

## DEMOGRAPHIC & CLINICAL PROFILE OF HOSPITALIZED AND NON-HOSPITALIZED COVID-19 PATIENTS IN BANGLADESH

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### ABSTRACT

**Introduction:** The COVID-19 pandemic emerged as a major public health emergency affecting the healthcare services all over the world. This study highlights demographic and clinical experience in hospitalized and non-hospitalized covid-19 patients in Bangladesh. **Methodology:** The study was conducted under Molecular Laboratory of Novus CRSL Dhaka between April 2021 September 2021. The diagnosis of SARS-CoV-2 infection was confirmed by real-time reverse transcriptase polymerase chain reaction (RT-PCR) on oropharyngeal swab and/or nasopharyngeal swabs in our laboratory. By contacting them with their contact number from the database then we collected their demographic, clinical and laboratory parameters. **Results:** Data of 150 both non-hospitalized and hospitalized patients with COVID-19 were recorded and analyzed. In non-hospitalized patients, the mean age of the patients was  $44.42 \pm 14.20$  year with 84 (80.8%) male and 20 (19.2%) female. Comorbidities were present of which hypertension 40 (38.5%), diabetes 34 (32.7%), hypothyroidism 16 (15.4%) and others. A significant proportion of patients had symptomatic such as fever 96 (92.3%), dry cough 92 (88.5%), loss of taste 50 (48.07%), loss of smell 53 (50.96%) was the most common and normal laboratory parameters. Majority of the patients were managed with supportive treatment with paracetamol 40 (38.46%), antihistamine 80 (76.9%), oral vitamin-c 87 (83.65%), and antibiotics 70 (67.30%). It took an average of 12-14 days for them to become negative. And hospitalized patients, of whom 37 (71.73%) were males and 13 (28.26%) were female. Overall mean age was  $45.12 \pm 13.80$  years. Maximum cases (58.69%) were from age group of 20-40 year. 19 (41.30%) were smoker. They have some kind of comorbidities present like diabetes mellitus 21 (45.65%), hypertension 26 (56.52%), hyperlipidemia 8 (17.39%), hypothyroidism 2 (4.34%), coronary heart disease 10 (21.73%), chronic respiratory disease 1 (2.17%), severe disease 2 (4.34%). In addition, they have taken some medicine as per the doctors advise such as paracetamol 21 (45.65%), antihistamine 29 (63.04%), oral vitamin c 32 (69.56%), antibiotics 27 (58.69%), antifungal 21 (45.6%) and oxygen therapy 7 (15.21%). Some changed laboratory parameters were observed. **Conclusion:** We concluded that there is no significant changes or abnormalities in non-hospitalized patients clinical and laboratory parameter reports but significant changes in hospitalized patient's laboratory parameters. There is a warning for them which is post covid-19 fatigue.

**KEYWORD:** SARS-CoV-2, Comorbidities, Post Covid-19 Fatigue, RT-PCR.

### INTRODUCTION

Coronavirus disease 2019 (COVID-19), a highly contagious respiratory disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-COV-2), was declared a pandemic by the World Health Organization in March 2020.<sup>[1]</sup> The causative virus was initially called

“novel coronavirus 2019” (2019-nCoV) by the World Health Organization (WHO), but it was then renamed as “severe acute respiratory syndrome coronavirus 2” (SARS-CoV-2) by the international committee of the Coronavirus Study Group (CSG), and the disease called “coronavirus disease 2019” (COVID-19) by WHO.<sup>[2]</sup> Six

species of family Coronaviridae are identified to infect the human race comprising two zoonotic viruses: 1) Severe acute respiratory syndrome coronavirus (SARS-COV), and 2) Middle-East respiratory syndrome (MERS-COV), accountable for major epidemics of China in 2002-2003, and Middle East in 2012.<sup>[3]</sup> SARS-COV-2 depicts pathogenicity of infiltrating epithelial cells of the human respiratory tract in lieu of communication between viral S protein and angiotensin-converting enzyme 2 (ACE 2) on the surface of epithelial cells thus retaining a high efficiency in infecting human race.<sup>[4]</sup>

Every age group is prone to suffer from the novel coronavirus. But according to data received from studies conducted throughout the world, frequently affected individuals belong to middle and older age groups with an age range of 65-85 years. Age group infected by a novel coronavirus in China was 10 to  $\geq 80$  years with a median age of 30-79 years suffering frequently. Italy reported an age group of 18 to  $\geq 70$  years with a median age of  $\geq 50$  years, while the USA being the most affected country globally, reported age range of 19 to  $\geq 85$  with a median age of 65-84 years.

