Original Research Article

Clinical & Demographical Status of Hospitalized and Non-Hospitalized Covid-19 Cases: A Multicenter Hospital Based Study in Bangladesh

Md. Ashiqur Rahman[1], Sadia Islam[2], Shohanur Rahaman[3], Md. Raihanul Islam[4], Md. Sujon Ali[5]*

1 Md. Ashiqur Rahman, Lab. Scientific Officer, Novus Clinical Research Services Limited, Bangladesh

2 Sadia Islam, Junior Scientific Officer, Bangladesh Specialized Hospital Limited (BSHL), Bangladesh

3 Shohanur Rahaman, Scientific Officer, Diabetic Association ofBangladesh (BADAS), Bangladesh

4 Md. Raihanul Islam, Lab. Scientific Officer, Novus Clinical Research Services Limited, Bangladesh

5 Md. Sujon Ali, Senior Executive, Joint Venture Medical Industry (JMI), Bangladesh

***Corresponding author**: *Md. Ashiqur Rahman, Lab. Scientific Officer, Novus Clinical Research Services Limited (NCRSL), E mail: ararashiqur@gmail.com, , Orchid Id: 0000-0002-9430-5547*

Abstract: **Background:** The COVID-19 pandemic has had a profound impact on global health, with millions of individuals affected by the viral infection. Among the vulnerable populations, diabetic patients face a higher risk of severe illness and complications when exposed to the SARS-CoV-2 virus. Bangladesh, like many other countries, has witnessed a significant number of COVID-19 cases, raising concerns about the management and outcomes of diabetic patients during this pandemic. This study highlights clinical and demographical experiences in hospitalized and non-hospitalized covid-19 patients in Bangladesh. **Methodology**: This descriptive cross-sectional study was from May 2021 to August 2022. Five selected government hospitals and six private hospitals located in the Dhaka Division were included in this study. The diagnosis of SARS-CoV-2 infection was confirmed by real-time reverse transcriptase polymerase chain reaction (RT-PCR) test. **Results:** Data of 416 non-hospitalized patients with COVID-19 were recorded and analyzed. The mean age of the patients was 44.42 ± 14.20 year with 336 males and 80 females. Comorbidities were present of which hypertension 38.5%, diabetes 32.7%. A significant proportion of patients had symptomatic such as fever 92.3%, dry cough 88.5%, loss of taste 48.07%, loss of smell 50.96% was the most common. Majority of the patients were managed with supportive treatment with paracetamol 38.46%, antihistamine 76.9%, oral vitamin-c 83.65%, and antibiotics 67.30%. It took an average of 12-14 days for them to become negative. And hospitalized patients, of whom 131 were males and 53 were female. Overall mean age was 45.12±13.80 years. They have some kind of comorbidities present like diabetes mellitus 45.65%, hypertension 56.52%, hyperlipidemia 17.39%, coronary heart disease 21.73% etc. In addition, they have taken some medicine as per the doctors advise such as paracetamol 45.65%, antihistamine 63.04, oral vitamin c 69.56%, antibiotics 58.69%, antifungal 45.6% and oxygen therapy 28 (15.21%). Some changed laboratory parameters were observed. **Conclusion:** We concluded that laboratory results from non-hospitalized patients did not show any major alterations or abnormalities, but laboratory results from hospitalized patients did show substantial changes. There is a post-COVID-19 tiredness warning for them.

Keywords: Covid-19, RT-PCR, SARS-Cov-2, Covid-19 Fatigue.

1. Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the seventh human coronavirus, was discovered in Wuhan, Hubei province, China, during the recent epidemic of pneumonia in January 2020[1]. 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

Received: 2 June 2023 Accepted: 6 August 2023 Available online: 8 Novermber 2023

2019" (COVID-19) by WHO[2]. 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[3].Bangladesh, like many other countries, has witnessed a significant number of COVID-19 cases, raising concerns about the management and outcomes of diabetic patients during this pandemic. The concept of coronavirus disease 2019 (COVID-19)-related cytokine storm syndrome (COVID-CSS) emerged early in the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic to explain why some patients exposed to this virus become critically ill with acute respiratory distress syndrome, multi-organ failure, and death[4].

