

Physiotherapy Practice during Covid-19 Pandemic: A Systematic Review

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ABSTRACT

The aim of this review is to identify the current study results for the effect of COVID-19 in physiotherapy practice. Scanning of recent research articles was done through- Google scholar, Pedro and Pub-Med from 2021-2023. COVID-19, Physiotherapy, Respiratory therapy, physiotherapy Students, Clinical Practice, Medical Education and physiotherapy practice like terms were used to search data base. The primary search generated 50 possibly related publications, 5 articles out of 50 were finalized to include in this review depending on eligibility standards. These articles offer clear and valued perceptions into the direct and indirect effects of the COVID-19 disease on several features of physiotherapy, together with clinical techniques, educational databases, and staffs primary forces. The results of this review are expected to serve as a brief reference guide for physiotherapists and instructors, guiding the growth of evidence-based approaches and procedures in managing severe COVID-19 situations. On the other hand, it is acknowledged that further investigation is necessary to achieve a more extensive understanding of long term effects of the COVID-19 disease on the physiotherapy occupation and clinical practice.

Keyword- Pandemic, Covid-19, Physiotherapy, Respiratory therapy, Health workers

INTRODUCTION

Coronavirus syndrome (COVID-19) is a severe acute respiratory disease. Coronavirus-2, (SARSCOV-2), is a new coronavirus that emerged in 2019, which is very contagious infection. This virus is diverse from earlier respiratory virus, because it has approx. 2 to 10 days man-man spread cycle before an individual shows symptoms¹. This virus is transferred from individual to individual by respiratory discharges. Big droplets through cough, sneeze or rhinorrheas stick on tops in 2 min. from diseased individual. SARS-CoV-2 stays active for at-least 1 day on hard places and up to 8 hours on soft places². COVID-19 infected persons might develops flue-type, respiratory signs like:- fever-87%, cough-59%, great tiredness-36%, enlarged mucus-35% and shortness in breath -17%³. Novel corona-virus is related to seafood marketplace, known as etiological mediator who is currently termed as SARS-CoV-2^{4,5}.

MERS-CoV was reported first in 2012 in Middle-East and since then it has afflicted Middle-East. In Jan 2020, 2384 cases were tested positive in lab along with 855 deaths are reported by World Health Organization (WHO). In China, Hubei State, Wuhan city- cluster of pneumonia cases were indicated in end of December in 2019. The virus was rapidly spreading up to-date. At the time of scripting this article, out of 154,198 affected cases and 98,927 cases were improved and 1,230 passed away in kingdom of Saudi Arabia⁶⁻⁹.

As per the Global Surveillance Interim guidance developed by WHO¹⁰: 1) An individual showing severe acute respiratory tract infection signs like high fever and cough who need hospital admission and there is no cause other than which entirely defines the medical indicators along-with history of travelling or staying in China for 14 days period earlier start of symptoms. 2) An individual showing any kind of acute respiratory tract infection symptoms with at least one of stated below for the 14 days duration before starting signs like : i) Contacted an infected or suspected COVID-19 infection or (ii). Worked or attended health center where cases with infected or suspected COVID-19 acute respiratory disorder persons were being treated. Doubtful persons determined by Saudi Center for Disease Prevention and Control (SCDC)¹⁰.

The COVID-19 pandemic has posed unprecedented challenges for healthcare systems worldwide, with frontline workers bearing the brunt of the physical and emotional toll. While numerous studies have examined the pandemic's psychological impact on healthcare workers, research exploring the experiences of those managing the crisis in Saudi Arabia remains

scarce. To address this gap, the present study sought to evaluate the psychological well-being of Saudi healthcare professionals actively involved in the SARS-CoV-2 response. The researchers were particularly interested in identifying the specific difficulties and changes encountered by these workers, and how the pandemic had affected their professional practice, with a focus on mental health-related issues.

Employing a rigorous qualitative approach, the study delved into the lived experiences of the healthcare providers, providing a nuanced understanding of the myriad challenges they faced. The findings hold significant implications for developing targeted interventions and support systems to safeguard the mental well-being of healthcare professionals, not only in Saudi Arabia but also in other regions grappling with the aftermath of the COVID-19 crisis. By amplifying the voices and perspectives of those at the forefront of the pandemic response, this research contributes to a growing body of knowledge that can inform evidence-based policies and practices to better support healthcare workers during times of extraordinary duress.

Research Design and Setting:

This systematic review primarily includes studies with a high level of quality or evidence-based methodology.

