Original Research Article

A Comparative Study Between Covid-19 Positive Versus Suspected Patients: A Single-Center Study in Bangladesh

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.* ***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 among all the participants by RT-PCR tests, the demographic and clinical features were analyzed. 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.*

Keywords: *Covid-19, Positive cases, Suspected patients, RT-PCR, Clinical, Demographic.*

INTRODUCTION

In Bangladesh, the first Covid-19 cases were found on the 8th March, 2020. 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 [1] because of the possibility for rapid developing serious co-nosocomial infections, as well as misdiagnosis. [2-4] 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”. [5] 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, [6] 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. [7, 8] The major objective of this study was to compare the demographic and clinical findings between Covid-19 positive and suspected patients.

METHODOLOGY

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. 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. After confirming 16 Covid-19 positive cases among all the participants by RT-PCR tests, the

demographic and clinical features were analyzed. 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.

RESULT

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 (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 groups patients. As laboratory findings, in suspected cases, the mean± SD White blood cell (WBC), Neutrophil (N), Leukocytes (L), S. Creatinine, Na^+, K^+ and Cl^+ 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 and 105.67±5.86 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 and 99.86±5.44 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 <0.0001, 0.002 and 0.0002 respectively. 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. As more frequent symptoms, cough, shortness of breath, Hypoxemia/Oxygen use and lower limb swelling were observed 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%
31-40 yrs.	22	17%
41-50 yrs.	40	32%
51-60 yrs.	22	17%
61-70 yrs.	17	13%
≥ 70 yrs.	9	7%
Gender distribution		
Male	58	46%
Female	68	54%
BMI Distribution		
Normal (18.5-24.9)	83	66%
Overweight (25.0-29.9)	43	34%

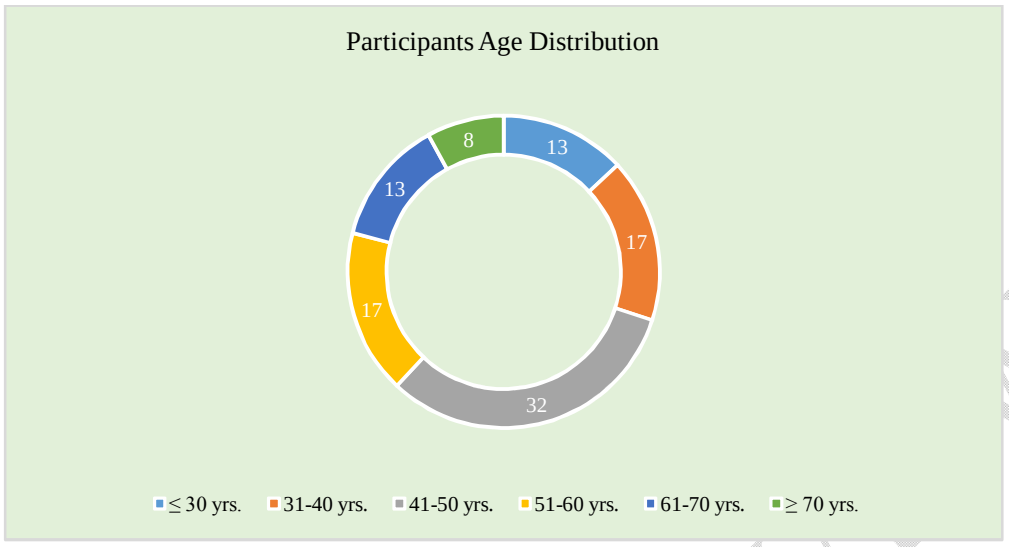

Figure I: Participants Age Group Wise Distribution (N=126)

