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Effect of Physiotherapy in Mitigating incidence of Intensive Care Unit Acquired Weakness: Protocol for a Systematic Review

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ADMINISTRATIVE INFORMATION

Support - Nil.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 09 May 2024 and was last updated on 09 May 2024.

INTRODUCTION

Review question / Objective Objective
The major purpose of performing this research is to analyze the effectiveness of advanced physiotherapy (PT) in decreasing the incidence of ICU-acquired weakness (ICUAW) in ICU patients in contrast to usual care. Additionally, we intend to investigate how these therapies improve a range of ICUAW occurrence outcomes like muscle mass biomarkers, blood glucose levels, muscle strength, hand grip strength, , ICU mobility, ventilator reliance, and ICU mortality.
Statement of research question:
Primary Question:
1. How efficiently do advanced physiotherapy interventions decrease the incidence of ICU-acquired weakness (ICUAW) in critically ill patients compared to usual care?
P = Over 18-year-olds admitted to ICUs due to critical illness and undergoing physiotherapy treatments.
I = Long-term ICU admitted patients are treated with appropriate protocol physiotherapy interventions including early mobilization, in-bed cycling, functional electrical stimulation, whole body vibration, resistance progressive exercises, and respiratory physiotherapy.
C = usual care
O = any measure of outcome related to ICUAW Occurrence (Measured by MRC Sum score, hand grip strength, electrophysiological research, and Muscle mass assessment)
Secondary outcomes: Physical activity level, Blood glucose levels (RBS), Duration of MV, Length of ICU stay (days), ICU mortality, Adverse events
Secondary Question:
2. How efficiently do advanced physiotherapy interventions affect various outcomes of ICUAW Occurrence compared to usual care in patients admitted to ICU?
3. When implementing advanced PT techniques for critically ill patients, what safety measures and contraindications should be considered?

Rationale This review seeks to provide researchers, clinicians, and policymakers with a comprehensive understanding of the feasibility, safety, and effectiveness of advanced therapies aimed at enhancing physical conditioning and reducing the incidence of ICUAW by combining data from various studies.

Condition being studied Intensive Care Unit Acquired Weakness.

METHODS

Search strategy The following electronic databases will be searched for literature indexed between the date of the search and the database's inception: PubMed, Pedro, Cochrane, Google Scholar. The reference lists of the retrieved paper will also be manually searched. The following keywords will be used to characterize the Medical Subject Headings: ("Intensive Care Unit Acquired Weakness" OR "ICUAW") AND ("Physiotherapy In ICU") AND ("Critical Illness Myopathy" OR "CIM") AND ("Critical Illness Polyneuropathy" OR "CIP") AND ("Critical Illness Neuro-myopathy" OR "CINM") AND ("Intensive care" AND "Physiotherapy") AND ("Critical care" OR "Intensive care") AND ("Physical Therapy") AND ("Therapeutic exercise" OR "Functional training" OR "Exercise" OR "Exercise therapy" OR "Mobilization" OR "Rehabilitation" OR "Ambulation") AND "Physical Therapy Modalities" AND ("Physical exertion" OR "Early Mobilization" OR "Muscle weakness/rehabilitation" OR "Muscle weakness/therapy") AND (“Randomized controlled trial” OR “RCT”) AND (“Quasi-Experimental Studies”) AND ("Cohort Studies").

Participant or population Both genders (over the age of 18) were hospitalized in ICU settings due to serious illness and received any sort of physiotherapy treatment.

Intervention Adequately designed physiotherapy intervention protocols including early mobilization, in-bed cycling, functional electrical stimulation, whole-body vibration, resistance progressive exercises, and respiratory therapy used to treat Critically ill patients.

Comparator Usual care.

Study designs to be included Randomized Control Trial.

Eligibility criteria Included studies will follow the given criteria:

Study Design: Randomized controlled trials published between 2015-2024 which investigated physiotherapy effectiveness in ICUAW
Participants: ICU admitted patient of both gender and 18 years above
Intervention: Physiotherapy and other medical interventions
Outcome measure: Muscle weakness, muscle mass, mobility status, adverse event and others
Language: full text articles published in only English language.

Information sources PubMed, Cochrane Central Register of Controlled Trials (CENTRAL), Physiotherapy Evidence Database (PEDro), Google Scholar.

Main outcome(s) ICUAW Occurrence (Electrophysiological Measures, Biomarkers, MRC Sum score, hand grip strength).

Additional outcome(s) Blood glucose levels, Physical activity level (By Mobility scale), Duration of Mechanical Ventilation (Hours and days), Length of ICU stay (days), ICU mortality, Adverse events (any undesired outcome due to the intervention).

Quality assessment / Risk of bias analysis This study will employ the Cochrane tool for risk of bias 2 (RoB2) for assessing the quality of RCT.

Strategy of data synthesis The data will be analyzed using SPSS version 27.0, with fixed-effect model used for homogeneous data and random-effects models will be used for clinical and methodological heterogeneity (if the I2 number is >50%,). If meta-analyses aren't feasible, a narrative summary will be provided, addressing direction, size, consistency, and evidence strength of the research.

Subgroup analysis To eliminate the random variance between the major research estimates, we shall undertake a subgroup analysis. The subgroup analysis will be based on the study's quality as well as the participant's age and gender.

Sensitivity analysis The Cochrane Risk of Bias Tool 2 (ROB2) will be used to exclude trials with a high risk of bias to perform a sensitivity analysis.

Language restriction Only English.

Country(ies) involved India.

Keywords Intensive Care Unit-Acquired Weakness; Critical Illness Neuromyopathy; Early Mobilization; Randomized Controlled Trial.

Dissemination plans The study's findings will be disseminated through peer-reviewed academic publications and presentations at scientific conferences.

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