

Clinical features of patients infected with novel corona virus (COVID 19) in Lahore, Pakistan

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Abstract

Corona virus is a virulent virus capable of producing respiratory disease. A recently identified strain (SARS-CoV-2) of coronavirus, has caused a worldwide pandemic of respiratory illness, called COVID-19. The objective of this study was to identify the clinical features of coronavirus disease 2019 in confirmed cases. This project was designed for retrospective analysis of COVID-19 patients, these patients were admitted in Mayo Hospital, Lahore, Pakistan during April 24 to August 24, 2020. The mean age of COVID-19 patients was 55 years. The male patients accounted for 68%. None of the patient was asymptomatic while Common symptoms at onset of illness were low grade fever (72%), Cough, Malaise, Chest Pain, Tightness, Sore throat without any warning sign (28%), Shortness of Breath with respiratory Rate > 25/min (50%) while (20%) patients developed Respiratory Rate > 30/Min, SpO₂ levels < 93 % were presented in (50%) patients; less common symptoms were High Grade Fever > 100 degree Centigrade (10%). In critically ill patients respiratory Failure (where mechanical ventilation required) developed in (28%) patients and (4%) developed septic shock. Co-morbid conditions presented with the covid-19 were cardiovascular disease (22%), Diabetes Mellitus (24%), asthma (2%), COPD (52%) and kidney disease (4%). There was increase in C-reactive protein (CRP) level (28%), D-Dimer (28%), LDH level (28%), ferritin (30%). None of the patient had developed Confusion, Lethargy, Agitation, Restlessness, and Multi Organ Dysfunction Syndrome. Five (10%) of 50 patients expired while others had shown significant improvement in health. The most common symptoms of covid-19 patient at onset of illness were low grade fever, Shortness of Breath, low SpO₂ levels, Cough, Malaise, Chest Pain, Tightness leading to respiratory failure and increased

levels in C-reactive protein, D-Dimer, LDH and ferritin. Co-morbid conditions presented with the covid-19 were cardiovascular disease and Diabetes Mellitus.

Keywords: COVID-19, Respiratory rate, Symptoms, Critically ill

1.0 INTRODUCTION

COVID-19 is an infectious disease caused by a newly identified strain of coronavirus (SARS-COV-2). This strain is responsible for respiratory infections in humans. The first case was reported in Wuhan City, China, in December 2019 (Abid, Bari, Younas, Javaid, & Imran, 2020). Since emergence of COVID-19, more than 210 countries have suffered with an estimated mortality rate of 3-4% (Pettirosso, Giles, Cole, & Rees, 2020). On February 26, 2020 in Karachi, the largest city of Pakistan, the first case of COVID-19 was reported (Abid et al., 2020). Since its emergence till 20th September 2020, (305,671) confirmed coronavirus cases were reported in Pakistan. 6952 cases were tested positive for COVID-19 (2.3%). 6416 (2.1%) died while 292,303 (95.6%) patients recovered (<https://covid.gov.pk/>).

One of the major route of transmission of corona virus is through aerosol transmission for a long time in a closed environment (Li et al., 2020). Blocking the transmission route by early detection of presence of virus in covid-19 suspected patient is crucial to control this pandemic. Early detection can be done by assessing clinical features of patients at earliest. Clinical characteristics of disease are low to high grade fever, dyspnea, dry cough, and fatigue (Wan et al., 2020). Age with comorbidities (Hypertension, diabetes, and renal failure) came out as a prominent factor leading to death in patients infected with corona virus. The fatality rate for COVID-19 patients having age more than 60 years was 63.6% (Chen et al., 2020).

According to review of literature present on web, no study has reported the clinical features presenting covid-19 infection in population of Lahore, Pakistan. There is very limited clinical information present,

therefore a study was designed to understand epidemiological, clinical, laboratory and radiological characteristics of patients confirmed to have covid-19 infection, presented in Mayo hospital, Lahore, Pakistan.

2.0 MATERIALS AND METHODS

This project was designed for retrospective analysis of confirmed cases of COVID-19 patients, these patients were admitted in Mayo Hospital, Lahore, Pakistan during April 24 to august 24, 2020. This study was approved by the Ethical Review Committee of Post Graduate Medical Institute (PGMI), Lahore, Pakistan. Initially an informed consent was signed by each participant for voluntarily participation in this study. Their right of privacy was also ensured. Only confirmed covid-19 cases were included. All airborne precautions were acquired for the patients and working staff in the designated area of the hospital.

