

Role of Physiotherapy in Long Term Physical and Mental Health of People Recovered From COVID 19: A Systematic Review Protocol

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Study protocol

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Abstract

Background: the objective of the study to design a protocol on the effectiveness of physiotherapy on long term physical and mental health of recovered patients from coronavirus disease 2019.

Methods: The following electronic databases will be searched from inception to June 2020: PubMed, EMBASE, Web of Science, China National Knowledge Infrastructure, Chinese Biomedical Literature Databases, and other databases. We will include all published documents regarding this topic. Two separate individuals will analyse studies and select accordingly after removal of duplicate studies. Then, final screening, assessment of quality of the articles and data analysis will be done. Meta-analyses, subgroup analysis, and descriptive analysis will be performed based on the included data conditions.

Results: Methodological heterogeneity analysis of current evidence will be provided from Physical health outcomes like Barthel Index or Functional Independence measure scale and questionnaires describing health status like Physical Health Questionnaire and Mental health outcomes like SRQ-20, Hamilton Depression scale or Hamilton Anxiety scale.

Conclusion: This study will provide the evidence regarding the importance of physiotherapy in future physical and mental health of recovered COVID-19 patients, when performed during treatment of disease in acute hospital management.

PROSPERO registration number: [CRD42020190863](#)

Introduction

COVID-19 (Coronavirus disease 2019) is a recently found and known highly infectious respiratory disease, declared as a global urgent medical issue on 31st January, 2020 by the World Health Organization (1). There's nevertheless no specific medical management for COVID-19 Just like MERS and SARS (2). COVID-19 has become a serious concern for all people all over the world with large number of people infected and died, even larger than SARS itself (3, 4). The only management left here in this disease is supportive protection and symptomatic treatment methods like social distancing and medications for high temperature, cough, multivitamins etc (5). COVID-19 disease has diverse range of symptoms from no symptoms at all to Acute Respiratory Distress Syndrome and multiple system dysfunctions. The common symptoms mainly include fatigue, pyrexia, cough, headache, body pain, sore throat, and dyspnoea etc (6). Specific diagnosis of the disease is done by RT-PCR on upper and lower respiratory specimens like oropharyngeal and nasopharyngeal swab, sputum, endotracheal aspirates and bronchoalveolar lavage. Additional clinical specimens may be collected as virus can be found in the stool and blood (7). The radiographic image of chest may also show bilateral pulmonary infiltrates in late infection but may be normal in early infection (8). Many researches have been already conducted to describe that physiotherapy given during the treatment of hospital admitted COVID-19 patients has great role in achieving a long standing healthy life for both physical and mental health perspective . It has also been seen that physical activity and cardio respiratory fitness is directly linked to good mental and

psychological well being (9). And likewise, psychotherapy using various psychological methods is helpful in eliminating physical symptoms and improves mental health (10, 11).

Physiotherapy is a well accepted and traditional profession that has been practiced all over the world. It is mandatory to have physiotherapists in different wards and ICUs in all health care centres. As an international clinical guideline, it has been recently published that physiotherapy is really effective in acute management of respiratory and physical complications in COVID-19 patients admitted in hospital setting. Coronavirus disease causes various comorbidities in patients and leads to serious functional loss as well as ICU-acquired weakness, physiotherapists have an important role here in administering interventions like general bed exercises, joint mobilisations, breathing techniques, postural drainage etc (12).

We have described the role of physiotherapy in management of patients with COVID-19 in acute hospital environment. With the help of this review, we will come to know the difference between the long term health status of patients with COVID-19 who underwent physiotherapy in their acute phase of disease in hospital and who did not received any physiotherapy management in their acute care. This difference will be accounted in terms of physical and mental health of those people who has recovered from the disease and are leading a normal life after one or two years of their disease occurrence. This would clearly describe the role of physiotherapy in long lasting well being of people who had recovered from COVID-19 documentation for health care professionals.

Methods

2.1 Study registration

This protocol for systematic review has been registered in the PROSPERO with registration number **CRD42020190863** and it is based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols guidelines (13).

2.2 Study selection criteria

2.2.1 Study type: Randomised controlled trials (RCTs) of physiotherapy on physical health and mental health for COVID-19 in English language only will be added. RCTs that involve any one physiotherapy procedure to the patients and have one control treatment will be finalised. Animal studies, case-report, editorials, discussion and duplicate reports will not be taken.

