

Effectiveness of physical therapy practice on COVID-19 patients: A systematic review

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Abstract

This study aimed to show the importance and effects of physical therapy practice on patients who are diagnosed with COVID-19 disease, particularly how physical therapists perform their treatment sessions in the most effective way possible and how important these sessions are for patients with COVID-19 who need rehabilitation. In this study, researchers have used quantitative systematic review in analyzing the literature presented and have acquired 313 references from the data check yield. The researchers then screened and analyzed the titles and abstracts and the full texts resulting in a final selection of 13 references that were acquired using PRISMA and JBI evaluation methods. Based on the articles reviewed, physical therapy is effective in patients who are diagnosed with COVID-19. Physical therapists play a significant part during COVID-19 in providing respiratory support and active mobility to patients in hospitals, with early rehabilitation or with underlying difficulties that can be treated. Therefore, physical therapists had to go through a great deal of adjustments to comply with the new normal due to the pandemic.

Keywords: Physical therapy practice; Effectiveness; Importance; COVID-19 patients; Systematic review.

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Introduction

Coronavirus Disease or more known as the SARS-CoV-2 virus is the infectious disease known as COVID-19. It was originally detected in Wuhan, a province in China back in December 2019. Back in 2020, the disease was elevated into a pandemic by the first quarter of the year as it is important to be controlled in its earliest stages due to its high danger of transmission and propagation. With the aftermath of transmission and propagation of the disease, it has become a reason for the downfall and overwhelm of the global health system. The World Health Organization (WHO) has informed the public that viruses can transmit from the lips or nose of an affected person in minute quantities on the occurrence of the person who is infected with sneezes, coughs, speaks, sings, or even just by breathing. It can result in patients developing respiratory distress or failure causing some patients to be seriously ill and require severe medical attention such as getting admitted into intensive care units of hospitals. According to Yuki et al. (2020), COVID-19 disease is divided into five categories: asymptomatic, mild, moderate, severe, and critical. When a patient has an asymptomatic condition, there are no clinical symptoms or indicators, and chest imaging is normal. Acute upper respiratory infections in mild cases can cause symptoms including fever, tiredness, myalgia, coughing up blood, sore throat, runny nose, and sneezing. Additionally, digestive issues like nausea, vomiting, pain in the abdomen, and diarrhea could develop. Moderate instances include persistent fever, persistent cough, or pneumonia without overt hypoxemia and chest computerized tomography (CT)

findings of lesions. In severe cases, patients had hypoxemia with pneumonia and a SpO₂ lower than 92%. The final diagnosis for critically ill patients with acute respiratory distress syndrome (ARDS) includes encephalopathy, myocardial injury, cardiac failure, coagulation abnormality, and acute renal injury. Most of the patients who contracted the virus were elderly or had underlying medical conditions including cardiovascular disease, diabetes, chronic lung disease, or cancer, which make them more prone to contracting serious infections. However, anyone who contracts COVID-19 can become very ill and die at any age.

According to the Philippine Physical Therapy Association, physiotherapists serve individuals and groups to develop, maintain and recover maximum movement and functional activity throughout their lives. Physiotherapists often act as independent practitioners and act as the first contact practitioner of a patient or client who needs direct contact. As an allied health profession, physiotherapists and physical therapists are well known for restoring functional mobility of a person. As stated by Li et al. (2020), in addition, full-face masks and proper hand hygiene were also considered to be used during respiratory physical therapy interventions. The purpose of physical therapy is aimed at minimizing sputum retention and respiratory and limb muscular power, airway patency, and operative mobility. Felten-Barentsz et al. (2020), indicated that the physical therapists' management of COVID-19 hospitalized patients includes vigorous mobilization and respiratory support. Breathing control, thoracic expansion exercises, airway clearance methods, and respiratory muscle strength training all fall under the category of respiratory support. Walking, active limb exercises done with assistance, active range of motion exercises, and bed mobility exercises are all examples of active mobilization procedures. Dean et al. (2020) also stated that a complete evaluation is necessary to minimize long-term functional repercussions, enhance gas exchange, decrease airway obstruction, prevent deconditioning and significant sickness issues, and counteract the negative effects of lying down and taking a nap. Body positioning and mobilization is recommended based on inspection. In every aspect of COVID-19 treatment, physical therapists have an unquestionable role, since COVID-19 was a newly discovered illness, rather than concentrating on specific symptoms and concerns in specific patients. With the progression of the pandemic, physical therapists who are known to have direct contact with patients have had trouble in handling patients due to the possible risk of infection. There have been changes or modifications made for physiotherapists to provide the best care that they can provide for their patients despite the surge of the pandemic.