2.1 Procedures

The presence of virus in respiratory specimens (nasal swabs) was detected by real time RT-PCR methods. Predesigned primers and probes were used and Conditions for the amplifications were 50°C for 15 min, 95°C for 3 min, followed by 45 cycles of 95°C for 15 s and 60°C for 30 s. standardized data collection forms were used (ISARIC-WHO-SARI_Case_Record_Form_7JAN16) to get epidemiological, clinical, laboratory and radiological findings. Collected data was verified by interviewing the patients for epidemiological and symptom analysis. All cases were divided into mild, moderate, severe and critically ill groups for comparison (He).

2.2 Statistical Analysis

Categorical variables were expressed as number (%) and Continuous variables were

expressed as median (IQR). Statistical analyses were done using The Statistical Product and Service Solution (SPSS) 24 software (IBM Corp., Armonk, NY, USA), and a p-value <0.05 was statistically significant.

3.0 RESULTS

3.1 Age group with incidence of covid-19

In this study fifty confirmed cases of covid-19 were included. They were divided into

four groups on the basis of guidelines provided by ISARIC and WHO (ISARIC-WHO-SARI_Case_Record_Form_7JAN16). The mean age of COVID-19 patients was 55 years and age range (55-60) has the highest incidence of having COVID-19 disease while persons having age range (40-45) and (70-75) were also at higher risk of developing the disease (**Figure-1**). The male patients accounted for 68%.

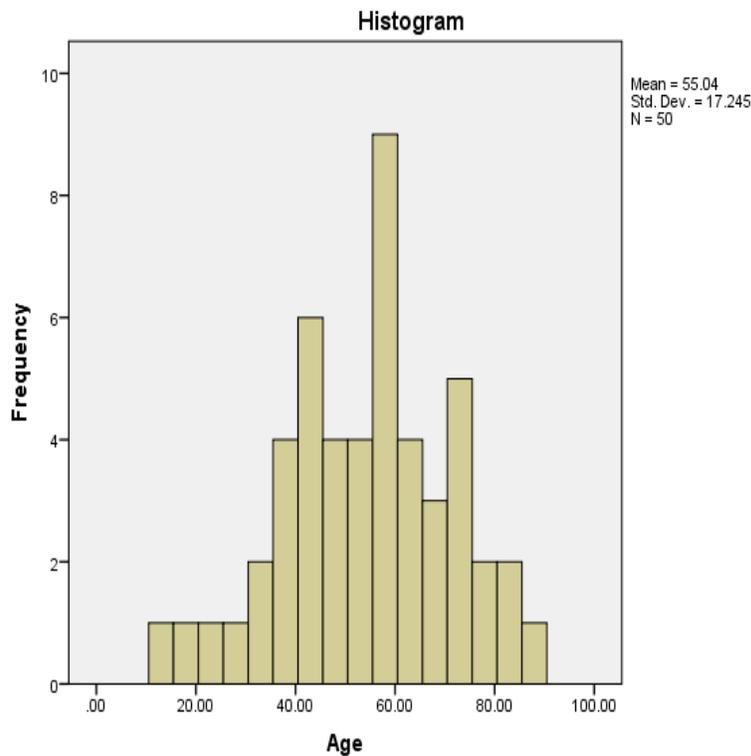


Figure-1: Histogram showing the age groups with incidence of COVID-19.

3.2 Prevalence of co-morbid condition and improvement of COVID-19 patients

64% patients had at least one underlying co morbid condition. Co-morbid conditions presented with the covid-19 were cardiovascular disease (11 [22%] of 50 patients), Diabetes Mellitus (12 [24%] of 50 patients), asthma (1 [2%] of 50 patients), COPD - Chronic Obstructive Pulmonary Disease (26 [52%] of 50 patients) (**Figure-2**).

