Clinical course and Risk factors associated with disease outcomes in hospitalized patients with 2019 novel coronavirus disease at Ibn-Al Kateeb Hospital in

Baghdad, Iraq

Iman Ahmed Mohammed[[1]](#footnote-1), Abbas Hasan Ali2, Jaafer Naseer Al shenaty3.

1 MBChB, FICMS/FM, Family Physician, Manager of Training and Human Development Centre, at Al-Rusafa Health Directorate, Baghdad, Iraq.

2 MBChB, HPD/FM, Family Physician, Co-manager of community medicine, at Ibn Al-Kateeb hospital, Al-Rusafa Health Directorate, Baghdad, Iraq.

3 MBChB, GP Medicine MRCP1, at Ibn Al-Kateeb hospital, Al-Rusafa Health Directorate, Baghdad, Iraq.

**ABSTRACT**

**INTRODUCTION:** Novel coronavirus (2019-nCoV), officially known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the etiological agent of the (Corona Virus Disease 2019) COVID-19, emerged in Wuhan, Hubei province, China. On 11th March 2020, The World Health Organization (WHO) declared this disease as pandemic.

**OBJECTIVE:** 1-To identify demographic of confirmed COVID-19 hospitalized cases at Ibn Al-Kateeb hospital in Iraq. 2-To identify COVID-19 hospitalized cases and the associated factors with it (demographic, signs and symptoms and certain vital and laboratory findings). 3-To identify the association between the used medication, complications, length of stay at hospital and confirmed COVID-19 hospitalized cases.

**METHODS:** Descriptive study with analytic element was conducted at Ibn-Al Kateeb hospital from 20th of May to the 15th of June 2020 on COVID-19 patients admitted to Ibn Al-Kateeb hospital from 1st of March till 4th of May 2020 and had a definite outcome.

**RESULTS:** The sample size was 127 out of 129 (98.4%). **23 (18.1%)** COVID-19 patients out of 127 were at age group 30-39 with mean age ± SD= **37.9±18.851**, COVID-19 outcome was statically significant association with age, marital state and patient severity status at admission.

**CONCLUSION:** This study found that older age indicated a poorer prognosis. A special care, attention and monitoring should be taken inconsideration to hypertensive patients, patients initial sign and symptoms dyspnea, weakness and sore throat because it is significantly associated with poor prognosis.

Key words: COVID-19, RT-PCR, patient outcome (cured and discharged or died).

**Introduction**

Novel coronavirus (2019-nCoV), officially known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the etiological agent of the (Corona Virus Disease 2019) COVID-19, emerged in Wuhan, Hubei province, China. On 11th March 2020, The World Health Organization (WHO) declared this disease as pandemic.**1**

According to a Chinese study, about 80% of patients present with mild disease and the overall case-fatality rate is about 2.3% but reaches 8.0% in patients aged 70 to 79 years and 14.8% in those aged >80 years.2 Within 2 months, the infection spread rapidly to other Countries and regions. On 11 April 2020, the virus has spread to 212 countries around the world. WHO reported more than 1,607,467 infected people globally and causing more than 98,866 deaths.**3**

After China, Italy is the country most affected by the spread of COVID-19 infection. Italian epidemiologic data updated to March 24th, show a very critical situation with a total of 69,176 confirmed infected people, of which 8326 have recovered and 6820 are deceased.**4** There is probably an important number of asymptomatic carriers in the population, and thus the mortality rate is probably overestimated.**5**

Coronaviruses are enveloped, non-segmented positive sense RNA viruses whose name is due to club-shaped spike projections emanating from the surface of the virion, which give them the appearance of a solar corona. **6,7**

Clinical feature of the disease, classical flu-like symptoms initially include fever, dry cough, fatigue, rhinorrhea, myalgia, and less frequently headache and diarrhea. The infection can progress, affecting the lower respiratory tract inducing dyspnea, increased respiratory frequency, decreased oxygen saturation, until respiratory failure, septic shock, and multiorgan dysfunction.**8,9**

COVID-19 manifests itself after a median incubation period of about 5 days (95% CI, 4.5 to 5.8 days), with a range of 0–24 days and the vast majority (97.5%) of patients becoming symptomatic 11.5 days (CI, 8.2 to 15.6 days) from infection.**10,11** The vast majority of affected patients were linked to the Wuhan Seafood Market suggesting possible animal and environmental exposures. Soon, however, person-to person spread was reported and became the main mode of transmission. Both asymptomatic and presymptomatic patients can transmit the infection.**12,13**

Currently there is no available vaccine for COVID-19 (corona virus infectious disease-19) and there is not any specific effective antiviral treatment for COVID-19. Although most of the COVID-19 patients have mild or moderate course, up to 5-10% can have severe, potentially life-threatening course, there is an urgent need for effective drugs.**14**

The vast majority of patients with COVID-19 will do fine without any therapy, so in most cases, there’s no need for antiviral therapy. However, waiting until patients are severely ill before initiating therapy could cause us to miss an early treatment window, during which the disease course is more modifiable. It is known that antiviral therapy is most likely to provide benefit when initiated earlier during the course of the disease both in influenza and in SARS.**15,16** Optimized supportive care remains the mainstay of therapy. As new data regarding clinical characteristics, treatment options, and outcomes for COVID-19 emerges approximately every hour, physicians who are in the care of patients should keep themselves up to date on this issue. There have been more than 300 clinical trials going on, and some of them will be published in the next couple of months. The WHO is launching “Solidarity” clinical trial for COVID-19 treatments to further evaluate [remdesivir](https://www.uptodate.com/contents/remdesivir-united-states-investigational-agent-refer-to-prescribing-and-access-restrictions-drug-information?search=covid+treatment&topicRef=127429&source=see_link), [hydroxychloroquine/](https://www.uptodate.com/contents/hydroxychloroquine-drug-information?search=covid+treatment&topicRef=127429&source=see_link)chloroquine and [lopinavir-ritonavir](https://www.uptodate.com/contents/lopinavir-and-ritonavir-drug-information?search=covid+treatment&topicRef=127429&source=see_link) with and without interferon beta.**17** Various other antiviral and immunomodulating agents are in various stages of evaluation for COVID-19. A registry of international clinical trials can be found on the WHO website and at ClinicalTrials.gov. At the moment, it is strongly recommended that patients be recruited into ongoing trials, which would provide much-needed evidence on the efficacy and safety of various therapies for COVID-19, given that we could not determine whether the benefits outweigh harms for most treatments.**18**

We started to conduct descriptive with analytic element study aiming at assessing the effect of demographic characteristic, certain comorbidities, clinical course of symptoms, used treatment, temporal changes of laboratory findings during hospitalization and certain other factors on COVID-19 infected patients (cured and discharged or died) after approval by scientific committee at al- Rusafa health directorate, so as to investigate the factors affecting the outcomes with the hope of improving the treatment and reducing mortality.

