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The Post COVID Infection: Immunity and Human Health

Shraddha Vaishnav[1] | Swati Nakhale[2*] | Shubham Patel[3] | Pradhan Avinash Sureshrao[4]

[1]Assistant Professor(Biotechnology)Bharti Vishwa Vidyalaya,Drug, Chhattisgarh, India.
[2]Principal, IIFST, Aurangabad, Maharashtra, India.
[3]M.Sc. in Food Technology, IBSBT, CSJM University, Kanpur, India
[4]PhD Scholar in Agri Business Management, Dept. of Agriculture Economic, SHUATS, Allahabad, U.P., India
[*]Corresponding Author Mail Id: swatinakhale28@gmail.com

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ABSTRACT

Infection with the coronavirus illness 2019 (COVID-19) necessitates rehabilitation. We undertook a study of the most recent papers due to the paucity of English-language guidelines on the rehabilitation of these patients. Randomized trials, recommendations, quasi-randomized or prospective controlled clinical trials, reports, guidelines, field updates, and letters to the editor were included in this literature review, which was conducted utilising the major research databases. In the database search, we found 107 studies, of which 85 were eliminated after reading the entire text or abstract.In the end, 22 studies were included. Patients with COVID-19 who have mild symptoms should be discharged as soon as feasible due to the complexity of the clinical environment and the rapid spread of the severe acute respiratory syndrome coronavirus 2, which leads to rapid occupancy of beds in the intensive care unit. For these reasons, rehabilitation programmes for these patients are needed to assist them regain physical and respiratory function while also reducing anxiety and sadness, especially in patients with comorbidities and those who live alone or in rural areas, in order to reclaim a good quality of life.

Keywords: covid-19, post covid infections, immunity, respiratory infection, anxiety, human health.

1. INTRODUCTION

The coronavirus disease 2019 (COVID-19) outbreak first surfaced in December 2019 in Wuhan, Hubei Province, China, and quickly spread around the world. 1 COVID-19 instances have been reported 16,465,707 times as of July 28, 2020. (according to case definitions and testing strategies in the countries concerned) **(Saez*et al.*, 2020)**.The severe acute respiratory syndrome coronavirus (in terms of virology, epidemiology, and clinical care) is becoming well understood. However, due to a lack of sufficient data, no medicines or vaccines to treat SARS-CoV-2 have been formally licenced **(Li *et al.*, 2020)**.

Because the pandemic is still ongoing, there is a scarcity of information on the clinical and prognostic aspects of COVID-19 patients**(Khot*et al.*, 2020; VardavasandNikitara, 2020)**.COVID-19 is a highly infectious respiratory infection disease, which leads to respiratory, physical, and psychological dysfunction in affected patients**(Zhao*et al.*, 2020)**.Patients are isolated

to prevent the spread of SARS-CoV-2 since COVID-19 is highly contagious. This results in a significant decrease in social connections, making patients feel lonely and alienated **(Zhao*et al.*, 2020; Medica, 2020)**.

Patients in the intensive care unit (ICU) are frequently bedridden for long periods of time. Patients are frequently in a prone position for long periods of time, which can result in post-ICU dysphagia, muscle weakness, myopathy, and neuropathy as a result of critical illness, as well as reduced joint mobility, neck and shoulder pain, difficulty standing, and impaired balance and gait, all of which can limit daily activities **(Medica, 2020; Simpson and Robinson, 2020).**

Some individuals have severe respiratory failure as a result of lung fibrosis, which necessitates respiratory rehabilitation **(Medica, 2020; Simpson and Robinson, 2020)**.Many recommendations for respiratory rehabilitation have been documented in the literature, however these are not based on experiences with COVID-19 patients. For these patients, a rehabilitation programme is deemed necessary, although the location is unknown. As a result, in this study, we examined the most recent articles addressing rehabilitation in patients with COVID-19 infection, providing concrete evidence of programme efficacy as well as suggestions for measures that health care organisations can take to treat patients with COVID-19 in the post-acute phase. Methods The following search phrases were used in PubMed, ScienceDirect, and Google Scholar from April 21, 2020 to April 21, 2020: ["COVID-19" or "COVID 19" or "2019-nCoV" or "SARS-CoV" or "new coronavirus" or "SARS-CoV-2"] and ["Rehabilitation"]. In English and Chinese, there were randomised studies, recommendations, quasi-randomized or prospective controlled clinical trials, reports, guidelines, field updates, and letters to the editor.The titles and abstracts of the publications were initially screened. In a full-text review, articles that were unclear from the title or abstract were assessed according to the selection criteria. Data was gathered from the studies that met the inclusion criteria by two writers who were blinded to each other. To examine the risk of bias, the Cochrane Handbook criteria were used. Two reviewers separately assessed the study's quality, looking for selection bias, performance bias, detection bias, attrition bias, selective presentation of results, and other biases.Disagreements in quality rating and differences in the extracted data were discussed with a third and fourth author in order to establish a consensus. The Preferred Reporting Item for Systematic Review and Meta-analysis (PRISMA-P) standard was followed when conducting this study. Because this was a literature review, no ethics approval or informed consent were necessary.

