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EARLY MOBILIZATION AND ITS PROTOCOLS AT HOSPITAL DISCHARGE IN ADULT PATIENTS IN THE INTENSIVE CARE UNIT

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Revista ARACÊ
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ABSTRACT

Introduction: The high-complexity hospital environment was created with the objective of offering intensive care to patients with severe acute states or system instability, with the potential for recovery. A growing number of individuals who survive the initial stage of treatment but do not have a good outcome are identified. A poor evolution of the critically ill patient is due to immobility, which can cause several complications that influence recovery. The authors warn that the consequences of immobility can extend up to 5 years after hospital discharge. It is highlighted in several published studies that PM is associated with a reduction in the patient's time in hospital units. Several arguments based on other studies indicate that PM has been proposed as a promising intervention for critically ill patients, important to prevent postoperative complications and reduce hospitalization time. Objective: To describe the influence of PM and its protocols on hospital discharge in adult patients in the ICU. Methods: This is a descriptive study based on a systematic review of the literature using the PICO strategy. Results and Discussion: Searches carried out in the databases found 96 articles that, after analysis, were discarded, 79 and 7 articles met all the inclusion criteria of this study. The present study analyzed the influence of PM and its protocols on hospital discharge in adult patients in the ICU in the selected articles. Where many issues should be investigated for a more assertive and guiding opinion, in this way to further highlight the benefits of the MP and its significant influence on hospital discharge. There is a need to design a model to meet the specific need according to the profile of the patients and thus systematize PM in the ICU. Conclusion: We consider it important to carry out further studies to systematize the practice and evidence the improvements of the protocols and, thus, benefit the patient, favoring their recovery, hospital discharge and quality of life.

Keywords: Early Mobilization (PM). Intensive Care Unit (ICU). Adult patient. Discharged.

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Revista ARACÊ
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INTRODUCTION

The high-complexity hospital environment with monitoring and advanced life support was created with the aim of offering intensive care to patients with severe acute states or system instability, with the potential for recovery. Everything related to this type of environment must work with excellence, coherence, and precision, and this includes both the patient's admission and stay process, as well as the path to discharge (Souza *et al*, 2020).

However, a growing number of individuals who survive the initial stage of treatment but do not have a good evolution and recovery from the acute phase, remaining with functional dependence, persistent inflammation, and organ failure for a prolonged period (Souza *et al*, 2020).

Aquim *et al* (2019) elucidate that one of the factors for a poor outcome of the critically ill patient is immobility, the authors state that immobility can cause several complications that influence the recovery of critically ill patients, including atrophy and muscle weakness. This effect can be mitigated by performing PM. Aquim (2019) warns us that the consequences of immobility, resulting from prolonged hospitalization, can extend up to 5 years after hospital discharge. It is thus characterized as a public health problem, as it impacts the increase in comorbidities and the mortality rate, influences the frequency of the need to use high complexity, overloads families and the health system.

For Dantas *et al* (2012), immobility appears with greater significance in the respiratory muscles due to the fact that the mechanical ventilator assumes a greater proportion of the work of breathing, reducing the work performed by spontaneous ventilation. This results in the complete or partial absence of neural activation and muscle mechanics, thus reducing the ability of the diaphragm to generate force.

Such atrophy becomes noticeable to a greater extent in the respiratory muscles than in the peripheral ones, although these are also inactive. This impairment of respiratory muscle function contributes to exercise intolerance, dyspnea, and hypercapnia, and its function can be improved with the maintenance of adequate physical training.

It is noteworthy in several published studies that PM is associated with a reduction in the patient's time on mechanical ventilation. Zhang *et al* (2012) presents several arguments based on other studies that PM has been proposed as a promising intervention for critically ill patients and that early exercise has the potential to improve function, which is important

Revista ARACÊ
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to prevent postoperative complications and reduce hospital stay. It is reported that PM appears to be safe and has a low risk of potential adverse events.