The objective of this study was to illustrate the significance and influence of physical therapy practice on COVID-19 patients. There are several questions that the researchers sought to answer throughout the course of the study. In this study, the researchers would like to determine how physiotherapists perform their treatment sessions in the most possible and safest way and how important these sessions are for patients with COVID-19 who need rehabilitation. Specifically, researchers were able to collect data and conduct systematic reviews demonstrating the importance and effectiveness of physiotherapy practices in patients with COVID-19.

Statement of the Problem

This study aimed to determine the efficacy of physical therapy practice on COVID-19 patients. It attempted to respond to the following:

1. What is the importance of physical therapy practice in patients during COVID-19?
2. What is the effectiveness of physical therapy treatment in patients with COVID-19?

Research Paradigm

PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) was used as the study's framework, as it is usually used for reviews that analyze how different treatments work, but it

can also be a good starting point for writing systematic reviews that have other goals besides treatment effects. Systematic reviews and meta-analyses in the field of healthcare are becoming more important. Clinicians read them to keep events in their field up-to-date, and developers of clinical practice recommendations often use them as a starting point for writing new guidelines. Some funding groups might ask for a systematic review to show that there is a reason to do more research, and some healthcare journals are moving in this direction. The value of a systematic review is determined, like the worth of any other type of study, by what was done, what was found, and how clearly the findings were reported. Systematic reviews can vary, which makes it hard for readers to judge the strengths and weaknesses of these studied topics. The PRISMA 2009 statement was revised in 2017 by an international panel to bring it up to date and ensure that it remains relevant. This was done by including new methods and language used in systematic reviews over the last ten years.

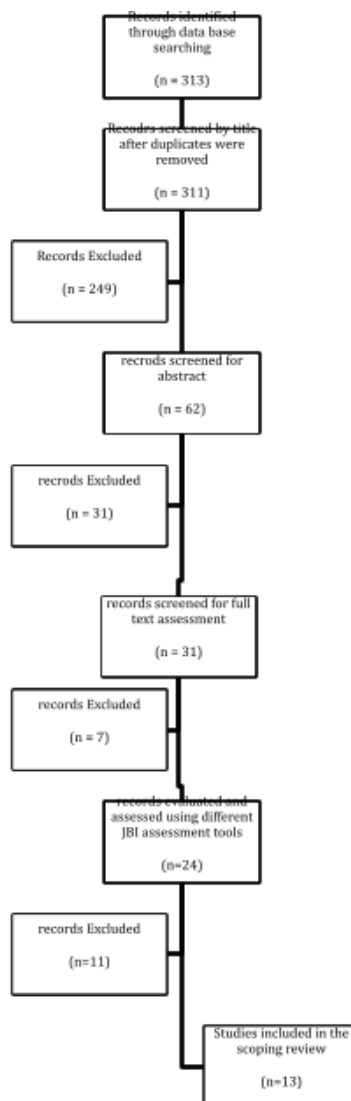


Figure 1. Conceptual Framework of the Study

Based on the data in figure 1 which is the conceptual framework of the study, the researchers have used PRISMA to extract their data to find journals to include in their study. The researchers have found 313 articles from base searching. They then individually screened the articles and reduced the articles to 311 after duplicates had been removed. After using the exclusion criteria, the researchers ended up with 249 articles. The researchers then individually screened the articles then ended up with 62 articles after being screened with the abstract. The researchers then ended up with 31 articles after the exclusion criteria

then screened the remaining articles for full text assessment. The researchers then ended up with 24 articles after being evaluated using different JBI assessment tools which then ended up removing 11 articles after their exclusion criteria which ended up with the researchers having 13 results included in the scoping review.

Methodology

Research Design

To determine the effectiveness of physical therapy on COVID-19 patients and how physical therapy came to be relevant during the pandemic, this research study used a quantitative systematic review design. A systematic review is a summary of the medical literature that searches for, critically assesses, and synthesizes data on a particular topic using defined, repeatable processes. It accomplishes this by combining the results of multiple original studies that are related to one another and by employing techniques that reduce random errors and biases (Gopalakrishnan & Ganeshkumar, 2013). In a systematic review, the synthesis phase often involves a meta-analysis, where results from many different reviews are brought together to form a summarized hypothesis. This includes calculating the overall effect and assessing how much this effect varies across different studies (Davis et al., 2019).

Search protocols were developed so that the study review could continue. To locate journals and studies that should be analyzed as part of the review, database searches were done. The databases used for the literature search were Oxford Academic, 2022 APTA Academy of Cardiovascular and Pulmonary Physical Therapy, Elsevier, MDPI, and PubMed Central because they are important for addressing the research question and provide data from relevant scientific, ethical, and technical studies. Conducting a literature search is an essential first step in doing real research. It helps with planning the study and forming a clear research question (Grewal et al., 2016). Since there is a huge amount of published data, the ability to choose relevant articles is a key skill. Search terms were identified using synonyms and keywords to find information across various databases.

