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"Study of prevalence of Post –Covid-19 syndrome and risk factors in the capital city of Dhaka, Bangladesh"

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Abstract

Corona virus disease 2019 (COVID-19) rapidly became a global pandemic which has resulted in global healthcare crises and strained health resources. A cross-sectional survey was conducted to explore the prevalence of Post-COVID-19 syndrome in Dhaka city based on retrospective interviews on 384 individuals. Out of 384 respondents, 219 (56.9%) were in the age group of 20-40 years (mean ±SD- 35.47±15.13). About 226 (58.7%) respondents were male and 159 (48.3%) were female and 315(81.8%) were literate. In respect of employment status, 134(34.8%) were service holder. More than fifty percent (n=214) respondents were married and 288 (74.8%) respondents were Muslim. Mean monthly (±SD) income (taka) was 46043.4386 ± 45473.43. Most 273(70.9%), 270(70.1%), 243(63.1%), 225(58.4%) of the respondents were suffered from Poor sleep quality, fatigue, anxiety and persistent cough followed by 211(54.8%), 188(48.8%), 189(49.1%), 163(42.3%) were suffered from joint pain, Continuous headache, chest pain, depression respectively. According to the risk factors, 227(59.0%), 166(43.1%), 132(34.3%) Covid-19 patient with respiratory distress, mental stress and poor nutritional status had developed Post Covid- 19 syndrome respectively. More than half (56.9%) respondents had developed Post Covid-19 syndrome < 7 days from the recovery of Covid-19 disease and 195(50.7%) Covid-19 patient had no Co-Morbidities to developed Post Covid 19 syndrome. A significant association was found between monthly family income and Post Covid-19 syndrome (Fatigue P=0.001, Poor sleep quality P=0.000, Anxiety P=0.000, Dyspnia P= 0.000, Joint pain P=0.000). With millions infected across the world, our findings emphasize the need for the timely planning of resources and patient-centered services for post-COVID-19 care.

Key Words: Post –Covid-19 syndrome, Urban community, Risk factors, Co-morbidity.

Introduction: A series of acute atypical respiratory infections ravaged the Wuhan city of Hubei province of China in December 2019. The pathogen responsible for these atypical infections was soon discovered to be a novel coronavirus belonging to the family Coronaviridae and was named as the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). It was seen to be highly homologous to the SARS coronavirus (SARS-CoV), which was responsible for the respiratory pandemic during the 2002–2003 period(Yuki K et.al,2020, Ksiazek et.al,2003). The respiratory illness caused by this virus was termed as coronavirus disease 2019 or simply COVID-19 by the WHO, and the outbreak was considered to have started via a zoonotic spread from the seafood markets in Wuhan, China. Subsequently, human-to-human transmission was recognized to be responsible for the community spread of the disease, being reported in approximately 200 countries worldwide.(Li Q et.al,2020, Zheng et.al,2020, Zhang et.al,2019, Cascella et.al,2020) Since the first report of Severe acute respiratory syndrome coronavirus 2 (SARS- CoV-2), which causes coronavirus disease (COVID-19) on December 31(World Health Organization,2020) , the virus has dominated the life of every person worldwide. The clinical presentation of COVID-19 ranges from asymptomatic, mild symptomatic to fulminant and fatal cases. Severe cases of infection can lead to serious complications(Rodriguez et.al,2020, Zheng K et.al,2120) . COVID-19-associated death is possibly a result of pneumonia and hyperinflammation associated with cytokine storm syndrome (.Mehta et.al,2020)The COVID-19 symptoms last for an average of 11.5±5.7 days(Lechien et.al,2020) . However, a significant proportion of patients have been found to remain unwell at post-discharge follow-ups (Carfì et.al,2020). A smartphone application-based study in United Kingdom revealed the persistence of COVID-19 symptoms in approximately 10% patients after 3 weeks of disease onset; in some patients, the symptoms persisted for months(COVID Symptom Study,2020). To address this issue, we need to define this condition first. In this study, we have defined post-COVID-19 syndrome as (1) persistence of illness signs and symptoms (except fever, respiratory distress, and hypoxia) after viral clearance (negative real time-polymerase chain reaction [RT-PCR] results for COVID-19 at 4 months after initial positivity) or meeting the World Health Organization (WHO) clinical criteria of improvement , including no fever for >3 days, improved respiratory symptoms, pulmonary imaging showing obvious absorption of inflammation, and no hospital care needed for any pathology or clinician assessment; (2) fresh development of symptoms within a month after initial clinical and virological cure, the etiology of which is postulated to be a viral infection (occurring after recovery); (3) exaggeration of previously

