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Research Article

Characterization of Covid-19 In the Population of The Jatibonico Municipality 2021-2022

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Abstract

Introduction: The infection caused by the new virus of the Coronaviridae family called SARS-CoV-2 and its transmission led to the World Health Organization (WHO) declaring it a pandemic in March 2020. Objective: Characterize COVID-19 in the municipality of Jatibonico, Province of Sancti Spiritus in the period from 2021 to 2022.
Methods: The study population was made up of the 45,377 diagnosed cases in the Province of Sancti Spiritus; the study sample was represented by the 6,399 cases confirmed from the municipality of Jatibonico.
Results: The frequency of confirmed patients was 14,10 % of the total in the municipality studied; there was a predominance of the female sex with 52,05 % and the age group between 41 and 60 years with 31,91 %. In the occupation of confirmed cases, stomatologists (0,18 %), doctors (0,65 %) and nurses (0,71 %) stood out as those with the lowest incidence.
Conclusions: The municipality of Jatibonico in the province of Sancti Spiritus faced a complex epidemiological situation during the period from 2021 to 2022 due to the incidence of positive cases of COVID-19. The immunization most used in the population of confirmed cases in the municipality was the Abdala vaccine, which demonstrated greater efficiency in the management of this respiratory disease.

Key words: COVID-19; vaccine; epidemiological characterization.

Introduction:

Throughout history, the world population has repeatedly suffered the onslaught of epidemics (some turned into severe pandemics) of various infectious diseases with different routes of transmission, such as the bubonic plague, cholera, the Spanish flu (in development of the First World War), the Acquired Immune Deficiency Syndrome (AIDS), the Severe Acute Respiratory Syndrome (SARS), the H1N1 Influenza and recently the SARS 2 COVID-19, which have led to millions of people infected, thousands loss of human life and

socioeconomic collapse, as collateral effects in many of them.(1)

Coronaviruses that affect humans (HCoV) can produce clinical symptoms ranging from the common cold with a seasonal pattern in winter to other more serious ones such as those produced by the Severe Acute Respiratory Syndrome (SARS) and of Middle East Respiratory Syndrome (MERSCoV).(2)

The infection caused by the new virus of the Coronaviridae family called SARS-CoV-2 (in English, Severe Acute Respiratory Syndrome Coronavirus 2) (3,4) and its transmission led the World Health Organization (WHO) to declare a pandemic in March 2020, naming the disease COVID-19 (for its acronym in English Coronavirus Disease 2019). (5,6)

This disease has an incubation period that averages between ± 5-6 days, with a range of 1 to 14 days. 97.5% of symptomatic cases develop within 11.5 days after exposure.(7,8)

The clinical spectrum of the infection varies from the absence of symptoms (asymptomatic infection) or mild respiratory symptoms, to severe illness and death. The disease can progress rapidly, causing acute respiratory distress syndrome (ARDS or SARS), shock, multi-organ failure, and coagulation disorders, among other complications. The prognosis varies from recovery in most cases to a slow evolution and death.(9)

In its prophylaxis, protection and social isolation measures are applied and in its therapeutic management, several protocols are applied to address the clinical process and complications, including assisted ventilation therapy, but up to this moment, there is no specific treatment.(10,11)

As of April 30, 2020, 183 countries have reported cases of COVID-19 worldwide with 3 million 130 thousand 800 confirmed cases and 227 thousand 051 deaths with a fatality rate of 7.25%.(12)

The countries with the highest number of confirmed cases and deaths are: the United States of America, where 1,035,353 cases were confirmed with 55,337 deaths, Spain with 210,733 cases and 23,822 deaths and Italy With 201,505 patients and 27,359 deaths.(12)

In the Americas region, one million 293 thousand 607 confirmed cases are reported, 41.32% of the total cases reported in the world with 74,591 deaths with a fatality rate of 5.7%. The highest number of cases is reported in the United States of America, followed by Brazil with 78,162 cases and 5,466 deaths and Canada with 52,056 confirmed cases and 3,082 deaths.(12)

In Cuba, in May 2020, 2,897 patients were reported hospitalized for clinical epidemiological surveillance. Another 3,892 people are monitored at home by Primary Health Care (PHC). For COVID-19, 49,409 samples were studied, resulting in 1,537 positive samples (3.1%).(12)

As of March 11, 2020, the date on which the first cases were diagnosed in the province of Sancti Spiritus and in the country, it became evident that the COVID-19 pandemic was already a health problem in the Sancti Spiritus territory. On March 13, one confirmed case (Italian tourist) was reported in the province, eight cases evaluated as contacts with that patient and one suspected case at the end of that same month. The reports given daily by the National Epidemiology Center showed a large number of cases in all municipalities of the province of Sancti Spiritus.

