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Assessment Of Post Covid 19 Symptoms: An Observational Cohort Study From A Level 3 Covid Hospital

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ABSTRACT: -
Introduction: - A substantial number of patients continue to have symptoms even after testing negative for COVID 19. Ours is a single-center, observational, cross-sectional study that describes the prevalent symptoms in patients who have recovered from mild to moderate COVID 19 disease.
Methods: - In a span of 3 months, from November 2020 to January 2021, we collected self-reported data from all post-COVID patients who consulted the post COVID 19 OPD. Data on the pertinent history related to their diagnosis of COVID-19 disease, like the date of RT PCR positive and negative reports and length of stay in hospital were collected. Self-reported data was collected in simple Yes/No format for presence of common respiratory and general post COVID-19 symptoms. The final data was analyzed and presented using the using R software version 4.0.2.
Result: -The mean age of the patients was 42.89 years with majority being from the age group of above 50 years of age. The mean duration of hospital stay was found to be 14 ± 7 days. A higher percentage were admitted for >10 days among all age groups, more predominantly among >60 years of age. Only 5 male patients gave a history of receiving noninvasive ventilation. Significantly a greater number of females complained of fatigue. Other symptoms that were found more commonly in females were headache, loss of hearing, and wheeze.
Conclusion: -In our study fatigue is the most common presenting symptoms followed by cough and breathlessness. Further evaluation and regular follow up required to substantiate this observation.
Keywords: Posy-covid-19, Long covid syndrome, Fatigue, Cough, Breathlessness.

I. INTRODUCTION

COVID 19 Pandemic has affected millions of lives globally. As per MOH estimates, there have been 1.07 Cr cases and 1,54,000 deaths so far in India, as of 3 February 2021.[1] The recovery rate for our country has been an encouraging 97.3%. However, a substantial number of patients continue to have symptoms even after testing negative for COVID. Many new terms like "Long COVID", 'long haulers' and 'post COVID syndrome' have emerged to describe these set of symptoms but currently, there is no delineated consensus definition.[2]

Numerous studies have been published globally regarding the clinical characteristics, epidemiological data, and complications seen after the acute phase of infection with coronavirus. There is, however, a dearth of research in the study of long-term consequences after recovery from COVID 19 disease. One study done in Italy by Carfi et al.described persistent symptoms after hospitalization for COVID-19.[3] Such evidence has not been reported for mild to moderate COVID-19.

A large cohort study with a follow-up of 6 months conducted in China has revealed that COVID 19 survivors mainly suffer from fatigue, muscle weakness, sleep difficulties, and anxiety or depression.[4] No study from India has been published till date. Ours is a single-center, observational, cross-sectional study that describes the prevalent symptoms in patients who have recovered from mild to moderate COVID 19 disease.

II. MATERIALS AND METHODS

Since March 2020, when Santosh Medical College and Hospital was declared as a dedicated COVID-19 treatment level 3 facility, around 1500 patients have been treated.In November 2020, SMCH started a Post COVID-19 OPD in the department of Pulmonary Medicine to particularly cater to the patients who have recovered from the acute phase of SARS CoV-19 infection but continue to have symptoms, respiratory and /or systemic. In a span of 3 months, from November 2020 to January 2021, we collected self-reported data from 99 post-COVID patients who consulted the OPD.

After taking informed consent, a simple questionnaire was administered to all the patients reporting to the Post COVID OPD in the study period defined above. The answers were recorded in a simple YES or NO format. Both English and Hindi formats were used for the ease of understanding of the patients.

Patients were offered a comprehensive medical assessment with a detailed history and physical examination. Data on the pertinent history related to their diagnosis of COVID-19 disease, like the date of RT PCR positive and negative reports and length of stay in hospital were collected. After recording vital signs of pulse rate, BP, and sPO2, patients were asked to answer the proforma about the presence or absence of the six cardinal symptoms of respiratory diseases viz cough, sputum, breathlessness, wheeze, haemoptysis, and chest pain. Systemic symptoms like fatigue, muscle weakness, body ache, joint pains, loss of taste, loss of smell, and decrease in mental concentration were also inquired.