experienced chronic disease, such as migraine, mental disorder, bronchial asthma, and rheumatologic disorders, within a month after initial recovery from COVID-19. In COVID-19, the most common symptoms after acute COVID-19 are fatigue and dyspnea (Del Rio et.al, 2020). Diagnosis of post-viral fatigue(Institute of Medicine,2020) requires certain specific symptoms. It is most commonly accompanied by a substantial reduction or impairment in the ability to engage in pre-illness levels of occupational, educational, social, or personal activities that persist for >6 months. Further, post-exertional malaise and unrefreshing sleep are some of the common features. Post –COVID-19 patients suffered not only from physical ramifications (reduced exercise capacity and lung function) but also from mental health impairment (anxiety and depression)(Halpin et.al,2021). For further exploration of post-COVID-19 syndrome, it is necessary to have knowledge regarding the prevalence, types, stigma, and risk factors of this syndrome. The current study aims to assess the current condition of post-COVID-19 syndrome and determine the correlations, if any, with factors like gender, age, and disease severity.

Materials and Methods

This descriptive cross sectional study was conducted in Mogbazar, Santinagar Shajahanpur, kamolapur Community in the capital of Bangladesh, Dhaka during the period from Jannuary,2021 to December, 2022, age from above 30 years and voluntarily agreed and given informed consent to participate in the study were enrolled as study subject. A total of 384 respondents were enrolled for the study by purposive sampling technique. A house to house survey was conducted and all the participants were interviewed and information regarding the age, education, occupation, monthly family income, post covid-19 syndrome, risk factors, co-morbidities, time duration were collected in a preformed data collection sheet. Assurance had been given that the confidentiality concerning their information would be maintained strictly. The primary data has been collected by face to face interview and the secondary data has been collected through some secondary sources (Internet, Bangladesh Bureau of Statistics, published and unpublished sources). Observation was done using an observational checklist to assess the sanitary condition. The data were checked, verified and then entered into the computer. Editing and coding of data was done and analyzed by using SPSS- 22. All analyzed data were presented in the form of percentages. Chi-square test was applied wherever applicable. A p value <0.05 was taken as significant.

Results and discussion:

A total number of 384 subjects were enrolled in this study.