The general objective of this work is to describe the epidemiological behavior of COVID-19 in the municipality of Jatibonico, province of Sancti Spiritus in the period from 2021 to 2022.

Methods:

A retrospective and cross-sectional descriptive study was carried out, where the epidemiological behavior of Covid-19 was determined in the population of the municipality of Jatibonico, Sancti Spiritus province, in the period from 2021 to 2022.

The study population consisted of the 45,377 diagnosed cases in the Province of Sancti Spiritus, the study sample was represented by the 6,399 confirmed cases in the municipality of Jatibonico, for which the following inclusion and exclusion criteria were chosen:

Inclusion criteria:

- Positive cases for COVID-19.
- Permanent residence in the municipality of Jatibonico of Cuban nationality.
- Exclusion criteria:

Positive cases, contacts or suspects of foreign nationality.

The documentary review method was used, reviewing the information issued by the Ministry of Public Health (MINSAP), the implementation instructions in the municipality of Jatibonico and the existing information in the Municipal Health Directorate and the Provincial Center for Hygiene, Epidemiology and Microbiology. Reviews of the medical records of the admitted patients were carried out, forming part of the analysis and results of the study. The mathematical method used was the descriptive one, which allowed the processing of the collected information, through the use of the SPSS software, creating a database where the sociodemographic characteristics of the patients were found, facilitating their interpretation in percentage and incidence rate x 105 inhabitants, with a population in the Jatibonico municipality of 42,577 (13) inhabitants according to the dispensation carried out in the country in 2021.

The basic principles of bioethics in research were always kept in mind: normal efficiency, beneficence, respect for patient autonomy and justice. With prior inclusion in the study, informed consent was requested in writing, previously explaining what the research consisted of, the need and importance of it. The institution was informed that the research would not promote situations that harm it and the information obtained would not be used for purposes other than the research. The principle of confidentiality was respected.

Results:

According to the distribution of these patients, according to case classification, it was observed that the frequency of confirmed patients was 6,399 (14.10%) of the total in the municipality, there was a predominance of the female sex with 52.05% and the age group between 41 and 60 years with 31.91% (Table 1).

Definición de casos	No. total, de casos	%	Tasa de incidencia x 10^5 habitantes
Confirmados	6399	14,10	15029,24
Contactos	38978	85,89	91547,07
Total	45 377	100	1076576,32
Sexo de los casos confirmados			
Masculino	3068	47,94	7205,76
Femenino	3331	52,05	7823,47
Total	6 399	100	15 029,24
Grupos de edades			
De 0 a 18 años	1292	20,19	3034,50
De 19 a 40 años	1822	28,47	4279,30
De 41 a 60 años	2042	31,91	4796,01
De 61 a 70 años	552	8,62	1296,47
De 71 a 79 años	417	6,51	979,40
Más de 80 años	274	4,28	643,53
Total	6399	100	15 029,24

Table 1: *Distribution of patients according to case classification, sex and age groups. Jatibonico Municipality. Period 2021 to 2022*

Regarding the behavior of cases according to clinical evolution, the cured cases in the age group between 41 and 60 years (99.85%) stood out, and negatively the 12 (4.37%) deceased patients in the age group of 80 years and older (Table 2).

Grupos de edades	Número de enfermos	Número de curados	%	Tasa x 10^5 habitantes	Número de fallecidos	%	Tasa x 10^5 habitantes
De 0 a 18 años	1292	1292	100	3 034,50	0	0	0
De 19 a 40 años	1822	1822	100	4 279,30	0	0	0
De 41 a 60 años	2042	2039	99,85	4 788,97	3	0,14	7,04
De 61 a 70 años	552	546	98,91	1 282,38	6	1,08	14,09
De 71 a 79 años	417	408	97,84	958,26	9	2,15	21,13
Más de 80 años	274	262	95,62	615,35	12	4,37	28,18
Total	6399	6369	99,53	14 958,78	30	0,46	70,46

Table 2: *Distribution of confirmed cases according to clinical evolution by age group. Jatibonico Municipality. Period 2021 to 2022*

Municipal Statistics Department Among the occupations of confirmed cases, dentists (0.18%), doctors (0.65%) and nurses (0.71%) stood out as those with the lowest incidence (Table 3).

