followed by 40.5% of those who did not undergo tests, and made use of Mechanical ventilation among the participants, only 0.9% corresponds to one person, as per (Table 2).

Table 2: *Distribution of sociodemographic variables of respondents, 2021.*

Clinical conditions	n	%	n accumulated	% accumulated
Tests - COVID				
Did not take test	45	40,5	40,5	40,5
RT-PCR (Swab)	33	29,7	29,7	70,3
RT-PCR (Swab), Not tested	1	0,9	0,9	71,2
RT-PCR (Swab), Serology, Quick Test	2	1,8	1,8	73,0
RT-PCR (Swab), Quick Test	3	2,7	2,7	75,7
Serology	6	5,4	5,4	81,1
Serology, Quick Test	2	1,8	1,8	82,9
quick test	19	17,10	17,1	100
Did you use the respirator				
No	37	33,3	33,3	33,3
Not applicable	73	65,8	65,8	99,1
Yea	1	0,9	0,9	100
Total	111	100	100	

Source: Prepared by the authors from data extracted from the research. (2021)

Another characteristic observed, with a strong predominance, was the involvement in females, which can lead to the conclusion that this is the public most exposed to risks in this study.

However, other studies had male predominance in previous pandemics caused by SARS-CoV and MERS-Cov viruses in which men were more likely to be infected than women.

Regarding health aspects, considering, however, the clinical conditions of patients at risk from comorbidities, 20.7% have comorbidities, and according to the research criteria - inclusion and exclusion described in the methodology of this study, the most common comorbidities were hypertension (6.6%), chronic respiratory disease (9.9%), diabetes (1.8%), and she was unable to answer (79.3%) of the participants.

In view of the analyses, the epidemiological profile showed that 37% of respondents reported not having presented symptoms for COVID-19. But among those who reported some symptom, the highest percentages were for dry cough (10.8%), cough accompanied by other symptoms (8.1%), absence of taste and smell (8%), tiredness (7%) and fever, dry cough and tiredness (6%).

As for periods of isolation, most remained between 14 days 20.7% and 15 days 17.1%. All of these as a result of symptomatic worsening of breathing difficulty or shortness of breath, followed by pain or pressure in the chest, symptoms justified by the pre-existing comorbidity of "Chronic respiratory disease" whose percentage was totaled in 11.7% of patients who knew of the existence of comorbidity, although 88 of the 111 participants were unable to affirm their knowledge about any comorbidity existing in their clinical histories.

Regarding the level of education, it is noted that most of the registered cases are people with sufficiency in education, among the professionals participating in the research, the highest percentage of those affected were education professionals followed by students, and, in addition to other areas, front-line professionals, first responders, pharmacists, physicians, nursing technicians, nurses and self-employed with 9.0% that ranks third among the public affected by the disease. In this sense, the research showed that young people were the most affected by COVID-19, however considering their respective work activities or other causes not evidenced in this study.

Discussion

Comorbidities represent major risk factors for complications that progress to death in individuals diagnosed with COVID-19. Analyzing the complexity of the topic presented, and the high number of deaths caused by Coronavirus in Brazil, it was of paramount importance to verify the correlation with the comorbidities associated with patients with COVID-19 so that differentiated risk profiles can be delineated in relation to the association of pathologies when co-occurring.

The results of epidemiological and association studies with comorbidities vary according to the population studied. Reasons why, this study aimed to know the epidemiological, clinical and laboratory profile of patients with comorbidities who were infected by COVID-19. There are several aggravating comorbidities of the strain, including: obesity, metabolic syndrome (MS), systemic arterial hypertension (SAH), dyslipidemia, type 2 diabetes mellitus (DM), malignancies, inflammatory bowel diseases, psychiatric disorders, smoking, alcoholism [9-11]. In addition to these are Chronic Pulmonary Disease (COPD), Cancer and Chronic Kidney Disease.

There are, therefore, individuals who have more than one comorbidity, that is, a multimorbidity that associated with COVID-19 provides overwhelming damage, since such involvement has an important relationship with health inequities, so that individuals with worse socioeconomic conditions tend to be most affected [12-14].

It is noteworthy that the evolution of cases and the risk of hospitalization brought a worrying scenario regarding the capacity of health systems, making explicit organizational and structural failures of the same [15].

Regarding the place where the study was carried out, it is considered that it may have influenced the results, although, in the systematic analysis, the outcome was not associated with the place of residence, but because the city is a regional health center that receives patients of the surrounding municipalities. Likewise, the method for analyzing the association of comorbidity used may have interfered with the results. Considering the aggravations due to other clinical factors.