The new coronavirus can affect people of any age. However, data from research carried out around the world show that those who are commonly impacted are typically older and middle-aged, with an age range of 65 to 85. In China, a novel coronavirus affected people between the ages of 10 and 80, with the typical age of 30-79 years experiencing regular illness. Italy reported an age group of 18 to ≥70 years with a median age of ≥50 years, while the USA being the most affected country globally, reported age range of 19 to ≥85 with a median age of 65-84 years. Globally, the coronavirus has a somewhat higher gender predilection for males than for females[5]. The three symptoms that were most frequently reported at the beginning of an infection were fever (98.6%), weariness (69.6%), and 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%)[6, 7]. 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%)[3–4], [8–9]. Patients with COVID-19 typically have lower median hemoglobin values, lower lymphocyte and eosinophil counts, and higher WBC and neutrophil counts as well as higher serum levels of CRP, LDH, AST, and ALT[10].

Although the main target of coronavirus infection is the lung, the wide distribution of ACE2 receptors in organs[11] may lead to cardiovascular, gastrointestinal, kidney, liver, central nervous system and ocular damage that has to be closely monitored[12]. The majority of COVID-19 patients ultimately recover, however according to the most recent research, 10% to 20% of patients may continue to have mid- or long-term consequences after their original sickness has passed. Post COVID-19 condition, also referred to as "long COVID", is the collective name for these short- and long-term effects. It's vital to keep in mind that, like COVID-19, post-COVID-19 condition is still developing. In order to better understand the cause, symptoms, and impact of post-COVID-19 conditions, researchers are collaborating with patients who have developed these conditions[13].

1.1 Aim of the Study

To evaluate the clinical demographical outcomes of hospitalized and non-hospitalized covid-19 patients in Bangladesh and their vaccination status.

2. Methodology

2.1 Study Population and Settings

The study was conducted as a descriptive cross-sectional study from May 2021 to October 2022. Five selected government hospitals and six private hospitals located in the Dhaka Division. 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.

2.2 Inclusion Criteria

(1) Covid-19 positive by RT-PCR.
(2)Age between 15 and 80 years.
(3)Tested different types of blood parameters.
(4)Hospitalized and non-hospitalized Covid-19 patients

2.3 Exclusion Criteria

(1) Newborn babies of covid-19 positive mothers
(2) Patients who don't share their information and test reports
(3) Patients in NICU (Neonatal) and PICU (Pediatric).

2.4 Data Collection

First of all, we collect their age, sex, and phone number from the hospital database before contacting them at first on a mobile device. We only included those in this study by contacting the positive patients, and among them only those who conducted various blood parameter testing. Clinical and laboratory parameters, demographic information, medical history (including comorbidities), sign and symptom information, and consent form information were all obtained with their consent. A self-administrated pre-tested questionnaire prepared in Bangla and English language was used for data collection. The questionnaire consisted of close ended questions, multiple-choice and yes/no questions.

2.5 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.

3. Results

Out of total 600 patients, 416 patients were non- hospitalized and 184 patients were hospitalized. Among non-hospitalized patients, of whom 336 (80.8%) were males and 80 (19.2%) were female. Overall mean age was 44.41±14.20 years. Maximum cases 272 (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 84 (20.19%) and married 332 (79.80%). 184 (44.2%) were smoker. They have some kind of comorbidities present like diabetes mellitus 136 (32.7%), hypertension 160 (38.5%), hyperlipidemia 48 (11.5%), hypothyroidism 64 (15.4%), coronary heart disease 24 (5.76%), chronic respiratory disease 8 (1.92%), severe disease 28 (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 160 (38.46%), antihistamine 320 (76.9), oral vitamin c 348 (83.65%), antibiotics 280 (67.30). They have the average BMI 23.5 kg/m2.

