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ASSESSMENT OF RESPIRATORY HEALTH OF PATIENTS WITH SELECTED COMORBIDITIES RECOVERED FROM COVID-19 – A LITERATURE REVIEW

VASAVA P[1*], SHARMA A[2] AND JAIN D[3]

1: M.Sc. Nursing Student Department of Nursing, MTIN, CHARUSAT, Charotar University of Science and Technology (CHARUSAT), CHARUSAT Campus, Changa, India

2: Principal, Department of Nursing, MTIN, CHARUSAT, Charotar University of Science and Technology (CHARUSAT), CHARUSAT Campus, Changa, India

3: Assistant Professor, Department of Nursing, MTIN, CHARUSAT, Charotar University of Science and Technology (CHARUSAT), CHARUSAT Campus, Changa, India

[*]**Corresponding Author: Ms. Priyanka Vasava: E Mail: priyankavsv0701@gmail.com**

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ABSTRACT

The aim of the researcher is to assess the respiratory health of post-Covid-19 patients because it mainly impacts the respiratory system and some research suggests that SARS-COV-2 mostly affects the respiratory system. Reviewing some previous literature manually on Google and Google scholar, as well as the electronic databases PubMed, Elsevier, and MEDLINE, after the reviewing literature the pulmonary function, 6-minute walk test, ABG analysis, Chest CT scan, X-ray, and lifestyle quality was performed and there is significantly showing a decrease in lung volumes, reduced physical capacity, variations in ABG and there is a mild disease are present in the x-ray and there is also impact on the Quality of life. The researcher looked at a lot of studies and discovered that changes in lung function, physical activity, and health-related quality of life were all affected, but that following respiratory rehabilitation, the respiratory status was improved.

Keywords: Assessment, COVID-19, Respiratory health, Comorbidities, Recovered from COVID-19

INTRODUCTION

Coronavirus disease 2019 is a corona virus-2 (COVID-19) causes acute respiratory illness, a novel corona virus linked to SARS-COVID-19. Covid-19 was initially discovered in China in December 2019, according to the current text. Since then, the disease has quickly spread over the globe, infecting approximately 73 million people. Due to COVID-19 there are 1.5 million individuals died, as stated by the World Health Organizational, however more 60 million survived **[1]**.

Corona virus disease is a multi-organ infection, and it directly affects the respiratory system which leads to pneumonia and other pulmonary complications **[2]**.

A different type of testing is used to determine pulmonary function. PFTs are typically used to examine respiratory capacity, such as lung volumes, forced expiratory volume in one second (FEV 1), and forced vital capacity (FVC) which is used to determine the respiratory system's functional ability. Different tests, performed such as measuring respiratory muscle strength and endurance or assessing airway resistance, aid in determining the health of the respiratory system, as well as its function in greater detail, making them more valuable in the research of respiratory illness. However, PFTs are the most widely utilized assays for evaluating respiratory function **[3]**.

REVIEW OF METHODOLOGY AND FINDINGS

The investigator gathered a large number of information from various MEDLINE, PubMed, and other digital resources and Elsevier, as well as manual research on Google Scholar.

A total of 62 kinds of literature are reviewed by the researcher and ultimately there are 10 kinds of literature are included in this literature review.

Table 1: Review related to the respiratory health of patients in post-Covid-19 patients

AUTHOR: **Edita Strumiliene, Ingrida Zeleckience *et al* [4]** **YEAR** **2021** **COUNTRY** **Lithuania**	**OBJECTIVES:** **In the follow-up survivors, researchers looked at their functional capacity, residual radiological alterations, physical performance, and health-related well-being.**	**METHODOLOGY:** **A descriptive study was conducted on 51 patients (25 men and 26 women) post-Covid-19.**	**RESULTS:** **The pulmonary function is reduced in 15(29.4%) patients but also impaired in 24 (47.2%) patients and 12 patients showed a physical capacity reduction in the 6MWT.** **CONCLUSIONS:** **Lung alterations and lung function that persists as well as states of physical and health-related life quality were significantly lower in COVID-19 survivors.**
AUTHOR: **Mustafa Ilteris Bardakci, Esin**	**OBJECTIVES:** **Long-term radiological changes are being**	**METHODOLOGY:** **An observational prospective investigation**	**RESULTS:** **Results showed that forced capacity for vitality (FVC) is**

