

## Research Article

# Clinical Characteristics of Patients with COVID-19 in a Primary Care Center in Tijuana, Mexico

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## Abstract

**Background:** COVID-19 is caused by a new Coronavirus, which causes severe acute respiratory syndrome (SARS). The most at-risk population is those over 75 years and with pathologies such as obesity, diabetes mellitus, arterial hypertension, smoking, cardiovascular diseases and asthma, this condition increases the risk of death up to five times.

**Objective:** To describe the clinical characteristics of patients with COVID-19 in the Family Medicine Unit #27 of Tijuana, Mexico.

**Methods:** A review of the database of epidemiological studies of the FMU 27 was carried out between April to June 2020. The clinical characteristics recollected were: age, fever, cough, headache, dyspnea, arthralgia, myalgia, odynophagia, rhinorrhea, conjunctivitis, chest pain, hypertension, diabetes mellitus, obesity, smoking, Chronic Obstructive Pulmonary Disease (COPD), Asthma and chronic kidney failure. Descriptive statistics were used, the qualitative variables were expressed in frequencies and percentages, and the quantitative variables in measures of central tendency and dispersion, the information obtained was analyzed in the statistical program SPSS version 25.

**Results:** 111 patients were analyzed, the following clinical characteristics were found: headache 102 (91.9%), fever 97 (87.4%), myalgia 93 (83.8%) and cough 90 (80.1%). The most frequent comorbidity was obesity (24.3%).

**Conclusions:** It is important to know all the COVID-19 clinical characteristics. The knowledge of this characteristics allows us identify the disease and complications early.

**Keywords:** COVID-19; SARS-CoV-2; Comorbidities; Clinical Characteristics

## Introduction

Coronavirus disease is caused by a new coronavirus [1]. SARS-CoV-2 has a close similarity to bat coronaviruses, its origin is not yet known, which is still being investigated. Current evidence suggests that it was spread to humans through transmission from wild animals sold illegally in the wholesale market in Wuhan, China [2,3]. A confirmed case is defined as a case with test positive for SARS-CoV-2 by at least one of the following 3 methods: isolation of SARS-CoV-2 or at least 2 positive real-time reaction in reverse transcriptase polymerase chain (RT-PCR) for SARS-CoV-2 or a genetic sequence that matches SARS-CoV-2 [4].

The estimated mean incubation period is approximately 5 days, comparable to the incubation period values in SARS and Middle East Respiratory Syndrome (MERS). The pathophysiology of Covid-19 disease, it has not been fully described but sources indicate that the protein S of the virus penetrates the host cells using the angiotensin-converting enzyme as a receptor, infecting the lower respiratory tract. As consequence, an inflammatory response of inflammatory cytokines is generated, creating the cascade or storm of cytokines that activate the immune cells inducing inflammatory cytokines in the endothelial cells of the pulmonary vessels [5].

The initial clinical manifestations were the following: fever, dry cough, myalgias, fatigue, headache, dyspnea, and anorexia. However, a proportion had different symptoms such as diarrhea and nausea, generating complications in a certain population such as acute respiratory distress syndrome, arrhythmias, and shock, requiring intensive care and oxygen therapy. There are other reports that indicate that the mean age of death in Italy was 81 years, and more than two thirds had comorbidities such as diabetes, cardiovascular disease, cancer or smoking [6]. The risk factors for hospital admission most commonly associated are: age greater than 75 years, heart failure, men, chronic kidney disease, Body Mass Index (BMI) greater than 40 and dyslipidemia. Regarding the development of critical illness, the most commonly associated risk factors were saturation at admission below 88%, troponin level greater than 1, C-Reactive protein greater than 200 and an increase in D-dimer greater than 2,500 [7].

The diagnosis of COVID-19 disease is made through microbiological studies based on the detection of the genetic sequence of the virus using the real-time PCR technique, or by means of the sequencing of the viral gene, considered as the gold test or "Gold Standard". Both tests are performed through invasive procedures such as tracheal or bronchial aspirates, as well as non-invasive procedures such as nasopharyngeal and oropharyngeal

swab. Invasive procedures are those with greater sensitivity [8-10]. The complications by SARS-CoV-2 can generate sequelae and high mortality rates. It is essential to recognize complications in order to improve therapeutic strategies and limit the damage as much as possible, for that reason the objective of this research was to describe the clinical characteristics in patients with COVID-19 in the Family Medicine Unit #27 of Tijuana, Mexico.

