ORIGINAL ARTICLES

First Cuban community quarantined by COVID-19

Primera comunidad en cuarentena por la COVID-19 de Cuba

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RESUMEN

Introducción: el brote de la enfermedad causada por el coronavirus 2019 (COVID-19) es una emergencia de salud pública de importancia internacional, situación de la que no escapa Cuba.
Objetivo: caracterizar clínico-epidemiológicamente el evento epidemiológico por COVID-19 en la comunidad Camilo Cienfuegos de Consolación del Sur.
Métodos: se realizó una investigación observacional, descriptiva, longitudinal y prospectiva en el período comprendido entre marzo a mayo de 2020 en la comunidad referida, declarada en cuarentena epidemiológica, con 10 casos confirmados de la enfermedad. Se confeccionó la araña epidemiológica, el cronopatograma y el mapa de ubicación de los casos positivos.
Resultados: en la caracterización socio-demográficamente a la comunidad, predominó el sexo masculino, el grupo etario de 0 a 19 años, el modo de contagio introducido, la nacionalidad cubana, la evolución favorable de la enfermedad, y el período de incubación corto. Fueron descritas las acciones de salud implementadas en las primeras fases de enfrentamiento de la enfermedad.
Conclusiones: el evento epidemiológico por COVID-19 fue caracterizado clínico-epidemiológicamente, se mostró la importancia de una adecuada implementación de los planes descritos para el control de la enfermedad, y que la prevención desde la Atención Primaria de Salud es fundamental.

Palabras clave: Cuarentena; Atención Primaria de Salud; Pandemia por el Nuevo Coronavirus 2019; Transmisión de Enfermedad Infecciosa.

ABSTRACT

Introduction: the outbreak of the disease caused by the coronavirus 2019 (COVID-19) is a public health emergency of international importance, a situation from which Cuba does not escape.
Objective: to characterize the epidemiological event by COVID-19 clinically and epidemiologically in the Camilo Cienfuegos community of Consolación del Sur.
Methods: an observational, descriptive, longitudinal and prospective investigation was carried out
in the period from March to May 2020 in the referred community, declared in epidemiological quarantine, with 10 confirmed cases of the disease. The epidemiological spider, the chronopatogram and the location map of the positive cases were made.
Results: in the socio-demographic characterization of the community, the male sex predominated, the age group from 0 to 19 years, the mode of infection introduced, the Cuban nationality, the favorable evolution of the disease, and the short incubation period. The health actions implemented in the early stages of coping with the disease were described.
Conclusions: the epidemiological event by COVID-19 was characterized clinically-epidemiologically, the importance of an adequate implementation of the plans described for the control of the disease was shown, and that prevention from Primary Health Care is essential.

Keywords: Quarantine; Primary Health Care; Pandemic for the New Coronavirus 2019; Disease Transmission, Infectious.

INTRODUCTION

On December 31st, 2019, Wuhan Municipal Health and Sanitation Commission (Hubei Province, China) reported 27 cases of pneumonia of unknown etiology, with common exposure to a wholesale seafood, fish, and live animal market in Wuhan City, including seven severe cases. The onset of the symptoms of the first case was on December 8th, 2019. On January 7th, 2020, Chinese authorities identified a new type of virus in the *Coronaviridae* family as the causative agent of the outbreak, later named SARS-CoV-2, which genetic sequence was shared by Chinese authorities with the international scientific community on January 12, 2020.[1]

On January 30th, 2020, the Director-General of the World Health Organization (WHO) declared the outbreak of coronavirus disease 2019 (COVID-19) a public health emergency of international importance. On February 4th, 2020, he briefed the UN Secretary-General and called for the activation of the crisis management policy to establish a team to coordinate the expansion of UN system-wide activities to assist countries in preparing for and responding to COVID-19. On March11th, the WHO declared a global pandemic. [1,2]

Until May 7th, 2020, 184 countries with cases of COVID-19 reached 3 million 713 thousand 796 confirmed cases (+ 89 993) and 263 288 deaths (+ 6 thousand 408), with a lethality of 7.09 %. In the Americas 1.595.437 confirmed cases (+ 41.592) were reported, 42.96% of the total number of cases reported worldwide, with 94.122 deaths (+ 3,556) and a lethality of 5.90% (+0.07).[3]

At the close of May 7th, 2020, there were 1 986 patients hospitalized in Cuba for clinical epidemiological surveillance. Another 5 264 people were being observed at home by primary

health care personnel, and 1 947 samples were studied for the COVID-19 survey, resulting in 12 positives.[3]

In Pinar del Río province, in anticipation of this article, there were 50 confirmed cases of the disease. Consolación del Sur was the first to contribute with 13 patients diagnosed, 10 of them were confined to the geographical limits of Camilo Cienfuegos community, which led to the determination by the Provincial Defense Council to be declared in quarantine, being the first community in the country under this status.