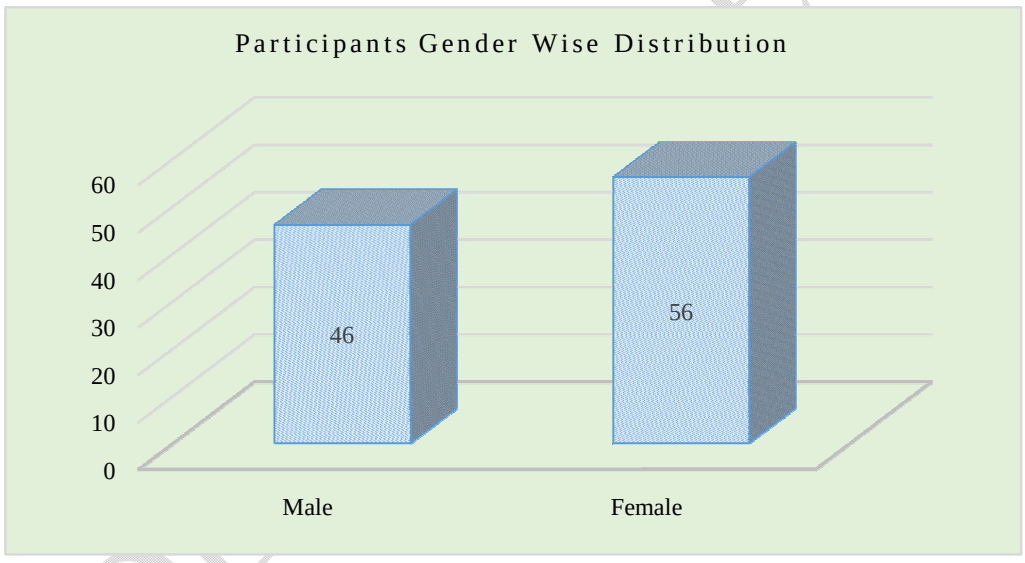

Figure II: Participants Gender Wise Distribution (N=126)

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

Characteristics	Groups		P value
	Suspected cases (n=126)	Positive cases (n=16)	
Age and BMI distribution			
Mean± SD age (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
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	<0.0001
K^+	3.68±0.69	3.13±0.27	0.002
Cl^-	105.67±5.86	99.86±5.44	0.0002
Risk factors distribution			
Recent exposure to a Covid-19 patient	10%	25%	
Length of symptoms before the indexing	7%	19%	
Bilateral lung infiltrates	6%	13%	
Peripheral lung infiltrates	6%	13%	
Neutrophil count <7.5 × 103/L	3%	6%	
LDH > 500 U/L	2%	6%	
Major symptoms distribution			
Cough	54%	56%	
Shortness of breath	38%	31%	
Hypoxemia/Oxygen use	23%	25%	
Lower Limb Swelling	17%	19%	
Comorbidities distribution			
HTN	24%	31%	
DM	11%	13%	
IHD	2%	6%	
CKD	2%	6%	