And hospitalized patients, of whom 131 (71.20%) were males and 53 (28.80%) were female. Overall mean age was 45.12±13.80 years. Maximum cases 108 (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 32 (17.39%) and married 152 (82.60%). 76 (41.30%) were smoker. They have some kind of comorbidities present like diabetes mellitus 84 (45.65%), hypertension 104 (56.52%), hyperlipidemia 32 (17.39%), hypothyroidism 8 (4.34%), coronary heart disease 40 (21.73%), chronic respiratory disease 4 (2.17%), severe disease 8 (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 84 (45.65%), antihistamine 116 (63.04), oral vitamin-c 128 (69.56%), antibiotics 108 (58.69%), antifungal 84 (45.6%) and oxygen therapy 28 (15.21%). They have the average BMI 23.9 kg/m2. (Table 1)

Table 1 Baseline characteristics of Non Hospitalized and Hospitalized Covid-19 Patients (n=600).

Parameters	Non hospitalized n=416 (%)	Hospitalized n=184 (%)
Gender		
Male	336 (80.8)	131 (71.20)
Female	80 (19.2)	53 (28.80)
Age Group in Years	**44.42 ± 14.20**	**45.12 ± 13.80**
20-40	272 (65.5)	108 (58.69)
41-60	88 (21.2)	56 (30.43)
61-85	56 (13.5)	20 (10.86)
Marital Status		
Unmarried	136 (32.7)	60 (32.60)
Married	280 (67.3)	124 (67.39)
Smoking	**184 (44.2)**	**76 (41.30)**
BMI	**23.5**	**23.9**
Nutritional status		
Under weight	09 (2.16)	2 (1.10)
Normal weight	229 (55.04)	122 (66.30)
Pre obese	112 (26.93)	37 (20.10)
Obese	66 (15.86)	23 (12.5)
Comorbidities		
Diabetes	136 (32.7)	84 (45.65)
Hypertension	160 (38.5)	104 (56.52)
Hyperlipidemia	48 (11.5)	32 (17.39)
Hypothyroidism	64 (15.4)	08 (4.34)
Coronary Heart Disease	24 (5.76)	40 (21.73)
Chronic Respiratory Disease	08 (1.92)	04 (2.17)
Other Disease	28 (6.73)	08 (4.34)
Post Covid-19 Fatigue		
Tiredness/Sleepiness	140 (33.36)	84 (45.650
Irritability	188 (45.19)	108 (58.69)
Slow motion & response	-	64 (34.7)
Poor concentration	-	36 (19.56)
Reduced immune system Function	128 (30.76)	60 (32.60)
Short term memory problem	-	16 (8.69)
Muscle Weakness	-	-
Drug Received		84 (45.65)
Paracetamol	160 (38.46)	116 (63.04)
Antihistamine	320 (76.9)	128 (69.56)
Oral Vitamin C	348 (83.65)	108 (58.69)
Antibiotics	280 (67.30)	84 (45.6)
Antifungal	-	28 (15.21)
Oxygen Therapy	-	

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 380 (91.35%) and the asymptomatic 36 (08.65%). Symptoms such as fever 384 (92.3%), palpitation 280 (67.3%), dry cough 368 (88.5%), productive cough 252 (60.57%), sweating 304 (73.1%), myalgia 240 (57.7), shortness of breath 88 (40.38%), headache 352 (84.6%), chest pain 132 (31.73%), loss of taste 200 (48.07%), loss of smell 212 (50.96%), abdominal pain 96 (23.1%), nasal congestion 320 (76.9%), sore throat 184 (44.2%), rhinorrhea 44 (10.5%), vomiting 72 (17.3%), diarrhea 68 (16.34%).

