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Original Article**Common Symptoms of Post COVID-19 Syndrome of Patients Attended in a Tertiary Care Hospital in Northern Part of Bangladesh**Rahman MA^{1*}, Hossain MZ², Montasir AA³, Shahin SI⁴, Uddula MA⁵, Hossain MF⁶, Chhetri PK⁷, Siddique MAK⁸

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Corresponding Author*Abstract**

Introduction: This study aimed to evaluate post-COVID symptom, risk factors, and their impact on patients' well-being, focusing on the continuation of symptoms after viral clearance and the appearance of new symptoms several months after recovery.

Materials and Methods: The study was conducted at Rafatullah Community Hospital, TMSS Medical College, Bogura, from April to November 2021, with a three-month follow-up period for post-COVID patients.

Results: This study involved 300 COVID-19 patients who received treatment from various hospitals and stayed at home. The majority (87%) reported fever as their symptoms, followed by fatigability (81.3%) and cough (78.3%). Fatigue was the most prevalent enduring symptom in the post-COVID-19 period, with 41.8% reporting fatigue 60 days after symptoms onset and 28% reporting it 90 days later. Shortness of breath was reported by 32.67% of patients after 12 weeks. Other symptom included sore throat, cough, and diarrhea.

Conclusion: COVID-19 patients may continue to experience symptoms post-recovery, highlighting the need to consider long-term effects such as increased patient morbidity, increased healthcare system demand, and financial resource loss.

Key Words: COVID-19, Fatigue, Longitudinal study Northern region, Post COVID-19 syndrome.

Introduction

COVID-19, induced by SARS COV-2, was first found in Wuhan, Hubei, China.¹ The World Health Organization labeled the illness a pandemic on March 11, 2020.¹ In 2 November 2020, Bangladesh's Directorate General of Health Services (DGHS) recorded 41,0988 cases and 5966 deaths.¹ On June 1, 2020, TMSS Medical College & Rafatullah Community Hospital (TMC & RCH) opened its COVID-19 unit, admitting its first patient on June 3. Most cases were severe, health personnel were inexperienced, and most treatment was symptomatic

during the first half of the first wave of COVID-19 (8 months). Post COVID syndrome was diagnosed in many hospitalized or home-treated patients who came to TMC & RCH in the second part of the first wave. Even moderate COVID-19 patients have persistent or new symptoms following recovery.^{2,3,4} Many COVID-19 patients died, although milder symptoms were more prevalent.^{3,4} According to research, 10% of patients had a three-week sickness, and others had symptoms for a month.⁵ Following an acute illness, multisystem disorders may occur. Neurocognitive

post-COVID (disorientation, nausea, dizziness, and loss of attention); autonomic (palpitations, chest pain, tachycardia); gastrointestinal (vomiting, diarrhea, and abdominal pain); respiratory (dyspnea, coughing, and throat pain); musculoskeletal (myalgias, arthralgias); and psychological-related (anxiety, depression) symptoms are described in the literature.^{5, 6} Reports further suggest that thyroid abnormalities detected during COVID-19 may persist post-COVID. Many studies of earlier respiratory virus pandemics show that symptoms persist after an acute outbreak, suggesting that post-COVID-19 syndrome is not new.^{7, 8} Data is lacking on the pathogenesis of persistent post-COVID-19 syndrome. One research connected mast cell activation to persistent symptoms.⁹ From weariness, cough, baldness, and shortness of breath to heart issues, stroke, renal failure, etc., the symptoms might vary. Hospitalized individuals with serious diseases had more of it.^{10, 11} Symptoms of acute COVID-19 infection are seldom documented. Patients with severe COVID-19 infections dominate the literature. Bangladesh's population, especially outside the city, has been little studied. Outside Dhaka, Bangladesh's outlying cities have diverse socioeconomic origins and lifestyles. Thus, this population's post-COVID symptom presentations should be thoroughly examined. Establishing post-COVID clinics will help study and characterize the disease's epidemiology, enabling appropriate patient treatment. It may also need reframing public health intervention, resource allocation, and policy formation. This research examined post-COVID-19 symptoms, risk factors, and patient well-being.