Based on the literature, this study was developed with the objective of systematically evaluating the available evidence on the influence of early mobilization on hospital discharge in adult patients.

METHOD

This is a descriptive study using a systematic review of the literature. Evidence-based practice (EBP) provides for methodological analyses and processes for identifying evidence with a treatment, or diagnostic means, if it is in fact effective, with strategic criteria to evaluate the quality of studies and mechanisms for implementing care.

The proposal of the EBP seeks to highlight what is clear, the verification of a truth that does not cause any doubt, where the clinical problems that arise in the care practice are fragmented and organized using the PICO strategy.

Elucidated by Santos *et al* (2007), the PICO strategy can be used to construct research questions of different natures, arising from the clinic, from the management of human and material resources, from the search for instruments for symptom assessment, among others. This strategy enables the correct definition of what information (evidence) is necessary for the resolution of the clinical research question, maximizes the retrieval of evidence in the databases, focuses on the scope of the research and avoids unnecessary searches.

To prepare this systematic review, the PICO strategy was used, described in chart 1 where it represents an acronym for **Patient, Intervention, Comparison and "The**utcomes" (outcome).

Table 1 – PICO Description

Acronym	Description
P	Adult patients in intensive care unit
I	Early mobilization
C	Late mobilization
Or	To identify the importance of PM in the hospital discharge of patients in the unit intensive care

Source: Authors

Revista ARACÊ
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Chart 2 – Stages of Evidence-Based Practice. São Paulo, 2022.

1 - Identification of a clinical problem	Systematic Review
2 - Formulation of a relevant and specific clinical question	
3 - Search for scientific evidence	
4 - Evaluation of the available evidence	
5 - Evaluation of the clinical applicability of the evidence	
6 - Implementation of evidence in patient care	
7 - Evaluation of the results of the change	

Source: Authors

Santos *et al* (2007) points out in chart 2, stages 1, 2, 3 and 4 representing the development of studies called systematic reviews, a fundamental research model within the EBP and which represents the use of a standardized method to synthesize data from multiple primary studies.

Chart 3 presents the four components of the PICO strategy, also described and exemplified (Santos *et al* 2007).

Table 3 - Description of the PICO strategy

Acronym	Definition	Description
P	Patient or Problem	It can be a single patient, a group of patients with a particular condition or health problem
I	Intervention	It represents the intervention of interest, which can be therapeutic (e.g., different types of dressing), preventive (e.g., vaccination), diagnostic (e.g., blood pressure measurement), prognostic, administrative or related to economic affairs
C	Control or Comparison	Defined as a standard intervention, the most used or no intervention
Or	Denouement (“Outcomes”)	Expected Result

Source: Authors

The Health Sciences Descriptors (DeCS) and the Boolean operators (AND/OR) were used. The descriptors selected for the disease were: Early Mobilization, Critical Patient, Adult Patient, Intensive Care Unit, and Hospital Discharge.

The inclusion criteria consisted of: (1) type of study: controlled clinical trial and any study with participants (sampling) and intervention protocol. (2) publication between 2012 and 2022, search for current literature.

Revista ARACÊ
ISSN: 2358-2472

The exclusion criteria consisted of: (1) type of study: systematic review, meta-analysis, cross-sectional studies, and case report. (2) Research that uses animals for study. (3) Theses.

Literature searches for articles were carried out from June to November 2022, in English and Portuguese. The articles were searched in recognized databases such as: PUBMED (National Center for Biotechnology Information, U.S. National Library of Medicine), MEDLINE (Medical Literature Analysis and Retrieval System Online), PEDro (Physical Therapy Evidence Database), SciELO (Scientific Electronic Library Online) and LILACS (Latin American and Caribbean Literature on Health Sciences).

To choose the selected studies, the pair search was used, first carried out with a focus on randomized clinical trials, the inclusion criteria were applied by the titles and year of the articles; soon after, the summaries and, finally, the full text. The selected articles were those that met the proposed theme and objective.