2.2.2 Participants: All patients recovered with COVID-19 will be selected without taking age, gender, ethnicity and financial status into consideration.

2.2.3 Interventions: Physiotherapy procedure of any kind like mobilisation, manual therapy, cardio-respiratory physiotherapy, machine therapy or general physical therapy exercises will be included whereas Chinese therapies like acupuncture or any Chinese medicine will not be entertained. Control treatments can be treatments other than physiotherapy or inactivity.

2.2.4 Outcome measures: Physical health outcomes will be scales measuring the capability of performing daily living activities like Barthel Index or Functional Independence measure scale and questionnaires describing health status like Physical Health Questionnaire. Mental health outcomes will be the scales describing the psychological condition of patients like SRQ-20, Hamilton Depression scale or Hamilton Anxiety scale.

2.3 Data sources

The electronic databases search will be conducted from inception to June 2021. These are Web of Science, PubMed, Google scholar, China National Knowledge Infrastructure, EMBASE, Chinese Biomedical Literature Databases and Science-direct. Only RCTs will be included. Keywords will be used with free words combination according to difference in databases and extensive search will be done.

2.4 Search strategy

The teams that will be searched on PubMed will be “physiotherapy”, “physical therapy”, “cardio-respiratory therapy”, “physical exercise”, “rehabilitation”, “Corona Virus”, “Corona Virus Disease 2019”, “COVID-19”, “Randomised Controlled Trial”, “randomised”, “randomly”, “clinical trial”. MeSH headings and text words combinations will be used. Table 1 shows the search strategy for PubMed database.

Table 1. Search strategy

Search strategy for PubMed

Number	Search terms
1	Physiotherapy
2	Physical therapy
3	Cardio-respiratory therapy
4	Physical exercise
5	Rehabilitation
6	1 or 2-5
7	COVID-19
8	Corona Virus Disease 2019
9	Corona Virus
10	7 or 8-9
11	Randomised Controlled Trial
12	Randomised
13	Randomly
14	Clinical trial
15	11 or 12-14
16	6 and 10 and 14

2.5 Data collection and analysis

2.5.1 Selection of studies: Two reviewers (NR and VG) will separately chose the articles based on the titles and abstracts of the papers. Discussion on the results will be done between them. In case of disagreements, a third reviewer (AP) has to decide finally. Studies screening process is shown in the figure 1. Only full text literature will be obtained.

2.5.2 Data extraction: Data will be recorded electronically in terms of patients' characteristics, interventions, eligibility criteria, outcomes, the study features and results. Disagreements between the two authors for data extraction, a third reviewer will come with the final decision.

2.5.3 Assessment and quality: Quality and assessment of risk of bias of the studies will be estimated with the help of Cochrane collaborative tool independently by the two reviewers.

2.5.4 Measures of treatment effect: In this convention, we will utilise 95% confidence interval (CI) hazard proportion to thoroughly establish the dichotomous information. For efficacy of 95% CI in continuous data, difference between means (M) and standard deviation (SD) will be used.

2.5.5 Dealing with missing data: Authors will be communicated via email. In case if missing data could not be revived, then the study will not be included.

2.5.6 Assessment of heterogeneity: The distribution of participant factors like sex, age, time of stay in hospital and intervention factors like nature of physiotherapy intervention and control intervention of the included studies will be compared. Methodological heterogeneity will be checked by using I^2 with value less than equal to 50% and chi-square test ($\alpha=0.1$).

2.6 Ethics

This paper is a systematic review protocol and ethical approval is not necessary for this.

Discussion

The current COVID-19 pandemic is clearly a global public health problem. There is rapid progression in the transmission and clinical characteristics of the disease. Treatment is primarily supportive and symptomatic. WHO has published the guidelines for critical care management of the disease (14). Along with physicians, nurses and Intensive care unit staffs, physiotherapist also played an important role in the therapeutic management of COVID-19 patients. Physiotherapy is effective in cardio-respiratory fitness and physical rehabilitation of these patients. We know that this coronavirus disease can cause comorbidities like lung damage, kidney damage, liver damage and even multiple organ failure too. Most common physical problems that occurs due to longer periods of inactivity during disease could be joint stiffness, contracture, capsulitis, deep vein thrombosis, decubitus ulcers, cardiorespiratory insufficiency and so on. Psychological sequelae could be depression, anxiety, insomnia and mood alterations (15). If patients get proper physiotherapy followed as the proposed rehabilitation guidelines, then these conditions can be avoided and patients can return to their normal life.

