

EVALUATION OF PULMONARY COMPLICATIONS IN POST COVID PATIENTS

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Abstract

Pneumonia and acute respiratory distress syndrome (ARDS), both common COVID-19 symptoms, can result in pulmonary sequelae such as pulmonary fibrosis [2, 3]. Short-term pulmonary sequelae have been described in cohorts of patients followed up between 3 and 6 months after discharge, and range from mild respiratory impairment with moderately reduced DLCO in asymptomatic patients to more severe restrictive ventilatory dysfunction in patients suffering from persistent pulmonary symptoms, primarily exertional dyspnea. A short-term follow-up may not be sufficient to assess the long-term prognosis of respiratory dysfunction; consequently, longer-term investigations are necessary. According to preliminary data from

Chinese cohorts, up to 47 percent of patients had residual abnormalities on pulmonary Computed Tomography (CT) scans taken one year after the pneumonia, with ground glass attenuation and reticular abnormalities being the most common radiologic patterns [7]. Furthermore, when 6 to 12-month followup radiological exams were compared, fibrotic interstitial lung abnormalities (ILA) and traction bronchiectasis remained constant, whereas non-fibrotic ILA were totally or partially eliminated [8]. The largest 1-year follow-up study available to date, conducted in Wuhan, China, found a prevalence of lung

diffusion impairment of up to 54 percent in critically sick patients, as well as a considerable burden of symptoms, with 30 percent of patients still complaining of dyspnea [9]. Large observational studies on long-term pulmonary sequeale in European cohorts, however, are still lacking. The purpose of this study is to evaluate pulmonary complications in post covid patients

AIM

To evaluate Pulmonary complication in Post COVID 19 infected patients

OBJECTIVE

To evaluate Pulmonary complication in Post COVID 19 infection and related adverse health events

METHODOLOGY

STUDY POPULATION

Hospitalised, treated and discharged patients who were RAT/RTPCR Positive for COVID-19.

STUDY AREA

STUDY DESIGN

This is a Cross sectional and Observational study This study includes Descriptive analysis of pulmonary complications in Post COVID 19 patients based on :

1. Clinical Evaluation Based on Questionnaire
2. HRCT chest /Chest X Ray

INCLUSION AND EXCLUSION CRITERIA

□Inclusion Criteria

- 1.Hospitalised, treated and discharged COVID 19 Rapid Antigen Test Positive or COVID 19 RTPCR Test Positive patients.
2. Adult patients 18 and above

□Exclusion Criteria

1. Pre-existing interstitial lung disease.
2. Pregnant mothers

OBSERVATIONS AND RESULTS

Table 1. Distribution of cases according to age

Age	N	%
18-20	2	6.00%
21-30	10	18.00%
31-40	10	18.00%
41-50	06	20.00%
50-60	14	20.00%
Above 60	9	18.00%
Grand Total	50	100.00%

Distribution of cases according to sex

		Count	Column N %	p-value
Sex	Female	12	24.00%	0.001
	Male	38	76.00%	

The count of female individuals in the sample is 12, which represents 24% of the total sample. The count of male individuals in the sample is 38, which represents 76% of the total sample. The p-value for a comparison of these groups is 0.001 for female group. This p-value indicates that there is a statistically significant difference between the groups

Distribution of cases according to smoking history

		Count	Column N %	pvalue
Smoking	No	39	78.00%	0.032
	Yes	11	22.00%	

The study found that 78% of patients were non-smokers and 22% were smokers. The p-value is 0.032, indicating that there is a statistically significant difference in the proportions of the smoking.

Distribution of cases according past history of respiratory diseases.

		Count	Column N %	p-value
BRONCHIAL ASTHMA	No	43	86.00%	0.001
	Yes	7	14.00%	
COPD	No	47	94.00%	0.001
	Yes	3	6.00%	
TUBERCULOSIS	No	45	90.00%	0.001
	Yes	5	10.00%	
INTERSTITIAL LUNG DISEASE	No	50	100.00%	

Bronchial Asthma: There are 43 individuals in the sample who do not have bronchial asthma, representing 86% of the total sample. There are 7 individuals in the sample who have bronchial asthma, representing 14% of the total sample. The p-value for a comparison of these groups is 0.001, indicating that there is a statistically significant difference between the proportions.