Indeed, there is no study conducted in Al- Rusafa health directorate regarding COVID-19 patients admitted to Ibn Al-Kateeb hospital with respect to their outcome. Hence, the current study aims to identify the demographic, clinical characteristics, other factors of confirmed COVID-19 hospitalized cases and the association with their outcomes (cured and discharged or died) at Ibn Al-Kateeb hospital in Iraq.

**Objectives**

1. -To identify demographic of confirmed COVID-19 hospitalized cases (cured and discharged or died) at Ibn Al-Kateeb hospital in Iraq.
2. -To identify COVID-19 hospitalized cases (cured and discharged or died) and the associated factors with it (demographic, signs and symptoms and certain vital and laboratory findings).
3. -To identify the association between the used medication, complications, length of stay at hospital and confirmed COVID-19 hospitalized cases (cured and discharged or died).

**Methodology**

**Study design, setting: -** Descriptive study with analytic element was conducted at Ibn-Al Kateeb hospital from 20th of May to the 15th of June 2020 on COVID-19 patients admitted to Ibn Al-Kateeb hospital from 1st of March (i.e., when the first patient was admitted)till 4th of May 2020 and had a definite outcome. Since this hospital was the only designated hospitals for transfer of patients with COVID-19from other hospitals at Al-Rusafa part of Baghdad until 4th May, 2020. Our study enrolled all inpatients who were hospitalized for COVID-19and had a definite outcome (died or cured and discharged) at the early stage of the outbreak.

**Ethical consideration: -** The study was approved by the scientific and ethical committees for research at Al-Rusafa Health Directorate. Verbal approval was taken from Ibn Al-Kateeb hospital and aim of the study was explained to the manager of the hospital before starting the study.

**Definition of cases, inclusion and exclusion criteria: -** All the patients of all age groups, diagnosed as COVID-19 admitted to Ibn Al-Kateeb hospital and had a definite outcome cured and discharged or died at the period of the study were included. COVID-19 cases diagnoses were done according to the world health organization interim guidance, 28 January 2020 and 13 March 2020, clinical management of severe acute respiratory infection when novel corona virus (nCOV -2019) infection is suspected:- Collect specimens from both the upper respiratory tract (URT; nasopharyngeal and oropharyngeal) 2019-nCoV testing by RT-PCR.**19,20** Two incomplete medical records were excluded.

**Data collection procedure: -** Our study sample size was 129 patients.127 patients out of 129 were included in the study (98.4%), 2 were excluded because incomplete medical records. Data of the patients were extracted from medical records using a standardized data collection form. **The form** was developed by the study team in English. The study questions and the characteristics of the patients were based on a form taken from the ministry of health with similar objectives. The form was filled by a trained medical staff working at Ibn Al-Kateeb hospital part of our researcher team. We identified our cases from infection control department and medical records. Demographic (age, sex, education level, occupation , marital state and smoking history), signs and symptoms (fever, convulsions, cough, sore throat, dyspnea, vomiting, headache, diarrhea, rhinorrhea, weakness, cyanosis, irritability and others), certain vital and laboratory investigations (temperature, pulse rare, oxygen saturation) , comorbidity (diabetes, heart disease, hypertension, chronic lung disease, cancer, chronic renal failure and arthritis,) patient severity status classification (mild, moderate, severe or critical)**21**, treatment (hydroxychloroquine, Tamiflu, kaletra, azithromycin, antibiotics, bronchodilators, antipyretics, corticosteroids, immunomodulators, convalescent plasma, mechanical ventilator, oxygen and others), complications (lung fibrosis, heart failure, renal failure and others) and outcome data were collected.

Outcome: - the outcome of COVID-19 patients either cured or died. To declare that the patient is cured ,Real technique- polymerase chain reaction (RT-PCR) tests results were collected, at the end of the treatment, nasopharyngeal and throat swabs were taken from patients by a trained personnel by certain kits and submitted to Ministry of health laboratory at Baghdad in order to perform RT-PCR tests results. Every patient not discharged unless two PCR-tests were negative at least 24 hours apart. According to the world health organization interim guidance, 28 January and 13 March 2020, clinical management of severe acute respiratory infection when novel corona virus (nCOV -2019) infection is suspected, in hospitalized patients with confirmed 2019-nCoV infection, repeat URT sample should be collected to demonstrate viral clearance. The frequency of specimen collection will depend on local circumstances but should be at least every 2 to 4 days until there are two consecutive negative results (URT sample) in a clinically recovered patient at least 24 hours apart.**19,20**

**Statistical analysis: -** The statistical analysis of the study was performed with statistical package for social science (SPSS) 23. Categorical data formulated as number and percentage, numerical data with normal distribution were described as mean and standard deviation. Chi-square test was used or fisher’s exact test, where appropriate. P- value <0.05 considered significance.

**Results**

The sample size was 127 out of 129 (98.4%). **23 (18.1%)** COVID-19 patients out of 127 were at age group 30-39 with mean age ± SD= **37.9±18.851**, male patients were **51.2%,** while female patients were **48.4%** out of 127. Out of 121, **40 (33.1%)** COVID-19 patients complete primary education. in our sample, both employed and unemployed COVID-19 patients have the same percentage **52 (43.0%)** out of 121, in education level and job, the total sample size was 121 because all children <6 years old (as 6 years was the age for entering the school in Iraq) were excluded. **86 (74.1%)** were married and **100 (86.2%)** were nonsmokers out of 116 COVID-19 patients, the total sample was taken out of 116 because all children <10 years old were excluded. Less than third of the COVID-19 patients have chronic disease **40 (31.5%)**, diabetes represents **34.0%** and then hypertension **26.0%** respectively as shown in table 1.

There was a **statistically significant** association between age categories and COVID-19 patients’ outcome, 70% of the death were between 50-59 and 60-69 age groups. There was **no statistically significant** association between sex, education level, job, history of smoking and COVID-19 patients’ outcome. Out of 10 death 20% and 10% were widow and divorce respectively, whereas 74.5% out of 106 cured and discharged, were married so there wasa **statistically significant** association between marital state and COVID-19 patients’ outcome. Although 70.9% of recovered patients does not have any comorbidity and 60.0% of the died patients have at least one comorbidity but, there was a **no statistically significant** association between having comorbidities and COVID-19 patients’ outcome except (hypertension). There was no statistical association between COVID-19 patient outcome and using chronic drugs as shown in table 2.

