

PHYSIOTHERAPEUTIC INTERVENTION IN HOSPITALIZED PATIENTS WITH COVID-19: AN INTEGRATIVE REVIEW

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Abstract: At the end of 2019, a new disease caused by the coronavirus emerged, which was identified after a series of cases, which can lead to several complications in severe cases of the disease, the need for hospitalization. The objective of the study was to identify the physiotherapeutic resources that can be used in hospitalized patients with COVID-19. This is an integrative literature review carried out in the following databases: Google Scholar, LILACS and SciELO, using the descriptors physiotherapy, COVID-19 and respiratory failure, through the crossing of the Boolean operator AND. Studies published from 2020 to 2022 in Portuguese and English with free access were included. Review studies, newspaper publications, articles that did not address the theme and duplicates were excluded. The results highlighted the importance of physical therapy interventions during the pandemic and that the resources used during this period, such as oxygen therapy, non-invasive and invasive ventilation (NIV), prone position and early mobilization, had a great predominance during hospital rehabilitation. It is concluded that the physiotherapeutic strategies applied to hospitalized patients with COVID19 are safe and bring benefits for the recovery of these individuals.

Keywords: Physiotherapy; coronavirus; respiratory failure.

INTRODUCTION

In December 2019, a new disease caused by the coronavirus emerged in the city of Wuhan, caused by the SARSCoV-2 virus, identifying a new coronavirus as the causative agent that was named COVID-19 (Coronavirus Disease 2019) (GUAN et al., 2020).

COVID-19 is a multisystem clinical syndrome that was identified after a series of cases of severe respiratory infection (MATTE et al., 2020). The number of confirmed cases

has shown exponential growth in different countries, which has resulted in an overload on health systems, which has aroused concern to the world population and the scientific community (PIRES; TELLES, 2020).

On February 26, 2020, the first notification of a confirmed case in Brazil was carried out by the Ministry of Health (MS), on March 11 of the same year, the WHO characterized COVID-19 as a pandemic (CAVALCANTE et al., 2020). The World Health Organization (WHO) until November 11, 2021, notified that in the world there were 251,266,207 confirmed cases of COVID-19, of which 5,070,244 were deaths, in Brazil 21,897,025 cases and 609,756 deaths were confirmed. (WHO, 2021).

Since the beginning, when it was declared that it was a pandemic, the physical therapist has been working to combat this virus, at all stages of the disease, through the provision of exercises, mobilization and rehabilitation interventions, patients hospitalized by COVID-19, who often present with signs and symptoms such as cough, dyspnea, pulmonary secretions, fatigue and hypoxemia, they are potentially treatable through physiotherapeutic techniques and resources (THOMAS et al., 2020).

Although COVID-19 challenged the health system, in times of a pandemic, it highlighted the need for physiotherapists in the fight against the virus, and it is up to this professional to act in the care, treatment and recovery of patients in various stages of treatment, especially in severe cases that may result in death, ensuring ventilatory support (MORENO et al., 2021). Therefore, this study aimed to identify the physiotherapeutic resources that can be used in hospitalized patients with COVID-19.

METHODOLOGY

The present study is an Integrative Literature Review, referring to the scientific

production on physical therapy intervention in hospitalized patients with COVID-19.

Classified as a specific method in health that concentrates the synthesis of scientific research in a systematic way based on a standard, promoting the characterization and dissemination of the knowledge produced on a certain topic addressed. This method aims to develop knowledge gaps that can sometimes be confirmed by carrying out new studies (MOREIRA et al., 2015).

For the construction of this review, we proceeded with the sequential method of six steps, in the conception of maintaining standards and methodological rigor, where we proceeded with: Identification of the theme and selection of the thematic question; Data collection by searching the literature in electronic databases; Use of inclusion and exclusion criteria; Development of a data collection instrument; Critical analysis of the sample and Interpretation of data and presentation of results (KUABARA et al., 2014).

The population and sample consisted of articles found after careful refinement using the Health Sciences Descriptors (DeCS), namely: “physiotherapy”, “COVID-19” and “respiratory failure”, combined with the help of the Boolean Operator AND.

