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Outcome of patients with Chronic Noncommunicable Diseases who tested positive for COVID-19

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Desfecho de pacientes portadores de Doenças Crônicas não Transmissíveis que testaram positivo para COVID-19

Evolución de pacientes con Enfermedades Crónicas No Transmisibles que dieron positivo a COVID-19

RESUMO

Objetivo: Descrever o desfecho dos pacientes portadores de doenças crônicas não transmissíveis que testaram positivos para COVID-19, atendidos em uma região de saúde do Distrito Federal, e caracterizar o perfil de saúde destes pacientes. Métodos: estudo descritivo, prospectivo não concorrente (janeiro a julho de 2021), buscando o desfecho dos pacientes durante esse período, realizado no Núcleo de Vigilância Epidemiológica e Imunização da atenção primária, localizado na região de saúde oeste. Resultados: Foram incluídos 367 pacientes, 54% do sexo feminino, com idade superior a 50 anos (73,56%). Doenças Cardíacas Crônicas (44,58%) e Distúrbios Metabólicos (25,88%) foram as comorbidades mais notificadas. Sintomas como Dispnéia (28,88%) e tosse (23,73%) predominaram. Índice de hospitalização de 81,19%, óbito de 88,56%, dos quais 46,13% eram cardiopatas e 25% distúrbios metabólicos. Conclusão: Paciente portadores de doenças crônicas não transmissíveis tiveram um pior prognóstico quando expostos à pandemia da Covid-19.

DESCRITORES: Covid-19; Pandemias; Doenças Crônicas Não Transmissíveis.

ABSTRACT

Objective: To describe the outcome of patients with chronic noncommunicable diseases who tested positive for COVID-19, treated in a health region in the Federal District, and to characterize the health profile of these patients. Methods: Descriptive, prospective, non-concurrent study (January to July 2021), seeking the outcome of patients during this period, carried out at the Núcleo de Vigilância Epidemiológica e Immunização of primary care, located in the western health region. Results: 367 patients were included, 54% female, aged over 50 years (73.56%). Chronic Heart Diseases (44.58%) and Metabolic Disorders (25.88%) were the most reported comorbidities. Symptoms such as dyspnea (28.88%) and cough (23.73%) predominated. Hospitalization rate of 81.19%, death of 88.56%, of which 46.13% were heart disease and 25% metabolic disorders. Conclusion: Patients with chronic noncommunicable diseases had a worse prognosis when exposed to the Covid-19 pandemic.

DESCRIPTORS: Covid-19; Pandemics; Noncommunicable Chronic Diseases.

RESUMEN

Objetivo: Describir la evolución de pacientes con enfermedades crónicas no transmisibles positivos a COVID-19, atendidos en una región sanitaria del Distrito Federal, y caracterizar el perfil de salud de estos pacientes. Métodos: Estudio descriptivo, prospectivo no concurrente (enero a julio de 2021), buscando la evolución de los pacientes durante este período, realizado en el Núcleo de Vigilancia Epidemiológica e Inmunización de atención primaria, ubicado en la región sanitaria de occidente. Resultados: Se incluyeron 367 pacientes, 54% mujeres, mayores de 50 años (73,56%). Las Enfermedades Cardíacas Crónicas (44,58%) y los Trastornos Metabólicos (25,88%) fueron las comorbilidades más reportadas. Predominaron síntomas como disnea (28,88%) y tos (23,73%). Tasa de hospitalización del 81,19%, muerte del 88,56%, de los cuales el 46,13% fueron cardiopatías y el 25% trastornos metabólicos. Conclusión: Los pacientes con enfermedades crónicas no transmisibles tuvieron peor pronóstico al exponerse a la pandemia de Covid-19.

DESCRIPTORES: Covid-19; pandemias; Enfermedades Crónicas No Transmisibles.

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INTRODUÇÃO

According to the Clinical Management Protocol for COVID-19, SARS-CoV-2 is classified as a Beta Coronavirus, has high transmissibility between humans, whose transmission occurs mainly through contact with symptomatic people and droplets. [1-2]

In November 2019, in the city of Wuhan, China, an outbreak of respiratory diseases caused by the new coronavirus began, resulting in numerous deaths. [1] On March 11, 2020, due to the increase in case numbers, the World Health Organization (WHO) announced that the disease caused by the new coronavirus was characterized as a pandemic. [3].