Table 1. Database Search for Systematic Review

Eligible Databases	Modified Keywords	Hits	Yield After Titles	Yield After Abstract	Yield After Full Articles
PubMed Central	“Physical Therapy” OR “Physical Therapy Practice” OR “Physical Therapy Management” OR “Physical Therapy Rehabilitation” OR “Physiotherapy”	134,302	48	12	3
PubMed Central	“COVID-19 Patients” OR “COVID-19”	335,214	45	10	1
PubMed Central	“Physical Therapy” OR “Physical Therapy Practice” OR “Physical Therapy Management” OR “Physical Therapy Rehabilitation” OR “Physiotherapy” AND “COVID-19 Patients” OR “COVID-19”	335,214	65	10	1
PubMed	“COVID-19 Patients” OR “COVID-19” OR “Rehabilitation” OR “Physical Therapy”	8,037	28	9	1
PubMed	“Physical Therapy” OR “Physical Therapy Practice” OR	1,655	30	3	1

	“Physical Therapy Management” OR “Physical Therapy Rehabilitation” OR “Physiotherapy”				
PubMed	(“Physical Therapy” OR “Physical Therapy Practice” OR “Physical Therapy Management” OR “Physical Therapy Rehabilitation” OR “Physiotherapy ”) AND (“COVID-19 Patients” OR “COVID-19”)	4,543	44	9	1
Oxford Academic – PTJ	“Physical Therapy” OR “Physical Therapy Practice” OR “Physical Therapy Management” OR “Physical Therapy Rehabilitation” OR “Physiotherapy ”) AND (“COVID-19 Patients” OR “COVID-19”)	63	15	4	3
MDPI	(“Physical Therapy” OR “Physical Therapy Practice” OR “Physical Therapy Management” OR “Physical Therapy Rehabilitation” OR “Physiotherapy ”) AND (“COVID-19 Patients” OR “COVID-19”)	1	1	1	1

PubMed Central	Elsevier	MDPI	Oxford Academic	2022 AP TA Academy of Cardiovascular and Pulmonary Physical Therapy
Title: physical therapy AND Title/Abstract: effectiveness to COVID - 19 patients	Title: Physical Therapy or PT AND Abstract: effectiveness to COVID - 19 patients AND All text: COVID - 19 patients	Document Title(TI): Physical Therapy AND Abstract(AB): Effectiveness to COVID - 19 patients AND Abstract(AB): COVID - 19 patients AND Document text(PT): COVID - 19 patients	Title: Physical Therapy AND Abstract: Effectiveness to COVID - 19 patients AND Abstract: COVID - 19 patients	Title: Physical therapy AND Title, abstract, keywords: Effectiveness to COVID - 19 patients AND COVID - 19 patients.

Figure 2. Data search from databases

Research Question

PICO (Population/Patient/Problem, Intervention, Comparison, and Outcome) was utilized by researchers to formulate a research question. With the PICO presented in Table 2, the researchers were able to formulate a research question: “*Is physical therapy important in treating patients with COVID-19?*”

Table 2. PICO Framework in Research

P	COVID-19 Patients
I	Physical Therapy
C	Not Applicable
O	Effectiveness of Physical Therapy

Eligibility Criteria

The researchers have established the following inclusion and exclusion criteria to conduct more efficient and accurate study. To ensure the validity of this literature evaluation, it is essential to pay attention to the data collection process and the accuracy of the chosen research. For the literature review to be up-to-date and include the most recent findings, it is also essential to pay close attention to the articles being chosen and their dates of publication.

Inclusion Criteria

- COVID-19 patients who were infected with any different variants of concern
- COVID-19 patients who underwent any physical therapy treatment
- COVID-19 patients with mild, moderate, and severe cases
- COVID-19 patients with or without comorbidities

Exclusion Criteria

- COVID-19 patients who did not seek any physical therapy treatment

Research Population

The population of this research was taken from the compiled articles that the researchers analyzed. The population that was used were COVID-19 patients with and without other underlying conditions, ages 18-80 years old, races from various countries with mild, moderate, severe, and critical cases.

Research Instrument

The tool utilized in this study was based on collaborative articles/journals compiled from various research and publication projects to assess the significance and value of physical therapy for COVID-19 patients. The quality of the studies that were going to be examined was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Tools. It includes checklists for qualitative research, systematic reviews, research synthesis, economic evaluation, cross-sectional analysis, and text and opinion. The final steps of data collection, content evaluation, and story account thus included a total of 13 studies.

This objective is to assess the effectiveness of the research methodology employed and the degree of success it has in relation to the viewpoint that was examined in terms of its presence, actions, and interpretation. The synthesis and analysis were facilitated by the evaluation's findings as they relate to the effectiveness of each study (Joanna Briggs Institute, 2017). Moreover, each step of the search was thoroughly itemized and documented carefully, in which duplicates were removed, abstracts were analyzed, and full texts of each study were probed in every single thought so that it will fit for the systematic review of the present study. Scoring is commonly used in quality assessment checklists. To make the JBI quality assessment results easy to understand, scoring was used. Percentages were given to allow for a clear comparison of the quality of the various research.