Materials and Methods

Study design and setting

The study, a prospective descriptive one, was conducted at Rafatullah Community Hospital, TMSS Medical College, Bogura, Bangladesh, and was approved ethically by the TMC Institutional Review Board.

Study period

The study collected data from April to November 2021 and monitored patients monthly for three visits after registration.

Study participants and eligibility criteria

This study involved randomly selecting patients who experienced COVID-19 and later visited the post-COVID-19 corner of RCH.

Inclusion criteria

The study included patients who tested positive for SARS-CoV-2 and were at least 18 years old, regardless of their symptoms during COVID-19.

Exclusion criteria

The study excluded patients under 18 and pregnant women. Study tools and techniques

Data was collected from patients using a structured questionnaire, with informed consent. COVID-19 severity was classified by initial symptomatology, following WHO's definition.

Study variables

The study categorized variables into socio-demographic factors, including patient age and sex, comorbidities, occupation, and smoking habits. Additional variables included symptoms during the positive phase, duration, hospital admission, length of stay, infection severity, persistent positivity after 14 days, and symptoms at the end of visits starting 12 weeks after diagnosis.

Statistical analysis

Data was collected daily using Microsoft Excel and analyzed using SPSS 28. Descriptive analysis was conducted on patients' socio-demographic characteristics.

Results

A study examined the post-COVID status of 300 patients in the post-COVID-19 corner of RCH, with a majority of men (56%) and women (44%) (Figure 1).

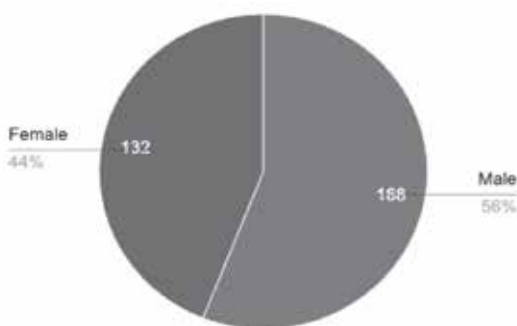


Figure-1: Gender distribution of Post COVID-19 affected patients (n=300)

The patients ages ranged from 18 years to 88 years, and had a mean age of 46.06 ± 15.07 (Figure 2).

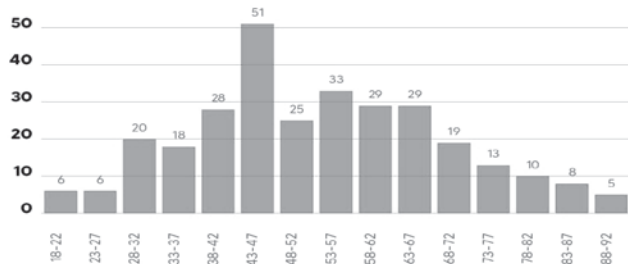


Figure-2: Age distribution of Post COVID-19 patients, (n=300)

Patients were mostly from Bogura Sadar Upazila (29.6%).

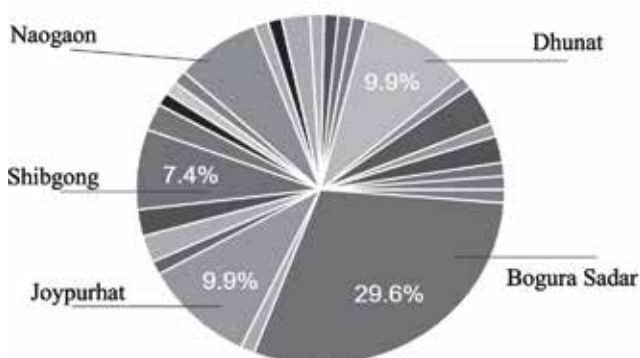


Figure-3: Geographical location of the patients attended in post COVID corner

Post-COVID-19 symptoms included dyspnea (66%), fatigue (81.33%), cough (78.33%), rhinitis (29%), headache (30.67%), and diarrhea (28.53%). Among the total post-COVID-19 patients, 62.7% had one or more comorbidities, including diabetes mellitus and hypertension (Table 1).