In Cuba, the Strategy for the Prevention and Control of the novel Coronavirus SARS-CoV-2, causing COVID-19 was designed in January 2020. It involves all the Central State Administration Agencies, companies, the private sector and the population in general; it is contextualized to the real conditions of each territory. In this sense, the quarantine phase is one of the most important. It consists of restricting activities and separate people who were not infected and those who were suspected of being infected by the virus, in order to prevent the possible spread of infection or contagion.

In the current context, the recent emergence of COVID-19 meant that the understanding of transmission patterns, severity, clinical characteristics and risk factors for infection remains low among the general population, medical personnel, their family environments or other "closed" settings. Therefore, studies to assess the epidemiological and clinical characteristics of cases in different settings are essential to deepen and better understand this virus and associated disease. They will also provide the reliable information needed to adjust the parameters that will be integrated into the prognostic models.[1]

The proposed objective was to characterize clinical and epidemiologically the onset of COVID-19 at Camilo Cienfuegos community, Consolación del Sur municipality, Pinar del Rio province.

METHODS

An observational, descriptive, longitudinal and prospective study was conducted, in which the main clinical-epidemiological characteristics of the epidemiological event were identified by the diagnosis of COVID-19 at Camilo Cienfuegos community, Consolación del Sur municipality, Pinar del Río province during the period from March to May 2020.

The target group comprised 10 patients confirmed with the diagnosis of COVID-19 in the mentioned community.

A characterization of the municipality was completed; the variables included: age, sex, most frequent symptoms, way of transmission, personal pathological history, incubation period, evolution of the disease. In addition, the order of the epidemiological event took into account the characterization of the municipality and the community in study, description of the epidemiological event with the positive cases to the disease and the identification of the main actions carried out during the pre-epidemic phase and local autochthonous confirmed transmission.

For its epidemiological understanding, the SPIDER search tool, the chronopathogram and a map of the location for the COVID-19 confirmed cases were organized.

The results obtained were recorded in a computerized database and processed using the SPSS Version 21.0 statistical package. The description of the results of the behavior of the variables was made by methods of descriptive statistics and presented in absolute and relative percentage frequencies.

The ethical principles of the Declaration of Helsinki were met for this type of study, considering the confidentiality of the data, and only for scientific purposes.

RESULTS

Characterization of Consolacion del Sur municipality

It is located in the southern plain, in the eastern part of Pinar del Río province with an area of 1 113.9 km^2. Located to the South of the Gulf of Batabano, the municipalities of La Palma and Viñales in the north, Los Palacios municipality in the east and Pinar del Río municipality in the west. Approximately a quarter of the territory is made up of land. Its climate is tropical with an average annual temperature of 25.5°C. The extremes of heat during the summer have an average of 27°C. The relative humidity is 80%. It is located in a region frequently affected by tropical hurricanes. It is politically and administratively integrated by 13 People's Councils, 174 districts and 37 population settlements. [2]

According to the analysis of the territory health situation, the population pyramid is modified to the extent that it assimilates the demographic dynamics of the country, with a narrow base, given the low fertility rate, a discreet widening between 45 and 49 years old and another larger one between 50 and 54 years old. In the gender analysis by means of age group, the proportion of men is 3,4 % higher than the number of women. The female index reached a value of 1 029 women per 1 000 men in the 45-54 age group. The population aged 60 and older is mostly concentrated in the 60-64 age group, reaching an aging rate of 26 %. The highest mortality rates are in chronic non-communicable diseases.