## Material and Methods

### Study design and population

A descriptive cross-sectional study was carried out in Tijuana, Mexico between April to June 2020. The research was developed at the family medicine unit #27 of the Instituto Mexicano del Seguro Social (IMSS), a primary care center. The records of patients with positive test for SARS-CoV-2 were included. Patients without confirmatory test by PCR and with incomplete records were excluded and patients with incomplete information were eliminated from the study.

### Variables

The collection of variables was done with a standardized data form; the epidemiological study was reviewed on the SINOLAVE platform (National Epidemiological Surveillance System), based on the operational definition in the internal algorithm for COVID-19 care (IMSS), which describes a patient with at least two of the following: fever greater than or equal to 38 degrees, dry cough or headache, in addition to adding at least one of the following: dyspnea, arthralgia, myalgia, odynophagia, rhinorrhea, conjunctivitis, chest pain. Therefore, the variables collected were the following: age, fever, cough, headache, dyspnea, arthralgia, myalgia, odynophagia, rhinorrhea, conjunctivitis, chest pain, arterial hypertension, diabetes mellitus, obesity, smoking, Chronic Obstructive Pulmonary Disease, Asthma and Chronic kidney failure.

### Statistical analysis

Once the information was collected, the analysis was carried out using the SPSS version 25. Descriptive statistics were used, the qualitative variables were expressed as frequencies and percentages, and the quantitative variables as measures of central tendency and dispersion.

### Ethics

The study was approved by the Local Committee for Ethics and Health Research number 204, with registration number R-2021-204-049. The research was conducted under the General Health Law on Health Research, the Declaration of Helsinki and bioethical principles.

## Results

In the sociodemographic characteristics (age, sex), the mean age (n=111) was 40 years. The clinical manifestations in 111 patients with COVID-19, in order from highest to lowest were the following: headache 102 (91.9%), fever 97 (87.4%), myalgia 93 (83.8%), cough 90 (80.1%), arthralgia 86 (77.5%), odynophagia 62 (55.9%), chest pain 44 (39.6%), dyspnea 43 (38.7%), rhinorrhea 38 (34.2%) and conjunctivitis 5 (4.5%). The most common comorbidities were obesity (24.3%), diabetes mellitus (18%), arterial hypertension (21.6%), smoking (3.6%) and asthma (2.7%). The complete characteristics are showed in the Figure 1 and 2.

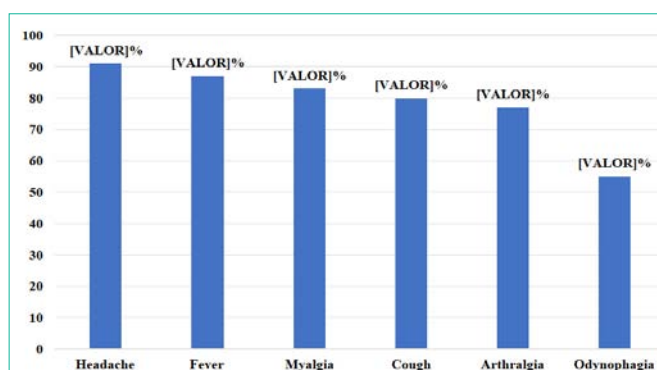


Figure 1: Frequency of clinical manifestations (n=111).

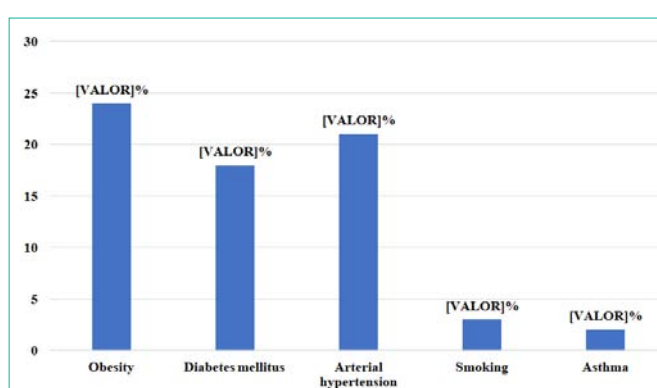


Figure 2: Frequency of comorbidities (n=111).

## Discussion

A study carried out in China by Jin agree with our results, which consisted of the analysis of the epidemiological characteristics and clinical symptoms of 1740 confirmed cases from various Municipal Health Commissions of all Chinese provinces and cities, including Jiangsu, Fujian, Gansu, Guangdong, Guizhou, Hainan, Hebei, Henan, Beijing, and Zhejiang, until January 31, 2020, found the following data: the clinical characteristics were fever (47.39% of 1,247 cases), cough (25.26%), fatigue (8.02%), sore throat (6.34%), muscle pain (4.89%), chills (3.61%), chest tightness (1.52%), diarrhea/abdominal pain (1.36%), rhinorrhea (1.20%) and lack of appetite (0.40%). Regarding the percentage and distribution by sex, the data were as follows: 52.52% for men and 44.48% for women, age was mainly concentrated between 33 and 54 years [11].

