# A Comparative Study between Covid-19 Positive versus Suspected Patients: A Single-Center Study in Bangladesh

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*Authors' contributions*

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

*Original Research Article*

## ABSTRACT

**Background:** The novel coronavirus disease or Covid-19 was first identified in Wuhan, China, which quickly involved majority of the countries across the world. Because of its high rate of mortality-morbidity and the similarities in signs and symptoms of pneumonia, it is very important to acquire proper knowledge to differ Covid-19 suspected and positive cases.
**Aim of the Study:** The aim of this study was to compare the demographic and clinical findings between Covid-19 positive and suspected patients.

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**Methods:** This comparative observational study was conducted in the Department of Medicine, Shahabuddin Medical College Hospital, Gulshan, Dhaka, Bangladesh, during the period from November 2020 to March 2022. In total 126 suspected Covid-19 patients were included as the study subjects for this study. After confirming 16 Covid-19 positive cases from total 126 participants by RT-PCR tests, the demographic and clinical features of those positive cases were compared with previously found findings (When total participants were defined as suspected) of total participants. A predesigned questioner was used in data collection. All data were collected, processed and analyzed by using MS Office and SPSS version 23 programs as per need.

**Results:** In this study, in comparing the demographic findings like age, gender as well as body-weights of Covid-19 suspected and positive group patients, we did not find any significant correlation. But in comparing the electrolytes: Na+, K+ and Cl- between the groups, we found extremely significant correlation between Covid-19 suspected and positive groups where the P values were found as <0.0001, 0.002 and 0.0002 respectively. In this study, as more frequent comorbidities, HTN and DM were observed in both the groups (>10%).

**Conclusion:** It is very difficult to confirm Covid-19 cases from suspected cases by demographic and/or clinical investigation without RT-PCR tests. Electrolyte assessment may play an important role in detecting Covid-19 cases.

## 1. INTRODUCTION

In Bangladesh, the first Covid-19 cases were found on the 8th March, 2020 [1]. Because of its high rate of mortality-morbidity and the similarities in signs and symptoms of pneumonia, it is very important to acquire proper knowledge to differ Covid-19 suspected and positive cases. Covid-19 in asymptomatic carriers and suspected ones should be diagnosed immediately [2] because of the possibility for rapid developing serious co-nosocomial infections, as well as misdiagnosis. [3-5] Nasal-pharyngeal swab with real-time reverse transcriptase-polymerase (PCR), is considered as the gold standard for the diagnosis of Covid-19 but there are some difficulties related to the procedure which may postpone it. [6] The sensitivity and specificity of RT-PCR test have been discussed in several studies; Dramé et al. [7], found that, the sensitivity of nasal-pharyngeal swab (NPS) was below 40% and suggested performing NPSs repeatedly over time. Moreover, Xiang et al. considered the SARS-CoV-2 antibody tests IgM as well as IgG as a better diagnostic investigation than the NPS [8]. A systematic review pointed out the necessity of performing repeated tests in subjects with a strong suspicion of infection, considering that, 54% of COVID-19 positive cases showed false negative results on the first test with the RT-PCR method [9]. WHO (World Health Organization) defines "cases of Covid-19" as "a person with the laboratory confirmation of SARS-CoV-2 infection irrespective of clinical signs or symptoms". [10] Trial seventh version of "Diagnosis and Treatment Guidelines" for Covid-19 issued by the National Health Committee (NHC) of China declares "suspected" cases with one of four items of epidemiological history, or two of three items of clinical manifestations or three items of clinical manifestations with no item of epidemiological history, [11] or an acute respiratory tract SARS-CoV-2 infection for <14 days, or clinical illness compatible with Covid-19, or asymptomatic carriers in a close contact to the confirmed cases of Covid-19. [12,13] The major objective of this study was to compare the demographic and clinical findings between Covid-19 positive and suspected patients.

## 2. METHODOLOGY

This comparative observational study was conducted in the Department of Medicine, Shahabuddin Medical College Hospital, Dhaka, Bangladesh, during the period from November 2020 to March 2022. In total 126 suspected Covid-19 patients were included as the study subjects for this study. After confirming 16 Covid-19 positive cases from total 126 participants by RT-PCR tests, the demographic and clinical features of those positive cases were compared with previously found findings (When total participants were defined as suspected) of total participants. A predesigned questioner was used in data collection. All demographic data regarding age, sex, address, contact history etc. and clinical data regarding the symptoms on admission, comorbidities and their durations of disease were recorded. Qualitative variables like fever, cough, dyspnea, headache etc. were

expressed as frequency and percentage. Data were processed and analyzed by using MS Office and SPSS version 23. Tests of significance were performed by unpaired t-test for quantitative variable and Chi square test for qualitative variables compared separately in different clinical presentation. Besides these, the multivariate logistic regression analysis of possible risk factors was performed to determine the association with mortality by calculating odds ratio with 95% confidence intervals. The "p" value, <0.05 was be considered as significant.