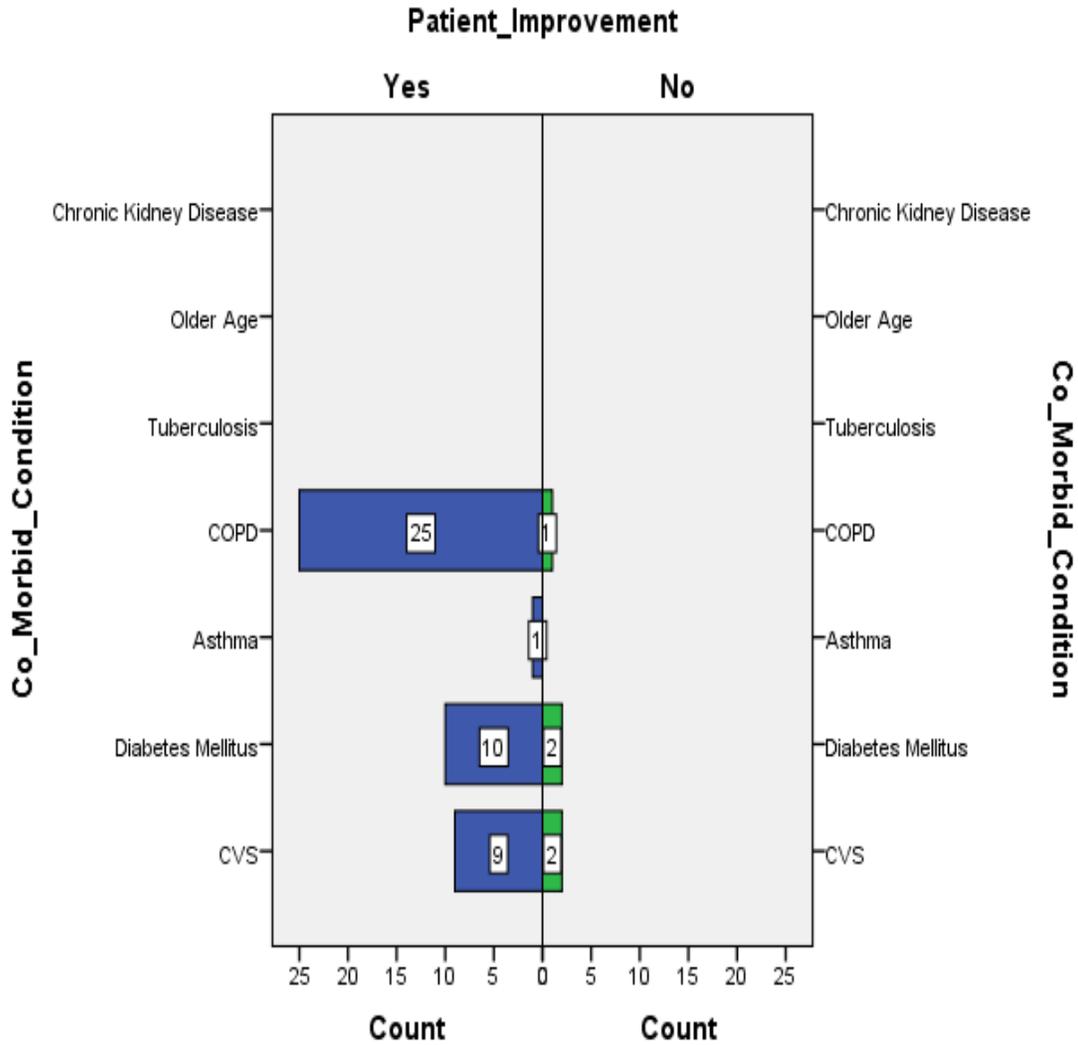


Figure-2: Box and Whisker graph showing the prevalence of co morbid conditions and improvement of COVID-19 patients.

3.3 Association of clinical symptoms with mild disease group

None of the patient was asymptomatic while Common symptoms at onset of illness were low grade fever (36 [72%] of 50 patients), Cough, Malaise, Chest Pain, Tightness, Sore throat without any warning sign (14 [28%]) (**Figure-3**).