In this study, it is concluded that most individuals did not leave home or left between once and twice in the last week. However, it is to be expected that the oldest group of people in the population will be the ones that most respect the protection measures, given the evidence that indicates this public in a higher risk prognosis both for immunity and for comorbidities [10].

Conclusion

Since COVID-19 is no longer contained in Wuhan, China, but with a high rate of independent and self-sustaining outbreaks in several cities around the world, due to the substantial export of pre-symptomatic cases that culminated in immediate demand for health interventions large-scale public service quickly throughout the world. These comorbidities associated with COVID-19 significantly increase the morbidity and mortality rates of the disease, being a disease still in complex studies, there is a need to race against time in order to increase the importance and implement effective preventive and early therapeutic measures.

Thus, this article presents evidence of relevance for the pharmaceutical class in order to update their knowledge about COVID-19. Furthermore, information about the new coronavirus is continuously influenced by various factors, both in terms of diagnoses and new mutations whose new strain variants arise with severe complications. This requires attention from professionals regarding clinical and pharmacological conduct. Thus, in the current scenario of the pandemic, the implementation of stricter biosafety criteria is necessary in order to protect hospital staff and allow better treatment for patients.

Therefore, there is a need for further studies with well-established evidence for the new Corona Virus, since currently, adaptations of protocols and mechanisms established in previous epidemic outbreaks, caused by viruses similar to the current COVID-19, still predominate.

Thanks

Bibliography

1. Ruan, Q., Yang, K., *et al.* (2020). Clinical predictors of mortality due to COVID-19 based on an analysis of data of 150 patients from Wuhan, China. *Intensive Care Medicine, 46*(5), 846-848.

2. Nobre, Akim Felipe Santos, *et al.* (2014). Primeira detecção de Coronavírus humano associado à infecção respiratória aguda na Região Norte do Brasil. *RevPan-Amaz Saúde, Ananindeua, 5*(2), 37-41.

3. Brazil Ministry of Health. (2020). *Coronavírus.*

4. Cui, J., Li, F., Shi, Z. L. (2019). Origin and evolution of pathogenic coronaviruses. *Nat Rev Microbiol., 17,* 181-192.

5. Driggin, E., Madhavan, M. V., *et al.* (2020). Cardiovascular considerations for patients, health care workers, and health systems during the coronavirus disease 2019 (COVID-19) pandemic. *J Am Coll Cardiol., 75*(18), 2352-2371.

6. World Health Organization. (2020). *Coronavírus.*

7. Bansal, M. (2020). Cardiovascular disease and COVID-19. *Diabetes and Metabolic Syndrome: Clinical Research and Reviews, 14*(3), 247-250.

8. Baldin, N. & Munhoz, E. M. B. (2011). Snowball (bola de neve): uma técnica metodológica para pesquisa em educação ambiental comunitária. X Congresso Nacional de Educação- EDUCERE. I Seminário Internacional de Representações Sociais, Subjetividade e educação - SIRSSE. Pontifícia Universidade Católica do Paraná, Curitiba, de 7 a 10 de novembro de 2011.

9. Christophers, E. (2007). Comorbidities in psoriasis. *Clin Dermatol., 25*(6), 529-534.

10. Jordan, R. E., Adab, P. & Cheng, K. K. (2020). COVID-19: risk factors for severe disease and death. *BMJ., 368,* m1198.

11. Vena, G. A., Vestita, M. & Cassano, N. (2010). Psoriasis and cardiovascular disease. *Dermatol Ther., 23*(2), 144-151.

12. Calderón-Larrañaga, A., Vetrano, D. L., Ferrucci, L., Mercer, S. W., Marengoni, A., Onder, G., *et al.* (2019). Multimorbidity and functional impairment-bidirectional interplay, synergistic effects and common pathways. *J Intern Med., 285*(3), 255-271.

13. Guimarães, R. M. & Andrade, F. C. D. (2020). Healthy life-expectancy and multimorbidity among older adults: Do inequality and poverty matter? *Arch Gerontol Geriatr., 90,* 104157.

14. Oronce, C. I. A., Scannell, C. A., Kawachi, I. & Tsugawa, Y. (2020). Association between state-level income inequality and COVID-19 cases and mortality in the USA. *J Gen Intern Med., 35*(9), 2791-2793.

15. Fundação Oswaldo Cruz (2021). Nota técnica: Intensidade de trânsito, relaxamento do isolamento social e fluxo de pacientes em grandes cidades: Sistema Monitora COVID-19 FIOCRUZ: Nota técnica de 8 de junho de 2020, [S. l.]