Although there was **no statistically significant** association between having sign and symptoms and COVID-19 patients’ outcome, but there was a **statistically significant** association between those having sore throat, dyspnea, weakness and COVID-19 patients’ outcome. Out of those who died 50% were severely ill patients and also 50% were critically ill patients, whereas 81.2% were mild and 16.2% were moderate out of cured and discharged group, there was a **statistically significant** association between patient severity status and COVID-19 patients’ outcome as shown in table 3.

80% of the died patients had low oxygen saturation, whereas 93.2% of the cured had normal oxygen saturation. Also 70.0% of the died had high temperature, while only 0.9% of the cured had high temperature as shown in table 4.

After completing the treatment 90.0% of the died patients had high temperature whereas no one in the cured group had high temperature. 98.0% of the cured patient had normal oxygen saturation and 0.0% of the died group had normal oxygen saturation. Also 90.0% of the died group their pulse was high, while 98.3% of the cured patients had normal pulse rate shown in table 4.

Although there was **no** **statistically significant** association between those who received treatment and those who did not, but there was a **statistical difference** between those who received kaletra, antibiotic, corticosteroids, anticoagulant, plasma, other drugs and COVID-19 patients’ outcome.

There was **no** **statistically significant** association between patients who suffered from complication and those who does not in COVID-19 patients’ outcome.

All the died patients 100%, their length of stay at hospital was <=7 days, whereas 52.1% of those who cured their length of stay at hospital was 8-14 days, there was a **statistical significant** association between length of stay, days at hospital and COVID-19 patients’ outcome with mean days± SD= **12.18±6.797** as shown in table 5.

**Discussion**

COVID-19 is one of the significant public health issues which consequences with a large number of morbidity and mortality. 127 positive COVID-19 hospitalized cases were enrolled in our study (117 cured and discharged and 10 died), **case fatality rate in our study=7.87%** and there are various important findings have been highlighted in this study. As in Al-Rusafa health directorate, we lack epidemiological studies that concern COVID-19 outcome and the factors associated with it, Our study comprehensively described the major differences in demographic, clinical characteristic, treatment, certain vital and laboratory findings and complications between the patients who died of COVID-19 and those who recovered from it. we conducted this study to identify the current public health issue. In our study the highest proportion of our sample is between **30-39** years (**18.1%)** with **median 38** years and **mean** age (**37.9)**, our median of age is similar to a study done at 3 tertiary hospitals in Wuhan, China **(median= 38) 22**  and much lower than a study done in Lombardy Region, Italy with a **(median =63)** **23** and also, lower than a study done on 323 hospitalized patients in china **(median=61).24** In our study male percentage was a bit higher than female (**51.0% to 48.8%)** similar to a study conducted on 107 patients infected with the novel coronavirus, SARS-CoV-2, discharged from two hospitals in Wuhan, China **(male ratio 53.3%).25** Lower than a study conducted in America at New York **(male ratio 60.3%).26** lower than a study conducted in a teaching hospital in Italy **(male ratio 63%) 27** and also, lower than a study conducted in united states of America (**male ratio 75%).28** In our study non-smokers percentage among COVID-19 were more than smokers (**86.2%)** similar to a study conducted on 323 COVID-19 Hospitalized Patients in Wuhan, China (**88.2%)24,** **(31.5%)** of our COVID-19 cases had comorbidities which is much less than a study done in china on 113 deceased patients with coronavirusdisease2019 **(49%) 29** and much less than a study conducted in in Lombardy Region, Italy **(63%).23** This variation in percentages may be due to that these countries do not follow a healthy life style.

There was a significant association between age and COVID-19 patient outcome, most deaths were in older age groups, this is consistent with a study done on 107 infected patients with COVID-19 in china (**p value<0.001)25** and another study done also in Wuhan, China **(p value<0.0001).30** One of the possible reasons for this phenomenon might be that the lung aging is associated with an inability of lung cells and multiple structural and functional changes in the respiratory tract, giving rise to decreased lung function, altered pulmonary remodeling, diminished regeneration, and enhanced susceptibility to pulmonary disease **31** or it might be due to that elderly people are physically frail and are likely to have several comorbidities, which not only increase the risk of pneumonia, but also affect the prognosis and immune response when getting new corona virus.**32**

There was no statistical association between male and female ratio, smoking history and patient outcome, this inconsistent with a study done in Wuhan, China to detect clinical characteristic of fatal and recovered cases of corona virus 2019 **(male: female p value<0.001).33**  A study done in Wuhan, China for analysis of factors associated with disease outcome in hospitalized patient with COVID-19 (**male: female p value=0.517, smoking history p value= 0.018).22** In our study there was a statistical significant association between marital status and COVID-19 patient outcome (**p value= 0.002)**, most married patients cured and discharged 79 out of 86 (91%), while one divorce which is the only divorce patient admitted with COVID-19 and died (100%), this might be due to that absence of husband may cause emotional depression which affect the immune response of the body to fight the virus. The comorbidities, particularly the cardiovascular diseases and chronic pulmonary diseases, were reported to be important to predict the in-hospital mortality in critically ill patients.**34** In our study, there was no statistical association between having comorbidities and patient outcome (**p value= 0.071)**, there was a significant association between those having hypertension and COVID-19 patients’ outcome **(p value= 0.010),** but no association between having coronary heart disease, diabetes and COVID-19 outcome. A hypothesis is that there are more hypertensive patients who developed the 2019-nCoV infection, which is related to the ACE inhibitors used in these patients. ACE inhibitors could indirectly increase the cellular ACE2 receptors, which may be the receptors for 2019-nCoV. This is consistent with a study done on adult Wuhan, China **(hypertension p value=0.000) 35** and consistent with a study done in Wuhan, China to asses clinical characteristics of fatal and recovered cases of COVID-19 regarding hypertension **(p value <0.001)** but inconsistent regarding comorbidity **(p value<0.001) and** heart disease **(p value=0.031). 33** Inconsistent with a study done in United States **(hypertension p value=0.31). 28**

In our study there was no statistical association between patients using chronic drugs such as antidiabetic, heart disease drugs and antihypertensive drugs in COVID-19 patient outcome **(p value= 0.303, 0.445 and 0.053 respectively)**. This is inconsistent with a study done in china to assess if metformin was associated with mortality in diseased hospitalized patients with COVID-19, the in-hospital mortality of 2.9% (3/104) in the metformin group was markedly decreased compared with the mortality of 12.3% (22/179) in the no-metformin group **(p value= 0.01). 36**

As differences in factors influencing outcomes have been observed between global populations, we hypothesize that factors such as pollution, social economic variables, genetics, population co-morbidities, and health status and infrastructure availability may all impact observed COVID-19 morbidity and mortality across different regions. To enable better clinical awareness and allocation of medical resources, understanding differences between patient characteristics across different regions is required.