## 3. RESULTS

In this study, among total 126 participants, 46% were male whereas 54% were female. So female participants were dominating in number and the male-female ratio was 1:1.17. Among total participants, two third (66%) were with normal (18.5-24.9) BMI and the rest one third (34%) were with overweight (25.0-29.9) status. In this study, in comparing the demographic and clinical status between Covid-19 suspected and positive participants, the mean± SD (age in year) and BMI (Kg/m2) of Covid-19 suspected cases were found as 48.36±14.30, 22.16±2.04 respectively. On the other hand, those variables were found as 49.52±15.63 and 23.22±2.43 respectively in Covid-19 positive groups. We did not find any significant correlation between Covid-19 suspected and positive patients. As major symptoms in both Covid-19 suspected and Covid-19 positive patients, cough, shortness of

breath, hypoxemia/Oxygen use, fever & diarrhea were found respectively. As laboratory findings, in suspected cases, the mean± SD White blood cell (WBC), Neutrophil (N), Leukocytes (L), S. Creatinine, $Na^+$, $K^+$, $Cl^+$, CRP, D-Dimer, IL-6, Ferritin and LDH were found as 10.80±8.99, 77.21±47.54, 19.63±11.83, 1.50±2.36, 139.50±4.93, 3.68±0.69, 105.67±5.86, 47.20±62.03, 606.04±395.36, 92.09±319.07, 410.10±331.49 and 290.00±0.00 respectively. On the other hand, those variables were found as11.61±9.12, 76.97±44.36, 18.43±10.72, 1.50±3.17, 133.73±4.56, 3.13±0.27. 99.86±5.44, 45.85±90.97, 793.29±424.26, 110.90±106.89, 413.62±345.13 and 335.62±265.15 respectively in Covid-19 positive group patients. In comparing the electrolytes: $Na^+$, $K^+$ and $Cl^-$ we found extremely significant correlation between Covid-19 suspected and positive groups where the P values were found as <0.001, 0.002 and 0.002 respectively. In this study among both the groups the findings of HRCT chest along with lung distribution, in HRCT pattern ground glass opacity(GGO) with consolidation was higher than ground glass opacity(GGO). Regarding distribution of lung involvement, bilateral lung involvement was highest followed by peripheral & diffuse lung involvement. In central involvement lung, maximum patients of Covid-19 suspected & positive patients were nil. As more frequent symptoms, cough, shortness of breath, hypoxemia/Oxygen use, fever and diarrhoea were found in both the groups. In this study, as more frequent comorbidities, HTN and DM were observed in both the groups (>10%).

**Table 1. Demographic status of total participants (N=126)**

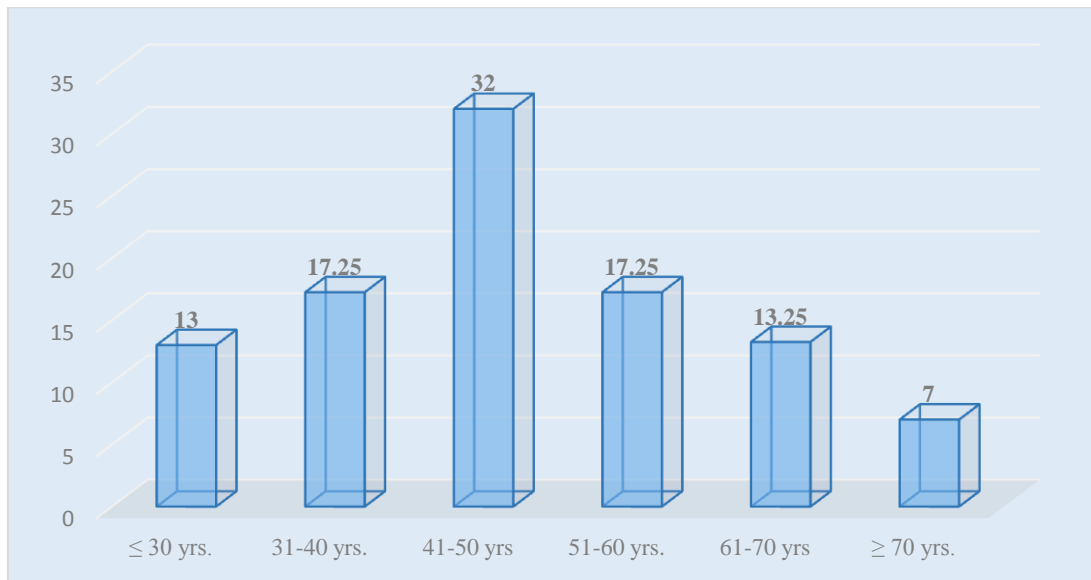| Variables | n | % |
|---|---|---|
| **Age distribution** | | |
| ≤ 30 yrs. | 16 | 13.0% |
| 31-40 yrs. | 22 | 17.25% |
| 41-50 yrs. | 40 | 32.0% |
| 51-60 yrs. | 22 | 17.25% |
| 61-70 yrs. | 17 | 13.25% |
| ≥ 70 yrs. | 9 | 7.25% |
| **Gender distribution** | | |
| Male | 58 | 46% |
| Female | 68 | 54% |
| **BMI Distribution** | | |
| Normal (18.5-24.9) | 83 | 66% |
| Overweight (25.0-29.9) | 43 | 34% |