Socio-demographic characteristics of the study subject

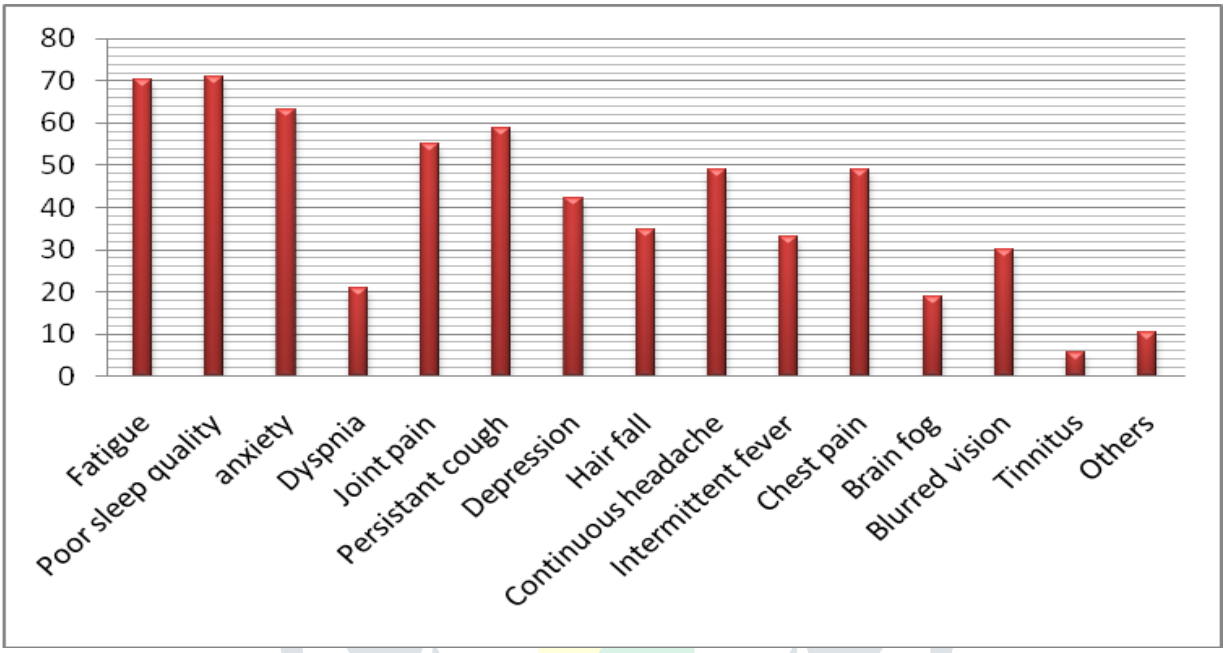
Out of 384 respondents, 219 (56.9%) were in the age group of 20-40 years. Their mean age ±SD was 35.47±15.13 (Figure-1).These findings agreed with the findings of the study done in Southeast Brazil.(Daniel et.al,2021) The age distributions of the respondents also agreed with the similar studies done at home and abroad (Mahmud et. al, 2021, CDC COVID-19 Response Team,2021). In the present study, the proportion of men with COVID-19 was higher226 (58.7%) than that of women159 (48.3%). Previous studies have reported such a pattern (Grant et.al,2021, Agyeman et.al,2020)Regarding education status, 129(33.5%) were educated up to graduate level and above, 93 (24.2%) were higher secondary level and 70 (18.2%) were illiterate. Use of self-reported educational status as marker of level of highest education achieved is similar to previous studies(Sharma et.al,2022,. Gupta et.al,2021, Hossain et.al,2021) About 134(34.8%) of the respondents were service holder,73(19.0%) were housewife, 50(13.0%) were day laborer and 128(33.2%) respondents involved in other activities. This study findings was quite similar with the study findings conducted by Ayman Iqbal et.al.(Iqbal et.al,2021).More than fifty percent (n=214) respondents were married and 288 (74.8%) of all were Muslim.

Table-I. Distribution of the respondents by socio-demographic characteristics (n=384)

Socio-demographic characteristics	Frequency	Percent	Mean±SD
Age			
<20 years	48	12.5	
20-40 years	216	56.9	Mean±SD
40-60 years	89	23.1	35.47±15.13
>60 years	29	7.5	
Sex			
Male	493	47.9	
Female	536	52.1	
Education			
Illiterate	70	18.2	
Primary	34	8.8	
Secondary	59	15.3	
Higher Secondary	93	24.2	
Graduate and above	129	33.5	
Occupation			
Housewife	73	19.0	
Day laborer	50	13.0	
Service holder	134	34.8	
Others	128	33.2	
Marital status			
Married	214	55..6	
Unmarried	149	38.7	
Other	22	5.7	
Religion			

Islam	288	74.8	
Hindu	74	19.2	
Type of family			
Nuclear family	227	58.9	
Joint family	153	39.7	
Others	5	1.2	
Monthly Family income			
Taka <20000	233	22.6	**Mean±SD** 46043.4386± 45473.43
Taka 20,000-40,000	274	26.6	
Taka >40,000	284	27.6	

Profiles of Post-Covid-19 syndrome of the study subject:



****Multiple answers

Figure 5: Distribution of the respondents regarding Post–Covid19 syndrome (n=384)