The data thus collected was entered into a structured electronic data collection system. The post-COVID-19 outpatient service is currently active, and further details about the patient evaluation protocol are described in the annexures. There are other ongoing studies in the department in collaboration with other clinical and para clinical departments that further examine the effects of COVID-19 on mental health and lung functions.

III. STATISTICAL ANALYSIS

Demographic characteristics and long-term health consequences of COVID-19 in patients were presented as median (IQR) for continuous variables and expressed as absolute values along with/side percentages for categorical variables. The data was collected and entered in MS 2010. Different statistical analysis was performed using R software version 4.0.2. The one-sample Kolmogorov – Smirnov test was employed to determine whether the data differed from a normal distribution or not. Normally distributed data was analyzed using parametric tests and non - normally distributed data was analyzed using nonparametric tests. Descriptive statistics were calculated for qualitative and categorical variables. Graphical representation of the variable was shown to understand the results clearly and to measure the association for the categorical dataset was analyzed using the Chi-Square test. Independent T-test or student t-test was applied to measure the mean difference between the two groups. The correlation was estimated to measure the strength of the relationship between two or more quantitative variables.

If p-value <0.05, it was considered as statistically significant and

If p-value>0.05, then it was considered statistically insignificant.

IV. RESULTS

During the study period, a total of 99 patients consulted the post-COVID OPD. The mean age of the patients was 42.89 years. (table 1) Out of 99 patients, 56.6% were males and 43.4% were females. (table 2) The age distribution revealed 37.3% of patients from the age group of above 50 years of age. (table 3) the patients in other age groups as per frequency were 33% (18 -30 years) 15.2% (31-40 years) and 14.1% (41-50 years).

The mean duration of hospital stay was found to be 14 ± 7 days. (table 1) The majority of patients (68.7%) were admitted for 10 or more days. This distribution was almost maintained in both genders (p=0.839). As per age distribution, we found that a higher percentage were admitted for >10 days among all age groups, more predominantly among >60 years of age. (table 4)

Only 5 male patients gave a history of receiving noninvasive ventilation (p=0.044), indicating that mainly mild or moderate cases consulted the OPD. However, only 12% of patients were completely asymptomatic on presentation to the OPD. (table 5)

The most common symptom reported was fatigue/ weakness or lethargy. (table 6) The next most prevalent complaint was body ache or joint pain. An equal percentage reported cough and shortness of breath. Some also reported other symptoms like headache, chest pain, decrease in mental concentration, etc. Not a single patient complained of hemoptysis.

In our study, significantly a greater number of females complained of fatigue. (table 7) Other symptoms that were found more commonly in females were headache, loss of hearing, and wheeze. Rest all symptoms were more common in males. These results were however not significant.

In age distribution with symptoms, the majority of patients belonged to 2 age groups viz 18-30 years and 51-60 years. (table 8) Elderly patients (>60 years) had predominant complaints of persistent loss of taste, smell, and hearing. Rest all symptoms were found to be more in the young and middle-aged group.

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Table 1: MEAN AGE AND MEAN HOSPITAL STAY

	TOTAL NO. OF PATIENTS	MINIMUM	MAXIMUM	MEAN	STANDARD DEVIATION
AGE	99	22	77	42.89	14.799
HOSPITAL STAY	99	4	40	14.55	6.996