Coronavirus has slightly increased gender affinity towards males as compared to females globally.<sup>[5]</sup> Most frequently encountered manifestations in initial onset of infection were fever (98.6%), fatigue (69.6%), dry cough (59.4%), muscle pain (34.8%), dyspnea (31.2%), and least frequently suffered symptoms were headache (6.5%), dizziness (9.4%), abdominal pain (2.2%), diarrhea (10.1%), nausea (10.1%) and vomiting (3.6%).<sup>[6-7]</sup> Coronavirus as quoted by many studies usually infects the older population, the most characteristic comorbidities encountering infection are hypertension (15%), diabetes (12%), cardiovascular disorders (10%), and cerebrovascular disorders (7%).<sup>[30-4,8-9]</sup> COVID-19 patients usually show decrease lymphocyte and eosinophils counts, lower median hemoglobin values as well as increases in WBC, neutrophil counts, and serum levels of CRP, LDH, AST, and ALT.<sup>[10]</sup> Although the main target of coronavirus infection is the lung, the wide distribution of ACE2 receptors in organs<sup>[11]</sup> may lead to cardiovascular, gastrointestinal, kidney, liver, central nervous system and ocular damage that has to be closely monitored.<sup>[12]</sup> So the aim of the study was to evaluate the demographic and clinical outcomes of non-hospitalized covid-19 patients.

## METHODOLOGY

**Study population and settings:** The study was conducted under Molecular laboratory of Novus Clinical Research Services Limited (NCRSL), from April 2021 to September 2021. It was a cross-sectional observational study. A confirmed COVID-19 case was defined as an individual who tested positive for SARS-CoV-2 Envelope (E) and RNA-dependent RNA polymerase (RdRP). The test was conducted by taking a nasopharyngeal (NP) and oropharyngeal swab (OP).

Both samples were tested for the presence of SARS-CoV-2 by polymerase chain reaction (PCR) analysis. The RT-PCR test was conducted using Spin-X viral RNA Extraction Kits, Automated MagMax Kits for Viral Nucleic extraction and N-Cov Real Time Detection, TaqPath Covid-19 CE-IVD RT-PCR kit for detection on the Applied Bio systems (Foster City, CA) 7500 Fast Dx, and Quant Studio™ 5 Real Time PCR Instrument. We only recruited those who tested positive in our center and did and both non-hospitalized and hospitalized patients and who agreed to share all of their data with our study. Pregnant women and children were excluded.

**Data collection:** First of all, collect their age, sex, contact number from our database and contact them initially through mobile phone. By contacting the positive patients, among them only those who underwent various blood parameter tests, we included only those in this study. With their permission, clinical and the laboratory parameters, their demographic details, medical history including comorbidities, sign symptoms information was taken through Consent form.

**Statistical Analysis:** Statistical analysis was performed using the SPSS statistical software (version 25; IBM) and Microsoft Excel 2016. Qualitative variables are expressed as percentages and quantitative variables as means, standard deviation (SD), and range.