In the municipality, in relation to COVID-19, it was early reported the three outbreaks with 13 confirmed cases of the disease, where two cases had the source of infection in the United States of America that are outside the community event on local broadcast Camilo Cienfuegos

Camilo Cienfuegos community limits to the north with Loma de Candelaria, to the south with the National Freeway, to the east with Herradura reservoir and to the west with Valverde township; it has a population of 1 844 inhabitants, for a density of 14.7 inhabitants per km^2. The town has 461 houses, having 13 multi-family buildings and five population settlements, with a total of 141 houses and 564 inhabitants.

The main source of employment in the community is the "Empresa Pecuaria Camilo Cienfuegos" (Camilo Cienfuegos Cattle Breeding Enterprise) with a total of 553 workers, in addition to 12 state units and other 35 workers registered as self-employed.

Description of the epidemiological event at Camilo Cienfuegos Community

The community belongs to the health area of 1ro de Enero Community Teaching Polyclinic, where 10 confirmed cases were reported (two co-primaries who came from abroad and eight secondary cases, two of them were asymptomatic contacts). The community was declared in quarantine from April 1, 2020, which included the Nuevo Amanecer and No Alineados settlements, with a total population located in the cordon sanitaire of 1 430 inhabitants, distributed in 366 homes and 318 inhabitants, 22 % of them were elderly, and only 2,5 % were elderly living alone in their homes.

Confirmed cases of the epidemiological event

Index and primary case: 39-year-old male patient, with no personal pathological history of interest. Personal Pathological History (PPH): not referred. Arrived in the country on March 8th

from Cancun, Mexico. He started on March 17 with symptoms, going to the doctor the same day, and was diagnosed on March 21. His source of infection was abroad.

Co-primary case: 39-year-old female patient, wife of the primary case referred, returned with her husband from Mexico. PPH: did not contribute. Started with symptoms on March 18, admitted on March 22. Diagnosed on March 24. Source of infection abroad.

1st Secondary case: 13-year-old male patient, child of the primary and co-primary case. PPH: did not refer. Started with symptoms on March 21, admitted on March 22. Confirmed on March 26. Source of infection: his parents.

2nd Secondary case: 50-year-old female patient, housewife. Primary and co-primary case contact. PPH: high blood pressure. Started with symptoms on March 25th and was admitted the same day. Confirmed on March 29th. Source of infection: primary and co-primary cases.

3rd secondary case: 13-year-old male patient. Contact of 1st secondary case, they are classmates. PPH: not referred. Started with symptoms on March 21st and was admitted on the 28th of the same month. Confirmed on March 29th.

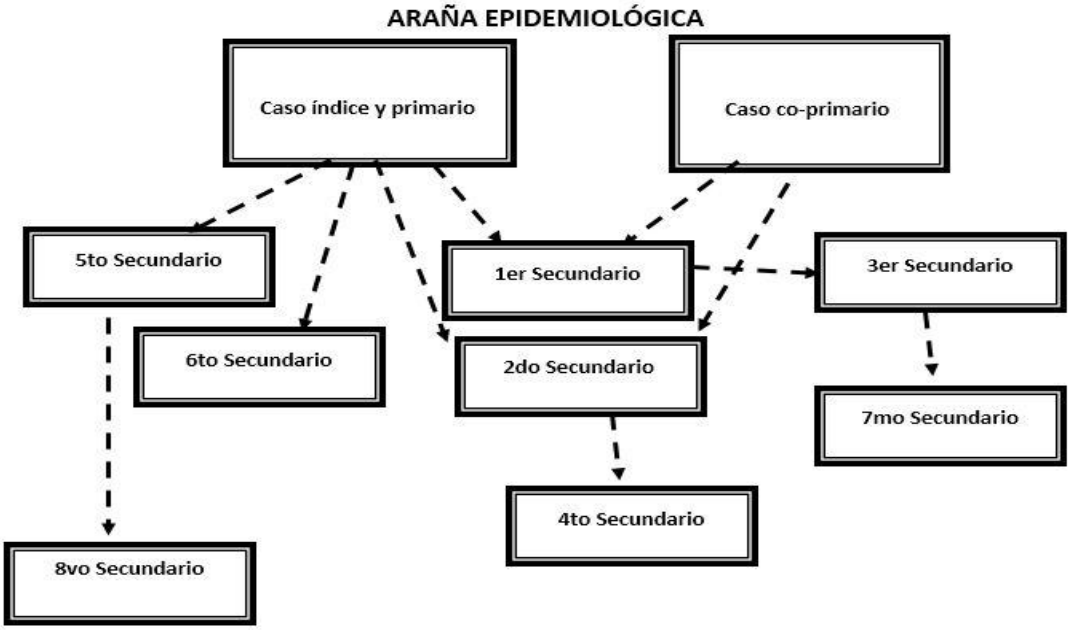
4th Secondary case: 31-year-old female, works as an economist in a community institution. Contact of the 2nd secondary case. PPH: does not refer. Asymptomatic patient; her son started with symptoms consequently he was admitted as a suspect and both were studied (the son was negative), on March 30th the patient is admitted and confirmed on April 1st.