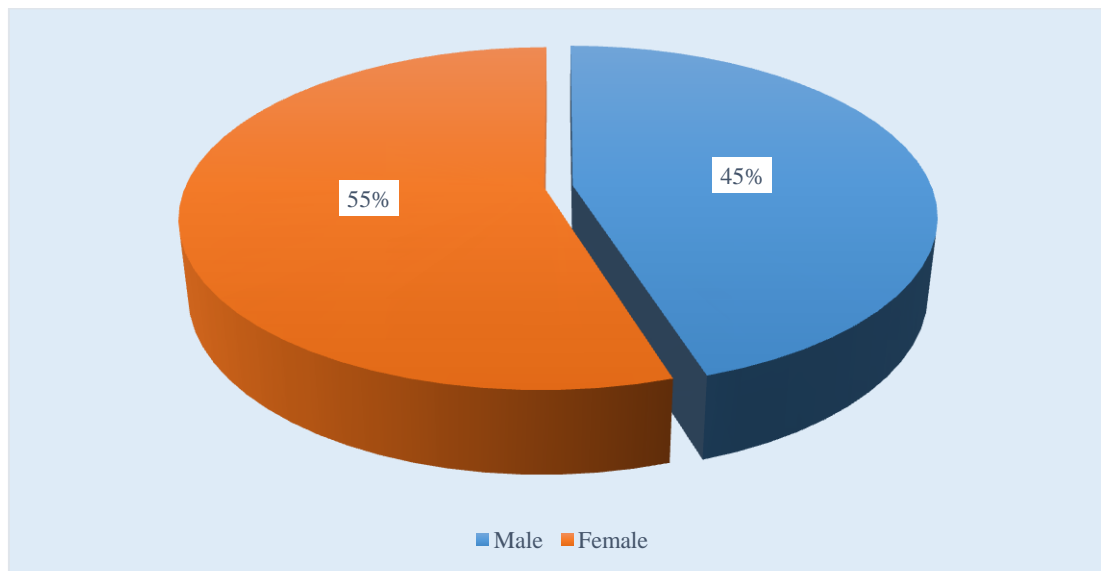**Fig. 1. Participants Age Group Wise Distribution (N=126)**



**Fig. 2. Participants Gender Wise Distribution (N=126)**

**Table 2. Comparison of demographic and clinical status between Covid-19 suspected and positive participants N=126)**

| Characteristics | Groups | | P value |
|---|---|---|---|
| | **Suspected cases** | **Positive cases** | |
| | **(n=126)** | **(n=16)** | |
| **Age and BMI distribution** | | | |
| Mean± SD(Age in year) | 48.36±14.30 | 49.52±15.63 | 0.763 |
| Mean± SD BMI (Kg/m2) | 22.16±2.04 | 23.22±2.43 | 0.058 |
| **Major symptoms distribution** | | | |
| Cough | 60(48%) | 8(50%) | |
| Shortness of breath | 30(24%) | 7(44%) | |
| Hypoxemia/Oxygen use | 29(23%) | 4(25%) | |