Nagihan Ozturk, *et al* [5] YEAR 2021 COUNTRY Istanbul Turkey	**assessed and investigated in exercise capacities, pulmonary function, and health-related well-being.**	**was carried out on 65 pneumonia patients.**	**45.8 percent in present in 27 patients, Twenty-six patients had changes in their chest on a CT scan, and general health and physical function were all found to be lower than normal on the scale of SF-36. CONCLUSIONS: After 6 months, radiological and other pulmonary functionality in COVID-19 pneumonia patients still shows some abnormalities.**
AUTHOR: Nicola Mumoli, Aldo Bonaventura MD, *et al* [6] YEAR 2021 COUNTRY Italy	**OBJECTIVES: To overcome the knowledge gap regarding clinical consequences of coronavirus illness in 2019, (COVID-19)**	**METHODOLOGY: A retrospective study was conducted on 88 COVID-19 patients who had previously been hospitalized.**	**RESULTS: Among patients, 40 % patients are hypercapnic, inflammatory biomarkers are improved and other symptoms such as fever, dyspnea, and cough are also resolved but after 3 months, the interstitial involvement is still present in greater than 50 % of patients, according to an HRCT scan. CONCLUSIONS: These findings highlight the necessity for post-COVID-19 patients should be regularly monitored after hospitalization.**
AUTHOR: Eyas A alhuthail, James A Stockley *et al* [7] YEAR 2021 COUNTRY Birmingham, UK	**OBJECTIVES: To see the influence COVID-19 has on respiratory physiology.**	**METHODOLOGY: A comparative descriptive study was conducted on 92 survivors of COVID-19. Those who were admitted into the ICU and those who received ward treatment and spirometry, gas exchange, and breathing patterns were all tested.**	**RESULTS: The findings showed that 65.4 % have pulmonary restriction and 36.1% have reduced transfer factor and 78.1 % had increased transfer coefficient this is highly seen in the ICU patients compared to those receiving the ward treatment and 18.8 % have abnormal breathing patterns are there. CONCLUSIONS: The effect of COVID-19 in respiratory systems is similar in both the department of the client whether they receive oxygen supply by mechanical ventilation or by ward-based supply of oxygen.**
AUTHOR: Qian Wu, Xinwei Hou *et al* [8] YEAR 2021 COUNTRY China	**OBJECTIVES: To assess the clients who were re-evaluated positively after COVID-19 rehabilitation.**	**METHODOLOGY: Follow-up research was undertaken on 302 post-COVID-19 patients. The Borg scale, dyspnea, and manually testing were used to compare detectable positive and non-detectable positive patients between 14 and 6 months after discharge.**	**RESULTS: There was not any major distinction between groups and in the redectable positive group less using an antiviral drug than the non- redectable positive patients. CONCLUSIONS: The recovery of physical and respiratory capacity is based on the severity of infection and hospitalization and those who do not continue antiviral**