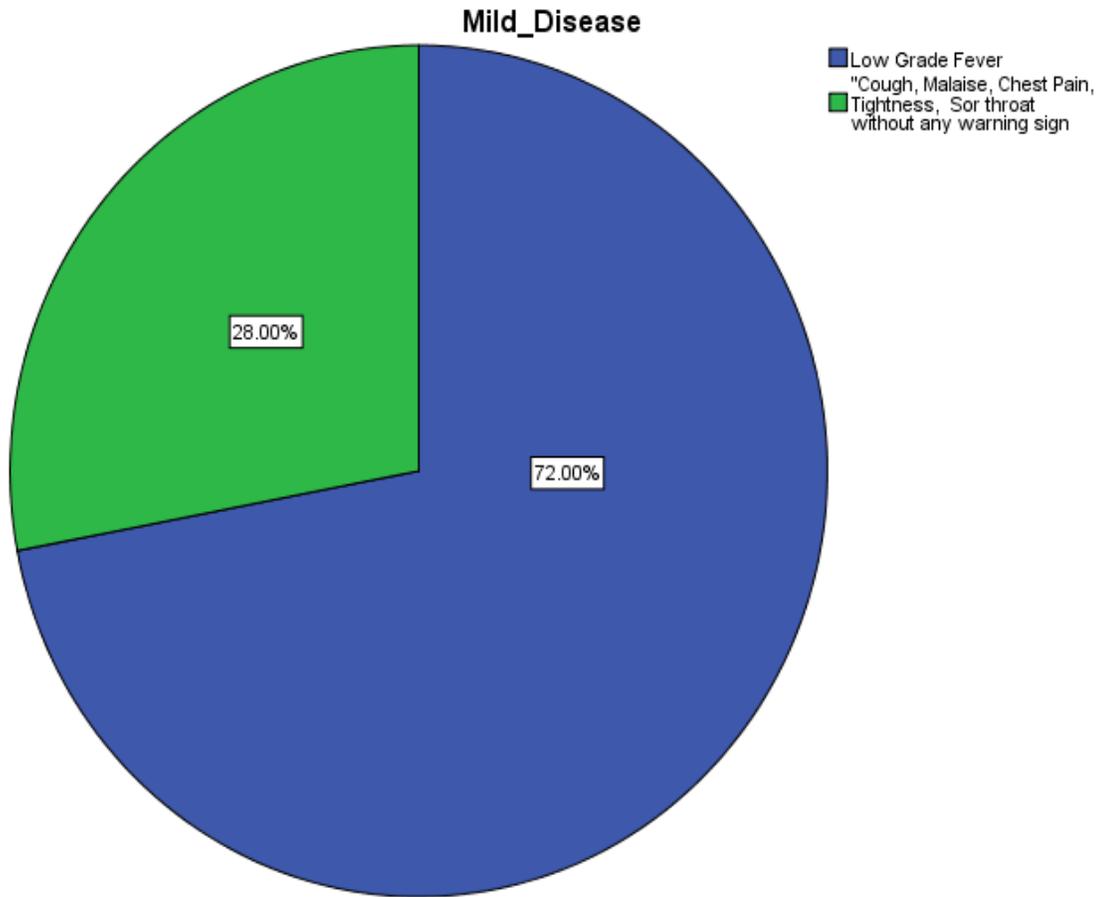


Figure-3: Pie charts showing the association of clinical symptoms with Mild disease group.

3.1 Association of clinical symptoms with moderate, severe and critically ill disease group

Shortness of Breath with respiratory Rate > 25/min (25 [50%]), less common symptoms were High Grade Fever (9 [18%] of 50), hemoptysis (7 [14%] of 50), lethargy without change in mental status developed in (6 [12%] of 50) and chest radiograph suggestive of pneumonia was evident in only (3 [6%] of 50) (**Figure-4**). In severe group 10 (20%) of 50 patients developed Respiratory Rate > 30/Min, SpO₂ levels < 93 % were presented in (25 [50%] of 50) patients (**Figure-5**). In critically ill patients respiratory Failure (where mechanical ventilation required) developed in 14 (28%) of 50 patients and two [4%] of the 50 patients developed septic shock (**Figure-6**).