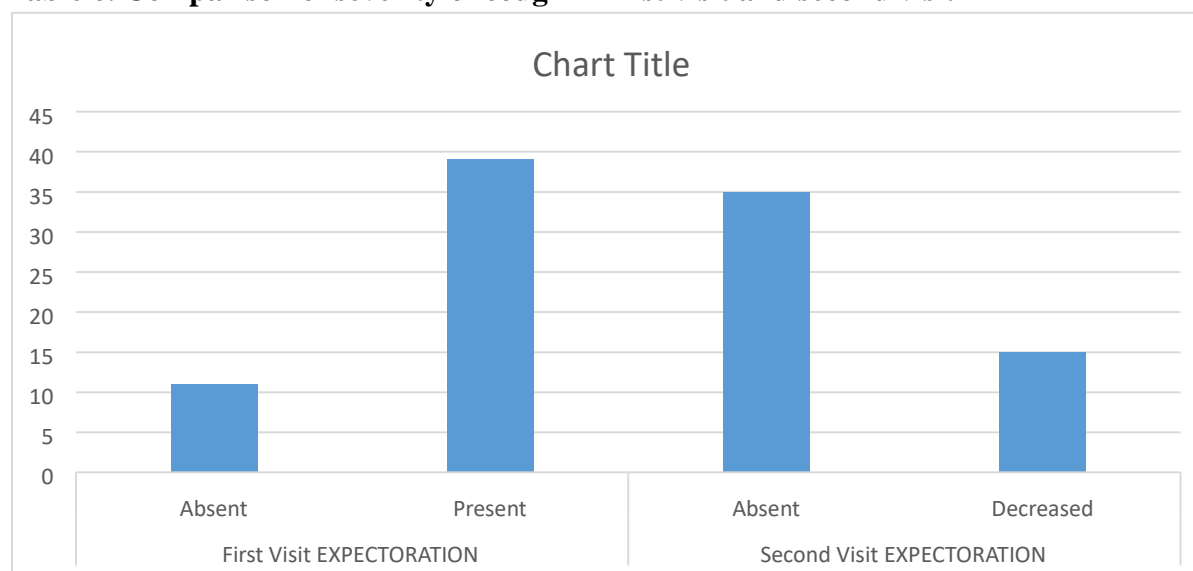
COPD: There are 47 individuals in the sample who do not have COPD, representing 94% of the total sample. There are 3 individuals in the sample who have COPD, representing 6% of the total sample. The p-value for a comparison of these groups is 0.001, indicating that there is a statistically significant difference between the proportions.

Tuberculosis: There are 45 individuals in the sample who do not have tuberculosis, representing 90% of the total sample. There are 5 individuals in the sample who have tuberculosis, representing 10% of the total sample. The p-value for a comparison of these groups is 0.001, indicating that there is a statistically significant difference between the groups. **Comparison of severity of cough in first visit and second visit**

		Count	Column N %	p-value
First Visit COUGH	Absent	11	22.00%	0.012
	Present	39	78.00%	
Second Visit COUGH	Absent	35	70.00%	0.046
	Decreased	15	30.00%	

The data shows that a majority of individuals in the sample had cough during the first visit, with 78% (39 out of 50) of the individuals reporting it, while 22% (11 out of 50) did not have cough. The p-value for a comparison of these groups is 0.012, indicating that there is a statistically significant difference between the groups.

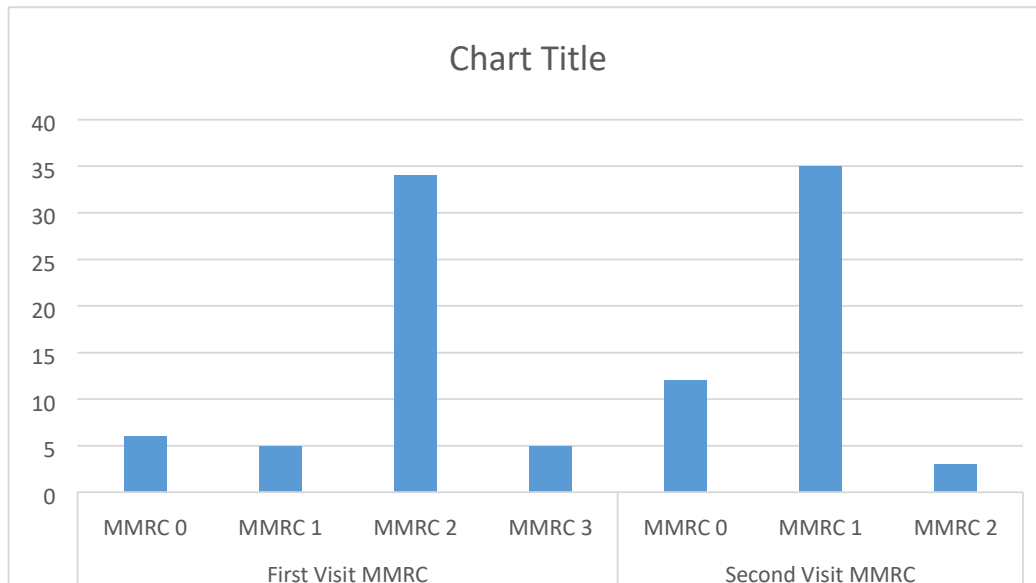
Similarly, for the second visit, 70% (35 out of 50) of the individuals in the sample did not have cough, while 30% (15 out of 50) had decreased cough. The p-value for a comparison of these groups is 0.046, indicating that there is a statistically significant difference between the groups.