| Characteristics | Groups | | P value |
|---|---|---|---|
| Fever | 23(18%) | 4(22)% | |
| Diarrhoea | 21(17%) | 4(21%) | |
| Lower Limb Swelling | 14(11%) | 2(13%) | |
| **Laboratory findings distribution (Mean± SD)** | | | |
| White blood cell (WBC) | 10.80±8.99 | 11.61±9.12 | 0.735 |
| Neutrophil (N) | 77.21±47.54 | 76.97±44.36 | 0.985 |
| Leukocytes (L) | 19.63±11.83 | 18.43±10.72 | 0.700 |
| S. Creatinine | 1.50±2.36 | 1.50±3.17 | 1.000 |
| $Na^+$ | 139.50±4.93 | 133.73±4.56 | <0.001 |
| $K^+$ | 3.68±0.69 | 3.13±0.27 | 0.002 |
| $Cl^-$ | 105.67±5.86 | 99.86±5.44 | 0.002 |
| CRP | 47.20±62.03 | 45.85±90.97 | <0.001 |
| D-Dimer | 606.04±395.36 | 793.29±424.26 | 0.001 |
| IL-6 | 92.09±119.07 | 110.90±106.89 | 0.002 |
| Ferritin | 410.10±331.49 | 413.62±345.13 | 0.002 |
| LDH | 290.00±0.00 | 335.62±265.15 | 0.001 |
| **Findings of HRCT chest along with lung distribution** | | | |
| HRCT Pattern | | | |
| Ground glass opacity(GGO) | 46(36.5%) | 9(56.3%) | |
| Ground glass opacity(GGO) with Consolidation | 81(64.6%) | 12(75.6%) | |
| **Distribution of lung involvement** | | | |
| Central | 0(0.00%) | 0(0.00%) | |
| Peripheral | 46(44.3%) | 9(56.7%) | |
| Diffuse | 58(46.2%) | 11(67.4%) | |
| Bilateral | 112(89.5%) | 15(92.6%) | |
| **Comorbidities & Risk Factor distribution** | | | |
| DM | 58(46%) | 12(78%) | |
| HTN | 32(25%) | 8(52%) | |
| IHD | 15(12%) | 4(25%) | |
| CKD | 8(6%) | 2(11%) | |
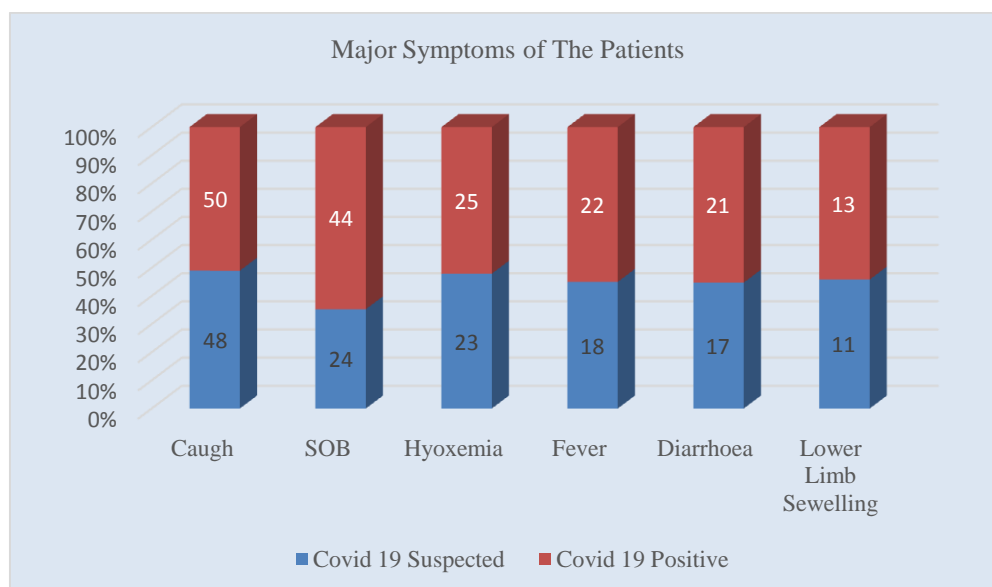


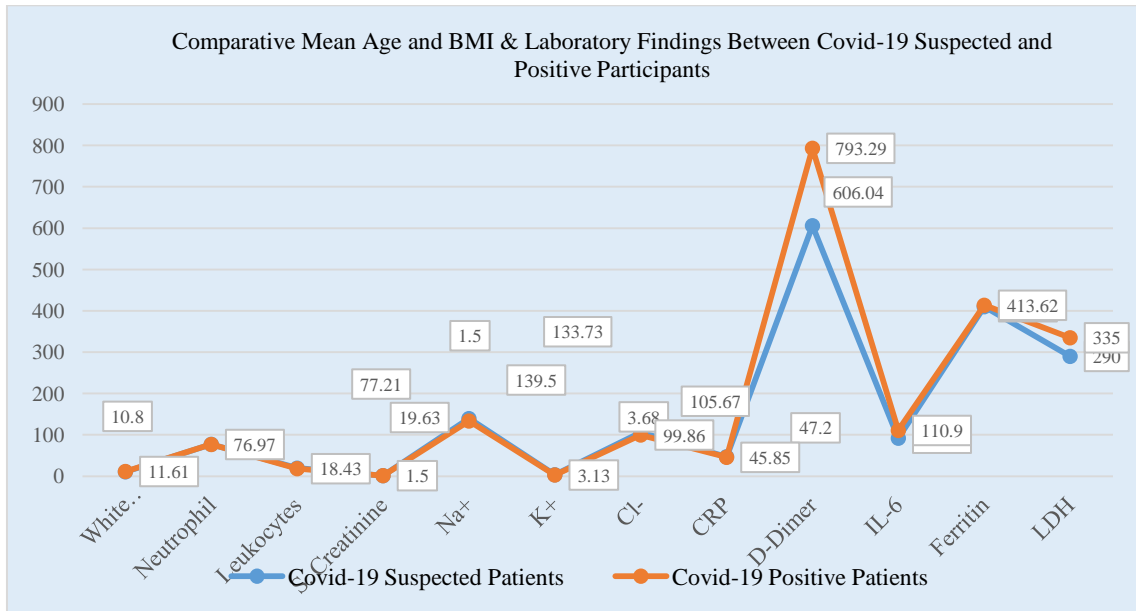**Fig. 3. Comparative major symptoms distribution among the participants (N=126)**