RESULTS

In the searches carried out in the databases, a total of 96 articles were found, of which: 86 results in PubMed, 4 results in LILACS, 5 results in PEDro and 1 article in SciELO, as shown in Table 4.

Chart 4 – Description of the total number of articles found per database searched. São Paulo, 2022.

Database	Early Mobilization AND Critically Ill Patient AND Adult Patient AND Intensive Care Unit OR UTI AND Hospital Discharge
PubMed	86
LILACS	4
Peter	5
SciELO	1

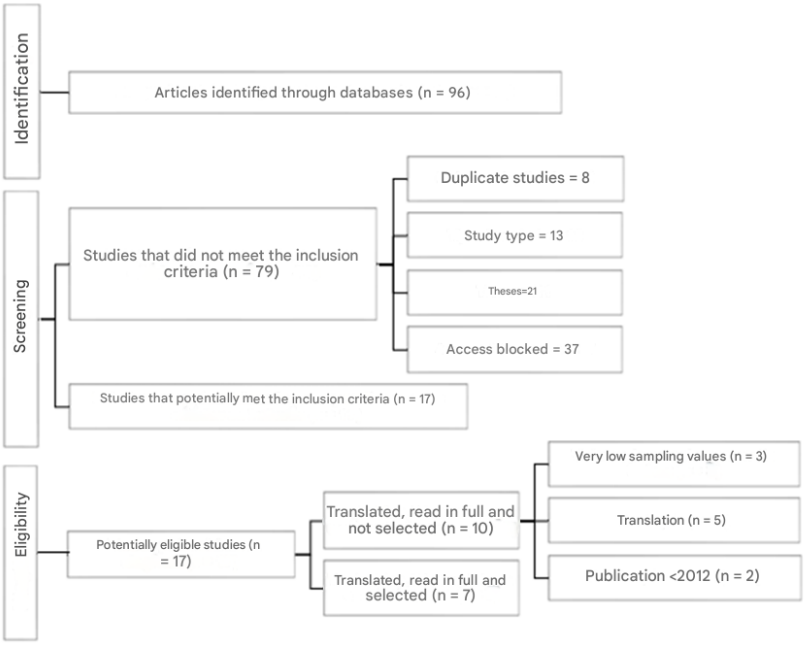
Source: Authors

A total of 96 articles were found in the aforementioned databases (Figure 1), which met the theme proposed in the research. After analyzing the titles and abstracts of each article, 79 were discarded and 17 were relevant and, thus, selected for reading and elaboration of this review, however, only 7 articles met all the inclusion criteria.

In figure 1 we can see the flowchart of the methodology used, which gave rise to the sample of this study.

Revista ARACÊ
ISSN: 2358-2472

Figure. 1 - Sample Flowchart.



Source: Authors

TABLE 5 – Characteristics of the included studies – São Paulo, 2022.

Authors Year	Objective	Sample	Assessment Instruments	Conclusions
Dantas, *et al* (2012)	To evaluate the effects of an early mobilization protocol on the peripheral and respiratory muscles of critically ill patients.	Initially 59 patients Outcome 28 patients	Randomized controlled clinical trial conducted in patients of both genders on mechanical ventilation.	There was a gain in inspiratory and peripheral muscle strength for the study population when submitted to an early and systematized mobilization protocol.
Feliciano, *et al* (2012)	To evaluate the efficacy of an early mobilization protocol on the length of stay in the intensive care unit, as well as to analyze respiratory muscle strength and peripheral muscle strength in these patients.	Initially 431 patients Discharge 28 patients	This is a randomized, controlled clinical trial.	For the population of critically ill patients studied, there was no reduction in the length of stay in the ICU. However, these same patients evolved with improved inspiratory muscle strength and level five of functionality, thus demonstrating the importance of using these protocols in critically ill patients.