Table 6. Comparison of severity of cough in first visit and second visit**Table 7. Comparison of Severity of Breathlessness in first visit and second visit according to MMRC grading .**

		Count	Column N %	p-value
First Visit MMRC	MMRC 0	6	0.00%	0.001
	MMRC 1	5	5.68%	
	MMRC 2	34	77.27%	
	MMRC 3	5	17.05%	
Second Visit MMRC	MMRC 0	12	24.00%	0.001
	MMRC 1	35	70.00%	
	MMRC 2	3	6.00%	

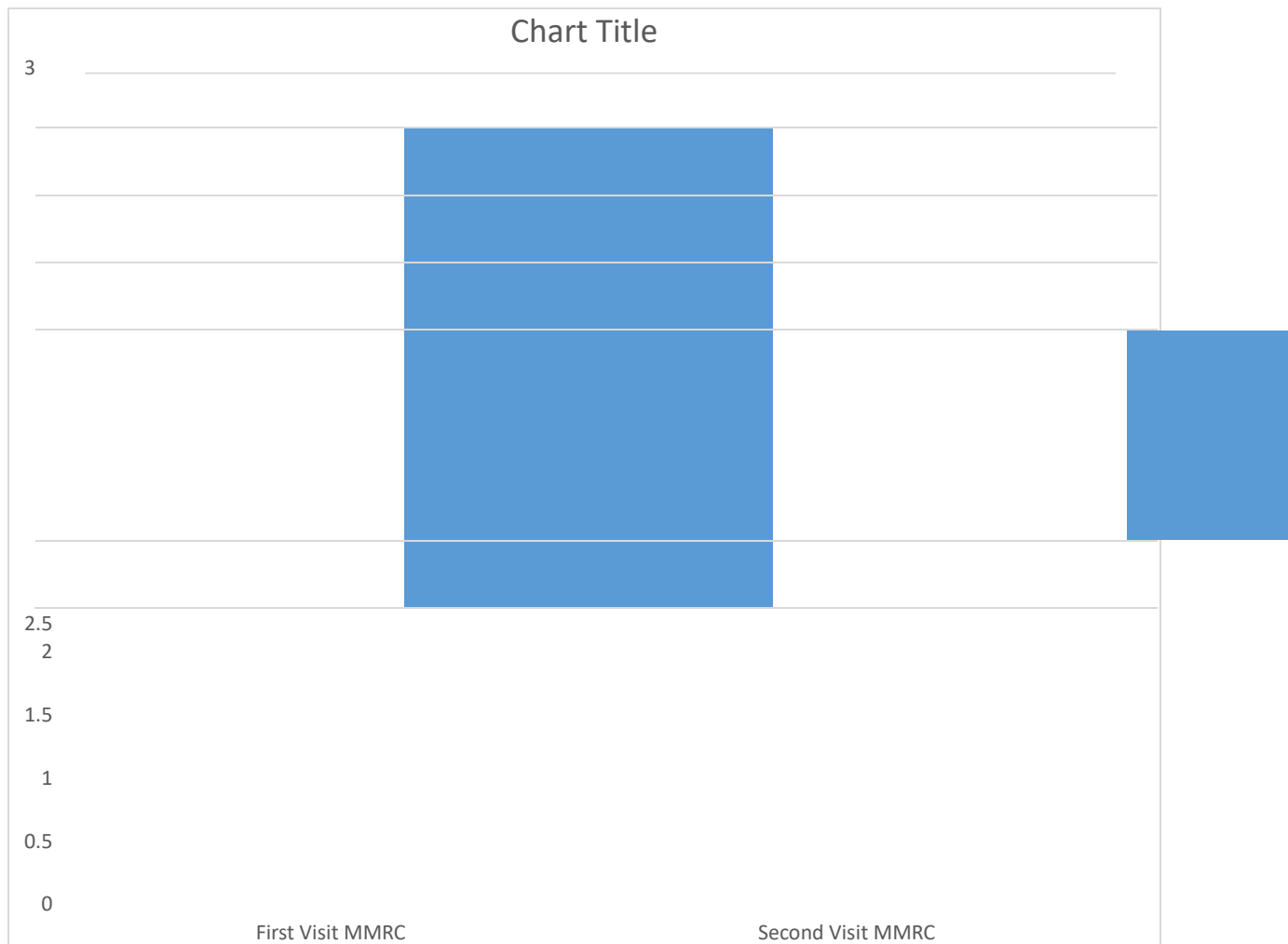
The study found that at the first visit, 0% of patients had MMRC 0 (breathlessness on strenuous exercise), 5.68% had MMRC 1 (breathlessness on hurrying on level ground or walking up a slight hill), 77.27% had MMRC 2 (stop for breath when walking on my own pace on the level), and 17.05% had MMRC 3 (stops for breath after walking about 100 meters). At the second visit, 24% of patients had MMRC 0, 70% had MMRC 1, and 6% had MMRC 2. The p-value for the first visit is 0.001, indicating that there is a statistically significant association between COVID-19 pneumonia and breathlessness. The p-value for the second visit is 0.001, again indicating that there is a statistically significant