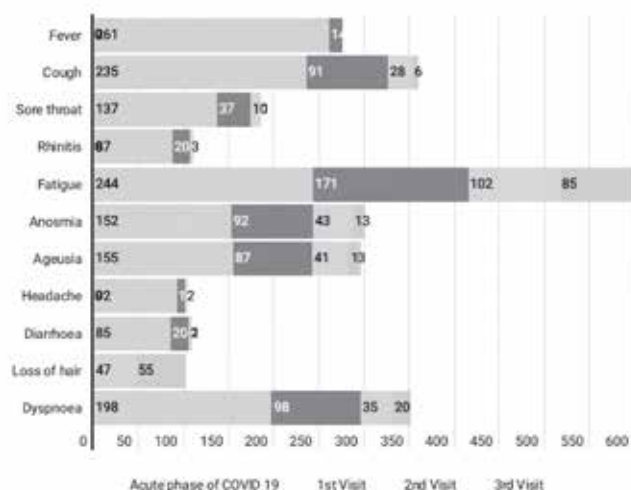
Table-I: Shows Acute COVID-19 symptoms of Post COVID-19 (n = 300)

Symptoms	Number of Patients	Percentage (%)
Fever	261	87
Fatigability	244	81.33
Joint pain	156	52
Muscle pain	155	51.67
Dyspnea	198	66
Cough	235	78.33
Rhinitis	87	29
Sore Throat	137	45.67
Taste loss (Ageusia)	155	51.67
Smell loss (Anosmia)	152	50.67
Headache	97	30.67
Diarrhoea	85	28.33%
Cardiac problems *	108	36

*Cardiac problems included palpitation, chest pain or discomfort, dizziness, and syncope.

Figure-4: lists the symptoms during the acute phase and in each of the three visits

Symptoms of COVID 19 and persistence of symptoms in Post COVID 19 phase (Values indicate number of patients)



Fatigue was the most common persistent symptom during the post-COVID-19 phase, with 34% reporting fatigue after 60 days and 28% reporting fatigue even after 90 days. The fatigue severity scale (FSS) was used to assess how fatigue affects specific tasks. After 12 weeks, fatigue was reported by 21% of mild cases, 28% of moderate cases, and 38% of severe cases (Table II).

Table II: Shows the Distribution of comorbidities and Risk factors

Comorbidities	Number of patients	Percentage (%)
Hypertension	86	28.7
DM	55	18.3
COPD	14	4.7
Pulmonary TB	4	1.3
Malignancy	2	0.7
Bronchial asthma	2	0.7
Thyroid disorder	25	8.3
Smoking	67	22.3
Tobacco Chewing	110	36.7

Infrequent post-COVID-19 symptoms included cough (2%), diarrhea (0.3%), sore throat (0.3%), anosmia (4.3%), and ageusia (4.3%) that persisted even after 12 weeks from the diagnosis of COVID-19. Moderate and severe cases had a higher prevalence of Post COVID-19 syndrome, with 29.7% of mild cases, 42.2% of moderate cases, and 47.7% of severe cases developing the syndrome, respectively.

Discussion

Of 300 SARS-CoV-2 convalescent patients in this prospective investigation, most experienced mild symptoms (WHO clinical progression scale grade.¹⁻³ Four months following illness recovery, 39.3% (118/300) had health issues. Other symptoms may occur. There were COVID-19 and post-COVID-19 syndrome symptoms.^{11, 12} This is the first data set to prospectively track a large cohort of SARS-CoV-2-convalescent patients for three months using a standardized procedure questionnaire. Some COVID-19 patients, regardless of severity, show symptoms weeks or months later.^{12, 13} What the illness is and whether symptoms return post-COVID-19 are unknown. Greenhalgh and colleagues differentiated "chronic COVID-19" from "post-acute COVID-19," which may last longer. Since symptoms last longer than three months, "post-COVID syndrome" was chosen over "post-acute COVID-19 syndrome".