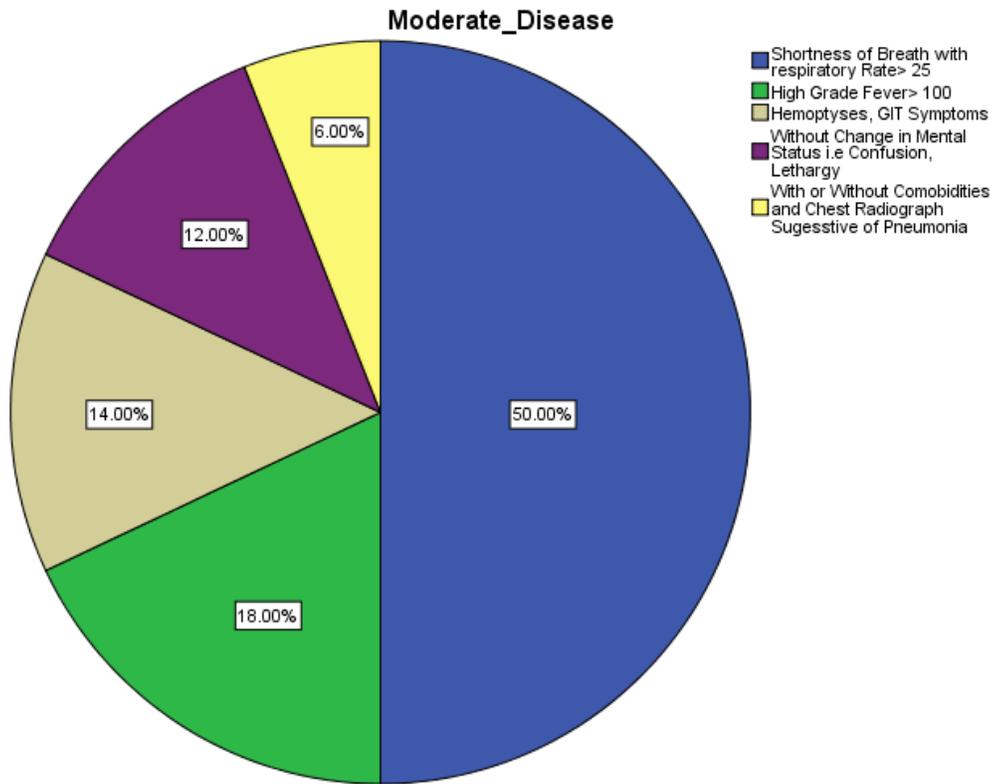


Figure-4: Pie charts showing the association of clinical symptoms with Moderate disease group.

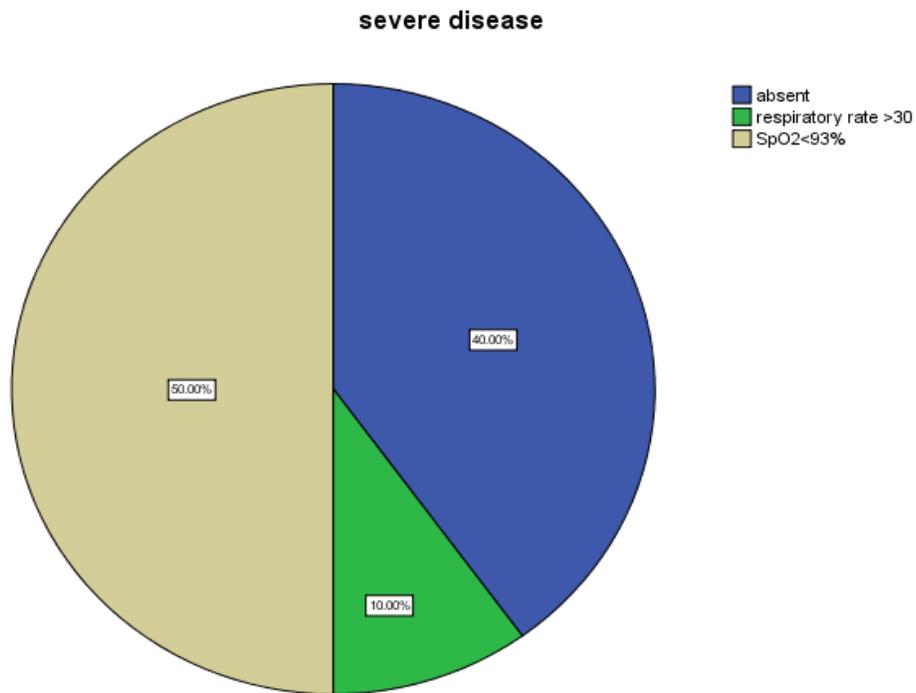


Figure-5: Pie charts showing the association of clinical symptoms with severe disease group.