Even though some studies were excluded because their evidence quality was considered low due to unclear study designs or weak JBI criteria, these were not included in the final list of sources for review. The included systematic reviews had moderate to high quality (82-100%; mean 92%). All JBI quasi-experimental studies and qualitative research received a score of 100%, except one study that scored 59% and was therefore excluded from the sources. However, the effectiveness of study strategies improved the level of in-depth comprehension of the subject.

On the other hand, PRISMA was used in this research. Although studies were mainly done and written in different countries, it is not a true tool for assessing the quality of a systematic review. Most of

the researchers focused on how COVID-19 patients responded to physical therapy. PRISMA is an approach for analyzing data gathered through reviews and other types of studies that are evidence-based. It helps authors in improving meta-analysis and literature review reporting. The researchers used the PRISMA to gather their data to choose articles to be included in their analysis. Through base searching, the researchers have located 313 articles. After carefully reviewing each article, they whittled the total down to 311 after eliminating duplicates. The researchers eventually produced 249 publications after applying the exclusion criteria. After screening each publication manually using the abstract, the researchers had 62 articles remaining. After applying the exclusion criteria and screening the remaining publications for full text evaluation, the researchers were left with 31 articles. 24 publications were ultimately produced by the researchers after being examined utilizing various JBI assessment methodologies, which subsequently removed 11 papers after applying its exclusion criteria, resulting in 13 results for the researchers being included in the research study.

Data Gathering and Procedure

The researchers independently reviewed the included publications from various databases, including PubMed Central, Elsevier, MDPI, Oxford Academic, and 2022 APTA Academy of Cardiovascular and Pulmonary Physical Therapy. Based on the specified criteria, the publications used for this study were appropriate.

A descriptive analytical approach was employed to extract qualitative or process-oriented knowledge from each sample. Additionally, it was necessary to compile the results and summarize them. The quality of the included research is then evaluated explicitly and systematically using the Critical Appraisal Tools developed by the Joanna Briggs Institute (JBI). Clarity, accuracy, and ethical considerations are crucial when it comes to data disclosure.

A total of 313 references were found as a result of the data check. 311 potential sources remained after duplicates were eliminated. The number of references was reduced to 31 after the titles and abstracts were first scrutinized for relevancy. Additionally, the whole text was screened to produce 24 references, which were then analyzed, and final 13 references were chosen. In the final step, these sources were examined and evaluated using several JBI assessment techniques. 13 sources in all were used to support this thesis during the analysis. The most common reasons for rejecting papers were that they were exact duplicate copies of articles already published in other databases, that the topic was not related to the study, that the writing lacked clarity rather than being too specific, or that it had nothing to do with the problem being studied.

Results and Discussion

Importance of Physical Therapy Practice in Patients during COVID-19

Patients who are diagnosed with COVID-19 may experience long-term repercussions, including a reduction in their functional capability and, as a result, their ability to do their job. Paz et al. (2021) did a study in investigating how COVID-19 pandemic affected occupational health, with a focus on the importance of physical therapy in rehabilitation. A comprehensive analysis of the article revealed four themes that were consistent with the results of this study: impact of COVID-19 on workplace health; use of physiotherapy in mild and moderate cases that do not require hospitalization; use of physiotherapy in inpatients infected with COVID-19; use of physiotherapy in post-intensive care units (ICU) and post-discharge recovery. COVID-19 can affect many parts of the body and lead to both short-term and long-term health problems, including physical and mental challenges. Physical therapists need to be part of the effort to help patients recover their physical abilities and get back to work as quickly, safely, and effectively as possible (Paz et al., 2021).

The pandemic surprised the healthcare industry, and it needed to adjust to the situation immediately. This required immediate changes in the systems and protocols to cater to the influx of patients seeking medical attention. According to Wasilewski et al. (2020), many COVID-19 patients who recovered suffer from long term symptoms that affect both physical and mental health. To recover, physical therapy is recommended, as it is proven to improve functional ability. Therapy can provide comfort and support to those who have difficulty recovering from COVID-19. Therapy can be part of the intervention for many of these comorbidities such as exercises for obesity, deep breathing exercises and drainage for respiratory disease, and other chronic pain. Due to the circumstances, many interventions must be modified to cater to the patient's needs and ability. Modification of the schedules and the required protection attire must be considered to continue with the sessions.