FIG. 2 GENDER DISTRIBUTION

	FREQUENCY	PERCENTAGE
MALE	56	56.6
FEMALE	43	43.4

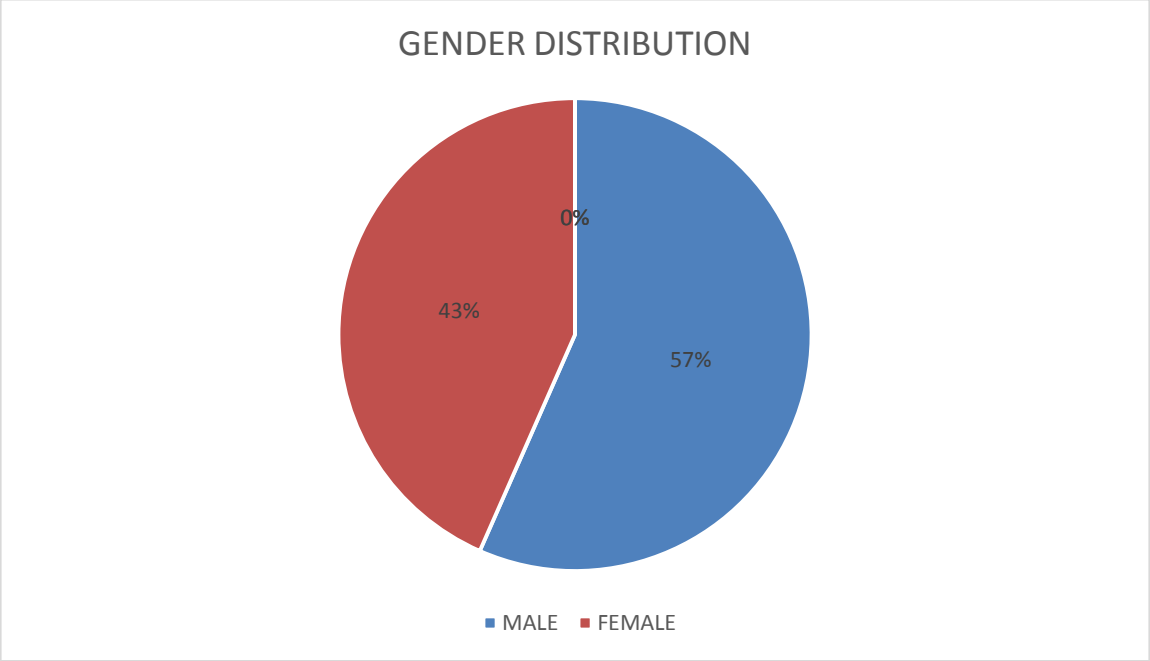

FIG. 3 AGE DISTRIBUTION

AGE GROUP	FREQUENCY	PERCENTAGE
18-30 YEARS	33	33.3
31-40 YEARS	15	15.2
41-50 YEARS	14	14.1
51-60 YEARS	25	25.3
>60 YEARS	12	12.1

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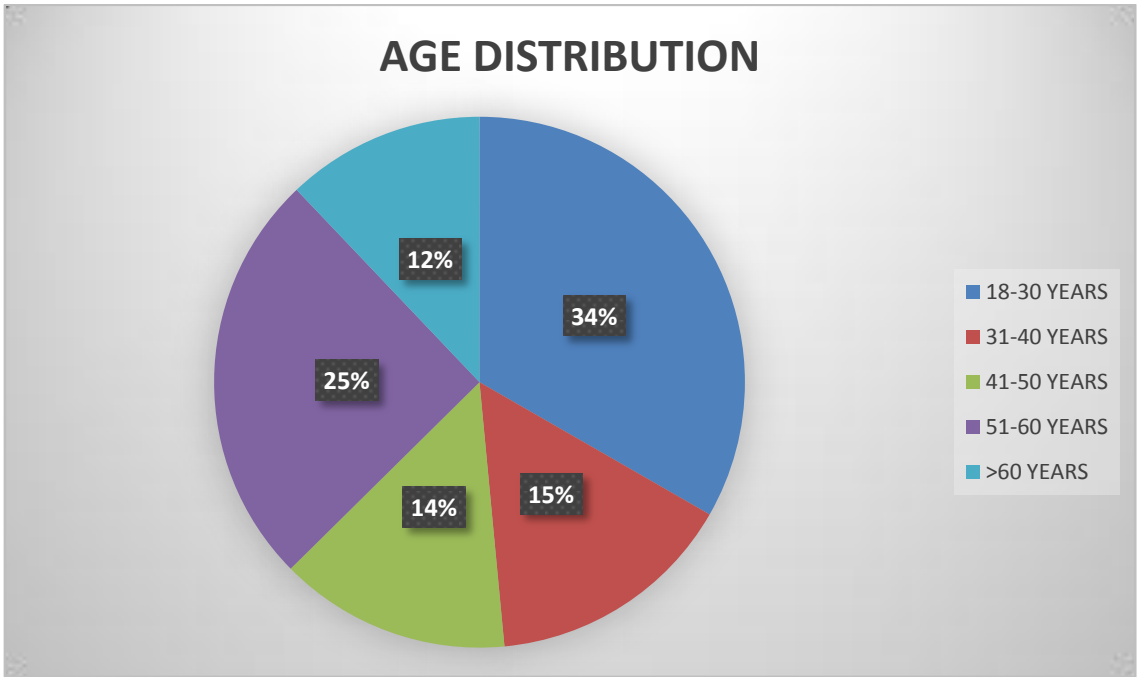