5th secondary case: 9-year-old male patient. Primary case contact. PPH: not referred. Started with symptoms on March 27th and was admitted on the 30th of the same month. Confirmed on April 1st.

6th Secondary case: 42-year-old male patient, a self-employed driver. Primary case contact (brother). PPH: does not refer. He was in one of the isolation centers from March 22nd as a confirmed case contact and asymptomatic. Confirmed on April 2nd.

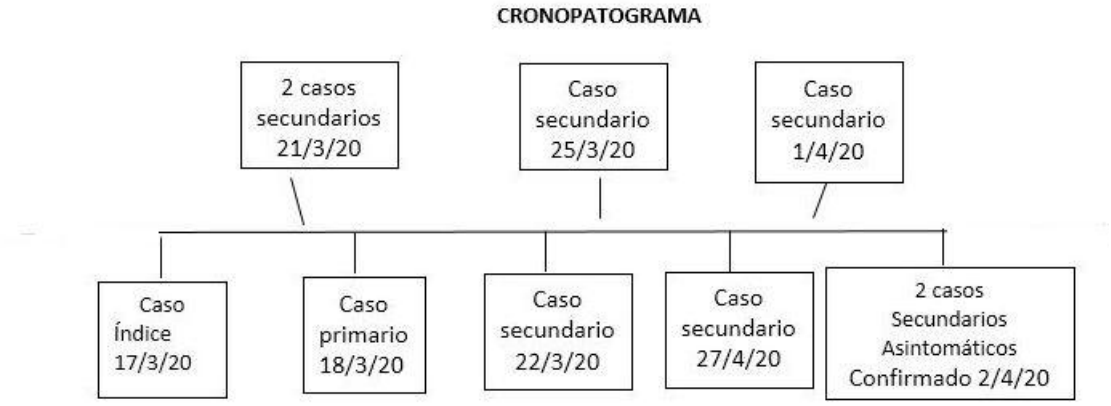
7th Secondary case: 72-year-old male patient, retired. Contact of the 3rd secondary case (grandfather). PPH: not referred. He was in one of the isolation centers from March 30th as a confirmed case contact, asymptomatic patient. Confirmed on April 2nd.

8th secondary case: 15-year-old male patient, unemployed. Contact of 5th secondary case (brother). PPH: not referred. He was in one of the isolation centers from April 1st as a confirmed case contact, the same day he presented fever and was referred as a suspicious case. Confirmed on April 9th (Graph 1)



Graph 1 Epidemiological SPIDER search tool. Epidemiological event at Camilo Cienfuegos Community, Consolacion del Sur municipality from March to May 2020.

The chronopathogram tool was distributed as shown in the flow chart. (Graph 2)



Graph 2 Chronopathogram. Epidemiological event at Camilo Cienfuegos Community. Consolacion del Sur. March-May 2020