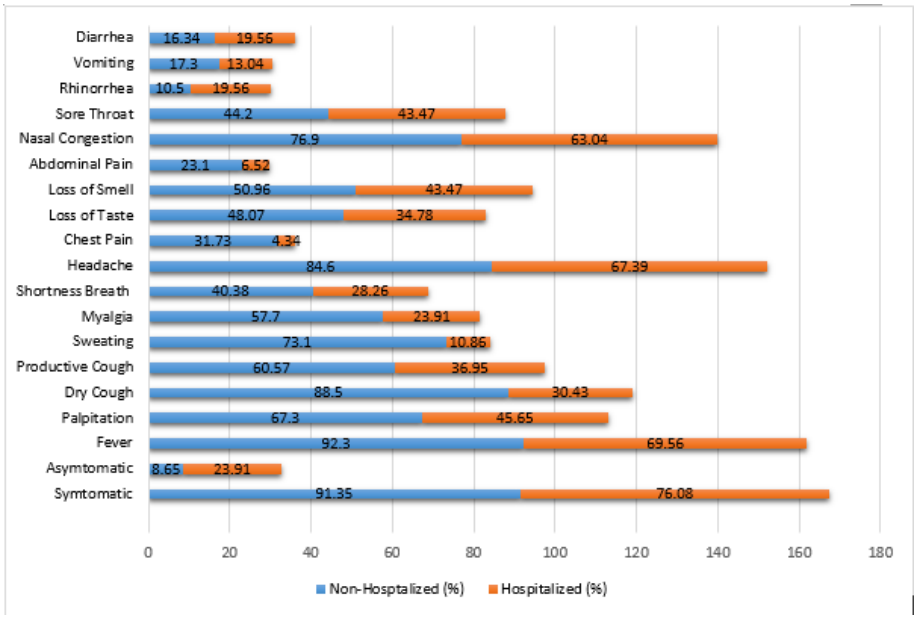

Figure 1 Distribution of the respondents on the basis symptoms profile (n=600).

In hospitalized patients, majority of the patients were symptomatic 140 (76.08%) and the asymptomatic 44 (23.91%). Symptoms such as fever 128 (69.56%), palpitation 84 (45.65%), dry cough 56 (30.43%), productive cough 68 (36.95%), sweating 20 (10.86%), shortness of breath 52 (28.26%), headache 124 (67.39%), chest pain 08 (4.34%), loss of taste 64 (34.78%), loss of smell 80 (43.47%), nasal congestion 116 (63.04%), sore throat 80 (43.47%), rhinorrhea 36 (19.56%), vomiting 24 (13.04%), diarrhea 36 (19.56%). Other study showed that COVID-19-positive patients smell and taste dysfunction appeared among 300 (37.5%) patients. Only smell dysfunction occurred in 57.0% of patients, and taste dysfunction appears in 34.0% patients.

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 (×10^3/ul) 7.80; Platelets (×10^3/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 64 (34.7%) patients, serum creatinine (mg/dl) increased in 8 (4.34%), serum urea (mg/dl) increased 12 (6.5%), serum bilirubin (mg/dl) increased in 08 (4.34%), D-Dimer (ug/L) increased in 52 (28.26%), CRP (mg/dl) increased 44 (23.9%), Sodium (mmol/L) increased 08 (4.34%) and decreased in 20 (10.86%), Potassium (mmol/L) increased in 16 (8.69%) and decreased in 12 (6.5%), ALT (U/L) increased in 72 (39.1%), AST (U/L) increased in 32 (17.39%), WBC (×10^3/ul) increased in 36 (19.5%) and decreased in 12 (6.5%), Platelet (×10^3/ul) decreased in 68 (36.9%), Serum ferritin (ng/ml) increased in 40 (21.7%) and decreased in 16 (8.69%). (Table 2)

From the vaccination status of the participating in our study we saw that, all received First Dose of COVID-19 vaccine among AstraZeneca 387 (64.5%), Sino pharm 177 (29.5%), Pfizer 23 (3.83%) and Moderna 13 (2.16%). 587 (97.84%) received Second Dose among them AstraZeneca 374 (62.3%), Sino pharm 182 (30.3%), Pfizer 14 (2.33%) and Moderna 14 (2.33%). Also 384 (64%) respondents received Booster Dose among them Moderna 141 (23.5%), Sino Pharm 92 (15.3%), AstraZeneca 87 (14.5%) and Pfizer 64 (10.67%). Till this time 216 people have not received booster dose.

Table 2 Laboratory Parameters among Covid-19 Patients (n=600).