COVID-19 is a highly contagious virus and different rehabilitation settings must be included in the modifications such as modifying the tasks, roles, use of protective gear, and the scheduling of the rehabilitation team; creating the associative COVID teams that made up of physicians, nurses, respiratory physiotherapists (RTs), and physiotherapists (PTs); changes in scheduling; reducing staff members to address the shortage of protective equipment (PPE); delegating task based of professional skills, putting together an internet communication system to facilitate email and document printing, and requiring PPE for patients going through rehabilitation. Physical therapists play a critical role in supplying active support for the respiratory system mobilization to COVID-19 patients in hospitals. Physiotherapy care is individualized in terms of frequency, intensity, type, and timing of intervention, especially in patients with severe / serious illness, patients over 70 years of age, obesity, and other complications. Patients with COVID-19 who are hospitalized present a range of symptoms, including muscle pain, fever, fatigue, cough, and breathing difficulties. It is thought that hospitalized patients who are elderly or who have underlying medical conditions are more likely to have severe symptoms and a higher risk of physical deconditioning. To prevent further deconditioning, patients should be encouraged to engage in physical activity through active mobilization as much as possible while they are in the hospital. Physical therapists are important in treating patients with COVID-19 and can offer individuals specialized exercises and training that suit their needs and preferences. The treatment guidelines apply to both critically unwell people admitted to the intensive care unit and seriously ill patients admitted to the COVID ward. Patients with COVID-19 who are hospitalized receive active mobilization and respiratory support from a physiotherapist. Airway clearance procedures, chest dilation, respiratory strength training, and respiratory control are all examples of respiratory assistance. It is advised to engage in activities of daily living, mobility training, fixed bike, pre-walking, and walking exercises in addition to bed range of motion, active range of motion, active assistive limb exercise, and active range of motion (Felten-Barentsz et al., 2020).

Physical therapists or physiotherapists act a significant role on patients that are diagnosed with and without coronavirus disease as they provide physical rehabilitation and respiratory rehabilitation. During the respiratory rehabilitation, physical therapists must wear a PPE suit and an additional full-face mask for additional safety as respiratory therapy techniques were considered aerosol-generating procedures. It was also stated by Thomas et al. (2020) that physiotherapists and other hospital staff must educate the patients about cough etiquette where patients who are able to move dependently must use tissue when coughing and dispose of the tissue properly followed by proper hand washing. For the patients that are unable to move independently, the staff should assist. Physical therapists ought to also position themselves two meters away from the patient when coughing and must avoid re-using respiratory equipment. When treating patients with respiratory illness, the physical therapists focus on preventing sputum retention, respiratory limb exercises to increase muscle strength, maximizing airway patency, and functional mobility. Each session of physical therapy includes positioning, respiratory management, and movement exercises and there were no recorded adverse effects associated with physical therapy interventions. For COVID-19 patients, physical therapists had a different role in pulmonary care because they took strong preventative measures to reduce the possibility of sputum retention and the onset of respiratory muscle weakness. For patients who do not have COVID-19, treatments were based on assessment results, which are physical therapist management processes for patients with COVID-19 in intensive care units. The main aims were

to improve airway openness, lung and limb strength, and movement ability while avoiding sputum retention.

Rather than focusing on specific symptoms or health issues seen in individual patients, a one-size-fits-all treatment plan was used for all patients. The following treatments show different protocols in treating patients from severe to critical conditions. Before starting the intervention, the physical therapist used protective gear before entering ICU rooms. Physical therapists use PPEs whenever physical therapist interventions are carried out. During respiratory physical therapy techniques that were believed to be aerosol-generating procedures, a second full-face mask was used. Before and after each patient's treatment, proper hand washing was done.

The main intervention that has been used in critically ill patients with COVID-19 is to maximize airway patency and prevent sputum retention. In this intervention, patients who could breathe on their own were made to stay upright for 20 minutes each day. For 20 minutes twice a day, these patients who needed deep sedation or who had poor consciousness were positioned with their heads elevated at 30 degrees. All patients undergoing mechanical ventilation were placed in the prone position for 12 hours each day up to extubation. Every patient who could breathe on their own was given an oscillatory positive expiratory pressure device, like the Acapella Portex from Smiths Medical in Ashford, Kent, UK, and was told to use it for 10 minutes, three times a day, or whenever they felt that mucus was building up in their lungs. All patients who could breathe on their own also received instruction in active cycle breathing techniques and were given a restricted inspiratory muscle training (IMT) device. They all performed a standardized IMT protocol with four sets of eight breaths at a specific intensity with two minutes of rest, eight times per day at either a 30 or 50 percent MIP. The maximum inspiratory pressure (MIP) for each patient was calculated, and the percentage of the expected values was measured. Therefore, the training intensity for the first patient assigned to physical therapy is 30% MIP, followed by 50% for the second, 30% for the third, and so on. The physical therapists and respiratory therapists administered a ventilator hyperinflation protocol to those patients who were being ventilated mechanically. The ventilator hyperinflation procedure involved delivering volume-controlled breaths at a flow rate of 20 L/min, gradually increasing the tidal volume by 200 mL with each breath until the maximum airway pressure reached 40 cm of H₂O, providing six consecutive mechanical breaths, and repeating these three steps for six cycles. Hyperinflation of the ventilator was employed to maintain and boost lung involvement. The other main intervention that was used was Neuromuscular Deconditioning. Each of the 16 patients followed a specific protocol for movement, which included regularly rolling over and shifting on the bed, sitting up in bed, sitting by the bed, sitting in a chair, standing, and walking along a 7-meter walkway in the ICU. The following mobility stage was only permitted when each mobility stage was finished (Li et al., 2021).