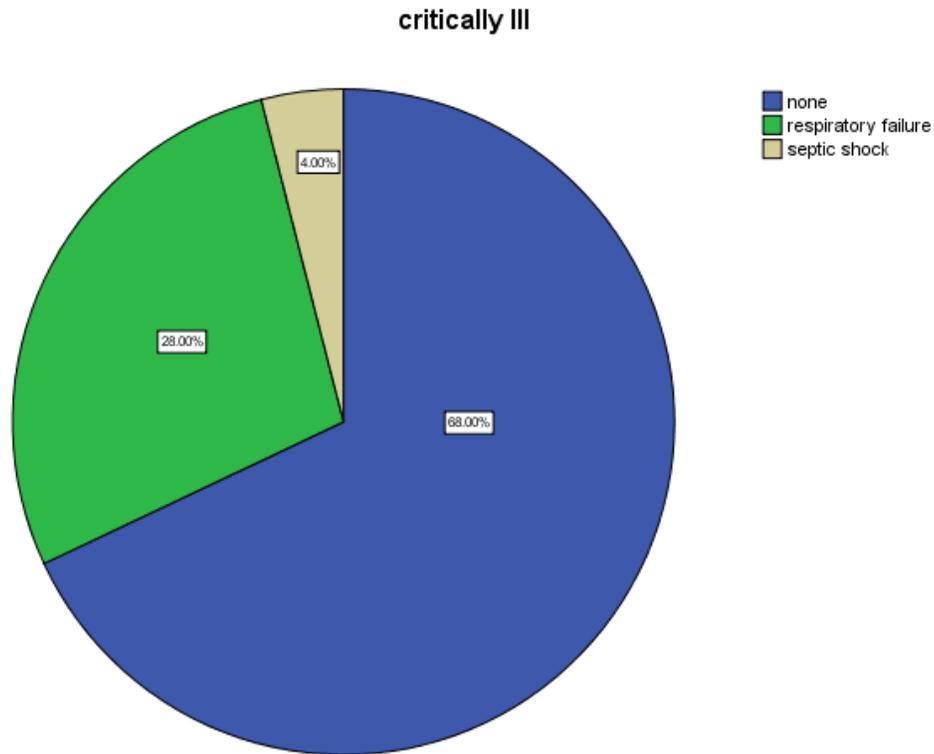


Figure-6: Pie charts showing the association of clinical symptoms with critically ill group.

3.5 Percentage of HRCT/CT chest findings

The common manifestation in CT (chest) examination were bilateral Lung infiltration > 50% within 24-48 hours with consolidation was present in 7 [14%] of 50 patients while unilateral lung infiltration with consolidation was present in 1 [2%] of 50 patients and pleural infusion was present in 1 [2%] of 50 patients (**Figure-7**). None of the patient had developed mental confusion, Agitation, Restlessness and Multi Organ Dysfunction Syndrome.