Parameter	Non Hospitalized n=416 (Median) (%)	Hospitalized n=184 (Median)	Normal Range
Hemoglobin (gm/dl)	**14.80**	**12.9**	**12-18**
Decreased n (%)		64 (34.7)	
Serum Creatinine (mg/dl)	**0.92**	**0.89**	**0.57-1.25**
Increased n (%)	-	08 (4.34)	
Serum Urea (mg/dl)	**28.40**	**25.7**	
Increased n (%)	-	12 (6.5)	**17-43**
Serum Bilirubin (mg/dl)	**0.80**	**0.60**	
Increased n (%)	-	08 (4.34)	**0.3-1.2**
D-Dimer (ug/L)	**450**	**487**	
Increased n (%)	24 (5.76)	52 (28.26)	**0-550**
CRP (mg/dl)	**5.21**	**5.66**	
Increased n (%)	32 (7.69)	44 (23.9)	**<6**
Sodium (mmol/L)	**139**	**141**	
Increased n (%)	13 (2.88)	08 (4.34)	**136-145**
Decreased n (%)	-	20 (10.86)	
Potassium (mmol/L)	**4.10**	**4.3**	
Increased n (%)	-	16 (8.69)	**3.5-5.1**
Decreased n (%)	-	12 (6.5)	
ALT (U/L)	**24.50**	**29**	
Increased n (%)	-	72 (39.1)	**7-55**
AST (U/L)	**26**	**29.5**	
Increased n (%)	-	32 (17.39)	**10-40**
WBC (×10^3/ul)	**7.80**	**6.70**	
Increased n (%)	56 (13.46)	36 (19.5)	**4-11**
Decreased n (%)	-	12 (6.52)	
Platelets (×10^3/ul)	**290**	**261**	
Decreased n (%)	20 (4.80)	68 (36.9)	**150-450**
HCT (%)	43.55	42.9	
Neutrophil (%)	63	59	37-54
Lymphocyte (%)	29.90	27.80	**40-75**
Increased n (%)	-	28 (15.21)	**20-50**
Monocyte (%)	6.10	5.9	
Eosinophil (%)	2.50	2.80	**2-10**
Basophil (%)	0.200	0.250	**1-6**
Serum Ferritin (ng/ml)	**92**	**90**	**<1**
Increased n (%)	36 (8.65)	40 (21.7)	**30-300**
Decreased n (%)	-	16 (8.69)	

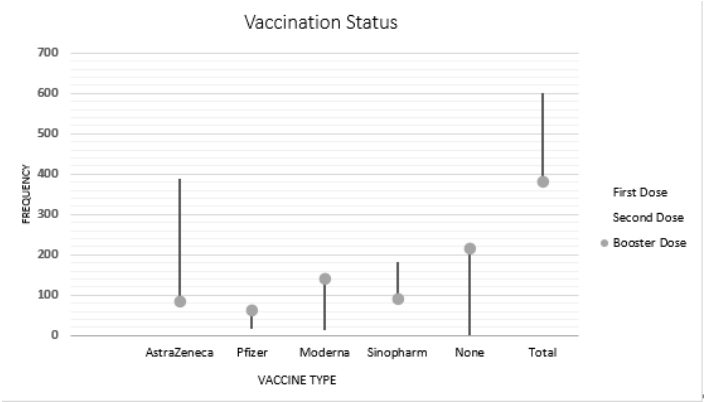

Figure 2 Distribution of the respondent by COVID-19 vaccination status and type of vaccine (n=600).

Table 3 Comparison of present study with published descriptive studies on covid-19.