TABLE 4 AGE AND GENDER DISTRIBUTION WITH DURATION OF HOSPITAL STAY

	<10 DAYS HOSPITAL STAY	**>10 DAYS HOSPITAL STAY**	**P-VALUE**
18-30 YEARS	11(33.3%)	22(66.6%)	0.490
31-40 YEARS	5(33.3%)	10(66.6%)	
41-50 YEARS	5(35.7%)	9(64.2%)	
51-60 YEARS	9(36%)	16(64%)	
>60 YEARS	1(8.4%)	11(91.6%)	
GENDER			
MALE	18(32.1%)	38(67.8%)	0.839
FEMALE	13(30.2%)	30(69.7%)	

TABLE 5. HISTORY OF INVASIVE VENTILATION AND PRESENCE OF POST COVID SYMPTOMS

		FREQUENCY	**PERCENTAGE**
HISTORY OF INVASIVE VENTILATION	YES	5	5.1
	NO	94	94.9
PRESENCE OF POST COVID SYMPTOMS	YES	87	87.9
	NO	12	12.9

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TABLE 6. DISTRIBUTION OF POST COVID SYMPTOMS IN PERCENTAGE

SYMPTOMS	TOTAL NO. OF PATIENTS	PERCENTAGE
Fatigue/weakness/lethargy	61	61.6%
Cough	30	30.3%
Shortness of breath	30	30.3%
Chest pain	8	8.1%
Headache	27	27.3
Body ache/joint pain	38	38.4
Loss of taste	13	13.1%
Loss of smell	17	17.2%
Loss of hearing	3	3%
Decrease mental concentration	18	18.2%
Wheeze	4	4%
Hemoptysis	0	0%