Ocupación	No	%
Médicos	42	0,65
Enfermeros	46	0,71
Estomatólogos	12	0,18
Estudiantes	975	15,23
Campesinos	205	3,20
Obreros	187	2,92
Jubilados	870	13,59
Otros	4 062	63,47
Total	6 399	100

Table 3. *Distribution of confirmed cases by occupation. Jatibonico Municipality. Period 2021 to 2022*

Clinical Histories, Provincial Surveillance Directorate Post Among the associated comorbidities in confirmed cases, chronic renal failure (0.25%), chronic obstructive diseases (0.29%) and neoplasias (1.00%) had a lower incidence, while the most frequent associated comorbidity was arterial hypertension (33.77%) (Table 4).

Comorbilidades asociadas	No	%
Enfermedades Obstructivas Crónicas	19	0,29
Asma Bronquial	397	6,20
Diabetes Mellitus	247	3,85
Enfermedades Cardiovasculares	165	2,57
Enfermedades neurológicas	86	1,34
Hipertensión Arterial (HTA)	2161	33,77
Neoplasias	64	1,00
Insuficiencia Renal Crónica	16	0,25
Otras enfermedades	560	8,75
No recogidas en Historia Clínica	2684	41,94
Total	6 399	100

Table 4: Distribution of confirmed cases according to associated comorbidities. Jatibonico Municipality. Period 2021 to 2022

Clinical Histories, Provincial Surveillance Directorate PostAmong the associated comorbidities in deceased patients, arterial hypertension was most representative with 40%, followed by 6 cases (20%) that did not present records and bronchial asthma with 13.33% (Table 5).

Comorbilidades asociadas de pacientes fallecidos	No	%
Hipertensión Arterial (HTA)	12	40
Asma Bronquial	4	13,33
Enfermedad Pulmonar Obstrutiva Crónica	2	6,66
Cardiopatia Isquemica	2	6,66
Inuficiencia Renal Cronicas	1	3,33
Diabetes Mellitus	2	6,66
Enfermedad Cerebro Vascular	1	3,33
Sin registro	6	20
Total	30	100

Table 5:*Distribution of associated comorbidities of deceased patients. Jatibonico Municipality. Period 2021 to 2022*

Clinical Histories, Provincial Surveillance Directorate PostThe immunization of confirmed patients in the municipality was led by the Abdala vaccine at 89.45%, followed by the Soberana 02 vaccine with 8.62% and Soberana Plus with 1.6% (Table 6).

Vacunas	No	%
Abdala	5 724	89,45
Soberana 02	552	8,62
Soberana Plus	104	1,62
Sinopharm	13	0,20
Pftizer	3	0,04
Moderna Biotc	2	0,03
Spuknik	1	0,01
Total	6 399	100

Table 6: Distribution of immunization of confirmed patients. Jatibonico Municipality. Period 2021 to 2022

Discussion:

In our study of confirmed cases, the female sex and the age group between 41 and 60 years predominated. The most relevant associated comorbidities that were collected in the acquired data was arterial hypertension, being the same with the highest prevalence in the deceased in the study. The Abdala vaccine led the immunization of confirmed patients.

Otoya et al., (14) in their study on the epidemiological behavior of COVID-19 in Colombia describe the lethality of the virus in men at 4.1% and 3.4% in women, as age increased, the percentage of lethality of the virus was higher, behaving in the group from 10 to 29 years at 0.3% and reaching 12% in the group over 70 years old. The data showed that mortality is at the expense of older people, where 50% of the deceased were over 70 years old.

Rios et al., (15) in their descriptive study of patients hospitalized for COVID-19 in a Hospital in Paraguay, studied 99 hospitalized patients, of which 34.34% were 60 years of age or older, 59.59% were male, 46.46% had some positive contact, of them 16.16% were hospitalized. 87.87% reported fever, 81.81% dyspnea and 76.76% myalgia. 22.22% (22) died.