Revista ARACÊ
ISSN: 2358-2472

Almeida, *et al* (2017)	The aim of this study was to evaluate the efficacy, feasibility, and safety of a supervised postoperative exercise program.	Initially 231 patients Outcome 108 patients	Randomized, single-blind, parallel-arm study.	An early postoperative mobilization program based on a set of exercises, such as core stability and orthostatic training, gait training, aerobic and resistance training, implemented twice daily, appears to be safe, feasible, and improves functional capacity in comparison with a standard rehabilitation treatment in patients undergoing elective major abdominal oncology surgeries. However, its impact on the Clinical results are still unclear.
Bartolo, *et al* (2017)	To determine whether early mobilization of patients with severe acquired brain injury, performed in the therapy unit intensive, influence or functional result.	Initially 109 patients Outcome 103 patients	This is a prospective observational study with patients with acquired brain injury.	Early mobilization seems to favor the clinical and functional recovery of patients with severe acquired brain injury in the intensive care unit.
Shimogai, *et al* (2019)	To examine the factors that affect the discharge home of medical patients treated in an intensive care unit, including elements of in-hospital rehabilitation and pre-hospital movement capacity.	Initially 1166 patients Outcome 155 patients	This retrospective cohort study was medical patients treated in an intensive care unit (ICU).	We identified factors that affect hospital discharge of medical patients treated in an ICU. In addition to commonly reported factors such as age and severity of illness, patients' independence prior to admission, life at home, and their ability to stand soon after admission were identified. Therefore, the degree of independence in home life before admission to the hospital and the progress of early mobilization should help in considering the appropriate destination of discharge of patients ICU.
Mohan, *et al* (2021)	Use the quality improvement initiative (QI) to understand mobilization practices, identify challenges, and test interventions.	Initially 140 patients Outcome 207 patients	IQ project in three phases, carried out in a 24-bed ICU. Mobilization performance and scores were analyzed pre-intervention and post-intervention. intervention. Were	Early mobilization is feasible and safe in facilities with limited resources. A multidisciplinary hands-on collaborative approach resulted in significant improvements in achieving mobilization precocious. Future research

Revista ARACÊ
ISSN: 2358-2472

			Data on adverse events and barriers to mobilization were recorded. Descriptive statistics were used to report all results.	should focus on identifying opportunities and challenges for the early mobilization of critically ill adults from other settings with limited resources in the South Asia region.
Hodgson, et al. 2022.	To identify the average number of days that patients undergoing early mobilization were alive outside the hospital compared to patients who underwent early mobilization received usual care.	Initially 10828 patients Outcome 733 patients	International, multicenter, randomized, controlled study.	Among adults undergoing mechanical ventilation in the ICU, the increase in early active mobilization did not result in a significantly higher number of days that patients were alive and out of hospital than the usual level of mobilization in the ICU.

Source: Authors

DISCUSSION

The present study analyzed the influence of PM and its protocols on hospital discharge in adult patients in the ICU in the selected articles. Where many issues should be investigated for a more assertive and guiding opinion, in this way to more congruently evidence the feasibility of the procedures, benefits of the MP and its significant influence on hospital discharge (Hodgson, et al. 2022).

Silva *et al* (2014) state that prolonged ICU stay and mechanical ventilation are associated with functional decline, increased morbidity and mortality, and care costs. It also understands that the delay in the beginning of physical rehabilitation during MV was associated with worse performance after discharge from the ICU.

A study by Feliciano *et al*, (2012) evaluated the efficacy of an early mobilization protocol in critically ill patients admitted to the ICU. The researchers compared a group that received systematized early mobilization with a control group that received conventional physical therapy. The results indicated that early mobilization did not result in a significant reduction in the length of ICU stay, but improved inspiratory muscle strength and functional capacity of the patients, demonstrating its importance in the recovery of these individuals.

One of the recommendations of the Brazilian guideline for early PM explains its indication for adult patients admitted to the ICU, preferably with spontaneous breathing, cooperative and without intracranial hypertension. PM in mechanically ventilated and non-cooperative patients can be considered a limitation, but not as contraindications (Aquim *et al* 2019), (Hodgson, et al. 2022); (Mohan, et al, 2021).