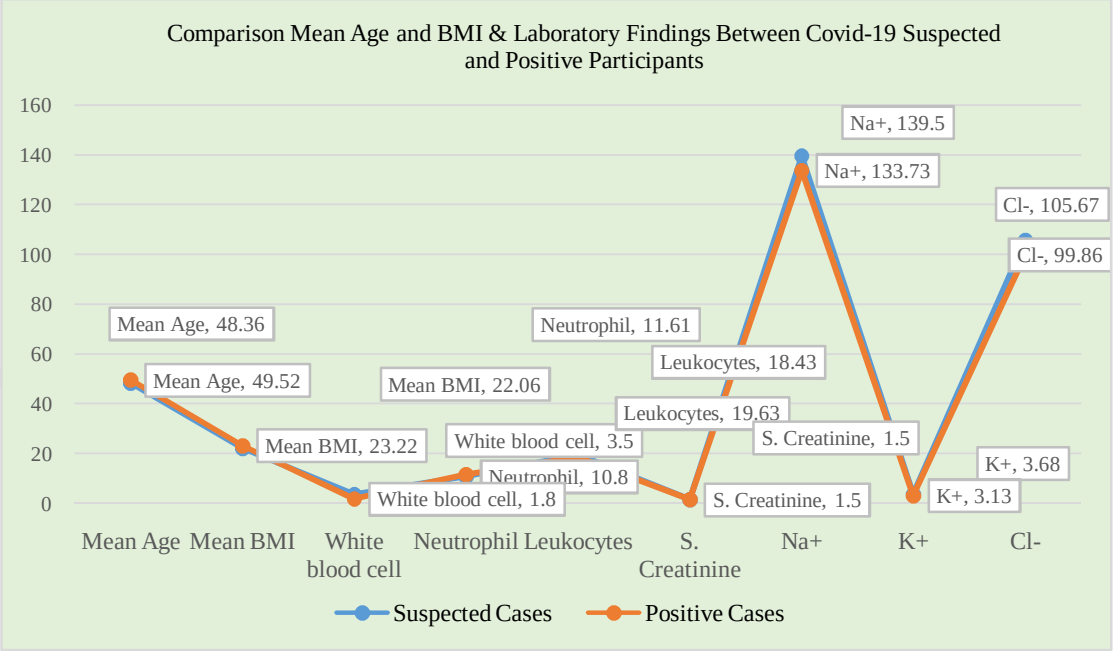

Figure III: Comparison of demographic and clinical status between Covid-19 suspected and positive participants (N=126)

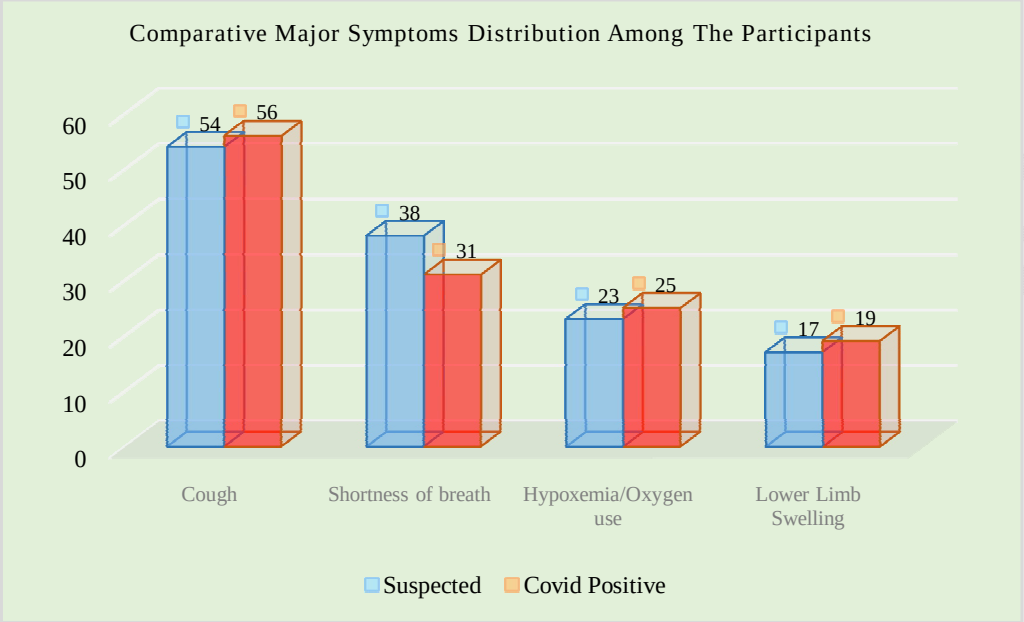

Figure IV: Comparative Major Symptoms Distribution Among the Participants (N=126)