COVID-19 is a highly contagious respiratory disease that causes patients to have respiratory, physical, and psychological problems. COVID-19 infection causes mild illness in the majority of patients (81%) with fever (88.7%), cough (57.6%), and dyspnea (57.6%). (45.6 percent). However, the infection can have serious consequences for a significant number of individuals, particularly those over 65 years old with comorbidities such as hypertension and diabetes. A surprisingly high percentage of individuals requiring hospitalisation (20.3%) require ICU care, often for acute respiratory distress syndrome (ARDS);**(Simpson and Robinson, 2020).**These patients can also experience multiorgan failure**(Bruglieraet *al.*, 2020).**Isolation is an efficient way to stop the spread of the extremely dangerous SARS-CoV-2 virus. The majority of patients have fever, exhaustion, and muscle discomfort, and they may be bedridden for an extended period of time. This causes a loss of muscle strength, which leads to inefficient sputum expulsion and a considerable increase in the risk of DVT. Patients in the ICU may have a variety of issues as a result of their prolonged immobility and time spent in the prone position **(Medica*et al.*, 2020; Coraci*et al.*, 2020; Lazzeri*et al.*, 2020)**, neuromuscular difficulties, severe muscle weakness and fatigue, joint stiffness, dysphagia, psychological issues, limited mobility, significantly affected quality of life, frequent falls, and even quadriparesis are only a few examples **(Stam*et al.*, 2020; Negrini*et al.*, 2020).**In addition, persistent mental health impairment is commonly described following treatment in the ICU, with pooled estimates showing a high prevalence of depression (29%)**(Simpson and Robinson, 2020)**.The longer a patient is in the ICU, the more likely they are to have long-term physical, cognitive, and emotional issues. Home quarantine and closure of day care facilities are likely to have a negative impact on fragile patients,**(Chaturvedi, 2020)** who may feel physically uncomfortable, frightened, alone, and

depressed**(Huang*et al.,* 2020)**, As a result, these individuals are more likely to drop out of treatment or acquire other psychiatric issues. Respiratory rehabilitation aims to alleviate dyspnea symptoms**(Kumar *et al.,* 2021)**,relieve anxiety and depression, decrease complications, prevent and ameliorate dysfunction, reduce impairment, retain function to the best extent possible, and improve quality of life in COVID-19 hospitalised patients. As of this writing, there is no proof about rehabilitation programmes for COVID-19 patients. Owing to poor knowledge about this infection, most published articles are based on past literature and have mostly considered general symptoms related to COVID-19, such as neuromuscular, psychological, and respiratory symptoms owing to post-acute syndrome and anxiety related to the idea of being infected with the novel coronavirus. Published studies do not specifically report results in patients with COVID-19 but rather focus on the sequelae of infection. In the present review, we identified two lines of thought; the first is based on consolidated principles of early respiratory rehabilitation, including mobilization and psychological support, to be started during the acute phase of illness**(Tewari *et al.,* 2021)**.The second point of view is based on the experiences of China and Italy, two nations who had to deal with the seriousness of COVID-19 pathology early in the pandemic and encountered a rehabilitation services crisis. Early respiratory rehabilitation is not advised for seriously and critically sick patients during periods of probable and progressive deterioration, according to the findings of this analysis. After ruling out contraindications, the date for starting respiratory rehabilitation should be chosen, and all precautions must be followed to prevent the spread of infection.To save resources of personal protective equipment and avoid cross-infection, it is recommended that hospitalised patients in isolation wards use movies, pamphlets, or remote consultations to monitor patients in rehabilitation. Depending on their clinical status, patients who have recovered and tested negative for COVID-19 infection can undertake respiratory rehabilitation. Patients with comorbidities, old age, obesity, numerous diseases, and problems of single or multiple organs require tailored respiratory rehabilitation therapies.To establish a tailored programme, the rehabilitation team should focus on the patient's specific challenges **(Medica, 2020; Borg and Stam, 2020).**Throughout the respiratory rehabilitation process, patients should be monitored using various technologies **(Simpson and Robinson, 2020; Mukaino*et al.,* 2020; Huang et al., 2020).**

The pandemic has had a huge impact on health systems all across the world, especially emergency, intensive care, laboratory, and imaging departments. As the epidemic spreads, practically every aspect of health care will be affected, including post-acute care and rehabilitation. A combination of rigour and professional pragmatism is required in this tough situation. Patients must be discharged sooner than usual to make hospital beds available, thus standard rehabilitation methods do not apply; this necessitates identifying patients who are "almost ready to be discharged" and who have strong caregiver support **(McNeary*et al.,* 2020)**.For this reason, the best recommendation is to develop a discharge rehabilitation programme, with a special focus on patients with comorbidities and those who live alone or in rural areas **(Falvey *et al.,* 2020).**

2. CORONAVIRUS AND HUMAN IMMUNITY

The impact of the coronavirus on the immune systems of humans. Because this virus primarily disrupts the immune system's equilibrium, people must maintain their immunity and strengthen their immune systems to combat coronavirus. Immunity is a state of resistance to invading pathogens (biotic and abiotic) and their detrimental effects on organisms. By counteracting, neutralising, and eliminating pathogens, immunity prevents infection and protects the integrity of the organism. A healthy immune system protects the human body from a variety of communicable and non-communicable diseases. Covid-19 is thought to be heavily altered. Researchers are attempting to develop a treatment or vaccination for the viral infection. Vaccines are still unavailable over the world. As a result, people must maintain their immunity and boost their immunological power by eating a healthy diet on a daily basis **(Tewari *et al.,* 2020).**

3. CONCLUSION

Given the large number of people infected with COVID-19 around the world, and the current state of

scientific knowledge and evidence, it is reasonable to expect that physiatrists and physiotherapists will become more involved in the care of these patients in order to improve pulmonary function, physical and psychological efficiency, and restore a good patient quality of life. Preparation ahead of time and careful planning can assist to mitigate the effects of this unexpected event.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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