It is obvious that physical therapists are involved in the COVID-19 pandemic. A physiotherapist should routinely evaluate a patient's respiratory symptoms and exercise tolerance in an acute care setting. Treatment of critically ill patients should be started as soon as possible to limit further outcomes. Respiratory treatment, prone positioning, early mobilization, and patient education were among interventions. Patients frequently exhibited instability, with fast symptom escalation and an erratic and sluggish recovery. Additionally, substantial weakness, post-extubation, weaning failure, anxiety, and delirium were common in critically sick patients. These symptoms were often unstable and required regular monitoring during physiotherapy to ensure safe delivery. Physical therapy required specialized and personalized treatment strategies. Most patients followed the proposed treatment strategies, and their lung function and physical strength actually improved (Eggman et al., 2020).

Demeco et al. (2020) examined randomized trials, referrals, semi-randomized or prospective controlled clinical trials, reports, guidelines, field updates, and letters to the editor using a significant research database. Patients with moderately severe COVID-19 diagnosis should be released as soon as feasible because of the challenging clinical circumstances and the rapid spread of coronavirus. To enhance their quality of life, it is important to develop rehabilitation programs for patients with multiple health conditions, those who live alone, or those in remote areas (Demeco et al., 2020).

During the first week of the peak of the COVID-19, physical therapists learned ways in contributing work in the hospital. They were involved in making decisions, transversality among professionals, interdisciplinary teams, prone and respiratory therapy support teams, neuromuscular recovery, and pain management. Physical therapists involved in ICU rehabilitation reported that their management helped reduce the number of patients needing long-term hospital stays and decreased complications caused by prolonged immobility. The role of physical therapists involves early mobilization, body positioning, patient safety, avoidance of deconditioning, respiratory care such as airway clearance techniques and exercises that improve thoracic mobility and inspiratory muscle strength (Palacios-Ceña et al., 2021).

Physical therapists have crucial roles during COVID-19 because they assist with early mobilization and prevent patients from losing fitness while they are hospitalized, according to Palacios-Ceña et al. (2021). Additionally, PTs support patient safety and aid in care planning and selecting the best setting for each patient's release. Physical therapists were able to fill jobs that needed support, such as the pulmonary and emergency departments, due to the shortage of healthcare professionals, thanks to their extensive knowledge.

The treatment of COVID-19 by a physical therapist for patients who are hospitalized with the virus includes elements like respiratory support and strenuous activity (Felten-Barentsz et al., 2020). Respiratory support involves managing breathing, doing exercises to expand the chest and clear the airways, and strengthening the muscles used for breathing. Suggestions for active movement include moving in bed, exercising the range of motion for limbs, doing daily living activities, practicing transfers, using a stationary bike, preparing for walking, and using ambulation.

In addition, Wasilewski et al. (2022) stated that it is necessary to offer a personalized rehabilitation program by a multidisciplinary group of experts across the continuum of care, and that the care setting as well as the severity should be considered when determining the nature and extent of the rehabilitation. The identified facilitators and modifications were able to directly address most of the difficulties that posed challenges in the implementation of COVID therapy.

According to Li et al. (2021), their experience treating patients with COVID-19 demonstrated that this intervention was successful in enhancing these patients' physical and respiratory function. Physical therapy during critical care for patients with COVID-19 is safe and seems to improve both breathing and physical abilities. Physical therapists have an important role in dealing with the pandemic (Eggman et al., 2021). These professionals often assess patients for breathing issues and how well they can tolerate physical activity. It is important to begin treatment as quickly as possible for individuals who are in severe condition to prevent future complications. Additional study is required for post-COVID rehabilitation topics such as awake prone stance, early breathing exercises, and early chest expansion.

Paz et al. (2021) showed that COVID-19 can affect patients both in the short term and long term, causing physical and mental challenges by impacting several body systems. To help patients regain their physical abilities and get back to work as quickly, safely, and efficiently as possible, it is essential for physical therapists to be involved in the fight against this illness. Therefore, physical society plays a crucial role in the fight against the COVID-19 pandemic in addition to promoting functional independence, assisting with reintegration into society, and assisting with employment. Physical therapists are essential in the prevention and treatment of illness-related disability, which aids in the fight against the pandemic.