Incidence of symptoms including fever, convulsions, cough, vomiting, headache, diarrhea, rhinorrhea, cyanosis, irritability and loss of smell did not differ significantly between died patients and recovered patients, whereas sore throat, dyspnea, weakness were more common in those who died (**p value=0.030, 0.000, 0.000 respectively**). It is easy to understand that dyspnea often suggests poor prognosis in pulmonary disease and the indicator to evaluate the severity of COVID-19. Moreover, the vital signs data showed that most deceased patients had tachycardia and/or tachypnoea as well as initial blood oxygen saturation was lower in the death group compared to the recovered group. These signs and symptoms indicated that most deceased patients had been in a severe or critical condition on admission, and the onset of certain symptoms may help physicians to identify the patients at risk of a poor outcome and it is easy to understand that the progressive hypoxemia often suggests poor prognosis in pulmonary diseases and the indicators for hypoxemia are already used to evaluate the severity of the COVID-19.**37** Our results was consistent with a study done on adult, Wuhan (**dyspnea p value=0.000 and fever p value=1.000**). **35** A study done in the United States confirmed that there is no risk in having any sign and symptoms and in COVID-19 patient outcome.**28**

In assessing patient severity status at admission, most of the recovered patients were in mild state at admission 81.2%, while all patients in the death group were admitted to hospital at severe or critical state 100% which may lead to poor prognosis, this makes a significant difference between patient severity status and outcome **(p value=0.000)**. This difference probably caused by rapid progression of COVID-19 in severe and critical cases of the death.

In our study, the using treatment does not make a statistical difference in COVID-19 patient outcome **(P value=1.000)**, except some treatment options such as kaletra, antibiotics, corticosteroids, anticoagulant and plasma **(p value=0.001, 0.000, 0.011, 0.003 and 0.031 respectively**). Regarding treatment protocol, our study results was consistent with a study done in Wuhan, China for analysis of factors associated with disease outcome in hospitalized patient with COVID-19 **(treatment protocol p value=0.371)** but inconsistent with the using of glucocorticoids **(p value= 0.075**) **22** and consistent with a study done on 323 COVID-19 patients **(kaletra p value<0.001 and glucocorticoids p value<0.001**). **24** Also inconsistent with a study done in United States **(hydroxychloroquine p value=0.02, azithromycin p value=0.04 and steroids p value=0.2).** **28** A limitation of our study is that a small sample size and the initial conditions of the two groups differed. Therefore, these results do not provide conclusive data on the effects of different treatments. More researches are required on the necessity of prophylactically using antibiotics and the time to use them in viral pneumonia patients. Previous studies in corticosteroid therapy suggest that high doses of corticosteroids do not diminish the mortality rate for SARS but tend to result in severe adverse reactions.**38**

Further research is required to investigate the necessity, dose, and timing of corticosteroid therapy in 2019-nCoV infection.

Length of stay at hospital differs significantly between cured and death groups, all patients in death group their length of stay at hospital was <=7 days, this might be due to that all patients in death group arrived to hospital at severe or critical state, where no beneficial from any interventions and end in poor prognosis and die quickly. This is consistent with a study done in United States (p value=0.03), **28** and a study done in Wuhan, China to assess clinical characteristics of fatal and recovered cases of COVID-19 **(Length of stay p value<0.001),** **33** but inconsistent with a study done on 107 patients infected with COVID-19 in Wuhan, China (**length of stay p value= 0.561).** **25**

Mortality rate are calculated only for patients who were discharged alive or died by the study end point. Many patients were still in the hospital at the study end point. We expect that as these patients complete their hospital course, reported mortality rates will decline.

Our study was conducted at a single-center hospital. Thus, A multi-center large-scale study with additional researchers is required. Currently, the best diagnostic and treatment protocols for COVID-19 are still being investigated. Early diagnosis and dynamic monitoring of prognostic factors are essential for improving the ability to treat the COVID-19.

**Conclusion**

The COVID-19 outbreak has been declared a global pandemic. Internationally, the number of confirmed cases and deaths is increasing rapidly, which includes older patients. This study found that older age indicated a poorer prognosis. These older patients need to be carefully monitored and administered suitable medical interventions to reduce their mortality. Also, a special care, attention and monitoring should be taken inconsideration to hypertensive patients, patients initial sign and symptoms dyspnea, weakness and sore throat because it is significantly associated with poor prognosis. Patients who admitted to the hospital at severe or critical state, poor vital and laboratory findings should be followed continuously. Regarding treatment, further studies should be done in multi-center hospitals with different treatment technologies and larger sample size to achieve better results.

Aggressive measures to suppress and prevent the pandemic from spreading, such as hygiene maintenance, early screening and intervention, and self-isolation after recovery. Efforts to control COVID-19 need to take into account globalization processes.

**References**

**1-**WHO Director-General's opening remarks at the media briefing on COVID-19: 11 March 2020. Published March 11, 2020. Accessed March 30, 2020. https://www.who.int/dg/speeches/detail/ who-director-general-s-opening-remarks-at-the media-briefing-on-covid-19---11-march-2020.

**2-**Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. JAMA. 2020 Feb 24. doi: 10.1001/jama.2020.2648.

**3-**WHO main website. [https://www.who.int](https://www.who.int/) [accessed 11 April 2020].

**4-**Ministero della Salute: Nuovo Coronavirus la situazione in Italia. <http://www.>[salute.gov.it/portale/nuovocoronavirus/homeNuovoCoronavirus.html](http://www.salute.gov.it/portale/nuovocoronavirus/homeNuovoCoronavirus.html).

**5-**Santé Publique France. Infection au nouveau Coronavirus (SARS-CoV-2), COVID-19, France et Monde [https://www.santepubliquefrance.fr/maladies-et-traumatismes/maladies-etinfections-respiratoires/infection-a-coronavirus/articles/infection-au-nouveau-corona virus sars-cov-2-covid-19-france-et-monde].