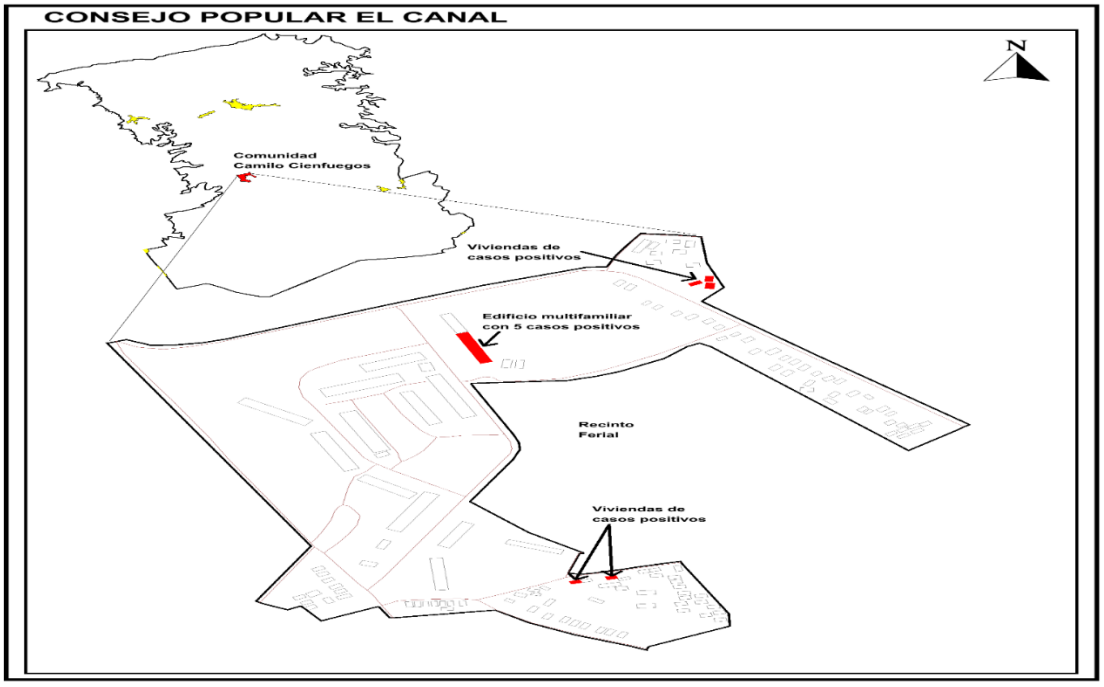
The event was characterized by 229 surveillance cases, of them 80 were identified as suspects. A total of 441 patients were studied in the community, all with negative results, including patients with respiratory symptoms.

The cases reported in the epidemiological event were Cuban citizen, two had their source of infection abroad, specifically in Mexico, consequently the way of transmission of the 20 % of the sample was imported and 80 % introduced.

Males were represented in 70 % of patients and the distribution by age group of those diagnosed was greater in the 0-19 age group (40 % of the cases), followed by the 20-39 age groups (30 %), the 40-59 age groups (20 %), followed by the 60-79 age group (10 %).

Only 10% of the sample reported a personal pathological history of high blood pressure. The incubation period in the sample was in the range from 4 to 7 days (90 %) and only 10 % was between 8 and 12 days. The most frequent symptoms were cough (60 %), followed by fever (40 %), fatigue (30 %), dyspnea (30 %), nasal congestion (10 %) and 20 % of the cases were asymptomatic. All patients presented mild symptoms not requiring hospitalization and the evolution was favorable.

For the epidemiological characterization, the epidemiological SPIDER search tool, the chronopathogram and a map with the location of cases in the epidemiological event in the community were completed (Graph 3).



Graph 3 Distribution of confirmed cases of COVID 19.

The closure of the epidemiological event took place on April 26th, 2020.
As a result of the implementation of the confrontation and control strategies of COVID-19, the actions proposed for the pre-epidemic stage and the local autochthonous transmission phase were implemented, giving priority to intersectorality and actions directed by the Defense Councils at the municipal and provincial levels.

Main actions in the pre-epidemic stage

- Combined participation of the multidisciplinary team, which prioritized the classification and conduct of the cases that were identified as suspects by the Basic Health Teams (BHTs).
- Designated the Rapid Response Teams and participation in the focus controls of COVID- 19 and in suspicious cases.
- Systemic, step-by-step training on the disease for all health personnel; in addition, a strategy following the step-by-step training outside the sector was implemented with mass organizations, state and private sector workers.