association between COVID-19 pneumonia and breathlessness. These findings suggest that many postCOVID-19 patients continue to experience breathlessness, with a majority of patients having moderate to severe breathlessness at their first and second visit.

Graph 7. Comparison of Severity of Breathlessness in first visit and second visit**Table 8. Comparison of Mean of MMRC Grading in first visit and second visit**

Paired Samples Statistics			
	Mean	Std. Deviation	p-value
First Visit MMRC	2.50	1.313	0.001
Second Visit MMRC	1.60	1.125	

The mean MMRC score at the first visit is 2.50 with a standard deviation of 1.313, and at the second visit is 1.60 with a standard deviation of 1.125. The p-value is 0.001, indicating that the difference in scores between the first and second visit is statistically significant. This means that there is a statistically significant difference in the MMRC scores between the two visits, with the scores being lower in the second visit than the first visit.



MMRC

8.
Comparison
Mean of
Grading in first visit and
second
visit

DISCUSSION

DEMOGRAPHICS

- The pulmonary sequelae (long-term effects on the lungs) of 50 COVID-19 patients were studied in this study. According to the findings, the majority of patients in the study were between the ages of 53 and 72, with 20% of patients falling into each of the age groups 53-62 and 63-72. Patients between the ages of 33 and 42 were the next largest group, accounting for 18% of all patients. The remaining age categories (23-32, 43-52, and 73-82) had 6-18% of patients each.
- Age: The sample's average age is 56 years and 16 years. In our study, the mean age of the fibrotic patients was significantly greater (53.8 years) than that of the non-fibrotic patients (48.5 years). The majority of the available literature had comparable conclusions in this regard [129140]. However, Aul et al. showed that the age difference between fibrotic and non-fibrotic patients was minor [128]. There have been conflicting findings in the literature on the role of gender and smoking status on the development of fibrosis.

In a comparable study, **Ali et al.** [129] discovered that post-COVID-19 pulmonary fibrosis was highly connected to patient age, with (13 patients out of 30; 43.3 percent) developing lung fibrosis aged 60 to 75 years..

EVALUATION OF SYMPTOMS BASED ON QUESTIONNAIRES

The mean **CAT score** at the first visit is 16.7 with a standard deviation of 5.456, and 11.6 with a standard deviation of 6.615 at the second visit. The p-value is 0.001, showing that there is a statistically significant difference in scores between the first and second visits.

The CAT can provide insight into the severity of symptom burden for patients following a hospitalisation for COVID-19 and could be considered to assess ongoing symptoms following COVID-19. [148]

Similar study conducted by **Daynes et al.** demonstrates a high CAT total score for patients following an admission of COVID-19. Symptoms relating to the airways (cough, phlegm and chest tightness) scored close to previously reported healthy persons of a similar age⁴; however, those with a pre-existing respiratory disease had higher phlegm scores.[148]

The time to follow-up call from discharge varied between patients, with a large SD and while we may have expected a trend to reducing symptoms over time, the length of follow-up did not affect the results. This suggests either limited/slow natural recovery or potentially higher initial CAT scores if patients were followed up earlier.[148] In the current study, the overall PCPF prevalence was 24 percent. This is lower than the last SARS outbreak (62%), but higher than the MERS epidemic (33% [119,120]). Despite certain studies suggesting a higher prevalence of PCPF in males [132,133], the majority of studies [129,140] overlook it. Several studies [128,131,132] consider smoking to be a risk factor for PCPF; however, others [133,139] do not.

CONCLUSION

majority of patients were between the ages of 53-72, with a higher proportion of males than females. Cough, dyspnoea, chest pain, and fatigue were commonly reported symptoms during the initial visit, with many patients continuing to experience these symptoms during the

second visit however shows significant decrease in CAT and SGRQ scores., and that post-COVID-19 patients had moderate to severe shortness of breath during their first and second visits. At the second visit, 22% of patients reported no breathlessness, 78% reported decreased breathlessness and none reported increased breathlessness.

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