**6-**Zhou P, Yang XL, Wang XG, Hu B, Zhang L, Zhang W, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature. 2020;579(7798):270–3.

**7-**Letko M, Marzi A, Munster V. Functional assessment of cell entry and receptor usage for SARS-CoV-2 and other lineage B beta coronaviruses. Nat Microbiol. 2020. <https://doi.org/10.1038/s41564-020-0688-y>.

**8-**<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses>.

**9-**<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>.

**10**-Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med. 2020. [https://doi.org/10. 1056/NEJMoa2002032.](https://doi.org/10.1056/NEJMoa2002032)

**11-**Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. N Engl J Med. 2020. [https://doi.org/10.1056/NEJMoa2001316.](https://doi.org/10.1056/NEJMoa2001316)

**12-**Chan JF, Yuan S, Kok KH, To KK, Chu H, Yang J, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating personto-person transmission: a study of a family cluster. Lancet. 2020;395(10223): 514–23.

**13**-Rothe C, Schunk M, Sothmann P, Bretzel G, Froeschl G, Wallrauch C, et al. Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. N Engl J Med. 2020;382(10):970–1. G.

**14**-Hoffmann C. Treatment. In: Kamps BS, Hoffmann C, eds. Covid Reference, Edition 2020-2. SteinHauser Verlag; Amedeo, Germany; 2020. Website [www.covidreference.com](http://www.covidreference.com/) [accessed 12 April 2020].

**15**-[Uyeki TM, Bernstein HH, Bradley JS, Englund JA, File TM et al. Clinical practice guidelines by the infectious diseases society of America: 2018 update on diagnosis, treatment,](https://www.uptodate.com/contents/treatment-of-seasonal-influenza-in-adults/abstract/5) [chemoprophylaxis, and institutional outbreak management of](https://www.uptodate.com/contents/treatment-of-seasonal-influenza-in-adults/abstract/5) [seasonal influenzaa. Clinical Infectious Disesases 2019; 68: e1.](https://www.uptodate.com/contents/treatment-of-seasonal-influenza-in-adults/abstract/5) [doi: 10.1093/cid/ciy866](https://www.uptodate.com/contents/treatment-of-seasonal-influenza-in-adults/abstract/5).

**16**-Chan KS. Treatment of severe acute respiratory syndrome with lopinavir/ritonavir: a multicenter retrospective matched cohort study. Hong Kong Medical Journal 2003; 9: 399-406.

**17-**World Health Organization (2020). “Solidarity” clinical trial for COVID-19 treatments [online]. Website [https://www.who.int/ emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov/solidarity-clinical-trial-for-covid-19treatments](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov/solidarity-clinical-trial-for-covid-19-treatments) [accessed 12 April 2020].

**18**-Bhimraj A, Morgan RL, Shumaker AH, Lavergne V, Baden5 L et al. Infectious DiseasesSociety of America Guidelines on the Treatment and Management of Patients with COVID-19 Infection [online]. Website [https://www.idsociety.org/globalassets/idsa/ practice-guidelines/covid-19/treatment/idsa-covid-19-gl-tx-and-mgmt-4-11-20-1058-am-edt.pdf](https://www.idsociety.org/globalassets/idsa/practice-guidelines/covid-19/treatment/idsa-covid-19-gl-tx-and-mgmt-4-11-20-1058-am-edt.pdf) [accessed 12 April 2020].

**19**-world health organization interim guidance 28 January 2020, clinical management of severe acute respiratory infection when novel corona virus (nCOV -2019) infection is suspected. https://apps.who.int/iris/handle/10665/330893.

**20**-world health organization interim guidance 13 March 2020, clinical management of severe acute respiratory infection when novel corona virus (nCOV -2019) infection is suspected. <https://apps.who.int/iris/handle/10665/331446>.

**21**-<https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>.

**22-**Liu W, Tao ZW, Wang L, et al. Analysis of factors associated with disease outcomes in hospitalized patients with 2019 novel coronavirus disease. Chin Med J (Engl). 2020;133(9):1032‐1038.

**23**-Grasselli G, Zangrillo A, Zanella A, et al. Baseline Characteristics and Outcomes of 1591 Patients Infected With SARS-CoV-2 Admitted to ICUs of the Lombardy Region, Italy [published online ahead of print, 2020 Apr 6]. JAMA. 2020;323(16):1574‐1581. doi:10.1001/jama.2020.5394.

**24-**Ling Hu, Shaoqiu Chen, Yuanyuan Fu, et al. Risk Factors Associated with Clinical Outcomes in 323 COVID-19 Hospitalized Patients in Wuhan, China*,*Clinical Infectious Diseases, ciaa539, <https://doi.org/10.1093/cid/ciaa539>.

**25-**Wang D, Yin Y, Hu C, et al. Clinical course and outcome of 107 patients infected with the novel coronavirus, SARS-CoV-2, discharged from two hospitals in Wuhan, China. Crit Care. 2020;24(1):188. Published 2020 Apr 30. doi:10.1186/s13054-020-02895-6.

**26-**Richardson S, Hirsch JS, Narasimhan M, et al. Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. JAMA. 2020;323(20):2052–2059. doi:10.1001/jama.2020.6775.

**27-**[Colaneri Marta](https://www.eurosurveillance.org/search?value1=Marta+Colaneri&option1=author&noRedirect=true) , [Sacchi Paolo](https://www.eurosurveillance.org/search?value1=Paolo+Sacchi&option1=author&noRedirect=true) , [Zuccaro Valentina](https://www.eurosurveillance.org/search?value1=Valentina+Zuccaro&option1=author&noRedirect=true) , et al. Clinical characteristics of coronavirus disease (COVID-19) early findings from a teaching hospital in Pavia, North Italy, 21 to 28 February 2020. [Euro Surveill.](https://www.eurosurveillance.org/content/ecdc) 2020;25(16): pii=2000460.

**28-**Aggarwal, S., Garcia-Telles, N., Aggarwal, G., Lavie, C., Lippi, G., & Henry, B. (2020). Clinical features, laboratory characteristics, and outcomes of patients hospitalized with coronavirus disease 2019 (COVID-19): Early report from the United States, Diagnosis, 7(2), 91-96. doi: <https://doi.org/10.1515/dx-2020-0046>.

**29**-Chen Tao, Wu Di, Chen Huilong, Yan Weiming, Yang Danlei, Chen Guang et al. Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study BMJ 2020; 368: m1091.