- Active epidemiological surveillance of Acute Respiratory Infections (ARI) has been organized and strengthened in all family doctor and nurse offices through the Rapid Response Team.
- Active surveillance was organized in educational and work centers, not allowing patients with respiratory symptoms to attend these centers.
- Strictly follow up on ARIs and implement the admission of the patient in his/her home for epidemiological surveillance, if necessary and indicated by the Rapid Response Team.
- Active research on ARIs has been developed with emphasis on vulnerable groups (elderly living alone, patients with chronic non-communicable diseases, pregnant women and children), with the participation of students from Pinar del Río University of Medical Sciences, who live in the municipality.
- Daily monitoring by the Rapid Response Team of cases reported by the polyclinic to the International Disease Control Center.
- In the month of March 2020, 308 travelers arrived in the municipality, seven of them lived at Camilo Cienfuegos Community, from the United States (three), Mexico (two), Spain and Haiti (one each).
- 121 CRP tests to determine SARS-CoV-2 were performed on these travelers; all the results of the tests were negative for SARS-CoV-2.
- Focus control of suspected and confirmed cases by the Rapid Response Team, with certification of the municipal team created for this purpose.
- The emergency rooms of both polyclinics for cases of ARIs are organized in a differentiated way.
- The Communication Strategy on COVID 19 has been implemented in the territory.
- Intensified health promotion and prevention actions from Primary Health Care, aimed at the prevention of ARIs, through educational talks and health hearings.
- Multilateral logistical security was guaranteed for the surveillance of cases that may enter the municipality, as well as the means of individual protection for health workers.
- The organization of the health institutions was assessed, with greater emphasis on the on-call staff in the polyclinics, family doctor's offices, and institutions for old people, quarantine or isolation centers and municipal therapy units.

Quarantine stage

- The Defense Council was activated in the mentioned community.
- The sanitary cordon was designed, complying with the regulations established with the participation of the representatives of the police department authorities (Ministry of the Interior and the National Revolutionary Police).
- The multidisciplinary technical team is maintained for the clinical assessment of cases.
- Continuing instruction on respect to the disease is maintained for all health personnel.
- A daily active screening is carried out on the total population living or visiting the community.
- The Health Care Team received information on the epidemiological situation of the territory, which allowed this team to improve the health research in their area of influence.
- Clinical-epidemiological evaluation of symptomatic respiratory patients and timely admission for appropriate monitoring and surveillance.
- 636 tests to determine SARS-CoV-2 were performed in the municipality, out of them 277 belonged to the community (closed on April 26th, 2020).
- 177 real time CRPs were implemented on the patients' contacts of confirmed cases in the municipality.

DISCUSSION

The analysis of the main variables related to COVID-19 is changeable and dynamic, bearing in mind that even the incidence, prevalence and case fatality rates continue to change considerably.

According to the preliminary data, Serra has stated that the most frequent incubation period has been estimated at 4-7 days with an average of five days, with 95 % of the cases occurring 12,5 days after exposure.[4] The results of the target group studied coincided with this contribution.

It is necessary to emphasize that even though, there are several studies on how long, in days, the virus can be transmitted, the authors agree with the WHO, which recommends isolation for an additional 14 days after hospital discharge because recent studies have presented data that the virus can be transmitted after the first 14 days. This is evident from a publication by the Chinese researchers in February, which found that the period can be extended to 24 days. [5]

Regarding the clinical characteristics of confirmed cases of COVID-19 in the city of Wuhan, China, a retrospective cohort of 41 patients showed that the average age was 49 years, with a male sex prevalence, reports that coincide with our series in terms of sex, but not in the age where the group of children under 19 years prevailed. The Chinese study itself considered important signs and symptoms of COVID-19: fever (98 %), dry cough (76 %), dyspnea (55 %), myalgia or fatigue (44 %) and lymphopenia (63 %). Infected persons may be asymptomatic or exhibit a range of signs and symptoms from mild to very severe depending on the characteristics of each person. [6,7]

The series in this study was characterized by coughing in order of frequency, followed by fever and fatigue. In addition, an important element was that, only 10 % presented non-communicable diseases, and older adults did not predominate, a reason that may explain the favorable evolution and the nonexistence of dead or reported cases of severe characteristics of the disease in the sample.

In 80 % of the cases of COVID-19 the disease is mild, to the point of being confused with flues or colds. However, 15% of the patients showed severe symptoms that required hospitalization and 5 % developed very severe symptoms that had to be treated in intensive care units. [8]
The data described in the cases of the study showed coincidences with those reported in Cuba on May 7th, 2020 [3] of 1 741 cases diagnosed, 587 active and 1 078 recovered; of them the predominant sex was male (907 patients), the way of transmission (1 340 introduced and 158 imported), Cuban citizen (1 701 patients), and the age group most affected (40-59 years followed by 20-39 years).