Revista ARACÊ
ISSN: 2358-2472

element. Matos *et al* (2016) indicates that dysfunctions present different behaviors and, depending on the severity, can persist, directly affecting the quality of life of hospitalized individuals.

Something noticeable in the study by Bartolo (*et al* 2017) and should be taken into account is that the evidence supporting PM is mainly based on trials conducted in general medical and surgical ICUs, while studies conducted in neurological ICU (ICU) settings are scarce and show conflicting results.

In the study by Silva (*et al* 2014), PM in clinical practice seems to be viable and safe, being able to promote improvement in functional capacity, quality of life, in addition to reducing the length of hospital stay and mechanical ventilation. The results also indicate that they are favorable for the prevention and treatment of neuromuscular disorders resulting from longer patient survival and prolonged bed stay.

Corroborating, Pinto (*et al* 2018) points out that some studies have shown that this practice is rarely performed due to the various barriers encountered by the physiotherapist, such as patient sedation, cardiovascular instability, and the presence of an endotracheal tube.

We cannot overlook that Pinto (*et al* 2018) draws our attention by pointing out that cultural/traditional factors such as professionals' attitudes, resistance to change and lack of interprofessional respect were also considered barriers to the practice of mobilization and considers that the limitation of hospital resources, as well as the lack of an incentive program, were also limiting factors for the practice of the MP.

In order for the practice to be more accepted and indicated, Conceição (*et al* , 2017) advises that the physiotherapist professional must be able to evaluate and propose safe therapeutic treatment, appropriate to the patient and with appropriate monitoring, so that potential benefits of mobilization result in gains for the patient. It also reinforces that it is necessary for the multidisciplinary team to have knowledge and be in constant harmony so that the outcomes are always favorable to the patient.

Focused on the theme of the work, Bartolo (*et al* , 2017) points out that patients in the mobilization group were more likely to be discharged for rehabilitation than patients in the group without mobilization.

Dantas *et al* (2012) in their study indicates that in the intervention group, 59% of the patients returned to functional independence at hospital discharge, while in the control group, the occurrence was in 35% of the patients. They also indicate that there is a

Revista ARACÊ
ISSN: 2358-2472

reduction in the length of stay in the ICU and, consequently, the hospital stay, in addition to promoting an improvement in the quality of life after hospital discharge.

In the work of Shimogai (*et al* , 2019), one of the effects of early rehabilitation in the ICU is also related to early improvement of activities of daily living and PM is reported to improve the discharge rate for each patient who was treated with mechanical ventilation. It concludes that the degree of independence in home life before admission to the hospital and the progress of the MP should help in considering the appropriate destination of discharge of ICU patients.

We can observe in the works that there is no standard of procedures for carrying out the MP. There is a need to design a model to meet the specific need according to the profile of the patients and thus systematize PM in the ICU. In this way, adapting the procedures, evidencing the benefits and favoring the patient, reducing their hospitalization time and improving their quality of life after hospital discharge.

FINAL CONSIDERATIONS

Early mobility is an effective technique to help patients recover and reduce the length of hospital stay. The current methods of providing early mobility consume time, however, the PM and the protocols analyzed in the studies are feasible and considerably influence hospital discharge, especially when carried out with a multidisciplinary collaborative approach, resulting in the improvement of the condition of patients in the ICU. For the practice of PM to be viable, it is relevant that the incentive, resources and training of professionals are indispensable, the qualification of professionals and resources for this technique to be applied is of great value in the recovery and discharge of patients hospitalized from the ICU, according to the states used in this article.

We consider it important to carry out more studies to systematize the practice and highlight the improvements in the protocols and, thus, benefit the patient, favoring their recovery, hospital discharge and quality of life.

Revista ARACÊ
ISSN: 2358-2472

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