Using inclusion criteria selected specifically for this research, therefore, it was determined: works that were available in the online databases, in Portuguese and English, with free access, (Google Scholar; SciELO; LILACS), published in the years (2020- to May 2022) that portray the subject under study, the role of the physical therapist in the hospital environment.

As exclusion criteria, studies that were not related to the purpose of the study, review article, monographs, journal publications, articles that addressed other types of viral infections and repeated publications.

Based on the results obtained after searching for the studies in their entirety, data analysis was carried out in three ways. In the first one, an exhaustive study was carried out in each publication, which allowed the verification and identification of data such as: indexed database; year of publication; journal name; title; authors' names; occupation area; methodology; study objective; results and final considerations.

In second route, an interpretative analysis was carried out in order to achieve the foreseen objective. Finally, the results were presented through an analysis of the articles included.

The search continued for the descriptors separately in the databases without applying any filter or inclusion criteria, as shown in Flowchart 1.

RESULTS

(Table 1)

The articles found in the databases between 2020 and 2021, responsible for producing

the study sample, were analyzed, inserted in the category that best corresponded to the purpose of each one, allowing the discussion and characterization of the facts.

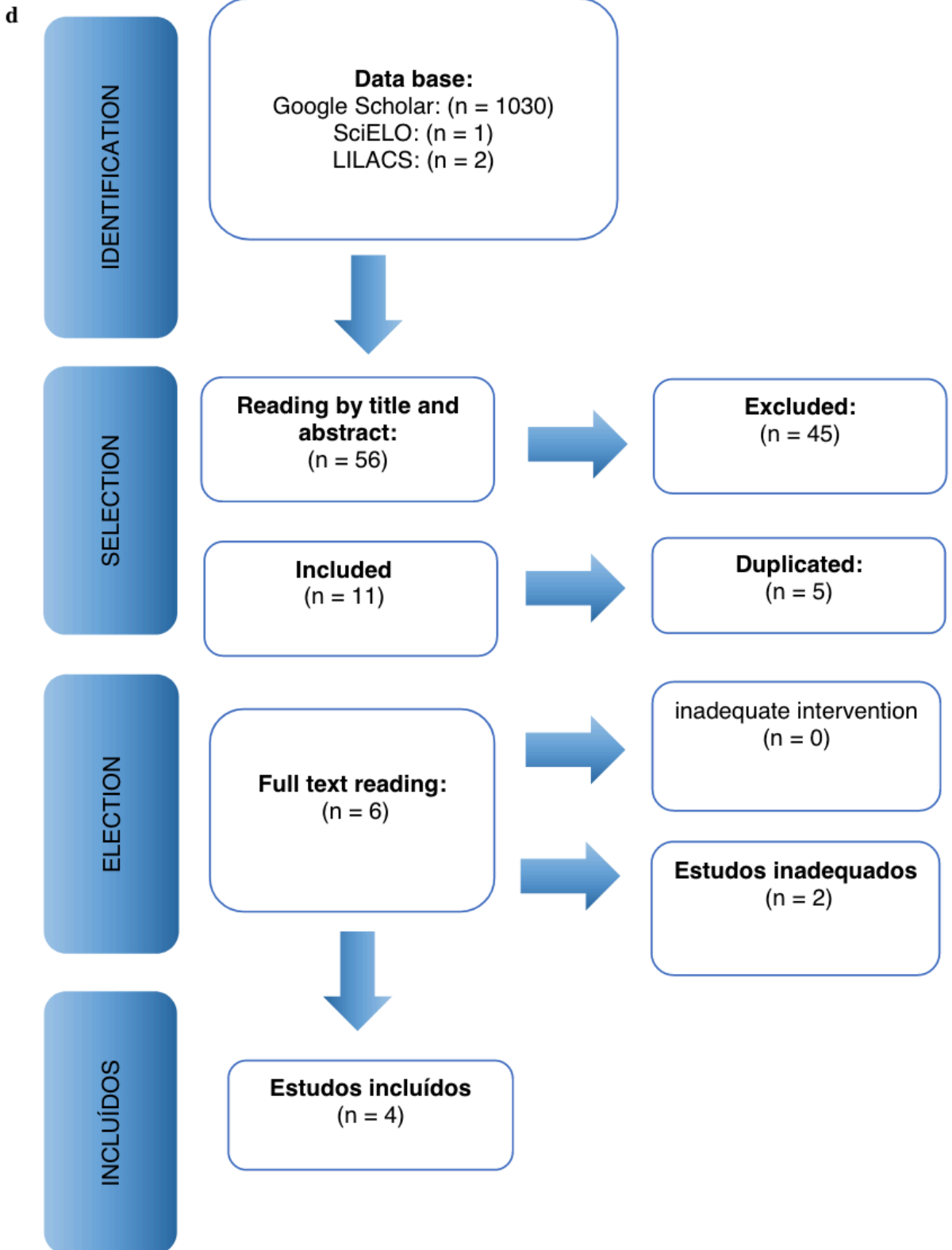
DISCUSSION

COVID-19 can present with different patterns of severity, ranging from mild to critical infection. These require intensive care due to the development of severe viral pneumonia and hypoxemic acute respiratory failure (iRpA) (MAFRA et al., 2021).

Carvalho and Kundsinn (2021) mentioned that respiratory failure is a clinical condition in which the physical therapist needs to be familiar with and able to identify, evaluate and treat. It can be classified as hypoxemic (type 1) when the partial pressure of oxygen (PaO₂) is less than sixty millimeters of mercury and hypercapnic (type 2) when the partial pressure of carbon dioxide (PaCO₂) is greater than fifty millimeters of mercury (PÁDUA; ALVAREZ; MARTINEZ, 2003).