Patients recovering from COVID-19 can benefit tremendously from participating in physical therapy. Physical therapists should start working with patients as soon as possible to help them breathe better, increase their strength and endurance, and reduce the amount of time they need to stay in the hospital. One of the best ways to improve clinical outcomes and patient care is to consistently keep lines of communication open with one's colleagues in the medical sector.

Effectiveness of Physical Therapy Treatment in Patients with COVID-19

Millions of people are affected by COVID-19, which suffers from SARS-CoV-2. Some patients who experienced symptomatic and asymptomatic symptoms when diagnosed with COVID-19 encountered severe symptoms and needed to be admitted to the intensive care unit. These patients may experience impairments, such as lung functional impairments, neurologic impairments, reduced physical functions, muscle weakness, and psychological and cognitive impairments. Physical therapy is an allied medical team that can help with these impairments in COVID-19 patients. According to Debeuf et al. (2022), physical therapy has a positive impact on pulmonary, physical, and psychosocial functions, but these effects vary depending on the clinical setting, such as home care, inpatient units, and intensive care units (ICU), due to the low to moderate quality of the studies included.

According to Wittmer et al. (2021), there are about thirty-two articles that meet the basis of the research, which is about the efficacy of early rehabilitation and exercise prescription. Both treatments are beneficial for people with COVID-19. However, they should consider different modifications of the parameters such as the intensity of the exercises used to consider the patient with moderate to severe symptoms. People who were positive for SARS-COV-2 may experience no symptoms or may have mild to severe illnesses. Some had mild cases of COVID-19 but did not require hospitalization or oxygen support. For eight weeks, the patient attended biweekly physical therapy sessions, which included strengthening exercises, aerobic training, diaphragmatic breathing methods, and mindfulness training. According to Mayer et al. (2021), the metabolic equivalent for task levels varied throughout the program. Patients showed improved physical function, exercise capacity, and muscle strength. Throughout the program, the metabolic equivalent for task levels increased with some variation. Patients showed improved strength, physical function and physical fitness. The patient increased the distance to 511 meters in a 6-minute walk test. This is an increase of 199 meters, but still 80% of the predicted age distance.

Meanwhile, a retrospective study using the records of patients who were admitted to 1 out of 11 emergency care settings in one health system showed that patients that were discharged last June 10, 2020, were admitted if they have a certified COVID-19 test upon hospitalization or resulted in hospitalization and were examined by physical therapist while they are admitted. Patients with COVID-19 were more likely to be discharged as post-hospital mobility improved, increased doses, and longer physiotherapy visits. According to Johnson et al. (2021), especially in patients with COVID-19, there is a need for more evidence to understand how hospital doctors' treatments affect the chances of being discharged from the hospital and how long patients stay at home. The main goal of this study was to determine the connection between regular physiotherapy sessions and the likelihood of being discharged as an outpatient, as well as the length of time patients stay at home. This retrospective analysis included people with COVID-19 who were admitted to one of 11 hospitals within a single healthcare system. It was the second result away from the house and away from the center. The correlation between these effects and the median frequency or duration of physiotherapy visits was assessed using multiple or modified line-poisson regression to look into the impact of frequency of physiotherapy visits and patient home visits compared to post-acute care (PAC) facilities. A possible assessment of this relationship with specific patient characteristics was assessed using the following retrospective model specifications. The length of the visit is also associated with improved travel departure and the opportunity to be released at home, although the results were less pronounced. In general, these relationships did not just apply to patient characteristics. The hospital program must include physical therapy. Providing appropriate physiotherapy interventions to improve results should be balanced with virus spread.

Rehabilitation is indicated for COVID-19 pneumonia patients. Data on rehabilitation start time, patient and healthcare worker safety, and program features are lacking. Bordas-Martinez et al. (2022) evaluated the safety and impact of early and non-early physiotherapy on patients with COVID-19 pneumonia. 159 people participated. 108 people received rehabilitation. Early physiotherapy group stayed 19 days, the non-early group 34. No physiotherapist was infected, and no harmful effects were seen. Obesity, invasive mechanical ventilation, and non-early physiotherapy are related to a longer hospital stay.

54% of participants completed an 8-week follow-up following the hospital release. Rehabilitation for severe cases of COVID-19 pneumonia is safe for both patients and healthcare workers and can shorten hospital stays, especially when it begins early (Bordas-Martínez et al., 2022).

Johnson et al. (2021) and Wittmer et al. (2021) found that patients who received physical therapy had better mobility when they were discharged and were more likely to go home due to more frequent and intense therapy sessions. Even though the protocols used in each study were different, the results were still positive. It was also suggested that prompt patient movement and exercise are beneficial for COVID-19 patients. In addition, it was shown that patient characteristics are not frequently regulated by the demographic data acquired in the studies. These studies could state that physical therapy treatments are effective in the improvements among patients who had COVID-19 diagnoses as per early mobilization or discharge of the patients.

