

Impact of Graded Early Mobilization Therapy on Psychomotor Status of a Patient Who was Mechanical Ventilated in Intensive Care Unit

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Abstract

Purpose: The purpose of the study was to explore the impact of graded early mobilization on psychomotor status of patients with mechanical ventilation.

Objectives: To measure the effect of early mobilization on days first out of bed, other motor function, psychological status and length of ICU stay of mechanically ventilated patient.

Methodology: This was a single case study. Sample was selected from BRB Hospitals Limited of Dhaka using convenient sampling method and according to selection criteria. A precise semi structured questionnaire was used for data collection.

Graded early mobilization was provided as intervention to the participant by a Professional qualified physiotherapist for 10 sessions. Another senior physiotherapist was assigned as data collector. He assessed the participant's Functional Independence Measure (FIM) score and Generalized Anxiety Disorder 7 point (GAD-7) score during discharge from ICU.

Results: It was found that Functional Independence Measure (FIM) score was 65 which means the participant was very much independent during discharge from ICU. The finding of GAD-7 was 04, which indicates that the participant was free from any psychological problems.

Conclusion: This study showed that graded early mobilization was effective to improve mechanically ventilated patients motor and psychological status.).

Keywords: Graded early mobilization • Mechanical ventilation • Functional status • Psychological status • Intensive care unit • Physiotherapy

Introduction

Background

In most of the intensive care units (ICUs), bed rest is considered as the routine standard of care which leads to immobility, deconditioning, and weakness. Critically ill patients in the ICU commonly receive less than 60% of their nutritional intake during their ICU stay leading further to malnutrition. The presence of muscle weakness is associated with the duration of mechanical ventilation and length of ICU stay. Muscle strength decreases to 20% within one week of immobilization with an additional decrease of 20% in each subsequent week [1].

Critically ill patients often survive because of the care received in the Intensive Care Unit, but are often plagued with costly physical and psychological sequelae that may be worsened with immobility. Bed rest or immobilization is frequently part of treatment, due to pharmacologically induced sedation and/or Mechanical Ventilation [2].

Hippocrates may have implied that pain is relieved by bed rest, but modern day researchers have found that bed rest is potentially harmful with complications of pulmonary edema, atelectasis, bone demineralization,

muscle wasting, vasomotor instability, constipation, back pain, pressure ulcers, contractures and blood clots [3].

Mechanically ventilated patients usually receive very high doses of sedatives and analgesics which lead to prolonged periods of unconsciousness and immobility. Excessive ICU sedation is an important cause of prolonged mechanical ventilation and length of ICU stay. Physical mobilization during mechanical ventilation of the ICU patients helps them to be active [4].

Literature Review

A patient (57 years, Male) was admitted in BRB hospital's intensive care unit with diagnosis of CKD with electrolyte imbalance and severe respiratory distress. He was immediately ventilated and was receiving all required treatment in ICU under consultant of ICU.

One 2nd day ICU consultant called physiotherapist and a qualified physiotherapist started following physiotherapy treatment to clear chest secretion:

- Positioning
- Assisted Breathing
- Postural Drainage
- Shaking & clapping

Grade early mobilization therapy

After chest physiotherapy, qualified physiotherapist started graded early mobilization of the patient which included following protocol:

Interventions: According to this protocol, graded early mobility can be defined as beginning the mobility program when the patient is minimally able to participate in the therapy, has stable hemodynamic status, and is receiving acceptable levels of oxygen. The criteria for mobilization were heart rate less

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than 110/min at rest, mean arterial blood pressure between 60 and 110 mm Hg, fraction of inspired oxygen less than 0.6, and oxygen saturation greater than 88% on activity. The vitals of the patient were to be assessed before, during, and after any mobility intervention [5].

The protocol was modified due to practical concerns and was divided into four phases.

Phase 1: This included patients who were critically ill with multiple medical problems, had limited activity tolerance and were unable to walk.

Goal of phase 1: To make the patient sit at the edge of the bed unsupported or with minimal assistance and initiate standing with manual assistance and walker support. General criteria for progressing to the next phase were that the patient followed commands, had stable hemodynamic and acceptable oxygenation, and was able to stand with a walker.

Phase 2: This phase included patients in acute/sub-acute phase with multiple medical problems, in a stable condition, and able to participate better in the activities.

Goal of phase 2: To initiate re-education of gait with the walker. General criteria for progressing to the next phase involved the patient following commands, having stable hemodynamic and acceptable oxygen, being capable of transfer to chair with the assistance of a walker, and walker re-education.

Phase 3: These included patients in acute/sub-acute phase with multiple medical problems or resolving medical problems and able to participate actively in the therapy.

Goal of phase 3: To initiate independent transfer training with walker and provide progressive walking re-education [6]. General criteria for progressing to the next phase included the patient following commands, being hemodynamically stable, with acceptable oxygen levels, and with improved tolerance to a progressive walking program.

Phase 4: Patients in sub-acute phase, who had been weaned from mechanical ventilation, were able to participate actively.

Goal of phase 4: To promote progressive transfers and walking independence. Assessment of physical therapy was carried out, the phase of the program in which the patient should be included was determined, and the mobility plan of care was established [7].

Data collection and analysis

This was a single case study. Sample was selected from BRB Hospitals Limited of Dhaka using convenient sampling method and according to selection criteria [8]. A precise semi structured questionnaire was used for data collection. Graded early mobilization was provided as intervention to the participant by a professional qualified physiotherapist for 10 sessions. Another Senior Physiotherapist was assigned as data collector. He assessed the participant's Functional Independence Measure (FIM) score and Generalized Anxiety Disorder 7 point (GAD-7) score during discharge from ICU.

Results and Discussion

It was found that Functional Independence Measure (FIM) score was

65 which means the participant was very much independent during discharge from ICU. The finding of GAD-7 was 04, which indicates that the participant was free from any psychological problems [9]. The duration of Anti-Retroviral Therapy (ART) is not associated with significant changes in serum markers.

Conclusion

The main objective of the study was to explore the effectiveness of graded early mobilization on psychomotor status patient those who wear mechanically ventilated in intensive care unit of hospital setting. We have found graded early mobilization is effective to bring functional independency and gain sound Psychological status. Further study need to be conduct with larger respondent to prove the effectiveness of this promising intervention.

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