## RESULTS

Out of total 150 patients, 104 patients were non-hospitalized and 46 patients were hospitalized. Among 104 non-hospitalized patients, of whom 84 (80.8%) were males and 20 (19.2%) were female. Overall mean age was  $44.41 \pm 14.20$  years. Maximum cases (65.5%) were from age group of 20-40 year and followed by 41-60 year (21.2%) and 61-85 year (13.5%). The marital status of this covid-19 patients were, unmarried 21 (20.19%) and married 83 (79.80%). 46 (44.2%) were smoker. They have some kind of comorbidities present like diabetes mellitus 34 (32.7%), hypertension 40 (38.5%), hyperlipidemia 12 (11.5%), hypothyroidism 16 (15.4%), coronary heart disease 06 (5.76%), chronic respiratory disease 2 (1.92%), severe disease 7 (6.73%). They are all non-hospitalized covid-19 patients. So they took the treatment of covid-19 sitting at home. In addition, they have taken some medicine as per the doctors advise. Such as paracetamol 40 (38.46%), antihistamine 80 (76.9), oral vitamin c 87 (83.65%), antibiotics 70 (67.30). They have the average BMI 23.5 kg/m<sup>2</sup>.

And hospitalized patients, of whom 37 (71.73%) were males and 13 (28.26%) were female. Overall mean age was  $45.12 \pm 13.80$  years. Maximum cases (58.69%) were from age group of 20-40 year and followed by 41-60 year (30.43%) and 61-85 year (10.86%). The marital status of this covid-19 patients were, unmarried 8 (17.39%) and married 38 (82.60%). 19 (41.30%) were smoker. They have some kind of comorbidities present like diabetes mellitus 21 (45.65%), hypertension 26

(56.52%), hyperlipidemia 8 (17.39%), hypothyroidism 2 (4.34%), coronary heart disease 10 (21.73%), chronic respiratory disease 1 (2.17%), severe disease 2 (4.34%). They are all hospitalized covid-19 patients. So they took the treatment of covid-19 in the hospital. In addition, they have taken some medicine as per the doctors advise.

Such as paracetamol 21 (45.65%), antihistamine 29 (63.04), oral vitamin c 32 (69.56%), antibiotics 27 (58.69%), antifungal 21 (45.6%) and oxygen therapy 7 (15.21%). They have the average BMI 23.9 kg/m<sup>2</sup>. (Table 1)

**Table 1: Baseline characteristics of Non Hospitalized and Hospitalized Covid-19 Patients.**

Parameters	Non hospitalized N=104 (%)	Hospitalized N=46 (%)
<b>Age Group in Years</b>	44.42 ± 14.20	45.12 ± 13.80
20-40	68 (65.5)	27 (58.69)
41-60	22 (21.2)	14 (30.43)
61-85	14 (13.5)	5 (10.86)
<b>Gender</b>		
Male	84 (80.8)	37 (71.73)
Female	20 (19.2)	13 (28.26)
<b>Marital Status</b>		
Unmarried	34 (32.7)	15 (32.60)
Married	70 (67.3)	31 (67.39)
<b>Smoking</b>	<b>46 (44.2)</b>	<b>19 (41.30)</b>
<b>BMI</b>	<b>23.5</b>	<b>23.9</b>
<b>Comorbidities</b>		
Diabetes	34 (32.7)	21 (45.65)
Hypertension	40 (38.5)	26 (56.52)
Hyperlipidemia	12 (11.5)	8 (17.39)
Hypothyroidism	16 (15.4)	2 (4.34)
Coronary Heart Disease	06 (5.76)	10 (21.73)
Chronic Respiratory Disease	2 (1.92)	1 (2.17)
Other Disease	7 (6.73)	2 (4.34)
<b>Post Covid-19 Fatigue</b>		
Tiredness/Sleepiness	35 (33.36)	21 (45.65)
Irritability	47 (45.19)	27 (58.69)
Slow motion & response	-	16 (34.7)
Poor concentration	-	9 (19.56)
Reduced immune system Function	32 (30.76)	15 (32.60)
Short term memory problem	-	4 (8.69)
Muscle Weakness	-	-
<b>Drug Received</b>		
Paracetamol	40 (38.46)	21 (45.65)
Antihistamine	80 (76.9)	29 (63.04)
Oral Vitamin C	87 (83.65)	32 (69.56)
Antibiotics	70 (67.30)	27 (58.69)
Antifungal	-	21 (45.6)
Oxygen Therapy	-	7 (15.21)