			drugs are more likely to get redectable positive.
AUTHOR: **Fridolin Steinbeis, Charlotte Thibeault *et al* [9]** **YEAR** **2021** **COUNTRY** **Germany**	**OBJECTIVES:** **To assess the changes in pulmonary function and quality of life after one year following exposure to COVID-19.**	**METHODOLOGY:** **An observational longitudinal study was conducted on 180 post-COVID-19 patients. The CT scan, Pulmonary function test, and Quality of life were measured between 6 weeks, 3, 6, and one year after the infection.**	**RESULTS:** **After the analysis, the pulmonary function is associated with the severity of the disease, and the respiratory symptoms were improved in the higher severity group at the time of follow-up.** **CONCLUSIONS:** **The severity of pulmonary function deterioration and the quality of life in the post-COVID-19 period is correlated with the respiratory failure**
AUTHOR: **Kristyn L. Lewis, Scott A. Helgeson *et al* [10]** **YEAR** **2021** **COUNTRY** **USA**	**OBJECTIVES:** **To compare COVID-19 infected individuals' lung function tests before and after infection.**	**METHODOLOGY:** **A multi-center retrospective cohort study was conducted in total on 80 COVID-19 infected patients with other comorbidities within one year of infection and measured the pulmonary function test.**	**RESULTS:** **By analyzing pre-post tests and post condition data, there is no variation in the pulmonary function test, and only underlying lung diseases such as interstitial lung disease FEV1 (p=0.03) and cystic fibrosis (p=0.01) were shown to be significantly different.** **CONCLUSIONS:** **There are no differences in pulmonary function before and post-infection, suggesting that the only differences are due to underlying lung disease.**
AUTHOR: **Kai Liu, Weitong Zhang *et al* [11]** **YEAR** **2020** **COUNTRY** **China**	**OBJECTIVES:** **To examine the six weeks of respiratory rehabilitation on COVID-19 patients.**	**METHODOLOGY:** **A randomized controlled study was conducted on 72 patients, with 36 patients included in the experimental group and 36 patients in the control group. A pulmonary function test, six-minute walk test, quality of life, and mental status examination was performed on both groups.**	**RESULTS:** **After 6 weeks of respiratory rehabilitation intervention, there was a statistically significant change in pulmonary function and 6-minute walk test in both groups as well as Quality of life in both groups with anxiety and depression being lower in both groups.** **CONCLUSIONS:** **Since 6 weeks of intervention, there is a considerable improvement in the elderly breathing, quality of life, and anxiety.**
AUTHOR: **Jeannette B Peters, Bram van den Borst *et al* [12]** **YEAR** **2020** **COUNTRY** **The Netherlands**	**OBJECTIVES:** **To evaluate all health domains 3 months afterward recovery from COVID-19 infection.**	**METHODOLOGY:** **An observational study was conducted on 124 post-COVID-19 patients.**	**RESULTS:** **Results show that 99% have reduced ground-glass opacification, 93% have mild disease shown in the X-ray, 91% of patients are found with residual pulmonary parenchymal abnormalities and 36% of patients have cognitive and mental health impairment.** **CONCLUSIONS:** **After the COVID-19**

			infectious disease, the patient still experiences various health problems.
AUTHOR: **Alessia Fumagalli, Clementina Misuraca *et al* [13]** **YEAR** **2020** **COUNTRY** **Italy**	**OBJECTIVES:** **To assess the respiratory function in post-COVID-19 pneumonia at the time of recovery and after the 6 weeks of discharge.**	**METHODOLOGY:** **A case series of research was carried out on 13 patients with COVID-19 pneumonia at the moment of discharge and 6 weeks afterward. ABG analysis, Spirometry, CT scan, and 6-minute walk test were all performed.**	**RESULTS:** **The findings show that 12 patients are having multifactorial ground-glass opacity and in the 6-minute walk test less than 100 m was observed in 4 patients, dyspnea, and fatigue are observed and mild hypoxia was present in 7 patients. Although pulmonary function improves after 6 weeks.** **CONCLUSIONS:** **Although some degree of restrictive modification persisted after the 6 weeks and the pulmonary function had improved.**

DISCUSSION

Some studies related to the assessment of respiratory health of patients with selected comorbidities recovered from COVID-19 indicated there is impairment in the pulmonary function, 6-minute walk test, and quality of life. Also other findings stated that after the introduction of respiratory rehabilitation there was an improvement in the respiratory health was seen.

CONCLUSION

After reviewing some literature, the researcher found that those who are infected with COVID-19 and it is showing a significant decrease the pulmonary function and some variations are seen in biochemical markers such as ABG analysis and 6-minute walk tests also affect the psychological impact on the quality of life. Therefore, through this literature review, the researcher aspires to choose to proceed with this study in their area.

Conflict of Interest: None

Source of Funding: Self

Ethical Clearance: Permission was obtained from Institutional Ethical Committee of CHARUSAT University.

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