Most 273(70.9%), 270(70.1%), 243(63.1%), 225(58.4%) of the respondents were suffered from Poor sleep quality, fatigue, anxiety and persistent cough followed by 211(54.8%), 188(48.8%), 189(49.1%), 163(42.3%),133(34.5%) 127(33.0%), 115(29.9%) were suffered from joint pain, Continuous headache, chest pain, depression, hair fall, Intermittent fever, Blurred vision respectively. Only few respondents were suffered from other diseases like dyspnia (20.8%), brain fog (18.7%), tinnitus (5.7%), others (10.4%) (Diarrhea, thrombocytopenia, malnutrition).These finding were almost similar with the study conducted by Daniel et al,2021. In the study, 50.2% presented with long COVID syndrome. Most frequent were fatigue (35.6%), persistent cough (34.0%), dyspnea (26.5%), loss of smell/taste (20.1%) and frequent headaches (17.3%). Mental disorders (20.7%) were also reported[1] Another study done by Mohammad Anwar Hosain et. al,2021 consisted almost the similar results that is the most common symptoms described were fever 76.6% (n=1683), fatigue 50.1% (n=1101), cough and upper respiratory tract symptoms 65.4% (n=1438), dyspnoea 23.8% (n=523), pain 33.1% (n=727), ageusia 29.3% (n=644), headache 38% (n=836) and anosmia 43.9% (n=966).(Daniel et.al,2022) The study done in Dhaka medical college, Bangladesh revealed that post viral fatigue 117(33%) was the most prevalent features. Others features included persistent cough (8•5%), post exertional dyspnea (7%), Headache (3•4%), Vertigo (2•3%), and Sleep related disorders (5•9%)(

Mahmud, Reaz et.al,2019). Many of the observed symptoms in our study were consistent with those from previous study.(Asadi-Pooya et.al,2021)

Table-08: Distribution of the respondents according to co-morbidities of post Covid-19 respondents

(n=384)

Risk factors of Post Covid-19 respondents	Frequency	Percent
Respiratory distress	227	59.0
Lethargy	77	20.0
Severity	146	37.9
Obesity	41	10.6
Mental stress	166	43.1
Nutritional status	132	34.3
Weight loss	73	19.0
Others	29	7.5

****Multiple answers

According to the risk factors, 227(59.0%), 166(43.1%), 132(34.3%) Covid-19 patient with respiratory distress, mental stress and poor nutritional status had developed Post- Covid 19 respondents respectively. And 146(37.9%) severe Covid-19 respondents had developed Post Covid-19 syndrome. Among others 77(20.0%), 73(19.0%), 41(10.6%) and 29(7.5%) Covid-19 respondents with lethargy, weight loss, obesity, others risk factor like DM, HTN, hypothyroidism etc had develop Post Covid-19 syndrome respectively. The study conducted by Mohamad-Said Almasri et.al,2021 revealed that six factors were found to be significantly increasing the risk factors of PCS. Among them respiratory disease (2.33, 1.21-4.501) was one of the important risk factor for developing post covid-19 syndrome which was quite similar with our study.

Table -11: Distribution of respondents according the relation of Monthly Family income and major Post Covid-19 syndrome (n=384)

Post Covid-19 Syndrome	Monthly Family Income				Level of significance	
		<20000 BDT	20,000-40,000 BDT	>40,000 BDT	X^2	P- Value
Fatigue	Yes	46	89	135	09.92	0.007
	No	58	24	33		
Poor sleep quality	Yes	57	97	119	11.02	0.004
	No	47	16	49		
Anxiety	Yes	49	78	116	10.27	0.006
	No	55	35	52		
Dyspnia	Yes	09	22	49	15.81	0.000
	No	95	91	119		
Joint pain	Yes	44	82	85	05.99	0.050
	No	60	31	83		
Chest pain	Yes	44	59	86	22.44	0.000
	No	60	54	82		

Chi-square test was done taking monthly family income as a dependent variable and Post Covid-19 syndrome as independent co-variables and a significant association was found between monthly family income and Post Covid-19 syndrome (Fatigue P=0.001, Poor sleep quality P=0.000, Anxiety P=0.000, Dyspnia P= 0.000, Joint pain P=0.000).This study findings represented the same findings of our study that was long SARS-CoV-2 infection is associated with a plethora of symptoms that are associated with a range of sociodemographic and clinical risk factors(Subramanian et.al,2022).

Conclusion and recommendation:

In this study, 273(70.9%), 270(70.1%), 243(63.1%), 225(58.4%) respondents were suffered from Poor sleep quality, fatigue, anxiety and persistent cough as predominant Post Covid-19 syndrome. Patients with COVID-19 require long-term follow-up even after recovery for observation and management of their post-COVID ailments. A comprehensive rehabilitation program is essential for such patients during hospitalization and discharge. During the ongoing COVID-19 pandemic, most health facilities are overloaded. Hence, arranging follow-up for patients can be a challenge. However, a significant population in the post-COVID state needs continuous monitoring. Male patients presenting with respiratory distress, patients with lethargy, and patients with a disease for a prolonged duration require special attention in the post-COVID-19 state.

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