**30-**Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study [published correction appears in Lancet. 2020 Mar 28;395(10229):1038] [published correction appears in Lancet. 2020 Mar 28;395(10229):1038]. Lancet. 2020;395(10229):1054‐1062. doi:10.1016/S0140-6736(20)30566-3.

**31**-Cho SJ, Stout-Delgado HW. Aging and lung disease. Annu Rev Physiol 2020; 82:433–459. doi: 10.1146/annurev-physiol-021119-034610.

**32-**Cilloniz C, Polverino E, Ewig S, Aliberti S, Gabarrus A, Menendez R, et al. Impact of age and comorbidity on cause and outcome in community-acquired pneumonia. Chest 2013; 144:999–1007. doi: 10.1378/chest.13-0062.

**33-**Deng Y, Liu W, Liu K, et al. Clinical characteristics of fatal and recovered cases of coronavirus disease 2019 in Wuhan, China: a retrospective study. Chin Med J (Engl). 2020;133(11):1261‐1267.

**34-**adha KS, Zhao K, Quraishi SA, Kurth T, Eikermann M, Kaafarani HM, et al. The Deyo-Charlson and Elixhauser-van Walraven comorbidity indices as predictors of mortality in critically ill patients. BMJ Open 2015; 5: e008990doi: 10.1136/bmjopen-2015-008990.

**35-**Li X, Xu S, Yu M, et al. Risk factors for severity and mortality in adult COVID-19 inpatients in Wuhan [published online ahead of print, 2020 Apr 12]. J Allergy Clin Immunol. 2020; S0091-6749(20)30495-4. doi: 10.1016/j.jaci.2020.04.006.

**36-**Luo P, Qiu L, Liu Y, et al. Metformin Treatment Was Associated with Decreased Mortality in COVID-19 Patients with Diabetes in a Retrospective Analysis [published online ahead of print, 2020 May 21]. Am J Trop Med Hyg. 2020;10.4269/ajtmh.20-0375. doi:10.4269/ajtmh.20-0375.

**37-**Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet2020; 395:497–506. doi: 10.1016/S0140-6736(20)30183-5.

**38-**Levy MM, Baylor MS, Bernard GR, Fowler R, Franks TJ, Hayden FG, et al. Clinical issues and research in respiratory failure from severe acute respiratory syndrome. Am J Respir Crit Care Med 2005; 171:518-526. doi: 10.1164/rccm.200405-621WS.

Table1: -Distribution of demographic characteristic of COVID-19 hospitalized patient.

|  |  |  |  |
| --- | --- | --- | --- |
| **Demographic characteristic** | | **No.** | **%** |
| **Age**  **Category**  **(years)**  **Mean ±SD=**  **37.9±18.851**  **Median=38** | <10 | 11 | 8.7 |
| 10-19 | 16 | 12.6 |
| 20-29 | 21 | 16.5 |
| 30-39 | **23** | **18.1** |
| 40-49 | 19 | 15.0 |
| 50-59 | 18 | 14.2 |
| 60-69 | 15 | 11.8 |
| >=70 | 4 | 3.1 |
| **Total** | **127** | **100.0** |
| **Sex** | Male | 65 | 51.2 |
| Female | 62 | 48.8 |
| **Total** | **127** | **100.0** |
| **Education**  **level** | Not read and write | 18 | 14.9 |
| Read and write | 17 | 14.0 |
| Primary | **40** | **33.1** |
| Secondary | 33 | 27.3 |
| Institution | 6 | 5.0 |
| College and above | 7 | 5.8 |
| **Total** | **121** | **100.0** |
| **Job** | Employed | **52** | **43.0** |
| Unemployed | **52** | **43.0** |
| Retired | 4 | 3.3 |
| Student | 13 | 10.7 |
| **Total** | **121** | **100.0** |
| **Marital state** | Married | **86** | **74.1** |
| Single | 20 | 17.2 |
| Widow | 9 | 7.8 |
| Divorce | 1 | 0.9 |
| **Total** | **116** | **100.0** |
| **Smoker** | Yes | 16 | 13.8 |
| No | **100** | **86.2** |
| **Total** | **116** | **100.0** |
| **Comorbidity** | Yes | 40 | 31.5 |
| No | **87** | **68.5** |
| **Total** | **127** | **100.0** |
| **Type of comorbidity** | diabetes | **17** | **34.0** |
| Coronary Heart disease | 7 | 14.0 |
| Hypertension | 13 | 26.0 |
| Chronic lung disease | 10 | 20.0 |
| Cancer | 1 | 2.0 |
| Arthritis | 2 | 4.0 |
| Chronic renal disease | 1 | 2.0 |
| **Total** | **50** | **100.0** |