All values expressed as number (%), Mean, SD

COVID-19 affects different people in different ways. Most infected people will develop mild to moderate illness and recover without hospitalization. Figure 1 express the symptomatic profile of this studied. Among non-hospitalized patients, majority of the patients were symptomatic 95 (91.35%) and the asymptomatic 09 (08.65%). Symptoms such as fever 96 (92.3%), palpitation 70 (67.3%), dry cough 92 (88.5%), productive cough 63 (60.57%), sweating 76 (73.1%), myalgia 60 (57.7%), shortness of breath 42 (40.38%),

headache 88 (84.6%), chest pain 33 (31.73%), loss of taste 50 (48.07%), loss of smell 53 (50.96%), abdominal pain 24 (23.1%), nasal congestion 80 (76.9%), sore throat 46 (44.2%), rhinorrhea 11 (10.5%), vomiting 18 (17.3%), diarrhea 17 (16.34%). In hospitalized patients, majority of the patients were symptomatic 35 (76.08%) and the asymptomatic 11 (23.91%). Symptoms such as fever 32 (69.56%), palpitation 21 (45.65%), dry cough 14 (30.43%), productive cough 17 (36.95%), sweating 5 (10.86%), shortness of breath 13 (28.26%), headache 31

(67.39%), chest pain 2 (4.34%), loss of taste 16 (34.78%), loss of smell 20 (43.47%), nasal congestion 29 (63.04%), sore throat 20 (43.47%), rhinorrhea 9 (19.56%), vomiting 6 (13.04%), diarrhea 9 (19.56%). Other study showed that COVID-19-positive patients

smell and taste dysfunction appeared among 75(37.5%) patients. Only smell dysfunction occurred in 57.0% of patients, and taste dysfunction appears in 34.0% patients.<sup>[21]</sup> (Figure 1)

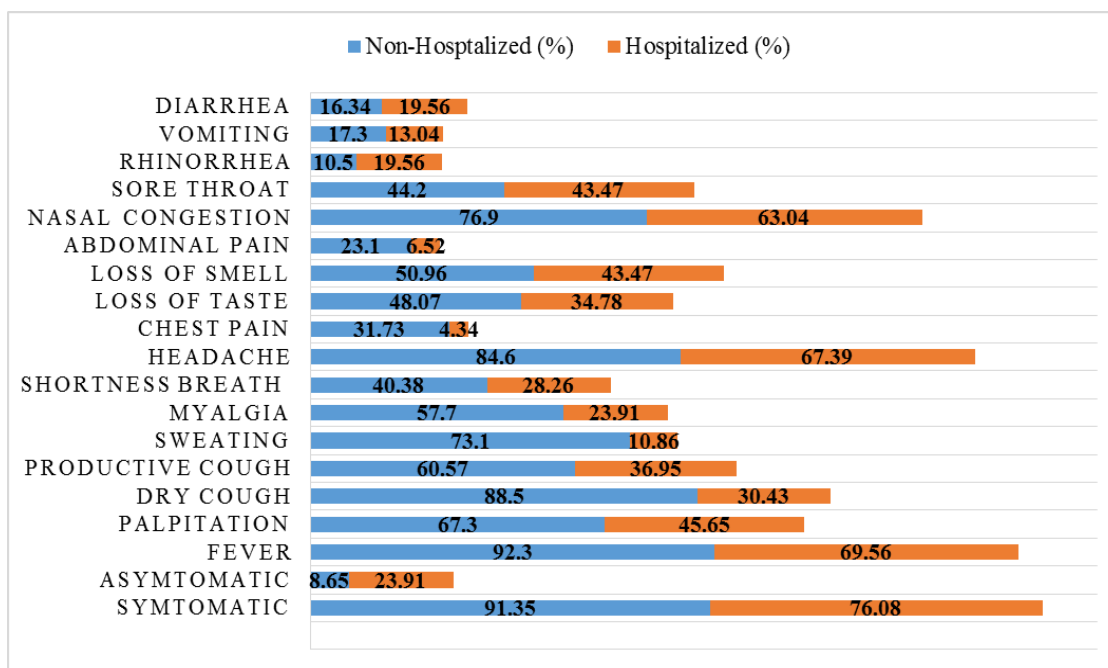


Figure 1: Symptoms Profile of non-hospitalized and hospitalized Covid-19 patients.