Haro et al., (16) in their observational, cross-sectional and descriptive study, analyzed the records of 1836 patients with respiratory symptoms. The results revealed that the prevalent age range was 18 to 40 years with 707 (38.5%) cases, upper respiratory diseases were more frequent with 1617 (88.1%) cases. COVID-19, unidentified virus was present in 91 (4.9%) cases, with the elderly population being the most affected with 39.5% of cases. Home follow-up was carried out in 48 (2.6%) patients suspected of COVID-19, with cough being the most frequent symptom for 60.4%, and high blood pressure (33.3%) the most prevalent comorbidity in this group. Valdés et al., (17) in their research carried out in Santiago de Cuba, recorded more than 65,000 cases and 592 deaths, using as sources of information the case records, laboratory records and summaries of deaths due to COVID-19. The 2nd and 3rd waves of the pandemic were the most intense, associated with the circulation of the Beta and Delta strains, contributing 93.6% of the total confirmed cases. The highest incidence rates were observed in age groups over 50 years, with a greater predominance in those over 80. 94.4% of the total deaths occurred during the 2nd and 3rd waves of the epidemic, a phenomenon probably associated with the strains circulating in that period. Diaz (18) found in his study that, in the demographic characterization, 52.3% were 60 years old, of them 66.4% were male. Their clinical characterization showed that 37.5% were obese, the most relevant comorbidity being that 74.2% had respiratory difficulty and 64.8% had cough. The deceased were men over 60 years of age who had alcohol and smoking habits.

Taborda et al., (19) evaluated the efficacy of vaccines in six Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico and Peru), during the period 2021-2022, for the analysis of efficacy and safety, the nine most relevant vaccines were taken in terms of participation in the number of doses negotiated by each of the countries. The efficacy of the vaccines in severe cases was included in the analysis: the Pfizer vaccine was 95% effective in this group of cases, AstraZeneca was 100% effective, Moderna was 94% effective, JanssenCilag was 95% effective, CanSinoBiologics was 65% effective, Sinopharm was 78% effective, Sputnik V was 92% effective, and Sinovac was 51% effective. The efficacy and safety data of the vaccines analyzed were taken from the interim results of the pivotal clinical studies of each of them.

Mazagatos et al.,(20) in a study in Spain, in a very restricted context of nursing homes for the care of people, found 97% effectiveness of vaccination to prevent death from COVID-19. Chunget al.,(21) presented the evaluation of the effectiveness of two vaccines (BNT162b2 and mRNA1273) in adults in Canada, reporting 80% or more effectiveness after 2 doses against symptomatic COVID-19 caused by different variants, including alpha, beta and gamma. López et al., (22) in their case-control matched cohort study of the population hospitalized for COVID-19 during the pandemic in Peru, with a follow-up from February 9, 2020 to October 27, 2021, determined that the effectiveness of the vaccination plan was estimated at 80.4%, people vaccinated with Sinopharm (20.5%) had the best chances of survival (0.960), those vaccinated with AstraZeneca (7.6%) had a lower probability of survival (0.866) than people vaccinated with Sinopharm, but higher than people vaccinated with Pfizer (71.9%) (0.812). Scruzzi et al., (23) in a retrospective cohort study in 1 139 458 vaccinated and unvaccinated residents of the province of Córdoba, Argentina, of them 55% were women and 45% men, aged between 18 and 110 years, of them received at least one dose of the SARS-CoV-2 vaccine 815 940 people (71.7%). 47% of the vaccinated received Sputnik-V, 37% AstraZeneca and 16% Sinopharm its two versions. Regarding the probability of death, the risk increased as age increased and with greater relevance in the male sex (56%), the presence of obesity, arterial hypertension and diabetes mellitus. Rios et al., (24) conducted an observational, descriptive, cross-sectional study of 146 health personnel vaccinated against COVID-19 in the first quarter of 2021. 68.5% were female and 38.4% were under 30 years of age. 72.6% (106) of the participants received the Oxford-Astrazeneca vaccine, while 27.4% (40) received other types of vaccines.

Conclusions:

The municipality of Jatibonico in the province of Sancti Spiritus faced a complex epidemiological situation during the period from 2021 to 2022 due to the incidence of positive cases of COVID-19, specifically in the age group between 41 and 66 years. The low incidence of confirmed cases among health professionals stands out, who were facing this difficult situation in the isolation centers established in the territory, in addition to the development of interprofessional education and preventive practices, which achieved better control of the pandemic. The most widely used immunization in the population of confirmed cases in the municipality was the Abdala vaccine, which demonstrated greater efficiency in the management of this respiratory disease.

Conflicts of interest:
The authors declare that there are no conflicts of interest.

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