Many studies has been published to suggest different types of physiotherapy advices for fast recovery of patients in both acute as well as chronic setting (16, 17). Here, with different studies published on the physiotherapy and respiratory management of COVID-19 patients, we would be able to review them and find the difference in the physical as well as mental health of patients after recovery who underwent physiotherapy and who did not.

Future studies and limitations will be shortlisted during evidence identification. One limitation that is highlighted now is the biases of language, as we will only search for English data. If the evidence could prove physiotherapy has strong benefit in future physical and mental health of COVID-19 patients, it would be helpful to people everywhere in the world. However, there is no systematic review on this topic, this would be the first review.

Abbreviations

COVID-19 = Coronavirus Disease 2019, RCT = Randomized Controlled Trial, MeSH: Medical Subject Heading, PEDro: Physiotherapy Evidence Database, PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-analyses.

Declarations

1. Funding

No.

2. Conflict of interests

No competing interests.

3. Acknowledgements

Not applicable.

4. Authors' contributions

V.G., A.P., and O.P.S contributed to conception idea and design of the project. N.R.D. and V.G. wrote the manuscript. A.P. and O.P.S. discussed and finalized the data structure of the manuscript. All authors read and approved the final manuscript.

5. Availability of supporting data

This study is the protocol for a systematic review and materials are not being collected and no data is yet available. After publishing the systematic review results, the dataset will be made available.

6. Ethics approval and consent to participate

Not applicable.

7. Consent for publication

Not applicable.

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Figures

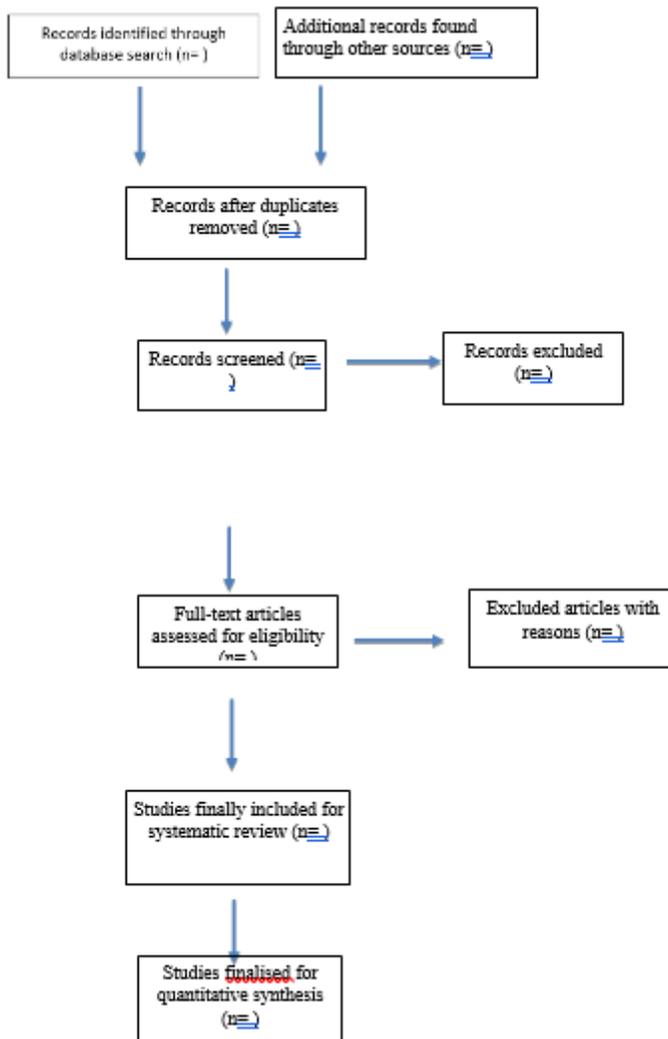


Figure 1

PRISMA flow diagram of the study process. PRISMA, Preferred Reporting Items for Systematic review and Meta-Analysis.