**Fig. 4. Comparative demographic and clinical status between participants
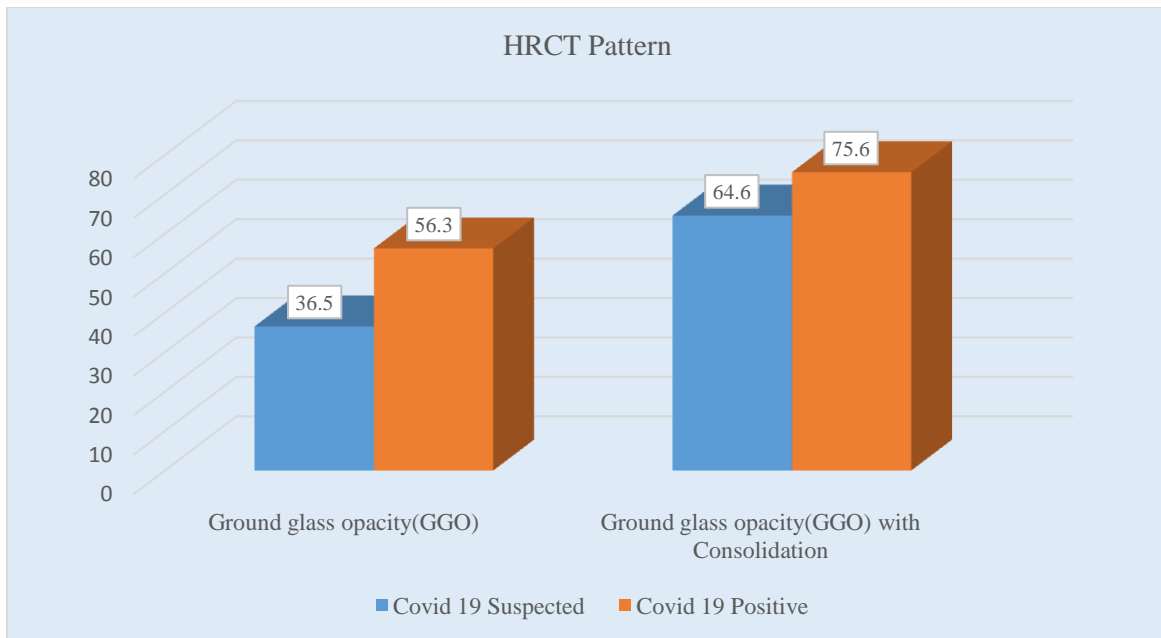(N=126)**



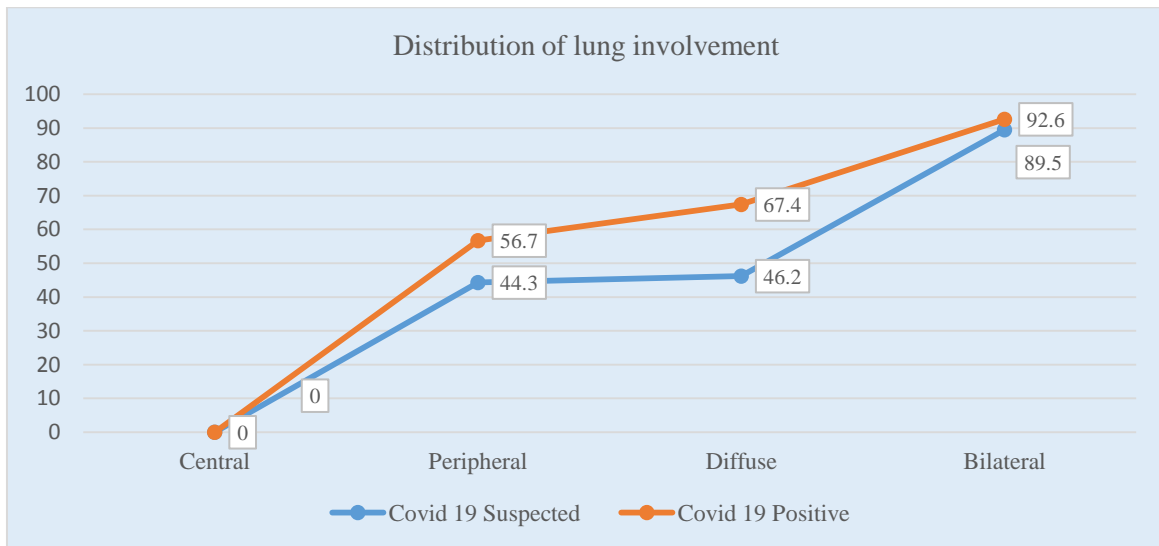**Fig. 5. Comparative HRCT Pattern between the participants
(N=126)**

