

## CASE REPORT

# Virtual Chest Physiotherapy for COVID-19 Patients: A Case Report

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## ABSTRACT

**Aim and objective:** This case report addressed the idea about the effect of virtual chest physiotherapy in improving the respiratory complications of COVID-19 patients. A 50-year-old female was diagnosed as COVID-19 positive at a tertiary care hospital, Pondicherry, with no specific complaints and quarantined in home, and as a preventive measure, we treated with a diaphragmatic deep breathing exercise, pursed-lip breathing, chest mobility exercise, and incentive spirometry virtually through video call for a duration of 2 weeks consisting of two sessions per day. Case reviewed after 2 weeks confirmed COVID-19 negative, and we made an assessment on chest expansion and respiratory rate. The patient showed a normal respiratory rate of 21 breaths per minute and chest expansion of 2.5 cm. Virtual chest physiotherapy was found to be an effective mode of treatment for COVID-19 patients under home quarantine.

**Keywords:** COVID-19, Home quarantine, Virtual chest physiotherapy.

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## INTRODUCTION

Coronavirus disease-2019 (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Patients with suspected or confirmed mild COVID-19 are isolated to contain virus transmission according to the established COVID-19 care pathway. This can be done at a designated COVID-19 health facility, community facility, or home (self-isolation). Most people who fall sick with COVID-19 will experience mild-to-moderate symptoms and recover without special treatment. For mild or asymptomatic COVID-19, patients can be treated and monitored in their homes. Physiotherapy plays a major role in the rehabilitation of COVID-19, and chest physiotherapy was done to improve the pulmonary complications.<sup>1</sup>

When the patients are home quarantined, digital physiotherapy became a valiant method to provide support to the medical management to rehabilitate. Digital physiotherapy ranges from various modes; virtual physiotherapy is one among the method, and the reliability and validity are already proved by various research works.<sup>2,3</sup>

The concept of virtual physiotherapy is not new, but it is already in practice. Physiotherapists employ virtual physiotherapy as an effective treatment medium for various conditions. For isolated patients with COVID-19, virtual physiotherapy can be as effective as a direct method, offers equitable access to services, provides more efficient use of staff time, and reduces costs.<sup>4</sup> Clinical impression of COVID-19 may vary from slight discomfort to more severe consequences such as dyspnea, hypoxia, respiratory failure, and the worst of all, death. In a report released from the Chinese Center for Disease Control and Prevention, approximately 44,500 confirmed cases were classified as mild (81%), severe (14%), and critical (5%) based on disease severity. The chest physiotherapy decided for the COVID-19 patient is planned according to the severity and need of the patient. The therapeutic exercises included in the chest physiotherapy of virtual mode to COVID-19 patients who are in home quarantine to improve their pulmonary complications were already experimented and proved by numerous studies. Virtual chest physiotherapy can be practiced not only in patients who are in home quarantine but also in patients who are in wards.<sup>5,6</sup>

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## CASE DESCRIPTION

A 50-year-old female was diagnosed as COVID-19 positive at a tertiary care hospital, Pondicherry, with no specific complaints and quarantined in home; and as a preventive measure, we treated with a diaphragmatic deep breathing exercise, pursed-lip breathing, chest mobility exercise, and incentive spirometry virtually through video call for a duration of 2 weeks consisting of two sessions per day. Case reviewed after 2 weeks confirmed COVID-19 negative, and we made an assessment on chest expansion and respiratory rate. The patient showed a normal respiratory rate of 21 per minute and chest expansion of 2.5 cm. Virtual chest physiotherapy was found to be an effective mode of treatment for COVID-19 patients under home quarantine. This case report addressed the idea about the effect of virtual chest physiotherapy improving the respiratory complications of COVID-19 patients.

After getting the phone number and details of the patient from the COVID-19 cell of tertiary care hospital, Pondicherry, virtual chest physiotherapy was given to the patient through video call for 2 weeks consisting of two sessions per day, with a single session duration of 30 minutes. Virtual chest physiotherapy consists of diaphragmatic deep breathing exercise for 50 counts, incentive spirometry for 50 counts, pursed-lip breathing exercise for 50

counts, and chest mobility exercise for 10 counts. At the end of the home quarantine, the patient underwent COVID-19 screening and diagnosed negative. The patient came to tertiary care hospital for follow-up with the result, and we made an assessment on respiratory rate and chest expansion with the help of stopwatch and inch tape. After the assessment, we found that the respiratory rate of the patient was 21 breaths per minute and the chest expansion was 2.5 cm, which were normal.

## DISCUSSION

The patient is apparently normal and asymptomatic because of that only she was home quarantined. Initially, the patient found it difficult to perform and follow the treatment, but later she found it easy and cooperated well. In this case report, we found that virtual chest physiotherapy is effective to prevent the pulmonary complications of asymptomatic COVID-19 patients. When the patient came to the hospital, the respiratory rate was 21 breaths per minute and the chest expansion was 2.5 cm. These values are absolutely normal for a healthy individual, but we do not have the pretest values to compare with the current values.

Sakai et al. conducted a research in remote physiotherapy for COVID-19 patients who were admitted in hospital to promote pulmonary functions of COVID-19 and concluded remote physiotherapy is as productive and as effective as direct physiotherapy service to improve the pulmonary complications, and also they strongly suggest to use technology like video calling to avoid the risk of chances of getting infected in this pandemic.<sup>7</sup> In our case also, we found that the patient has not developed any pulmonary complications, and the aim of the chest physiotherapy for asymptomatic COVID-19 has been conquered.

Physiotherapy telerehabilitation protocols to prevent and improve the pulmonary complications of COVID-19 patients who are in the home were designated and used by Gonzalez-Gerez et al. In their preliminary conclusions, they found that telerehabilitation is as effective as the direct method.<sup>8</sup>

Zha et al. administered modified physiotherapy interventions for COVID-19 cases in their study. Interventions included overhead chest and shoulder stretch (one set of two repetitions), standing heel raises, and upper body rotation (one set of four repetitions) along with their native acupressure treatment. Their research concluded that the modified rehabilitation exercises are specifically designed for the rehabilitation of COVID-19 patients at home or health facilities. Currently, it is only recommended for mild COVID-19 patients.<sup>9</sup> In the preview of our discussion with this study, our research also endorses the same in the rehabilitation of mild COVID-19 cases. The use of video visits for physiotherapists and physicians for the healthcare services has blossomed quickly and will remain an important tool in the foreseeable future, even once the pandemic has completely resolved.

## LIMITATIONS

Since the patient is confirmed COVID-19 and treatment mode is virtual, there are a lot of limitations in this study. There are no baseline data for comparison. Administration and monitoring of the treatment were difficult. In spite of these limitations, we managed and continued the treatment sessions as mentioned above.

## CONCLUSION

According to our case report, it is concluded that the virtual chest physiotherapy is found to be an effective treatment for COVID-19 patients under home quarantine. Chest physiotherapy has been used in many different respiratory conditions. It has been said to improve gas exchange, reverse pathological progression, and reduce or avoid the need for artificial ventilation when it is provided very early.

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