Objective:

Aim of this review is to offer evidence to physiotherapists (PT) and acute care health-care specialists regarding potential role of physiotherapists in the management of infected or suspected COVID-19 cases treated in clinical settings. Physiotherapists employed in acute health-care sectors are expected to have an important part in the management of infected cases. Physiotherapy is a worldwide well recognized and known profession. PTs are appointed in wards and ICUs of acute health-care sectors. Precisely, respiratory therapy is highlighting in the management of acute and chronic respiratory illnesses, aiming to improve re-establishment of physical health after an acute syndrome. PTs may prove to be valued in the respiratory management and physical recovery of COVID19 cases.

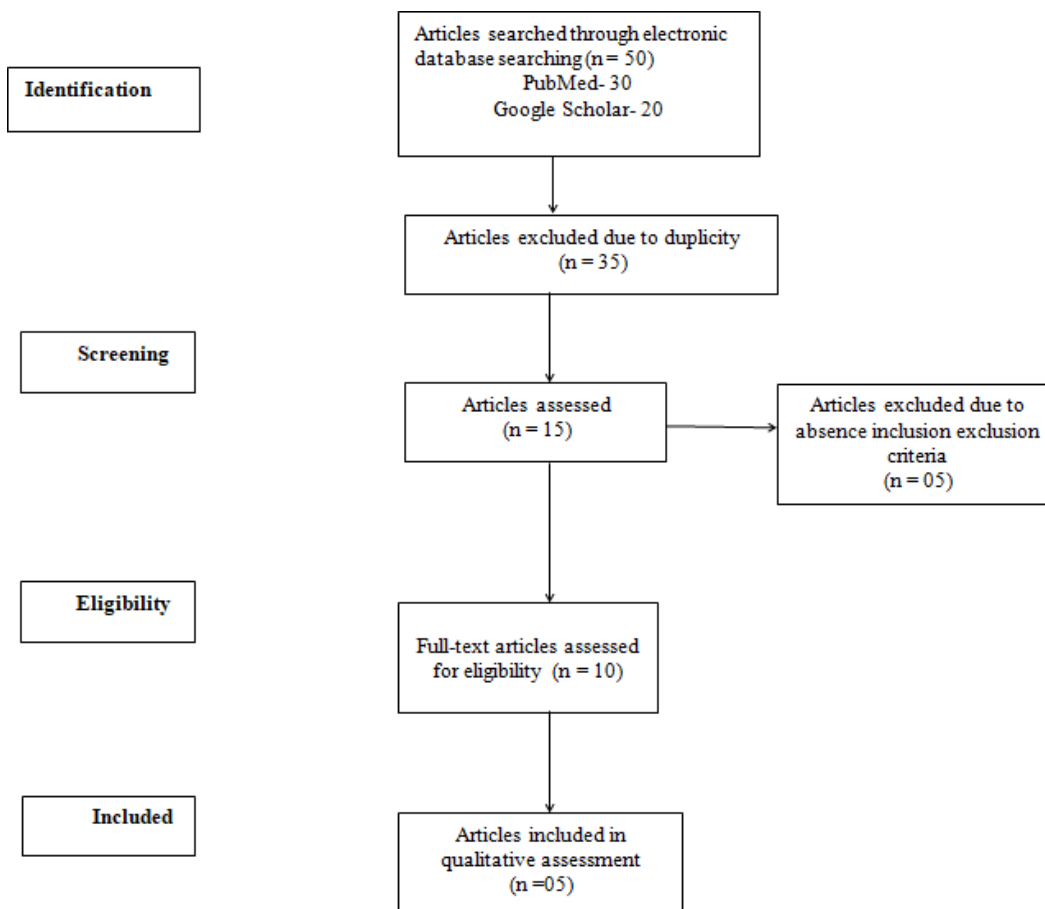


Figure 1: Flow diagram showing the screening and selection of articles

Outcome Measures

The key outcome measures are- inadequate management, increased work demand, under-staffing, prolong working hours/absence of off-time, dearth of respectfulness, shortage of funds ,psychological clang, great insight, shortage of scope and growth in profession ¹¹.

Quality assessment:

Selected article’s methods quality was evaluated through Pedro Scale which consists 11 Questions in 2 parts: Questions from 2 to 9 evaluates the inner rationality and questions from 10 to 11 evaluates demographical data vital for research which can be interpreted easily. Every question was scored on the basis of its presence or absence in the evaluated research. The ultimate score was calculated by adding all positive responses. As per Moseley et al articles which scored ≥ 5 (5/10) were considered superior. Hence, in this study all involved researches which scored ≥ 5 were considered of great value methodologically. The research articles were evaluated in Pedro scale by two self-determining researchers.