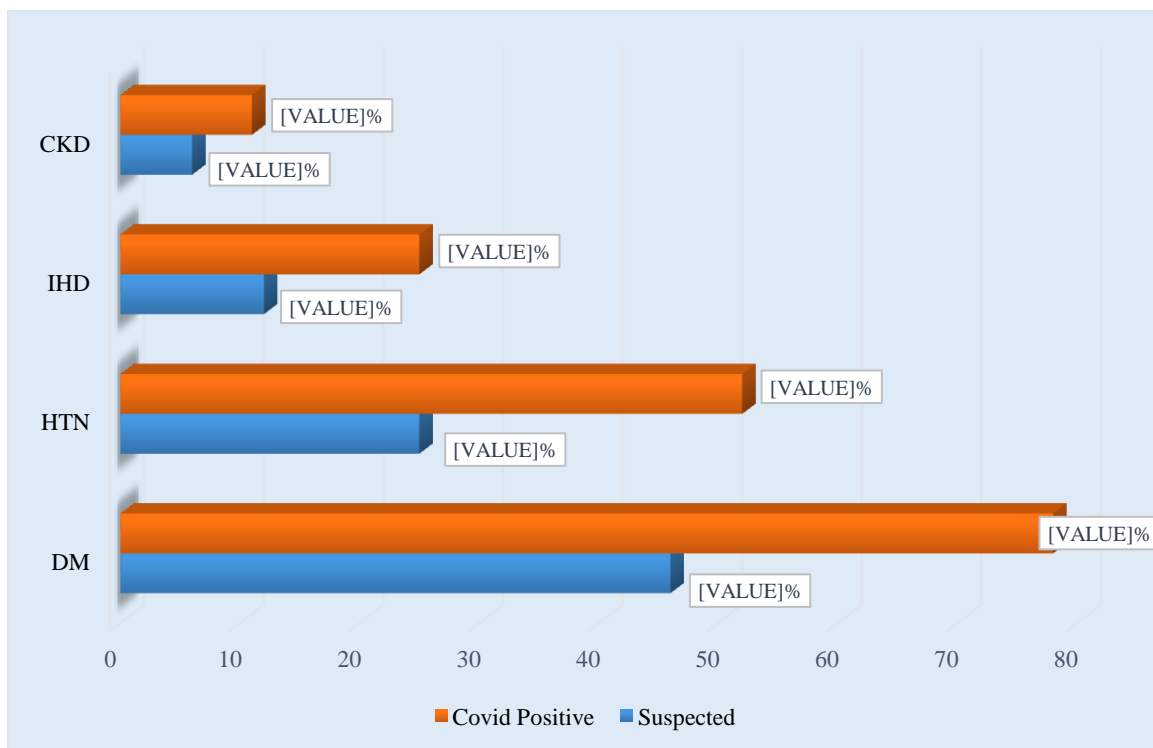**Fig. 6. Comparative lung involvement distribution between the participants (N=126)**