FIG.6 DISTRIBUTION OF POST COVID SYMPTOMS IN PERCENTAGE

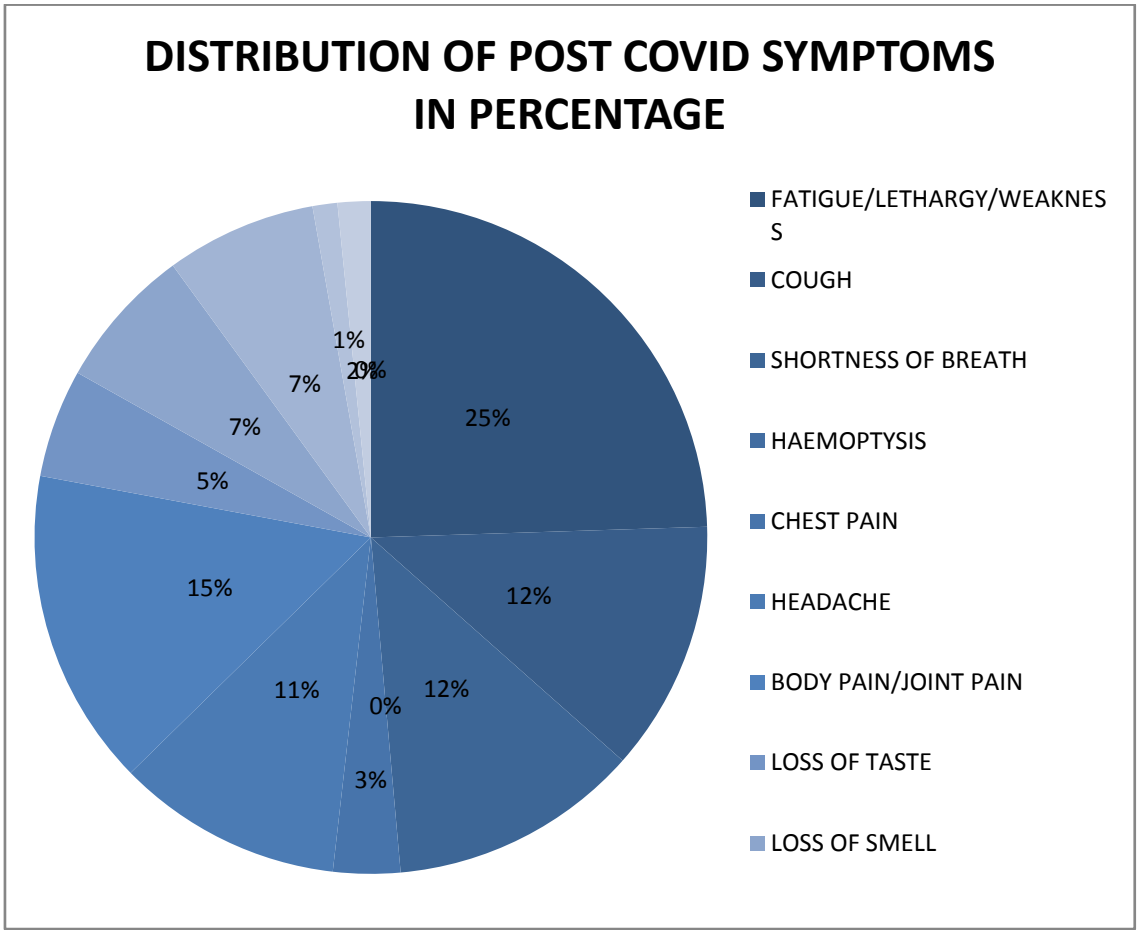

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TABLE 7. GENDER DISTRIBUTION OF POST COVID SYMPTOMS

SYMPTOMS	MALE	FEMALE	P-VALUE
Fatigue/weakness/lethargy	29	32	0.022
Cough	16	14	0.669
Shortness of breath	17	13	0.989
Chest pain	4	4	0.696
Headache	12	15	0.136
Body ache/joint pain	20	18	0.533
Loss of taste	8	5	0.698
Loss of smell	10	7	0.837
Loss of hearing	1	3	0.123
Decrease mental concentration	10	8	0.924
Wheeze	1	3	0.194
Hemoptysis	0	0	0