Table2: -Demographic characteristics associated with COVID-19 patient outcome.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **COVID-19 Patient outcome** | | | | **Total** | | **P value** |
| **Cure &**  **Discharge** | | **Died** | |
| **No.** | **%** | **No.** | **%** | **No.** | **%** | **0.030** |
| **Age category** | <10 | 11 | 9.4 | 0 | 0.0 | 11 | 8.7 |
| 10-19 | 16 | 13.7 | 0 | 0.0 | 16 | 12.6 |
| 20-29 | 21 | 17.9 | 0 | 0.0 | 21 | 16.5 |
| 30-39 | 22 | 18.8 | 1 | 10.0 | 23 | 18.1 |
| 40-49 | 18 | 15.4 | 1 | 10.0 | 19 | 15.0 |
| 50-59 | 15 | 12.8 | 3 | 30.0 | 18 | 14.2 |
| 60-69 | 11 | 9.4 | 4 | 40.0 | 15 | 11.8 |
| >=70 | 3 | 2.6 | 1 | 10.0 | 4 | 3.1 |
| **Total** | **117** | **100** | **10** | **100** | **127** | **100** |
| **Sex** | male | 58 | 49.6 | 7 | 70.0 | 65 | 51.2 | **0.325** |
| female | 59 | 50.4 | 3 | 30.0 | 62 | 48.8 |
| **Total** | **117** | **100** | **10** | **100** | **127** | **100** |
| **Education**  **Level** | Not read and write | 16 | 14.4 | 2 | 20.0 | 18 | 14.8 | **0.830** |
| Read and write | 15 | 13.5 | 2 | 20.0 | 17 | 14.0 |
| Primary | 38 | 34.2 | 2 | 20.0 | 40 | 33.0 |
| Secondary | 31 | 28.0 | 2 | 20.0 | 33 | 27.2 |
| Institution | 5 | 4.5 | 1 | 10.0 | 6 | 4.9 |
| College and above | 6 | 5.4 | 1 | 10.0 | 7 | 5.7 |
| **Total** | **111** | **100** | **10** | **100** | **121** | **100** |
| **Job** | Employed | 47 | 42.3 | 5 | 50.0 | 52 | 42.9 | **0.424** |
| Unemployed | 48 | 43.2 | 4 | 40.0 | 52 | 42.9 |
| Retired | 3 | 2.7 | 1 | 10.0 | 4 | 3.3 |
| Student | 13 | 11.7 | 0 | 0.0 | 13 | 10.7 |
| **Total** | **111** | **100** | **10** | **100** | **121** | **100** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **COVID-19 Patient outcome** | | | | **Total** | | **P value** |
| **Cure & Discharge** | | **Died** | |
| **No.** | **%** | **No.** | **%** | **No.** | **%** | **0.002** |
| **Marital state** | Married | 79 | 74.5 | 7 | 70.0 | 86 | 74.1 |
| Single | 20 | 18.8 | 0 | 0.0 | 20 | 17.2 |
| Widow | 7 | 6.6 | 2 | 20.0 | 9 | 7.7 |
| Divorce | 0 | 0.0 | 1 | 10.0 | 1 | 0.86 |
| **Total** | **106** | **100** | **10** | **100** | **116** | **100** |
| **Smoker** | Yes | 14 | 13.2 | 2 | 20.0 | 16 | 13.7 | **0.627** |
| No | 92 | 86.7 | 8 | 80.0 | 100 | 86.2 |
| **Total** | **106** | **100** | **10** | **100** | **116** | **100** |
| **Comorbidity** | Yes | 34 | 29.1 | 6 | 60.0 | 40 | 31.4 | **0.071** |
| No | 83 | 70.9 | 4 | 40.0 | 87 | 68.5 |
|  | Diabetes | 14 | 12.0 | 3 | 30.0 | 17 | 13.4 | 0.132 |
| Hypertension | 9 | 7.7 | 4 | 40.0 | 13 | 10.2 | 0.010 |
| Coronary heart disease | 6 | 5.1 | 1 | 10.0 | 7 | 5.5 | 0.445 |
| Chronic lung disease | 10 | 8.5 | 0 | 0.0 | 10 | 7.9 | - |
| Chronic renal failure | 1 | 0.9 | 0 | 0.0 | 1 | 0.8 | - |
| cancer | 1 | 0.9 | 0 | 0.0 | 1 | 0.8 | - |
| Arthritis | 0 | 0.0 | 2 | 20.0 | 2 | 1.6 | - |
| **Total** | **117** | **100** | **10** | **100** | **127** | **100** |  |
| **Chronic drugs** | Yes | 30 | 25.6 | 4 | 40.0 | 34 | 26.8 | **0.456** |
| No | 87 | 74.4 | 6 | 60.0 | 93 | 73.2 |
|  | Antidiabetic drugs | 12 | 10.3 | 2 | 20.0 | 14 | 11.0 | 0.303 |
| Antihypertensive drugs | 9 | 7.7 | 3 | 30.0 | 12 | 9.4 | 0.053 |
| Heart disease drugs | 6 | 5.1 | 1 | 10.0 | 7 | 5.5 | 0.445 |
| Corticosteroids | 9 | 7.7 | 0 | 0.0 | 9 | 7.1 | - |
| Drugs for renal failure | 1 | 0.9 | 0 | 0.0 | 1 | 0.8 | - |
| Chemotherapy | 1 | 0.9 | 0 | 0.0 | 1 | 0.8 | - |
| **Total** | **117** | **100** | **10** | **100** | **127** | **100** |  |

Table3: -Signs and symptoms associated with COVID-19 patient outcome.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **COVID-19 Patient outcome** | | | | **Total** | | **P value** |
| **Cure & Discharge** | | **Died** | |
| **No.** | **%** | **No.** | **%** | **No.** | **%** | **0.449** |
| **Signs & symptoms** | Yes | 87 | 74.4 | 9 | 90.0 | 96 | 75.6 |
| No | 30 | 25.6 | 1 | 10.0 | 31 | 24.4 |
|  | Fever at presentation | 62 | 53.0 | 7 | 70.0 | 69 | 54.3 | 0.243 |
| Cough | 64 | 54.7 | 7 | 70.0 | 71 | 55.9 | 0.511 |
| Sore throat | 30 | 56.6 | 6 | 60.0 | 36 | 28.3 | 0.030 |
| Dyspnea | 26 | 22.2 | 9 | 90.0 | 35 | 27.6 | 0.000 |
| Weakness | 22 | 18.8 | 8 | 80.0 | 30 | 23.6 | 0.000 |
| Vomiting | 2 | 1.7 | 0 | 0.0 | 2 | 1.6 | - |
| Headache | 14 | 12.0 | 0 | 0.0 | 14 | 11.0 | - |
| Diarrhea | 5 | 4.3 | 0 | 0.0 | 5 | 3.9 | - |
| Rhinorrhea | 15 | 12.8 | 0 | 0.0 | 15 | 11.8 | - |
| Loss of smell | 1 | 0.9 | 0 | 0.0 | 1 | 0.8 | - |
| Cyanosis | 1 | 0.9 | 0 | 0.0 | 1 | 0.8 | - |
| Convulsion | 1 | 0.9 | 0 | 0.0 | 1 | 0.8 | - |
| Irritability | 1 | 0.9 | 0 | 0.0 | 1 | 0.8 | - |
| Chest pain | 0 | 0.0 | 1 | 10.0 | 1 | 0.8 | - |
| **Total** | **117** | **100** | **10** | **100** | **127** | **100** |  |
| **Classification patient severity status at admission** | Mild | 95 | 81.2 | 0 | 0.0 | 95 | 74.8 | **0.000** |
| Moderate | 19 | 16.2 | 0 | 0.0 | 19 | 15.0 |
| Severe | 3 | 2.6 | 5 | 50.0 | 8 | 6.3 |
| Critical | 0 | 0.0 | 5 | 50.0 | 5 | 3.9 |
| **Total** | **117** | **100** | **10** | **100** | **127** | **100** |