**Fig. 7. Comparative Others Comorbidities Distribution Among the Participants (N=126)**
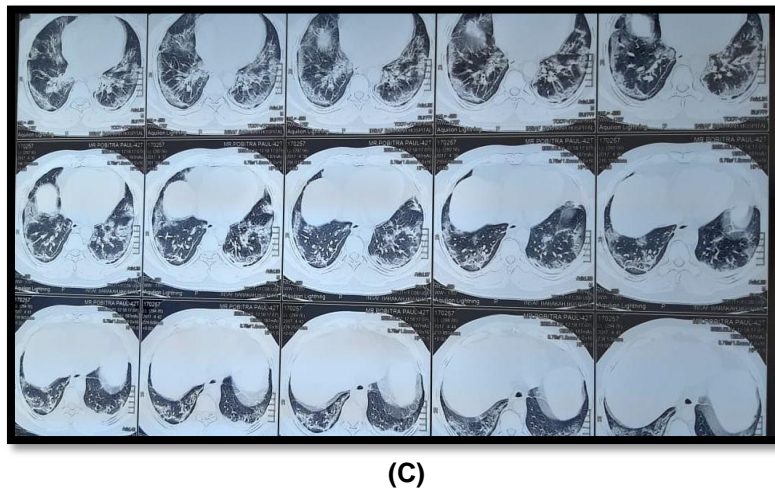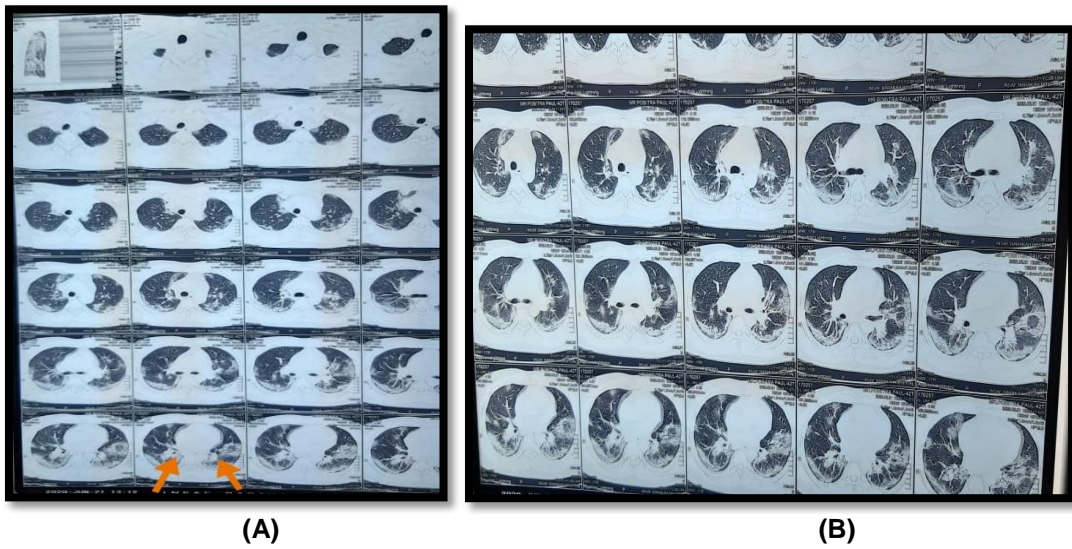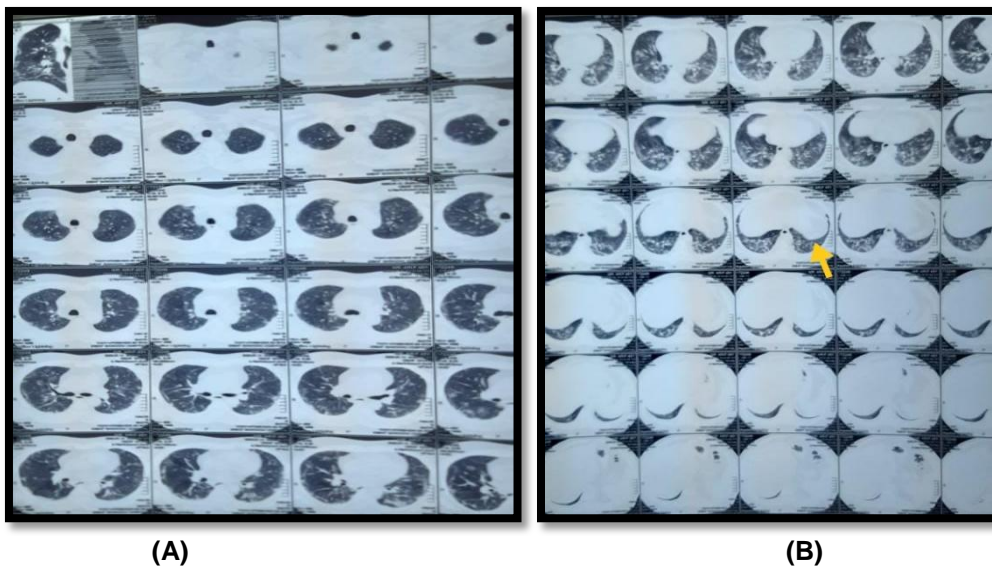
**Fig. 8. (A-C): Ground glass Opacity Lung Involvement**



