

THE EFFECTS OF PRONE POSITIONING IN MECHANICALLY VENTILATED PATIENTS WITH COVID-19 : A SYSTEMATIC REVIEW

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ABSTRACT

Background: The COVID-19 pandemic presented challenging times for everyone and impacted healthcare tremendously. Prone positioning (PP) was implemented to address inadequate oxygenation in mechanically ventilated patients with COVID-19. Prone positioning, which involves placing a patient face down, improves gas exchange and oxygen perfusion. For this reason, PP was introduced as a treatment option for patients with hypoxemia secondary to COVID-19.
Objective: The purpose of this systematic review was to analyze the effects of PP on mechanically ventilated patients with COVID-19.
Methods: PubMed and EMBASE databases were searched using terms relating to PP, COVID-19, and mechanical ventilation. Researchers screened titles, abstracts, and full texts, removing any duplicates. The JBI Critical Appraisal Tool was used to assess selected articles.
Results: Six studies met inclusion criteria for the study, with a total of 421 participants. Primary outcomes assessed included oxygenation parameters. All included studies met the JBI Critical Appraisal criteria to be deemed acceptable for the systematic review.
Conclusion: Physical therapists play an important role in mobility of patients in the ICU setting and may be involved in determining treatments to improve oxygenation in patients with COVID-19. Data consistently indicated that prone positioning may be an appropriate intervention to improve oxygenation in patients with respiratory failure due to COVID-19. Several articles indicated increased time in prone may lead to increase in improvements in oxygenation, but continued research is needed to determine the optimal time in prone. Due to the novelty of COVID-19, limited research participants, and low-level research study design, more studies on this topic are recommended.
Keywords: prone positioning, COVID-19, mechanical ventilation.

INTRODUCTION

Studies showed that as of October 2020, the coronavirus disease (COVID-19) had impacted 39 million people worldwide and brought about a case fatality rate of 3%. Severe respiratory failure requiring mechanical ventilation continues to be a major complication for a considerable number of patients diagnosed with COVID-19[1]. Hypoxemia, or low oxygen concentration in the blood, is a critical outcome assessed in patients with COVID-19 due to its significant prognostic correlation to mortality [2].

To address hypoxemia secondary to COVID-19, prone positioning became a viable intervention option to improve oxygenation. Prone positioning involves placing a patient face down in an effort to enhance lung perfusion and gas exchange while simultaneously decreasing the compression on the lungs. Furthermore, due to gravity and the asymmetry of the lung shape, prone positioning decreases the transpulmonary pressure, creating a more homogenous gas exchange, which results in improvements in ventilation and oxygenation [3]. To ensure the safety of patients undergoing sustained prone positioning clinicians should understand possible adverse effects, such as limb and facial edema, deep tissue pressure injury, minor