The authors agree with kluge HH[9] when he states that the coronavirus disease pandemic (COVID-19) has highlighted the importance of interconnecting the WHO strategic priorities: moving towards the worldwide health coverage, promoting health and well-being, and protecting against health emergencies. The author himself acknowledges that the prevention and control of non-communicable diseases are important during this pandemic because non-communicable diseases are the main risk factors for patients with COVID-19. An association between the severity of COVID-19 and non-communicable diseases has also been reported in Spain, China, and the United States.

The authors agree with what has been published by the WHO, the Pan American Health Organization and other authors that the most important measure to face the current pandemic is preventive work. They include: frequent hand washing with soap and water, coughing or sneezing, covering the mouth and nose with the ulnar fossa (the concavity formed by the inner side of the arm when bent at the elbow), keeping at least one meter away from others, particularly those who cough, sneeze and have a fever, avoiding touching the eyes, nose and mouth, seeing a doctor in case of fever, coughing and difficulty breathing, in addition to using surgeon's mask or face masks. [10,11,12,13]

In the experience of the authors, clinical-epidemiological surveillance of all persons who have had contact with patients who have been classified as probable or confirmed cases of COVID-19, for 14 days from the time of the last contact they had with those infected, in addition to limiting movements to places outside their place of residence to prevent possible spread, it is fundamental to cutting off the transmission of the disease, in addition to the adequate monitoring of the international health control program at the beginning of the introduction of the disease in Cuba, the opportunity to identify signs and symptoms of the disease in patients with an epidemiological history and risk factors.

Another aspect that is considered vital from the epidemiological point of view is the epidemiological re-survey, that is to say, to repeat for the second time this instrument; which is essential for the identification of suspicious cases and contacts of these people, based on the fact that in the initial moments of identification of the possible case, a group of psychological symptoms related to anxiety and stress can appear, those who influence to hide some contacts and places that the patient has visited or has been exposed to. Similarly, the quality of the active research carried out from the family doctor's and nurse's offices with the participation of Health Science Students and the ability to comply with the appropriate social distancing in the population, stands as an epidemiological value.

The designation of a multidisciplinary team with the presence of health psychology professionals in the referred setting, played a leading role in the management of the coping styles of the population, to the situation described and contextualized to new measures of social restriction.

The experience of the epidemiological event in the referred community demonstrated that prevention is the cornerstone to deal with and control the disease, these intersectoral actions are necessary; considering the total adherence to the strategies defined by the Cuban government to contain the risk of spreading the disease, which are valued as effective, where the community participation strengthens the actions that are implemented, the effectiveness of having trained personnel and of reinforcing the biosecurity measures. All of them are considered within the main strategies of the Primary Health Care for the completion of the objectives.

In addition, the authors recognize the immediacy and quality of the organization of health services and the importance of articulating an integrated network of services based on the pandemic. An added value to the Primary Health Care in dealing with the novel coronavirus and the disease it causes (COVID19), which provides comprehensive care for the individual to meet health needs throughout his/her life, not just for a series of specific diseases. Primary health care ensures that people have a comprehensive management, from promotion and prevention to treatment, rehabilitation, and palliative care, in a way that is as close as possible to their everyday environment and focused on the influence of social determinants of health, supported by a continuously updated protocol for managing the disease. [14]

This was the beginning of an outbreak caused by a novel coronavirus of which many aspects are still unknown. Some of its characteristics are starting to be clarified from very recent studies, and more information will surely be available in the coming months. The implementation of the described actions allowed the closing of the quarantine in the referred community on May 1st, 2020.

The conclusion is that timely care to the epidemiological event caused by COVID-19 demonstrated the importance of an adequate implementation in a suitable way of the strategies established for the control of the disease with the participation of the corresponding

Defense Councils, and that prevention from the Primary Health Care continues to be the keystone.

The study did not address the rapid test results, as they were not conducted at the territory level at that time. The target group was too small to establish biostatistical correlations.

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Conflicts of interest
The authors do not declare conflicts of interest in this study.

Author's contribution
All authors: conceived and designed the research: data collection and statistical processing, analysis and writing along with the validation of the final version.
ARM: statistical processing and collection of information
DMAP, BJS, JCCB: development of epidemiological field work.

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