The clinical management protocol clearly shows the manifestations of the infection. However, the main symptoms reported are: fever (≥37.8°C), cough, fatigue, dyspnea, malaise and myalgia, upper respiratory symptoms and gastrointestinal symptoms (rare). Clinical evaluation and treatment start from the definitions of the Influenza Syndrome (SG) and the Severe Acute Respiratory Syndrome (SARS). [1]

The disease causes an acute respiratory syndrome, which varies from mild to severe. Given the context, it was found that most deaths were in patients with some pre-existing comorbidity. According to data from the Epidemiological Bulletin of the Ministry of Health, 70% of people who died due to the coronavirus had one of the non-communicable chronic diseases (NCDs), with heart disease being the main associated comorbidity, followed by diabetes. [4]

Risk factors include age 60 years or older, chronic lung disease or moderate to severe asthma, heart disease, kidney failure, liver disease, diabetes mellitus (DM) and systemic arterial hypertension (SAH), especially if poorly controlled, severe obesity (BMI>40 kg/m2), smoking and immunosuppressed. [5]

This pandemic has a severe impact on the lives of the population, especially for those with CNCDs. According to the Pan American Health Organization (PAHO), since the beginning, routine health services have been reorganized or discontinued and many have had to interrupt care and advance planned activities. [6]

NCDs represent a major impact on public health, affecting individuals from all socioeconomic strata and, more intensely, those belonging to vulnerable groups[7]. According to Vigitel, in Brazil, CNCDs are equally relevant, being responsible, in 2019, for 41.8% of all premature deaths, that is, between 30 and 69 years of age. [8]

According to the WHO, it indicates that NCDs were responsible for 73.6% of deaths globally in 2019. In addition to being the main causes of death, NCDs have a strong burden of morbidities, responsible for a large number of hospitalizations and a significant loss of quality of life, which deepens as the disease worsens. As social determinants of these diseases, social inequalities, differences in access to goods and services, low education and inequalities in access to information are pointed out. [6,7,8]

The present study aimed to verify the final outcome of patients with CNCD who tested positive for COVID-19, as well as to determine the health profile of these patients..

METHODS

Descriptive, prospective, non-competing study [9], as it used data from a specific point in the past (January to July 2021) seeking the outcome of patients during this period, respecting this natural temporal sequence, and with a quantitative approach. The sample consisted of secondary data from patients treated in the western health region of the Federal District, extracted from the database of the Nucleus for Epidemiological Surveillance and Immuniza-

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tion of Primary Care (NVEP - Núcleo de Vigilância Epidemiológica e Imunização da Atenção Primária). In order to verify the average attendance in this period, a sample calculation was performed (CI 95% and sample error of 5%), defining a minimum total sample of 328 individuals.

Data from patients of both sexes, aged over 18 years, with CNCD who tested positive for COVID-19, notified from January to July 2021, were included in the study. Patients who had incomplete information in the database and/or were notified outside the mentioned period were excluded from the study. The following variables were used: [1] Gender; [2] Age; [3] Profession; [4] Type of exams (rapid test, RT-PCR, Serology); [5] Comorbidities (decompensated chronic respiratory diseases, chronic kidney diseases, chronic heart diseases, diabetes, immunosuppression, obesity); [6] Symptoms (Asymptomatic, headache, fever, sore throat, dyspnoea, cough, runny nose, taste disturbances, smell disturbances); [7] Outcome (Hospitalization, cure and death).

This research was approved by the Research Ethics Committee of the Health Sciences Education and Research Foundation (FEPECS), under opinion 5,353,244.

The data were organized in a Microsoft Office Excel 2013 spreadsheet to form the database. Subsequently, they were analyzed in detail to achieve the objective of the project.

This study adopted the norms of the national and unified database of research records involving human beings (Plataforma Brasil), as recommended by Resolution of the National Health Council (CNS) 466/2012 11 and CNS Resolution 510/2016. [10]

RESULTS

Initially, the study had 30,749 notified patients, after criteria, 367 patients were analyzed. In which it can be seen from table 1 that the majority was composed of female patients (54%), and that patients aged over 50 years were predominant (73.56%).

Chronic heart disease (44.58%) and metabolic disorders (25.04%) were the most reported comorbidities compared to the others.