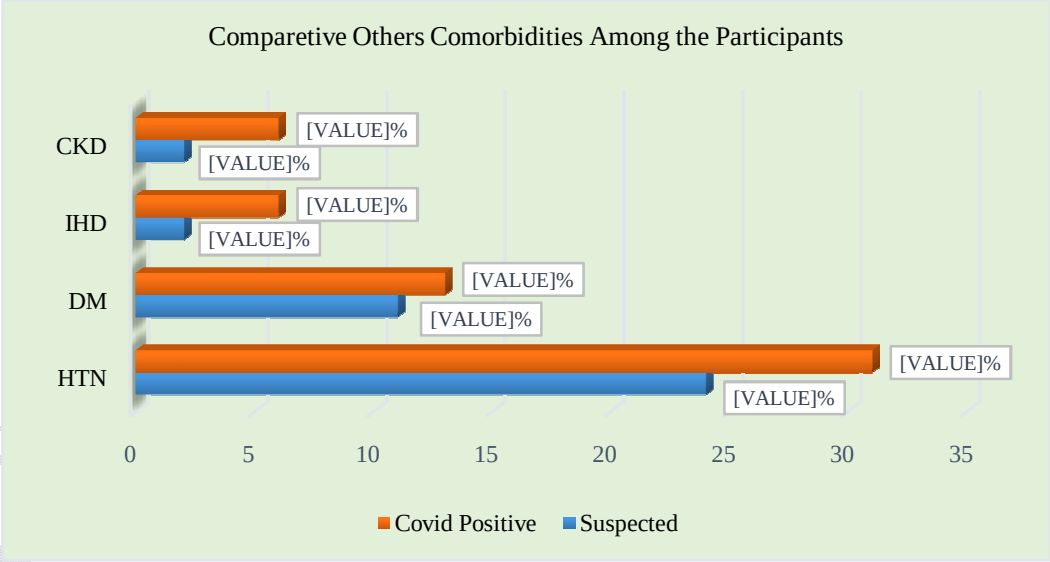

Figure V: Comparative Others Comorbidities Distribution Among the Participants (N=126)

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, [9] 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. [10, 11] Cough was reported in just less than half of the patients reported in another study [12] and mentioned that, cough and fever are the two most commonly reported symptoms in similar studies [13]. 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. [14, 15] In another study, [16] as risk factors for severe Covid-19 included older age, cardiopulmonary comorbidities, HIV, obesity, and diabetes mellitus.

LIMITATION OF THE STUDY

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

CONCLUSION & RECOMMENDATION

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.

REFERENCES

1. Moazzami B, et al., Is computed tomography necessary for the diagnosis of coronavirus disease (Covid–19) in all suspected patients? a case series. Journal of Kerman University of Medical Sciences 28 (2021): 187-193.
2. Dana Ghotbi, Elham Nouri, Nazila Bahmaie, Abdolreza Esmaeilzadeh. Coronavirus Diagnosis: Time for Unravelling the Secrets and Science Without Boundaries. Journal of Emerging Diseases and Preventive Medicine 3 (2020).
3. Cao G, et al., The potential transmission of SARS-CoV-2 from patients with negative RT-PCR swab tests to others: two related clusters of COVID-19 outbreak. Japanese Journal of Infectious Diseases, 165 (2020): JJID.
4. Chua F, et al., The role of CT in case ascertainment and management of COVID-19 pneumonia in the UK: insights from high-incidence regions. The Lancet Respiratory Medicine 8 (2020): 438-440.
5. Makurumidze R. Coronavirus-19 Disease (COVID-19): a case series of early suspects reported and the implications towards the response to the pandemic in Zimbabwe. Journal of Microbiology, Immunology and Infection (2020).
6. da Silva SJR, et al, Clinical and laboratory diagnosis of SARS-CoV-2, the virus causing COVID-19. ACS infectious diseases 6 (2020): 2319- 2336.
7. Zheng H, et al., Perioperative management of patients with suspected or confirmed COVID-19: review and recommendations for perioperative management from a retrospective cohort study. British journal of anaesthesia (2020).
8. Lubega M and Ekol JE. Preparing communities to receive persons recently suspected or diagnosed with COVID-19. The Pan African Medical Journal 35 (2020).

9. Yang, Betty Y., et al. "Clinical characteristics of patients with coronavirus disease 2019 (COVID-19) receiving emergency medical services in King County, Washington." JAMA network open 3.7 (2020): e2014549-e2014549.
10. Chen N, Zhou M, Dong X, et al: Epidemiological and clinical character- istics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet 395:507-513, 2020
11. Guan W-J, Ni Z-Y, Hu Y, et al: Clinical Characteristics of Coronavirus Disease 2019 in China. N Engl J Med: 1-13, 2020
12. Yerdon, H., et al. "Clinical Characteristics of Suspected COVID-19 in Pediatric Patients." Int J Crit Care Emerg Med 7 (2021): 121.
13. Panahi L, Amiri M, Pouy S (2020) Clinical characteristics of COVID-19 infection in newborns and pediatrics: A systema- tic review. Arch Acad Emerg Med 8: e50.
14. Chen T, Wu D, Chen H, Yan W, Yang D, Chen G, et al. Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study. BMJ. 2020;368:m1091.
15. 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.
16. Reese, K., et al. "Primary healthcare workers at risk during COVID-19: an analysis of infections in HIV service providers in vife districts of South Africa." South African Medical Journal 111.4 (2021): 309-314.