Zhu conducted a meta-analysis electronically searching PubMed, Embase, Wanfang, China Science and Technology Journal Database and China National Knowledge Infrastructure databases to identify related studies published between January and March 2020. They reviewed 55 unique retrospective studies involving 8697 COVID-19 patients, resulting in a higher proportion of infected patients being men (53.3%), and the two main symptoms were fever (78%) and cough (58%), which agree with our results. Other common symptoms included fatigue (34%), myalgia (21.9%), sputum (23.7%), anorexia (22.9%), chest tightness (22.9%), and dyspnea (20.6%). Minor symptoms included nausea and vomiting (6.6%), diarrhea (8.2%), headache (11.3%), sore throat (11.6%), chills (15.2%), and rhinorrhea (7.3%). Approximately 5.4% of the patients were asymptomatic.

Which obtained the conclusion that the most common symptoms for COVID-19 were fever and cough [12].

According to Zhoua from a meta-analysis where they searched PubMed, Embase and Cochrane Library databases to identify studies reporting rates of comorbidities in COVID-19 patients with severe or fatal outcomes, 34 studies were reviewed. Patients with COVID-19 with severe results have comorbidities like obesity (42%), hypertension (40%), diabetes (17%), cardiovascular disease (13%), respiratory disease (8%), cerebrovascular disease (6%), malignancy (4%), kidney disease (3%) and liver disease (2%), this result are similar to our study. Concluding that chronic comorbidities that include obesity, hypertension, diabetes, cardiovascular disease, cerebrovascular disease, respiratory disease, kidney disease, and malignancy are clinical risk factors for a serious or fatal outcome associated with COVID-19 [13]. In Spain, the first case of COVID-19 was registered on January 31, 2020, it was an imported case of a German patient from the Canary Islands [14]. Most of the cases were concentrated in the community of Madrid, with 38,723 confirmed cases, and in Catalonia [15].

According to Shikha-Garg [16], in the United States of America (USA), a study was carried out to determine the hospitalization rate and clinical characteristics of patients with a confirmatory test for COVID-19 in laboratories during the period from March 1 to March 30, 2020 registered in a hospitalization surveillance network associated with COVID-19 (COVID-NET) with a total of 1482 patients where 74.5 were over 50 years old and 54.4 were men, a hospitalization rate of 4.6% per 100,000 was recorded being higher in those over 65 years of age. 89.3% had aggregate pathologies, obtaining the following results: Systemic Arterial Hypertension (SAH) 49.7%, obesity 49.3%. COPD 34.6% and cardiovascular disease 27.8%, this result coincides partially with our results.

Bello-Chavolla conducted a study in Mexico, data obtained from COVID-19 cases certified by the National Institute for Diagnosis and Epidemiological Reference, indicates that until May 2020 there were a total of 177,133 subjects initially treated as suspected COVID-19 cases. Among them, 51,633 had been confirmed where the factors associated with lethality were greater than 65 years, diabetes mellitus, obesity, COPD, immunosuppression and hypertension, similar to our study. A mortality rate was obtained in patients with Diabetes Mellitus 9.4% and obesity 13.5%. The hospitalization and confirmed pneumonia were more frequent in obese patients, with higher rates of UCI admission [17].

Villagran-Olivas conducted a study in the civil hospital of the city of Culiacán, Mexico. The study had a population of 192 confirmed patients where the majority was between the ages of 40-65 years, obtaining the following as the most frequent clinical manifestations: fever 84.4%, cough 83.8%, headache 74.8% and dyspnea 65.1%. The study population also had comorbidities such as Obesity 33.3%, Arterial Hypertension 31.7%, and Diabetes Mellitus 21.9% [18]; this result is similar to our study.

## Conclusion

The most frequent clinical manifestation in our study were headache, fever, myalgias, all of them adhering to the operational definition and with a positive test record in SINOLAVE at FUM 27

which is used by the IMSS in reinforcing the most common clinical manifestations in positive patients in order to optimize resources in PCR tests for COVID-19, which generates great expenses for the institution. In patients, it would help to improve the cases of suspicion of COVID-19 in the population of the FUM 27 improving the attention care time for continuous medical attention as a consequence, the quality of continuous medical attention would be improved and less risk of contagion to the population.

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