Table 2: Baseline of Laboratory Parameters of Covid-19 Patients (n=150)

Parameter	Non Hospitalized N=104 (Median) (%)	Hospitalized N=46 (Median)	Normal Range
<b>Hemoglobin (gm/dl)</b> Decreased n (%)	<b>14.80</b>	<b>12.9</b> 16 (34.7)	<b>12-18</b>
<b>Serum Creatinine (mg/dl)</b> Increased n (%)	<b>0.92</b> -	<b>0.89</b> 2 (4.34)	<b>0.57-1.25</b>
<b>Serum Urea (mg/dl)</b> Increased n (%)	<b>28.40</b> -	<b>25.7</b> 3 (6.5)	<b>17-43</b>
<b>Serum Bilirubin (mg/dl)</b> Increased n (%)	<b>0.80</b> -	<b>0.60</b> 2 (4.34)	<b>0.3-1.2</b>
<b>D-Dimer (ug/L)</b> Increased n (%)	<b>450</b> 6 (5.76)	<b>487</b> 13 (28.26)	<b>0-550</b>
<b>CRP (mg/dl)</b> Increased n (%)	<b>5.21</b> 8 (7.69)	<b>5.66</b> 11 (23.9)	<b>&lt;6</b>
<b>Sodium (mmol/L)</b> Increased n (%) Decreased n (%)	<b>139</b> 3 (2.88) -	<b>141</b> 2 (4.34) 5 (10.86)	<b>136-145</b>
<b>Potassium (mmol/L)</b> Increased n (%) Decreased n (%)	<b>4.10</b> - -	<b>4.3</b> 4 (8.69) 3 (6.5)	<b>3.5-5.1</b>
<b>ALT (U/L)</b> Increased n (%)	<b>24.50</b> -	<b>29</b> 18 (39.1)	<b>7-55</b>
<b>AST (U/L)</b> Increased n (%)	<b>26</b> -	<b>29.5</b> 8 (17.39)	<b>10-40</b>
<b>WBC (<math>\times 10^3/\mu\text{l}</math>)</b> Increased n (%) Decreased n (%)	<b>7.80</b> 14 (13.46) -	<b>6.70</b> 9 (19.5) 3 (6.52)	<b>4-11</b>

<b>Platelets (<math>\times 10^3/\text{ul}</math>)</b>	<b>290</b>	<b>261</b>	<b>150-450</b>
Decreased n (%)	5 (4.80)	17 (36.9)	
HCT (%)	43.55	42.9	37-54
Neutrophil (%)	63	59	<b>40-75</b>
<b>Lymphocyte (%)</b>	29.90	27.80	<b>20-50</b>
Increased n (%)	-	7 (15.21)	
Monocyte (%)	6.10	5.9	<b>2-10</b>
Eosinophil (%)	2.50	2.80	<b>1-6</b>
Basophil (%)	0.200	0.250	<b>&lt;1</b>
<b>Serum Ferritin (ng/ml)</b>	<b>92</b>	<b>90</b>	<b>30-300</b>
Increased n (%)	9 (8.65)	10 (21.7)	
Decreased n (%)	-	4 (8.69)	

All values expressed as number (%); median and IQR. CRP: C-reactive protein; ALT: Alanine transaminase; AST: Aspartate aminotransferase; WBC: White blood cell; HCT: Hematocrit test.