FIG.7 GENDER DISTRIBUTION OF POST COVID SYMPTOMS

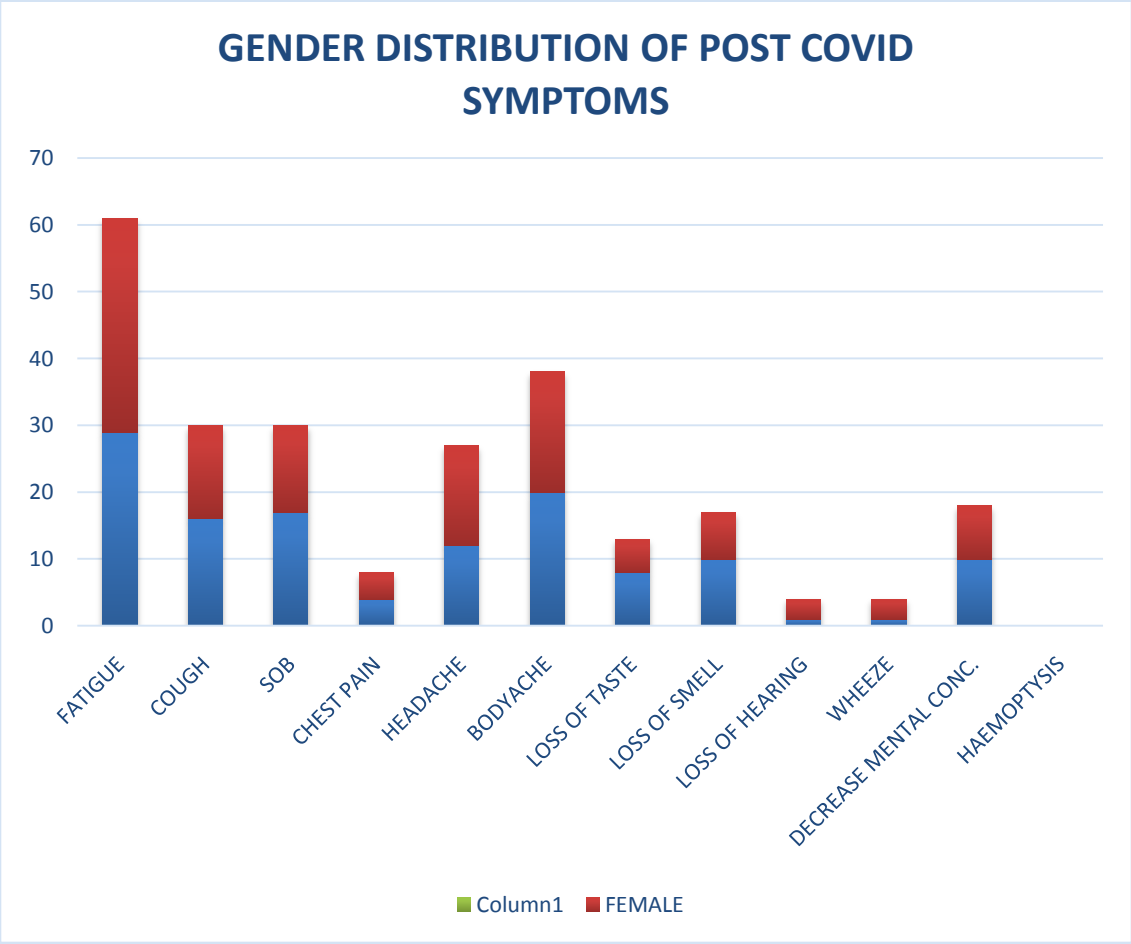

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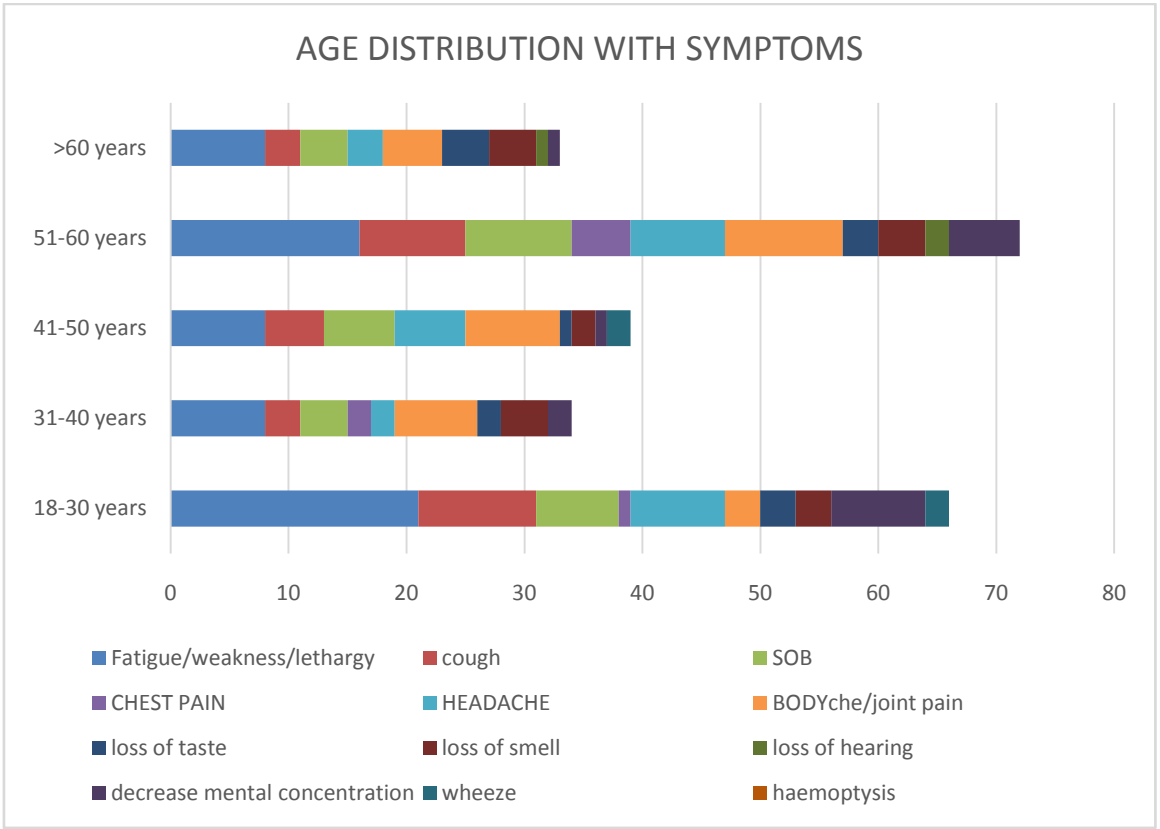
TABLE 8. AGE DISTRIBUTION OF POST COVID SYMPTOMS