Clinical case criteria for post-COVID-19 syndrome are required.¹⁴ Hospitalized severe disease patients provided most data.^{15, 16} After 28–30 days,^{13, 17} 60 days to three months,^{13, 18} recent studies found the condition. Time intervals were computed using each cohort's longest follow-up, not symptoms. Most post-COVID syndrome symptoms include dyspnea, weariness, joint discomfort, anosmia, and ageusia.^{15, 16, 18} Two-thirds of hospitalized patients with these symptoms reported worse quality of life. This research showed COVID-19 patients were demographically distinct from Westerners. The patient's age stood out. 21.3% of study participants were above 60. In one research, 31% were over 65.¹⁹ Bangladesh's sociocultural background has a lower senior population (8%) than the West (16% in North America and 21% in Europe). This research found more males than women with COVID-19. Most began with lethargy, anosmia, hypoxia, fever, and cough. Much research.^{17, 18} reveal a similar trend. The typical sickness lasted six days, another research found. Before SARS-CoV-2, hypertension, diabetes type II, and chronic lung disease were the most frequent concomitant illnesses. They replicated the most common concurrent symptoms in the general population and SARS-CoV-2 convalescent investigations.^{16, 17, 18} Top symptoms were post-viral fatigue (28.3%), baldness, exertional dyspnoea, ageusia, and anosmia. 2003 SARS-CoV-1 survivors suffer fatigue.^{17, 18, 19} Tiredness may induce brain capillary endothelial failure, say Nauen et al. As Townsend et al. found, moderate post-COVID state may cause tiredness.^{18, 19} No test can quantify exhaustion, and everyone feels it differently. Sharp 76 COVID-19 patients had dyspnoea after recovery. 49% and 46% had MRC grade 4 clinically severe dyspnea at 4 and 8 weeks. At the third visit after 12 weeks, 24% had MRC grade 4 dyspnea. Dyspnea deeply disturbed sleep and emotions. Telogen effluvium was noted in several COVID-19 studies. Telogen effluvium is a week-long stress-induced hair loss. Hair loss and early anagen phase termination may result from systemic illness, pregnancy, psychological stress, surgery, malnutrition,

and drugs. Scarring is rare in self-limiting TE. SARS-CoV-2 patients' increased proinflammatory cytokines (interleukin 1b, interleukin 6, tumor necrosis factor, and interferon types 1 and 2) may explain their cutaneous symptoms, including hair loss. Anosmia is a COVID-19 symptom.^{16,17,18,19} Over time, more women get and improve it. Unknown cause of anosmia. ACE-2 receptors in the nasal epithelium damage the olfactory neuroepithelium in SARS-CoV-2.^{5,11,13,17} Female sex, respiratory discomfort, long recovery, and disease severity elevated post-COVID-19 syndrome risk. People did not totally heal following clinical recovery, the research revealed. 33% of COVID-19 patients suffered long-term consequences. The US research indicated 35% of COVID-19 patients did not recover after three weeks. Over 90% of COVID-19-positive patients had symptoms within two months of hospitalization: 32.6% had none, 32% had one or two, and 55% had three or more.¹⁸ Patients had 43.7% chronic and 56.30% multiple symptoms. Research is underway on post-COVID syndrome's complicated symptoms. Viral tropism, which includes the virus entering cells via a broadly expressed ACE2 receptor, may cause immediate and lasting organ damage, worsening post-COVID.^{18,19} Medication causes nothing.²⁰

Conclusion

This study in Northern Bangladesh found fatigue as the most common post-COVID symptom, followed by respiratory symptoms. No differences were found in gender or age. Patients with comorbidities had higher chances of developing post-acute symptoms. Low prevalence was found in patients receiving steroids and remdesivir.

Limitations of study

The study's main weakness is its reliance on self-reported data, potentially causing recollection bias. However, experienced data collectors ensured validity and dependability by asking clear questions, referring to relevant incidents, and wording questions accurately.

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