hospitalized patients

Study	Guan[14] (n=1099)	Chen[15] (n=99)	Huang[16] (n=41)	Current Study (n=184)
				45.12
		55.5		108 (58.69)
	47	67 (68)	49	20 (10.86)
Age (year)	637 (58.1)	NR	30 (73)	
Males, n (%)	158 (14.6)		3 (7)	NR
Smoking History		50 (51)		40 (21.73)
Comorbidities	261 (23.7)	40 (40)	13 (32)	NR
Any	27 (2.5)	1 (1)	6 (15)	104 (56.52)
Cardiovascular	15 (1.4)	NR	NR	NR
Neurological	165 (15)	11 (11)	6 (15)	
Hypertension	23 (2.1)		1 (2)	40 (21.73)
Digestive system		13 (13)		
Disease	81 (7.4)		8 (20)	NR
Endocrine system		NR		128 (69.56
Disease	NR	82 (83)	NR	76 (41.30)
	975 (88.7)	81 (82)	40 (98)	116 (63.04)
Obesity	745 (67.8)	5 (5)	31 (76)	36 (19.56)
Fever, n (%)	153 (13.9)	23 (23)	NR	12 (6.52)
Cough, n (%)	42 (3.8)	23 (23)	1 (3)	
Nasal Symptoms	173 (15.74)		12 (29)	28 (15.21)
Diarrhea, n (%)		75 (76)		
Other Disease n	454 (41.3)		27 (66)	Paracetamol (45.65)
(%)		Antivirals (76)		Antihistamine
Oxygen therapy	Oseltamivir (35.8)	Anti fungal(15)	Antivirals (93)	(63.04)
Drug History	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 Recoded

4. Discussion

Along with MERS and swine flu, SARS-CoV-2 is one of the most virulent infections causing severe acute respiratory disease in humans. Early case investigations from China showed that COVID-19 is a respiratory infection with a spectrum of symptoms that range from moderate sickness (81%), severe respiratory distress (14%), and critical illness in 5% of cases, with a case fatality rate of about 2.4 percent[13]. Table 4 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 384 (92.3%), dry cough 368 (88.5%), loss of taste 384 (92.3%), loss of smell 400 (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 160 (38.46%), antihistamine 320 (76.9), oral vitamin-c 348 (83.65%), and antibiotics 280 (67.30%) and hospitalized patients they take paracetamol 84 (45.65%), antihistamine 116 (63.04), oral vitamin-c 128 (69.50%), and

antibiotics 108 (58.69%), antifungal 84 (45.6%) and also other study they used oseltamivir, antifungals, steroids, antivirals (Table 4). Compared to previously published reports from other countries (Table 4), the mean age of our patients was significantly lower 44.42 years' vs 47 years, 55.5 years and 49 years[14, 16].

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[17]. In another study from China, 5 of the 24 asymptomatic COVID-19 patients developed symptoms during the hospital stay. Varied laboratory abnormalities were observed[18]. 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.[14–17, 19] 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 140 (33.36%), irritability 188 (45.19%), slow moving and reduced immune system function 128 (30.76). But this post covid-19 fatigue is being observed a little more among hospitalized patients such as tiredness/sleepiness 84 (45.65), irritability 108 (58.69%), slow motion & response 64 (34.7%), poor concentration 36 (19.56%), reduced immune system function 60 (32.60%), short term memory problem 16 (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[20, 21]; four found greater fatigue in severely ill individuals, and one study reported greater fatigue or physical decline with longer durations of hospital stay[22–24].

5. Conclusion

In summary, our findings suggest that the demographic and clinical characteristics of non-hospitalized adults with COVID-19 illness differ from hospitalized patients. In hospitalized patients, we found abnormalities in laboratory parameters, majority of the patients were severe symptomatic and it took more time for them to test negative for covid-19. 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.

Acknowledgement

We would like to express our gratitude to the covid-19 patients who participated in our study and their family members and the hospitals staff who helped us in various ways.

Informed Consent

Informed consent was obtained from all individuals included in this study.

References

1. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X, Cheng Z. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. The lancet. 2020 Feb 15;395(10223):497-