After testing positive for covid-19, they tested their blood for various parameters as per the doctor advice. In non-hospitalized patients, reports are presented with median like hemoglobin (gm/dl) 14.80; serum creatinine (mg/dl) 0.92; serum urea (mg/dl) 28.40; serum bilirubin (mg/dl) 0.80; D-Dimer (ug/L) 450; C-reactive protein (mg/dl) 5.21; Sodium (mmol/L) 139; potassium (mmol/L) 4.10; ALT (U/L) 24.50; AST (U/L) 26; WBC ( $\times 10^3/\text{ul}$ ) 7.80; Platelets ( $\times 10^3/\text{ul}$ ) 260; HCT (%) 43.55; Neutrophil (%) 63; Lymphocyte (%) 29.90; Monocyte (%) 6.10; Eosinophil (%) 2.50; Basophil (%) 0.200. Serum Ferritin (ng/ml) 92. (Table 2)

In hospitalized patients, we found abnormalities in laboratory parameters such as hemoglobin (gm/dl) decreased in 16 (34.7%) patients, serum creatinine (mg/dl) increased in 2 (4.34%), serum urea (mg/dl) increased 3 (6.5%), serum bilirubin (mg/dl) increased in 2 (4.34%), D-Dimer (ug/L) increased in 13 (28.26%), CRP (mg/dl) increased 11 (23.9%), Sodium (mmol/L) increased 2 (4.34%) and decreased in 5 (10.86%), Potassium (mmol/L) increased in 4 (8.69%) and decreased in 3 (6.5%), ALT (U/L) increased in 18 (39.1%), AST (U/L) increased in 8 (17.39%), WBC ( $\times 10^3/\text{ul}$ ) increased in 9 (19.5%) and decreased in 3 (6.5%), Platelet ( $\times 10^3/\text{ul}$ ) decreased in 17 (36.9%), Serum ferritin (ng/ml) increased in 10 (21.7%) and decreased in 4 (8.69%). (Table 2)

**Table 3: Comparison of present study with published descriptive studies on covid-19 Hospitalized Patients**

Study	Guan <sup>14</sup> (n=1099)	Chen <sup>15</sup> (n=99)	Huang <sup>16</sup> (n=41)	Current Study (n=46)
Age (year)	47	55.5	49	45.12
Males, n (%)	637 (58.1)	67 (68)	30 (73)	27 (58.69)
Smoking History	158 (14.6)	NR	3 (7)	5 (10.86)
<b>Comorbidities</b>		50 (51)		NR
Any	261 (23.7)	40 (40)	13 (32)	10 (21.73)
Cardiovascular	27 (2.5)	1 (1)	6 (15)	NR
Neurological	15 (1.4)	NR	NR	26 (56.52)
Hypertension	165 (15)	11 (11)	6 (15)	NR
Digestive system Disease	23 (2.1)	13 (13)	1 (2)	10 (21.73)
Endocrine system Disease	81 (7.4)	NR	8 (20)	NR
Obesity	NR	82 (83)	NR	32 (69.56)
Fever, n (%)	975 (88.7)	81 (82)	40 (98)	19 (41.30)
Cough, n (%)	745 (67.8)	5 (5)	31 (76)	29 (63.04)
Nasal Symptoms	153 (13.9)	23 (23)	NR	9 (19.56)
Diarrhea, n (%)	42 (3.8)	23 (23)	1 (3)	3 (6.52)
Other Disease n (%)	173 (15.74)	75 (76)	12 (29)	7 (15.21)
Oxygen therapy	454 (41.3)		27 (66)	
<b>Drug History</b>		Antivirals (76)		Paracetamol (45.65)
	Oseltamivir (35.8)	Anti fungal(15)	Antivirals (93)	Antihistamine (63.04)
	Antifungals (2.8)	Steroids (19)	Antibiotics (100)	Oral Vit-C (69.56)
	Steroids (18.6)	Antibiotics(71)	Steroids (22)	Antibiotics (58.69)
		IVIg (27)		Antifungal (45.6)