General data of the included studies:

In present study all related researches concised in Table-1 comprising of set of factors: author’s name, year of study, design of study, number of subjects, duration of study, outcome measures in the study, and final results. Out of the 5 studies included, one were survey¹¹, two was cross section study^{12,13}, one was Narrative study¹⁴, and one is qualitative research study¹⁵. All studies were conducted between 2021 and 2023.

Table 1: Description of the included studies:

Author	Study design	Subject	Study Duration	Outcome measure	Result
Andrew G Miller, Karsten J Roberts, Carl R Hinkson et. all 2021 ¹¹	Survey	221	2 months	Burnout, high workload, emotional toll.	A significant majority of respondents reported experiencing burnout, yet few respiratory care departments had systems in place to measure and address burnout. While resilience resources were scarce, many departments offered employee assistance and wellness programs. The primary factors contributing to burnout were identified as inadequate leadership, insufficient staffing, and excessive workload, highlighting areas for improvement to support the well-being of respiratory care professionals.
Alokayli WT, Alkhalidi SM 2021 ¹²	A-Case Study	1	3 weeks	Exercises tolerance, walking safely, postural changes	Physical therapists clearly have a role in the COVID-19 pandemic. Based on our experience we recommend that physical therapists routinely screen and assess patients for respiratory symptoms and exercise tolerance on acute wards. Treatment of patients who are critically ill should start as soon as possible to limit further sequelae
Anthony Trojmana, Judith Houghb et. al 2023 ¹³	Survey study	204	One time	Self-administere d electronic cross-sectional survey	The experience of the pandemic highlighted the need for specialist training and availability of experienced cardiorespiratory physiotherapists to manage patients with COVID-19, specifically in intensive care. Furthermore, clear guidelines on the management of patients with COVID-19 should be established to ensure optimal management of patients and ensure the safety of physiotherapy staff

Madhuragauri Shevade, Sundeep Salvi et. al 2022 ¹⁴	Narrative Review	NA	NA	Burden, worked beyond their limits, working against the constraints, workforce shortage.	The COVID-19 pandemic brought Respiratory Therapists (RTs) into the spotlight, significantly increasing their demand and recognition as a vital workforce. This unprecedented crisis presented numerous opportunities for RTs to expand their roles, develop new skills, and enhance their professional growth. This narrative review examines the transformative impact of the COVID-19 pandemic on the evolution of the Respiratory Therapy profession in India, highlighting the challenges, opportunities, and advancements that have shaped the field.
Abdullah Al Shehri , Khaled Al Amoudi et. al 2022 ¹⁵	Retrospective Study	18395	One time	Age, Sex, referral source, location of the patient, and diagnosis.	The study offers' practice and policy implications. Health policymakers can apply the results to plan physiotherapy workload during the future COVID-19 pandemic

DISCUSSIONS

This systemic review was done to evaluate the PTs practice in the management of COVID-19 patients. PT profession is centered on skills where all the proficiencies necessitate practical experience to acquire, parallel to medical practice. Even though the distant learning technique can efficiently instruct theoretic understanding, it can-not offer the student with the practical knowledge as required in field¹⁶.

Learners encountered technical issues while during virtual teaching throughout the epidemic. Problems like internet signal, shortage of a smart-phone or laptop/PC, and malfunctioning of devices could have slowed down learners' understanding capability¹⁷.

Individuals infected with COVID-19 are often needed to be re-evaluated by PTs on the basis of progress of the infection. Certain individuals were mechanically ventilated or sometimes ECMO may be required repeatedly radiological examination. Transporting very sick individuals from ICU might lead to volatile threats. For that reason, all employees must be aware of all types of respiratory treatments and be capable in handling problems out of the ICU. PTs involved in transportation of critical individuals who are mechanically ventilated¹⁸.

Physical therapists play a very important part to combat the COVID-19 emergency worldwide. The Team who is responsible in the management of airways during Emergency consists of intensive therapist, anesthetists, Physiotherapist and Respiratory Therapists, who have responsibility in giving uniform education for nursing and general practitioners not working in ICU, and complete hazard management for COVID-19 individuals. In medical management, PTs evaluates the threat of upper respiratory system malfunction, mucus capacity and flora, coughing efficiency, and respiratory function. Additionally, they heightened nebulization to decrease vaporizer dispersal, supporting anesthetists before providing oxygen and intubating patients, aided in fiberoptic bronchoscopy and mucus culture, and applied in endo-tracheal suctioning for patients with intrusive mechanical ventilation¹⁹.