506.
2. Guo YR, Cao QD, Hong ZS, Tan YY, Chen SD, Jin HJ, Tan KS, Wang DY, Yan Y. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak–an update on the status. Military medical research. 2020 Dec;7(1):1-0.
3. Liu K, Fang YY, Deng Y, et al.: Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei province. Chin Med J (Engl). 2020, 133:1025-1031.
4. Shi H, Han X, Jiang N, et al.: Radiological findings from 81 patients with COVID-19 pneumonia in Wuhan, China: a descriptive study. Lancet Infect Dis. 2020, 20:425-434.
5. Asghar MS, Kazmi SJ, Khan NA, Akram M, Khan SA, Rasheed U, Hassan M, Memon GM. Clinical profiles, characteristics, and outcomes of the first 100 admitted COVID-19 patients in Pakistan: a single-center retrospective study in a tertiary care hospital of Karachi. Cureus. 2020 Jun 20;12(6).
6. COVID-19 coronavirus pandemic. (2020). Accessed: June 11, 2020:
7. Li Q, Guan X, Wu P, et al.: Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. N Engl J Med. 2020, 382:1199-1207
8. Wang D, Hu B, Hu C, et al.: Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. JAMA. 2020, 323:1061-1069
9. Fang L, Karakiulakis G, Roth M: Are patients with hypertension and diabetes mellitus at increased risk for COVID-19 infection?. Lancet Respir Med. 2020, 8:21
10. Lippi G, Plebani M. The critical role of laboratory medicine during coronavirus disease 2019 (COVID19) and other viral outbreaks. Clin Chem Lab Med. 2020;58(7):1063–1069.
11. Hamming I, Timens W, Bulthuis ML, et al. Tissue distribution of ACE2 protein, the functional receptor for SARS coronavirus. A first step in understanding SARS pathogenesis. J Pathol. 2004;203(2):631–637.
12. Renu K, Prasanna PL, Valsala Gopalakrishnan A. Coronaviruses pathogenesis, comorbidities and multi-organ damage - a review. Life Sci. 2020;255: 117839.
13. 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; 323: 1239-42.
14. 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; 382: 1708-20
15. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: A descriptive study. Lancet 2020; 395: 507-13
16. 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. Lancet 2020; 395: 497-506
17. Soni SL, Kajal K, Yaddanapudi LN, Malhotra P, Puri GD, Bhalla A, Singh MP, Sehgal IS, Koushal V, Varma N, Biswal M. Demographic & clinical profile of patients with COVID-19 at a tertiary care hospital in north India. The Indian journal of medical research. 2021 Jan;153(1-2):115.
18. Hu Z, Song C, Xu C, Jin G, Chen Y, Xu X, et al. Clinical characteristics of 24 asymptomatic infections with COVID-19 screened among close contacts in Nanjing, China. Sci China Life Sci 2020; 63: 706-11
19. Mohan A, Tiwari P, Bhatnagar S, Patel A, Maurya A, Dar L, Pahuja S, Garg R, Gupta N, Sahoo B, Gupta R. Clinico-demographic profile & hospital outcomes of COVID-19 patients admitted at a tertiary care centre in north India. The Indian journal of medical research. 2020 Jul;152(1-2):61.
20. Islam T, Akram A, Rahman MA, Ali MM, Islam MR, Saif MD. Molecular identification, clinical assessment, characterization of SARS-CoV-2 RT-PCR results: Insights into twenty-one months of COVID-19 pandemic in a single center in Bangladesh.
21. Shanbehzadeh S, Tavahomi M, Zanjari N, Ebrahimi-Takamjani I, Amiri-Arimi S. Physical and mental

health complications post-COVID-19: Scoping review. Journal of psychosomatic research. 2021 Aug 1; 147:110525

22. Akram A, Khan MJ, Rahman MA, Islam MR, Ali MM, Islam T, Akram L, Yusuf MA, Islam MT, Reza MA. Anosmia with or without Ageusia as a Presenting Symptom in COVID-19 Positive Patients: A Single Center Study at Dhaka in Bangladesh. Bangladesh Journal of Infectious Diseases. 2021;8(1):32-5.
23. World Health Organization. Coronavirus disease (COVID-19): post COVID-19 condition. World Health Organization, Geneva, Switzerland. https://www. who. int/news-room/questions-and-answers/item/coronavirus-disease-(covid-19)-post-covid-19-condition. Accessed. 2022 Aug;29.
24. Akram A, Islam MT, Rahman MA, Islam MR, Ali MM, Islam T, Akram L, Reza MA. The prevalence of asymptomatic COVID-19 cases in a single center and duration of viral clearance. Bangladesh Journal of Medical Microbiology. 2021 Jan 31;15(1):3-7.