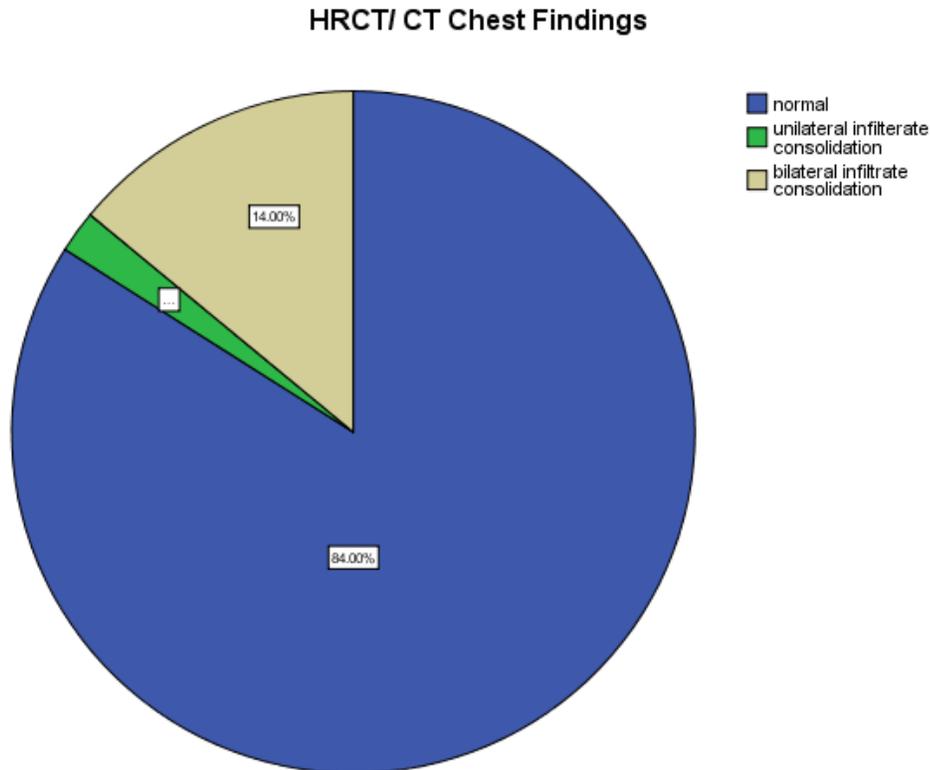


Figure-7: Pie charts showing the percentages of HRCT/CT chest findings.

Laboratory test results depicted an increase in C-reactive protein level (mg/L>8) in (14 [28%] of 50 patients), D-Dimer level (< 0.5 mcg/mL) in (14 [28%] of 50 patients), LDH level (>140 - 280 U/L) in (14 [28%] of 50 patients), ferritin level (>18–270 (ng/mL) in (15 [30%] of 50 patients). Five (10%) of 50 patients expired while others had shown significant improvement in health.

4.0 DISCUSSION

This is a retrospective analysis of COVID-19 patients, these patients were admitted in Mayo Hospital, Lahore, Pakistan during April 24 to August 24, 2020. The demography, epidemiology, clinical symptoms, radiological analysis and laboratory findings were assessed according to the guidelines provided by ISARIC and WHO (ISARIC-WHO-SARI_Case_Record_Form_7JAN16). The results indicated that male gender is more prone to be infected and at a higher risk of mortality than female gender. Similarly, old age is also one of the major contributing factors for high risk of mortality in Covid-19 positive patients. In a recent analysis conducted by Ortolan et al. in 2020 depicted the similar results as of the current study in

gender difference (Ortolan, Lorenzin, Felicetti, Doria, & Ramonda, 2020). The Conti and Younes in 2020 concluded that regulation of immune system is better in female gender as compared to male gender due to presence of additional X chromosome in female gender which is home for very important immune regulation genes. Females also express higher levels of CD4+ lymphocytes, for additional protection against virus (Conti & Younes, 2020). The results of our study also pointed out the significant relation of comorbid conditions (cardiovascular disease and diabetes mellitus) with Covid-19 infection with a poor outcome. A study conducted in 2020 also presented a high rate of mortality in patients having one or more comorbid conditions (Sanyaolu et al., 2020). The most

common clinical symptoms presented by Covid-19 infected patients were fever, cough, a higher respiratory rate and decrease oxygen saturation with bilateral lung infiltration on CT-scan. These results are in line with a meta-analysis performed in Wuhan China in 2020. This analysis analyzed 43 studies including 3600 patients. The common clinical symptoms were same with a slight variation (Fu et al., 2020). The laboratory investigations lead us to conclude a higher level of C-reactive protein, D-dimer, LDH and ferritin. D-dimer and ferritin levels have been emerging as reliable investigations to detect severity of disease along with ferritin. A number of studies have pointed out in the similar directions (Terpos et al., 2020). These findings will be helpful to diagnose the severity of disease and to decide the in-time management in local community.

The limitations of this study were the small number of cases from only one hospital. The strengths of the study; every patient was under observation till the outcome and this was the first study for the local community. In conclusion, COVID-19 disease has prominent clinical manifestations and poor outcome in older patients with cardiovascular disease and diabetes mellitus and old age. The male gender is more prone to get infected. The most common symptoms of covid-19 patient at onset of illness were low grade fever, Shortness of Breath, low SpO₂ levels, Cough, Malaise, Chest Pain, Tightness leading to respiratory failure and increased levels of D-Dimer and ferritin.

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DECLARATION OF CONFLICTING INTERESTS

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