CONCLUSION

The COVID-19 pandemic has underscored the vital role of lung health and the expertise of pulmonary therapists, but also emphasized the critical contribution of Physical Therapists (PTs) in patient care. Despite the challenges posed by the pandemic since 2020, PTs have risen to the situation, providing essential services. This crisis has accelerated opportunities for growth in PT education and practice, yet there remains a significant need for expansion in the field to address the increasing demand for physiotherapy care professionals.

REFERENCES

- [1]. Sharick Shamsi, Thamer Mugheeb, Shabana Khan, Physiotherapy Management of COVID-19, *International Journal of Science and Healthcare Research*, 2020;5:3:108-116.
- [2]. Thomas P, Baldwin C, Bissett B, Boden I, Gosselink R, Granger CL, Hodgson C, Jones AY, Kho ME, Moses R, Ntoumenopoulos G. Physiotherapy management for COVID-19 in the acute hospital setting: clinical practice recommendations. *J Physiother*. 2020; 66(2):73-82.
- [3]. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, Liu L, Shan H, Lei CL, Hui DS, Du B. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med*. 2020;30;382(18):1708-20.
- [4]. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X, Cheng Z. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet*. 2020;15;395(10223):497-506
- [5]. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, Zhao X, Huang B, Shi W, Lu R, Niu P. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*. 2020; 382:727– 33.
- [6]. Zaki AM, Van Boheemen S, Bestebroer TM, Osterhaus AD, Fouchier RA. Isolation of a novel coronavirus from a man with pneumonia in Saudi Arabia. *N Engl J Med*. 2012 Nov 8;367(19):1814-20.
- [7]. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X, Cheng Z. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet*. 2020 Feb 15;395(10223):497-506.
- [8]. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, Zhao X, Huang B, Shi W, Lu R, Niu P. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*. 2020; 382:727– 33.
- [9]. Ministry of health Saudi Arabia official Twitter account <https://twitter.com/SaudiMOH?s=09>.
- [10]. World Health Organization. Global Surveillance for human infection with novel coronavirus (2019-nCoV): Interim guidance v3. Geneva, Switzerland: World Health Organization; 2020. Available from:WHO/2019-nCoV/SurveillanceGuidance/2020.3.
- [11]. Andrew G Miller, Karsten J Roberts, Carl R Hinkson, Gabrielle Davis, Shawna L Strickland and Kyle J Rehder, Resilience and Burnout Resources in Respiratory Care Departments *RESPIRATORY CARE*;2021;66:5:715-723.
- [12]. Alokayli WT, Alkhaldi SM. Role of ICU Physiotherapy in Covid-19: A Case Study. *Int J Rec Innov Med Clin Res*. 2021;3(1):44-48.
- [13]. Anthony Trojmana, Judith Houghb, Julie Hidesa, Louise Gustafssona, Orlando Floresd , Jennifer Paratza, Physiotherapy practices when treating patients with COVID-19 during a pandemic: A survey study, *Heart & Lung*,2023; 57:152-160.
- [14]. Madhuragauri Shevade, Sundeep Salvi, Rajiv Yeravdekar COVID-19 Pandemic and the Opportunities for Respiratory Therapy in India: A Narrative Review, *Indian J Respir Care* 2022;11:202-6.
- [15]. Abdullah Al Shehri , Khaled Al Amoudi, Abeer Al Katheri, Sharick Shamsi, Impact of Covid-19 on Physiotherapy In-Patient Workload during the Same Quarter-A retrospective Study, *International Journal of Early Childhood Special Education*,2022;14:2:3511-3516.
- [16]. Alghamdi SM. Importance of simulation in respiratory care education in Saudi Arabia. *Int J Sci Eng Res* 2016; 7:1233-5.
- [17]. Sharma D, Singh A. E-learning in India during COVID-19: Challenges and opportunities. *Eur J Mol Clin Med* 2020;07:6199-206.
- [18]. Su Y, Han Y, Liu J, et al. Tailoring steroids in the treatment of COVID-19 pneumonia assisted by CT scans: three case reports. *J Xray Sci Technol* 2020;28:885-92.
- [19]. Guo-Wei Tu, Kai Liu, Ying Su, Shen-Ji Yu, Min-Jie Ju, Zhe Luo, The role of respiratory therapists in fighting the COVID-19 crisis: unsung heroes in wuhan, *Ann Palliat Med* 2020;9(6):4423-4426.