It is observed that health professionals (12.80%) were the least notified in relation to other professions. Among the reported symptoms, there is a predominance of dyspnea (24.88%) and cough (23.73%), followed by fever (16.62%) and headache (11.58%). The most common type of test was RT-PCR (73.03).

As for the place of quarantine, it was observed that most patients required hospitalization (81.19%). Regarding the outcome, it was found that 82.56% of patients died and only 14.43% progressed to cure.

Graph 1 shows that patients with chronic heart disease were the ones who most died (46.13%), followed by metabolic disorders (25%) and obesity (13.61%).

Table 1. Characterization of the study sample population, 2022.		
Variables	**N**	**%**
Gender		
Female	198	54
Male	169	46,04
Age		
From 18 to 25 years	9	2,45
From 25 to 35 years	17	4,63
From 35 to 45 years	48	13,07
From 45 to 50 years	23	6,26
Above 50 years	270	73,56
Occupation		
Health professional	47	12,80
Not a health professional	320	87,19
Type of exam		
Rapid Test	70	17,03
RT-PCR	303	73,72
Serology	38	9,24
Comorbidities		
Decompensated chronic respiratory diseases	45	8
Chronic kidney disease	23	4,08
Chronic heart disease	251	44,58
Metabolic disorders	141	25,04
Immunosuppression	24	4,26
Obesity	79	14,03
Symptoms		
Asymptomatic	6	0,68
Dyspnoea	217	24,88
Headache	101	11,58
Fever	145	16,62
Sore throat	59	6,76
Cough	207	23,73
Runny nose	63	7,22

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Taste disturbances	37	4,24
Olfactory disorders	37	4,24
Gastrointestinal disorders	7	
Quarantine location		
Hospital	298	81,19
Home	69	58.80
Outcome		
Recovery	64	14,43
Death	303	82,56

SOURCE: Prepared by the authors, 2022

Graph 2 indicates that the majority of patients with NCDs that evolved to death, both female and male, were aged over 50 years, 85.06% in the female population and 73.82% in the male population. It is also possible to observe that regarding the deaths of patients of other ages, the greater involvement was in males.

In summary, based on the death rate found in the study, it can be analyzed that the existence of at least one comorbidity is associated with a worse prognosis in the case of Covid-19, with Chronic Heart Disease being the comorbidity with the greatest impact in the study , followed by Metabolic Disorders and Obesity.
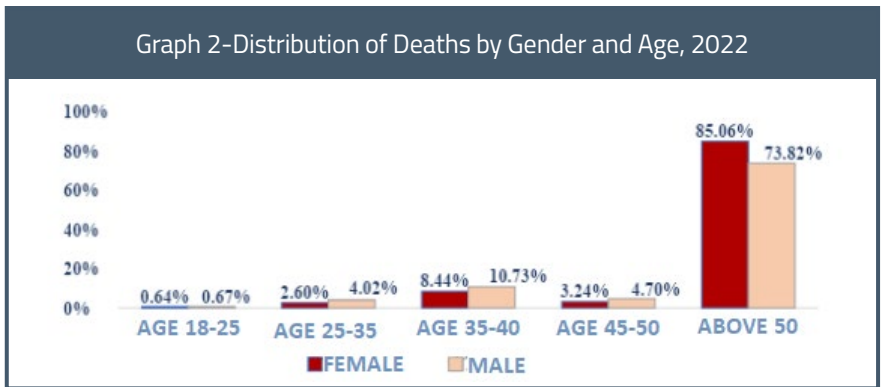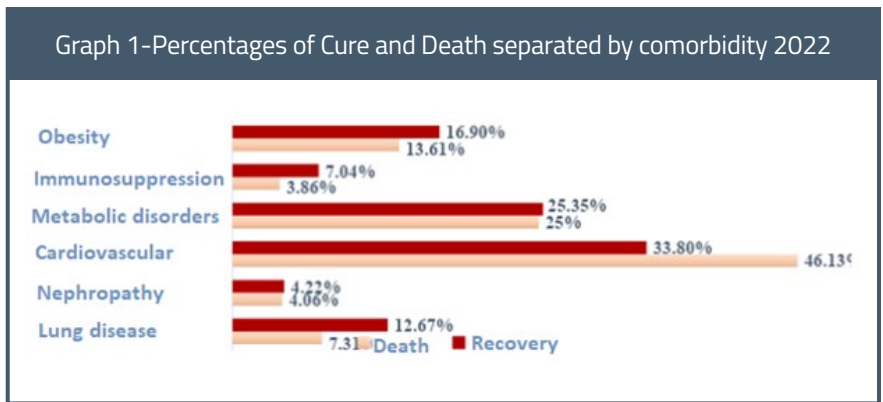
DISCUSSION