NR: Not Recorded

## DISCUSSION

SARS-CoV-2 is one of the most virulent pathogens causing severe acute respiratory illness along with MERS and swine flu in humans. Initial case studies from China demonstrated COVID-19 to be a respiratory illness with a spectrum ranging from mild illness (81%), severe respiratory distress (14%) and critical illness in five per cent with a case fatality rate of around 2.4 percent.<sup>[13]</sup> Table 3 compares our study with other studies in different aspects. This prospective study demonstrated the clinical profile and demographic profile of non-hospitalized and hospitalized COVID-19 patients from Bangladesh. Our results suggest that clinical characteristics of COVID-19 may differ in non-hospitalized patients than hospitalized patients. The most common signs and symptoms of COVID-19 illness, present both hospitalized patients and non-hospitalized patients have included cough, fever, and nasal symptoms. In this group of mostly mild to moderately ill patients, at least they have fever 96 (92.3%), dry cough 92 (88.5%), loss of taste 96 (92.3%), loss of smell 100 (96.2%) symptoms. In our study we found that, after being corona positive, in non-hospitalized patients they used to take some medicine as per doctor's advice and also they drank ginger, garlic, tulsi leaf juice and regular tea. Our study we saw that non hospitalized patients they take medicine like paracetamol 40 (238.46%), antihistamine 80 (76.9), oral vitamin-c 87 (83.65%), and antibiotics 70 (67.30%) and hospitalized patients they take paracetamol 21 (45.65%), antihistamine 29 (63.04), oral vitamin-c 32 (69.50%), and antibiotics 27 (58.69%), antifungal 21 (45.6%) and also other study they used oseltamivir, antifungals, steroids, antivirals (Table 3). Compared to previously published reports from other countries (Table 3), the mean age of our patients was significantly lower 44.42 years' vs 47 years, 55.5 years and 49 years.<sup>[14-16]</sup>

Within hospitalized patients among published articles, 58% of the patients were asymptomatic at admission; all of them were followed closely, and only two out of 66 patients became subsequently symptomatic during the hospital stay. They found abnormalities in laboratory parameters in 25 per cent of our asymptomatic patients.<sup>[17]</sup> In another study from China, 5 of the 24 asymptomatic COVID-19 patients developed symptoms during the hospital stay. Varied laboratory abnormalities were observed.<sup>[18]</sup> In hospitalized patients, another observation was an increased incidence of severe COVID-19 disease manifestations in patients with underlying chronic diseases like hypertension, diabetes and cardiovascular disease and they have abnormal laboratory parameters.<sup>[14-17,19]</sup> We conducted our study in non-hospitalized and hospitalized patients. We found there is no significant abnormalities in laboratory test in non-hospitalized patients but there are some significant abnormalities in laboratory test in hospitalized and this is also being seen in other studies. Comorbidities were present both non-hospitalized and hospitalized patients such as hypertension, diabetes, hypothyroidism, coronary

heart disease. In hospitalized patients it took an average of 12-14 days to become negative after being positive and hospitalized patients it averages 14-16 days to become negative. After testing negative most of the patients suffering from post covid-19 fatigue. In non-hospitalized patients they have chronic tiredness/sleepiness 35 (33.36%), irritability 47 (45.19%), slow moving and reduced immune system function 32 (30.76). But this post covid-19 fatigue is being observed a little more among hospitalized patients such as tiredness/sleepiness 21 (45.65), irritability 27 (58.69%), slow motion & response 16 (34.7%), poor concentration 9 (19.56%), reduced immune system function 15 (32.60%), short term memory problem 4 (8.69%) (Table 1). Fatigue was reported in 28% to 87% of individuals after coronavirus infection. This complication was observed in both hospitalized and non-hospitalized patients, and in those admitted to in-patient wards and the ICU. Seven studies assessed the association between fatigue and COVID-19 severity; four found greater fatigue in severely ill individuals, and one study reported greater fatigue or physical decline with longer durations of hospital stay.<sup>[20]</sup>

## CONCLUSION

In summary, our findings suggest that the demographic and clinical characteristics of non-hospitalized adults with COVID-19 illness differ from hospitalized patients. One thing we noticed in our study is that those who have comorbidities have more post covid-19 fatigue. Fatigue was appeared among mild and moderate cases of covid-19 and also suggest that rehabilitation could play a key role in reducing post-COVID-19 fatigue. Future studies on outpatient populations with COVID-19 are needed to better understand the epidemiology and manifold characteristics of COVID-19 illness.

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**Conflicts of Interest:** None.

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