Table4: - Certain vital and laboratory findings according to COVID-19 patient outcome in treatment room (after 2 days of starting treatment) and (after completing treatment).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **COVID-19 Patient outcome** | | | | **Total** | |
| **Cure & Discharge** | | **Died** | |
| **Certain vital &laboratory findings**  (after 2 days of starting treatment) | | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **Temperature** | Normal | 89 | 76.1 | 0 | 0.0 | 89 | 70.1 |
| Fluctuated | 27 | 23.1 | 3 | 30.0 | 30 | 23.6 |
| High | 1 | 0.9 | 7 | 70.0 | 8 | 6.3 |
| **Oxygen saturation** | Normal | 109 | 93.2 | 0 | 0.0 | 109 | 85.8 |
| Fluctuated | 8 | 6.8 | 2 | 20.0 | 10 | 7.9 |
| Low | 0 | 0.0 | 8 | 80.0 | 8 | 6.3 |
| **Pulse rate** | Normal | 114 | 97.4 | 0 | 0.0 | 114 | 89.8 |
| Fluctuated | 3 | 2.6 | 3 | 30.0 | 6 | 4.7 |
| High | 0 | 0.0 | 7 | 70.0 | 7 | 5.5 |
| **ECG** | Normal | 116 | 99.1 | 6 | 60.0 | 122 | 96.1 |
| Abnormal | 1 | 0.9 | 4 | 40.0 | 5 | 3.9 |
| **Liver function test** | Normal | 117 | 100.0 | 9 | 90.0 | 126 | 99.2 |
| Abnormal | 0 | 0.0 | 1 | 10.0 | 1 | 0.8 |
| **Renal function test** | Normal | 117 | 100.0 | 9 | 90.0 | 126 | 99.2 |
| Abnormal | 0 | 0.0 | 1 | 10.0 | 1 | 0.8 |
| **Certain vital &laboratory findings**  (after completing treatment) | |  | | | | | |
| **Temperature** | Normal | 115 | 98.3 | 0 | 0.0 | 115 | 90.6 |
| Fluctuated | 2 | 1.7 | 1 | 10.0 | 3 | 2.4 |
| High | 0 | 0.0 | 9 | 90.0 | 9 | 7.1 |
| **Oxygen saturation** | Normal | 115 | 98.3 | 0 | 0.0 | 115 | 90.6 |
| Fluctuated | 2 | 1.7 | 1 | 10.0 | 3 | 2.4 |
| Low | 0 | 0.0 | 9 | 90.0 | 9 | 7.1 |
| **Pulse rate** | Normal | 115 | 98.3 | 0 | 0.0 | 115 | 90.6 |
| Fluctuated | 2 | 1.7 | 1 | 10.0 | 3 | 2.4 |
| High | 0 | 0.0 | 9 | 90.0 | 9 | 7.1 |
| **ECG** | Normal | 116 | 99.1 | 4 | 40.0 | 120 | 94.5 |
| Abnormal | 1 | 0.9 | 6 | 60.0 | 7 | 5.5 |
| **Liver function test** | Normal | 117 | 100.0 | 9 | 90.0 | 126 | 99.2 |
| Abnormal | 0 | 0.0 | 1 | 10.0 | 1 | 0.8 |
| **Renal function test** | Normal | 117 | 100.0 | 9 | 90.0 | 126 | 99.2 |
| Abnormal | 0 | 0.0 | 1 | 10.0 | 1 | 0.8 |
| **Total** | **117** | **100** | **10** | **100** | **127** | **100** |

Table5: -Treatment and complications associated with COVID-19 patient outcome.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **COVID-19 Patient outcome** | | | | **Total** | | **P value** |
| **Cure & Discharge** | | **Died** | |
| **No.** | **%** | **No.** | **%** | **No.** | **%** | **1.000** |
| **Treatment** | Yes | 108 | 92.3 | 10 | 100.0 | 118 | 92.9 |
| No | 9 | 7.7 | 0 | 0.0 | 9 | 7.1 |
|  | Hydroxychloroquine | 93 | 79.5 | 10 | 100.0 | 103 | 81.1 | 0.206 |
| Tamiflu | 98 | 83.8 | 10 | 100.0 | 108 | 85.0 | 0.357 |
| kaletra | 3 | 2.6 | 4 | 40.0 | 7 | 5.5 | 0.001 |
| Azithromycin | 99 | 84.6 | 10 | 100.0 | 109 | 85.5 | 0.204 |
| Antibiotic | 22 | 18.8 | 8 | 80.0 | 30 | 23.6 | 0.000 |
| Bronchodilator | 24 | 20.5 | 4 | 40.0 | 28 | 22.0 | 0.151 |
| Antipyretic | 55 | 47.0 | 7 | 70.0 | 62 | 48.8 | 0.199 |
| Corticosteroids | 4 | 3.4 | 3 | 30.0 | 7 | 5.5 | 0.011 |
| Convalescent Plasma | 2 | 1.7 | 2 | 20.0 | 4 | 3.1 | 0.031 |
| Oxygen | 23 | 19.7 | 10 | 100.0 | 33 | 26.0 | 0.000 |
| Mechanical ventilator | 0 | 0.0 | 3 | 30.0 | 3 | 2.3 | - |
| Anticoagulant | 2 | 1.7 | 3 | 30.0 | 5 | 3.9 | 0.003 |
| Other drugs | 2 | 1.7 | 2 | 20.0 | 4 | 3.1 | 0.031 |
| **Total** | **117** | **100** | **10** | **100** | **127** | **100** |  |
| **Complications** | Yes | 1 | 0.9 | 1 | 10.0 | 2 | 1.6 | **0.152** |
| No | 116 | 99.1 | 9 | 90.0 | 125 | 98.4 |
|  | Heart failure | 0 | 0.0 | 1 | 10.0 | 1 | 0.8 | - |
| CVA | 1 | 0.9 | 0 | 0.0 | 1 | 0.8 | - |
| **Total** | **117** | **100** | **10** | **100** | **127** | **100** |  |
| **Length of hospital stay, days**  **Mean ±SD=**  **12.18±6.797** | <=7 | 24 | 20.5 | 10 | 100.0 | 34 | 26.8 | 0.000 |
| 8-14 | 61 | 52.1 | 0 | 0.0 | 61 | 48.0 |
| 15-21 | 16 | 13.7 | 0 | 0.0 | 16 | 12.6 |
| >21 | 16 | 13.7 | 0 | 0.0 | 16 | 12.6 |
| **Total** | **117** | **100** | **10** | **100** | **127** | **100** |

1. Corresponding Author: Iman Ahmed Mohammed, Training and Human Development Centre at Al-Rusafa Health Directorate, Baghdad, Iraq. Email: yahyaatheer@gmail.com [↑](#footnote-ref-1)