SYMPTOMS	AGE					TOTAL	P-VALUE
	18-30	31-40	41-30	51-60	>60		
Fatigue/weakness/lethargy	21	8	8	16	8	61	0.938
Cough	10	3	5	9	3	30	0.828
Shortness of breath	7	4	6	9	4	30	0.580
Chest pain	1	2	0	5	0	8	0.067
Headache	8	2	6	8	3	27	0.456
Body ache/joint pain	3	7	8	10	5	38	0.249
Loss of taste	3	2	1	3	4	13	0.264
Loss of smell	3	4	2	4	4	17	0.311
Loss of hearing	0	0	0	2	1	3	0.269
Decrease mental concentration	8	2	1	6	1	18	0.470
Wheeze	2	0	2	0	0	4	0.176
Hemoptysis	0	0	0	0	0	0	0

FIG.8 AGE DISTRIBUTION OF POST COVID SYMPTOMS



V. DISCUSSION

To our knowledge, this is the first cohort study from western Uttar Pradesh, India, assessing the post COVID symptoms. The sample size of 99 patients is similar to that taken in other studies. [3,5,6]A large cohort study from China with 6 months follow-up had a higher mean age (57years, range47-65years) as compared to our study.[4] Other studies, two done in France and 1 in Italy too reported a higher mean age. [3,5,6] This indicates that the majority of mild to moderate cases of post-COVID-19 reporting to our hospital were relatively younger (42.89 years).

Our study had a higher proportion of male patients, similar to other comparable studies. [3,4,6] As reported by other studies, almost 80% reported at least one symptom after recovering from the acute phase of coved 19 infections. The average length of hospital stays, found to be 2 weeks ± 1 week, was also consistent with the finding of other studies.The WHO stated that the median time from illness onset to recovery is about 2 weeks from mild cases and 3 to 6 weeks with the severe or critical disease [7].

Similar to a study by Carfiet al. [3], only a minority of patients received invasive ventilation. In our study, the most common symptom was fatigue which was significantly more in females. In comparison to other studies, more respiratory symptoms like cough and shortness of breath were reported by many patients in our study. This may be because patients are more perceptive to the respiratory complaints as the study is being conducted by the department of pulmonary medicine. General symptoms that were prevalent included headache and body pain. Loss of taste, loss of smell, hearing loss found more commonly in elderly (>60 years) patients. This is in contrast with the study of Carvalho et al. [5] who reported persistent symptoms in the 40-60 years age group, with anosmia/ageusia being the most common symptoms. This may be explained by the over-representation (75/150) of health care professionals in the study.

This study has several limitations. Firstly, only patients reporting to the post-COVID-19 OPD were enrolled in the study. There will be many cases especially the severe cases of COVID-19 who might have reported to other departments or other hospitals. Also, only self-reported data was recorded. The symptoms are subjective, and patients reported information may not be reliable unless backed by investigations. It is an observational study with no follow-up. For more reliable and detailed information, work up with investigation is required with follow-up of at least 3-6 months. More research is required in this area to better understand the spectrum of post-COVID-19 symptoms and complications.

VI. CONCLUSION: -

In the present epidemic of COVID-19 infection, although the number of patients admitted in our hospital ismore, our study consists of a small percentage of those cases whoattended post COVID-19OPD. Fatigue beingthe commonest symptom followed by malaise, joint pain, cough, and shortness of breath. A long-termfollow-up with a large number of post-COVID-19 patients is required to come to a conclusion .

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