Post-COVID syndrome is a rare health condition, and there is not enough data to guide rehabilitation assessments or treatments (Mayer et al., 2021). The case report described the post-COVID syndrome patient's clinical presentation and physical therapy. When developing a plan of treatment for patients with post-COVID disorders, physical therapists should consider the patients' cognitive performance as well as their emotional health. Physical therapists are made aware of post-COVID syndrome because of this case. Debilitating symptoms include reduced aerobic tolerance, anxiety, PTSD, and cognitive dysfunction can be a part of post-COVID syndrome. It is also made obvious to them what role therapists can have in diagnosing and treating patients with post-COVID syndrome. According to Bordas-Martínez et al. (2022), There is no evidence to support the hypothesis that either early or delayed physical treatment could put patients with severe COVID-19 pneumonia at risk or have unfavorable effects on them. There is no evidence supporting the use of physical therapy for people with severe COVID-19 pneumonia. However, physical therapy might also help reduce the time between admission and when patients can sit up, which in turn could shorten hospital stays.

In addition to lowering patient mortality, reducing hospital stays, and cutting down on medical costs, physical therapy for COVID-19 patients can help save medical resources, reduce individual and societal economic losses, and lower the risk of negative social stability events like medical emergencies. As the SARS-CoV-2 infection continue to spread, long-term symptoms and functional problems became more noticeable. Most people who were infected experienced long-lasting symptoms, with widespread declines in physical ability, fatigue, and muscle weakness being the most common. Patients with long-COVID, who continue to suffer from symptoms longer than usual after contracting the SARS-CoV-2 virus, may benefit from physical therapy interventions due to the serious impact on daily living activities, participation, and overall quality of life. The need for rehabilitation has been clearly highlighted since the start of the pandemic.

Most COVID-19 patients also show different levels of symptoms like difficulty swallowing and malnutrition, along with problems affecting the lungs and muscles. Cachexia, which is defined as losing at least 5% of body weight, was found in 37% of hospitalized patients with COVID-19. The range of this proportion is 29 to 52%. Other signs of the disease, such as the loss of taste and appetite, fever, inflammation, and catabolic-anabolic imbalance, as well as problems with hormone function, make people more likely to develop cachexia. For patients who have ongoing effects from COVID-19, a personalized rehabilitation program that includes proper nutrition and counseling might help them recover their physical abilities faster than a standard physical therapy program. Future studies should take the implementation of such a program into consideration.

Conclusions

The study's major goal was to determine the value of physical therapy practice during COVID-19, particularly to analyze how physical therapy affects COVID-19 patients. It also seeks to ascertain whether there has been an increase in COVID-19 patients seeking physical therapy appointments. The

researchers used a variety of papers and journals to perform a systematic review on the use of physical therapy by COVID-19 patients. The physical therapy setting saw a dramatic transformation during the COVID-19 pandemic. Physical therapy was essential in the early stages of the COVID-19 patients' recuperation. Physical therapists are advised to help individuals with COVID-19 increase their functional capacity and give comfort.

The articles and journals that were reviewed make it clear that physical therapists are essential to the COVID-19 in providing respiratory support and active mobility to COVID-19 patients in hospitals, COVID-19 patients with the early rehabilitation, or COVID-19 patients with underlying difficulties that can be treated by the physical therapist. Physical therapy treatments are useful for COVID-19 patients with mild to severe problems. Patients who had severe symptoms and spent more time in bed in the ICU and the ward received respiratory interventions like respiratory muscle strengthening. These patients showed minimal to moderate improvement in mobility through activities like getting in and out of bed, expanding their range of motion during active range of motion exercises, and performing active assisted exercises on both extremities. Additionally, these patients' training for daily living activities, pre-gait exercises, and ambulation were all observed to have improved. Even though some studies have shown that patients in intensive care units do not see much improvement in their breathing during their hospital stay, physical therapy still helps patients who have mild to moderate symptoms. Patients with these symptoms show improvement in pulmonary functions, physical activities, and psychosocial activities but these are outpatients who went to physical therapy rehab. Patients in intensive care units, as well as home care and in-patients have low to moderate improvement due to lack of monitoring of their exercises.

Physical therapists had to go through a great deal of adjustments to comply with the new normal. The information gathered from different articles are effective and helpful in providing support to the study. Physical therapy treatments are helpful in terms of physical functional and psychosocial activities of patients but need to seek more information to give support to in-patients undergoing respiratory interventions during their hospital stays both in intensive care units and ward. Physical therapists and other people involved in the study should learn about the importance and effectiveness of physical therapy for people with COVID-19. Results from the articles used in this study can help healthcare providers offer better care to those affected by the virus.

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