**Fig. 9. (A-B): Ground glass Opacity with Consolidation lung involvement**
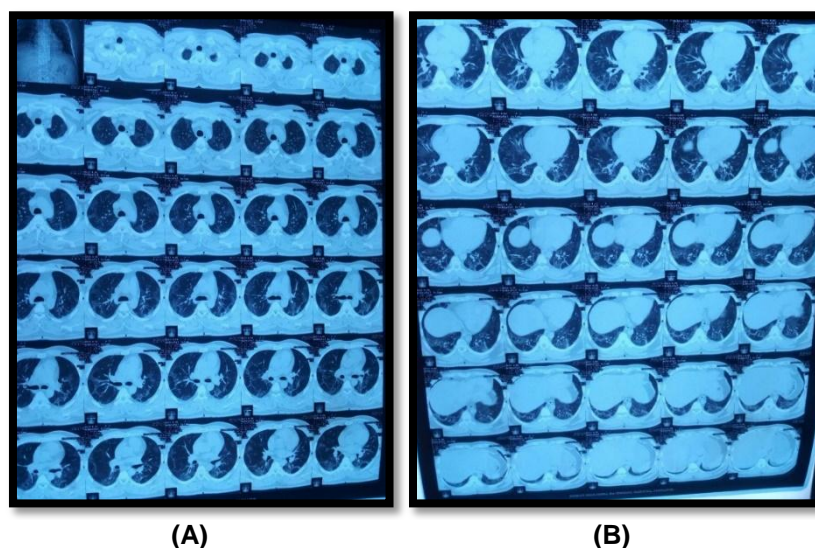
**Fig. 10. (A-B): Bilateral Involvement of lung**

## 4. DISCUSSION

The aim of this study was to compare the demographic and clinical findings between Covid-19 positive and suspected patients. In this study, among total 126 participants, 46% were male whereas 54% were female. So female participants were dominating in number and the male-female ratio was 1:1.17. Among total participants, two third (66%) were with normal (18.5-24.9) BMI and the rest one third (34%) were with overweight (25.0-29.9) status. In a similar study, [14] the mean age was 75.7 years, 66(53.2%) were women, 47(37.9%) had 3 or more chronic health conditions, and 57 (46.0%) resided in a long-term care facility. In this current settings, as more frequent symptoms, cough, shortness of breath, Hypoxemia/Oxygen use and lower limb swelling were observed in both the groups. Clinical studies conducted on hospitalized cases found that, the onset of Covid-19 is associated with symptoms commonly associated with viral pneumonia, fever, cough/sore throat and myalgia and/or fatigue. [15, 16] Cough was reported in just less than half of the patients reported in another study [17] and mentioned that, cough and fever are the two most commonly reported symptoms in similar studies [18]. In this study among both the groups, recent exposure to a Covid-19 patient, length of symptoms before the indexing, bilateral lung infiltrates and peripheral lung infiltrates were found as more frequent risk factors. In a recent study it was reported that, a male preponderance of cases has been noted for Covid-19 globally both in terms of absolute case numbers as well

as in severe disease [19,20]. In another study, [21] as risk factors for severe Covid-19 included older age, cardiopulmonary comorbidities, HIV, obesity, and diabetes mellitus. Although, in our study we did not analyze the comparative frequencies and features of symptomatic and asymptomatic Covid-19 patients it as a vital issue in controlling such pandemic. The clinical spectrum of Covid-19 may range from asymptomatic infection to mild upper respiratory tract illness even to severe interstitial pneumonia with respiratory failure and even death [22,23]. It is estimated that non-severe Covid-19 patients with no symptoms or mild symptoms could represent 30-60% of all infections [24,25]. Comparing severe cases of Covid-19, asymptomatic infection as well as mildly symptomatic infections often go unrecognized although the majority of affected patients are not sick enough to get medical help and cannot be detected by screening methods [26]. A few studies found that, high viral loads can be detected in some patients with Covid-19 early in their illness, when their symptoms were mild [27]. Moreover, another asymptomatic patient was found to shed a similar amount of virus as that shed by symptomatic patients [28]. Though a significant number of patients are Covid-19 negative but their HRCT chest finding were goes in favor of Covid-19 pneumonia. All the moderate to severe patients were under went HRCT chest test. However, according to CO-RADS score the involvement of lung in HCRT chest were 2 to 6 among total 126 participants. In this study among both the groups the findings of HRCT chest along with lung distribution, in HRCT pattern

ground glass opacity(GGO) with consolidation was higher than ground glass opacity(GGO). Regarding distribution of lung involvement, bilateral lung involvement was highest followed by peripheral & diffuse lung involvement. In central involvement lung, maximum patients of Covid-19 suspected & positive patients were nil.

## 5. CONCLUSION AND RECOMMENDA-TION

It is very difficult to confirm Covid-19 cases from suspected cases by demographic and/or clinical investigation without RT-PCR tests. Electrolyte assessment may play an important role in detecting Covid-19 cases. Cough and fever may be considered as the most potential symptoms of Covid-19 patients. For getting more specific findings we would like to recommend for conducting similar more studies with larger sized samples in several places.

## 6. LIMITATION OF THE STUDY

As, it was a single centered study with a small sample size, so findings of this study may not reflect the exact scenario of the whole country.

## ETHICAL APPROVAL AND CONSENT

This study had been approved by the ethical committee of the concerned hospital. Before data collection, proper written consents were taken from all the participants.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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