The results of this study showed that the main outcome of patients with NCDs notified from January to July 2021 was death, with the highest number analyzed in people aged over 50 years, female. When it comes to comorbidities, those with Cardiovascular Diseases were the ones who most evolved to death, which corroborates the study by Nunes, who also observed a higher percentage (75.5%) of deaths due to Cardiovascular Diseases. [11]

According to Nascimento (2020), patients with cardiovascular comorbidities infected by Covid-19, can damage myocardial cells more sharply, through various mechanisms, that generate direct damage by the virus, such as systemic inflammatory responses, destabilized coronary plaque and aggravated hypoxia, which generates a higher risk of death. [12]

Regarding deaths in relation to age group, when observing the other ages, the most affected individuals were those over 50 years of age, according to Nunes (2021), this aspect indicates that, when it comes to Covid-19, the age factor becomes even more relevant when there are Chronic Non-Communicable Diseases associated with it, leading to a greater severity of cases, as well as an increase in the percentage of deaths. A survey of 79,394 cases found that individuals over 59 were 5 times more likely to die after developing symptoms of Covid-19. [13]

The age range is extremely important in the outcome of patients. Age-associated multisystem dysregulation, in conjunction with reduced immunity, evidences systemic inflammation and increased susceptibility to infections. The outcome is evidenced in the discrepancy in the number of deaths in patients aged over 50 years. [13]

As for the sex of individuals affected by negative outcomes, the present study found a predominance of females, contrary to what was found in epidemiological studies carried out in other countries. In a survey conducted in the United States, 83.8% of patients who underwent invasive mechanical ventilation were male. [14]

Corroborating the results found in the

Graph 1-Percentages of Cure and Death separated by comorbidity 2022

SOURCE: Prepared by the authors, 2022

Graph 2-Distribution of Deaths by Gender and Age, 2022

SOURCE: Prepared by the authors, 2022

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present study, diabetes concomitantly with Covid-19 is associated with an increased risk of severe disease and a higher rate of admissions to the Intensive Care Unit (ICU). Inadequate blood glucose control evidenced by elevated glycated hemoglobin before hospital admission has been associated in the literature with a higher risk of death. [13]

It is known that the entry receptor for SARS-CoV-2 is the angiotensin-converting enzyme (ACE), which is increased in type 2 diabetes, especially in the lungs and other tissues. Chronic inflammation, endothelial cell activation, and worse insulin resistance are associated with this upregulation. This all leads to worsening of the inflammatory response and dysfunction of the alveolar-capillary barrier. [13]

Previous research has observed greater severity of the condition and longer hospitalization of obese patients with a BMI greater than 35 kg/m². The severity of the condition in these individuals can be justified by the increased levels of interleukin with activation of the pro-inflammatory state, tissue resistance to insulin, impaired chest wall elastance and reduced compliance of the respiratory system that leads to pulmonary dysfunction. Furthermore, ACE is overexpressed in obese adipocytes. [13]

CONCLUSION

The present study shows that the impact of the Covid-19 pandemic on patients with NCDs has an unfavorable outcome, and the predominance of at least one comorbidity was associated with a worse prognosis and outcome. With regard to the health profile most affected in this context, there was a greater impact on patients aged over 50 years, female and with Chronic Heart Diseases. This study also demonstrates the importance of paying extra attention and care to patients with cardiovascular diseases and female patients, especially because this was the group with the highest mortality rate in the study.

Based on this, it is concluded that it is important to reinforce the strategies aimed at the care of patients with CNCDs, in order to guarantee the follow-up and the implementation of actions integrated with the systematized care redoubled with this population, since patients with CNCDs bring a major public health impact.

It is important to emphasize that new epidemiological studies with this theme are being developed, seeking to contribute to the generation of knowledge and creation of new strategies for the protection of patients with CNCD, with the aim of increasing the survival of those affected by COVID-19.

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