DESCRITORES	BIBLIOTECA VIRTUAL DE SAÚDE			TOTAL	
	LILACS	GOOGLE SCHOLAR	SCIELO		
fisioterapia	5.317	515.000	3.047	523.364	1º SEM APLICAÇÃO DE FILTROS
COVID-19	7.777	4.410.000	5.913	4.423.690	
insuficiência respiratória	2.772	81.200	951	84.923	
				5.031.977	
fisioterapia	891	4.750	464	6.105	2º COM APLICAÇÃO DE FILTROS
COVID-19	2.672	1.990	1.137	5.799	
insuficiência respiratória	140	671	75	886	
				12.790	
fisioterapia and COVID-19	21	173	3	197	3º COM FILTROS + ASSOCIADO AO OPERADOR BOOLEANO
fisioterapia and insuficiência respiratória	8	507	2	517	
COVID-19 and insuficiência respiratória	33	321	16	370	
				1.084	
fisioterapia and COVID-19 and insuficiência respiratória	2	1030	1	1033	

Source: Authors (2022).



Flowchart 1 – Process of inclusion of studies for the integrative literature

Author (Year)	Goal	Type of study	Result
(ANJOS <i>et al.</i> , 2020).	To describe a case report of prone position in spontaneously ventilated patients.	Case report.	There was improvement in dyspnea and saturation.
(CARVALHO; KUNDSIN, 2021).	Observe the performance of the physical therapist in the hospital environment in the care of patients affected by COVID-19.	Cross-sectional descriptive study.	It was found that the physical therapists of this institution received training in the management of patients infected with SAR-CoV-2.
(SANTOS <i>et al.</i> , 2021).	Describe the frequency of mobilization in critical patients.	Descriptive and retrospective study.	It was found that early physical therapy intervention has a great predominance.
(SCHAAN <i>et al.</i> , 2020).	To report the physiotherapeutic conducts of the two cases of pediatric patients with COVID-19.	Case report.	It was found that the use of NIV was fundamental for the maintenance and improvement of the respiratory condition.

Table 1 – Studies that evaluated the importance of physiotherapy in hospitalized patients with COVID-19.

Source: Authors (2022).

According to Anjos et al., (2020), studies during the period of the pandemic suggest that, among those with COVID-19, up to 20% develop viral pneumonia and hypoxemic respiratory failure, requiring hospitalization and physical therapy assistance. Among this group of patients, up to a quarter need admission to an intensive care unit (ICU), representing approximately 5% to 8% of the total infected population (MAFRA et al., 2021).

Thus, physical therapy has several resources to manage respiratory failure in this group of patients: low and high flow oxygen therapy, non-invasive (NIV) and invasive ventilation, prone position and early mobilization (ANJOS et al., 2020; CARVALHO; KUNDSIN, 2021; SANTOS et al., 2021; SCHAAN et al., 2020).

Schaan et al., (2020) and Who (2021) highlight that oxygen therapy has been indicated in cases of hypoxemia, that is, when SpO₂ or SaO₂ is lower than 92%, with the aim of improving oxygenation, reducing the work of breathing and improved effort tolerance.

The World Health Organization (WHO) makes some recommendations for the

implementation of oxygen therapy, namely: initial flow of 5L/min to maintain a target SpO₂ ≥ 94% in the presence of clinical instability, such as respiratory failure, oxygen supplementation for SpO₂ ≥ 90 % when clinically stable and; SpO₂ ≥ 92% for pregnant women, if hypoxemia persists, a non-rebreathing reservoir mask with an O₂ flow between 10 and 15 L/min must be used (WHO, 2021; DRES; DEMOULE, 2017).

On the other hand, it is essential to identify the signs of intolerance to the technique used, namely: SpO₂<92% with inspiratory O₂ fraction greater than 60% (FIO₂>60%), worsening of the respiratory work, high respiratory rate (RR>30 irpm) and altered state of consciousness, thus, in the absence of criteria that indicate orotracheal intubation, the use of NIV and high-flow nasal cannula (HFNC) are a therapeutic possibility (MENDES et al., 2021).

The CNAF is a resource that has gained strength during the pandemic and has shown excellent results in reversing the hypoxemia of these patients (RELLO et al., 2012). It is easy to apply, and the inspiratory oxygen fraction

can be regulated between 21% and 100%, in addition to adjusting the inspiratory flow through the chosen therapeutic strategies and the user's tolerance (SILVA; NEVES; FORGIARINI, 2020).

To predict patient failure in HFNC, the ROX index is used as a parameter (ROCCA et al., 2015), which can be complemented with continuous assessment of vital signs (CALLIGARO et al., 2020). It is recommended to evaluate the ROX index at 2, 6 and 12 hours, with good response values > 4.88 , while lower values indicate a low therapeutic response, requiring FiO₂ or flow adjustments. Furthermore, there may be an association between the use of HFNC and the prone position (PP), based on the patient's tolerance and clinical response (FREITAS et al., 2021)

In the study by Carvalho and Kundsinn (2021), NIV has also been used in (ARDS) after coronavirus infection, in which as the disease evolves, the individual needs more ventilatory support and ICU care.

According to Carvalho and Kundsinn (2021), IMV is an important ally in supporting patients who do not respond to previous strategies or who have an absolute indication for orotracheal intubation.

Given the wide use of invasive mechanical ventilation, numerous studies have developed recommendations for the clinical practice of intensive care physical therapists in this condition (THOMAS et al., 2020). Initial adjustments after orotracheal intubation must observe ventilation criteria to maintain a protective strategy, such as: volume ventilation (VCV) or pressure ventilation (PCV), depending on the professional's ability; tidal volume of 4 to 6 ml/kg; Driving Pressure (DP) less than 15 cmH₂O; plateau pressure less than or equal to 30 cmH₂O; peak pressure less than 35 cmH₂O and; better positive end-expiratory pressure (PEEP) for a lower degree of alveolar distension (BARBAS et al., 2014).

Anjos et al., (2020) emphasize that the prone position can be associated with mechanically ventilated patients, with the aim of improving mechanics and pulmonary exchange.

Early mobilization is a physical therapy strategy based on the preservation of body structures and functionality, through well-indicated and planned early exercise throughout the hospital stay (BONORINO; CANI, 2020). Santos et al., (2021) related the importance of intensive mobilization through the transfer of the patient from the stretcher to the armchair and exercises in the armchair with reduction of pressure injuries, thrombosis and preservation of range of motion.

FINAL CONSIDERATIONS

This way, the physiotherapeutic strategies applied to hospitalized patients with COVID19 are safe and bring benefits for the recovery of these individuals. In addition, it is important to screen patients with severe functional impairment to determine whether treatment must be continued after hospital discharge.

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