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Review Article

Effects of early mobilization on patients in the intensive care unit: An integrative review

Márcio Cavalcante Marcelino[1], Djavan Gomes Leite[1], Weslley Barbosa Sales[2]* and Giovanna Pontes Vidal[1]

[1]Department of Physical Therapy, University Center Maurício de Nassau, UNINASSAU, Brazil

[2]Department of Physical Therapy, University of Federal do Rio Grande do Norte, Brazil

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***Corresponding author:** Weslley Barbosa Sales, Department of Physical Therapy, University of Federal do Rio Grande do Norte, Natal, Brazil, Tel: +55-83-98612-8115; E-mail: weslleysaless8@gmail.com

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Abstract

Introduction: The deleterious effects of immobility in the ICU can be minimized by having early mobilization within their strategies, which consists of an interprofessional plan that proposes the improvement of inactivity and which aims to reduce the problems caused by hospitalization with appropriate exercises for high-age individuals. Risk and its bed.

Objective: To identify the effects of this physical therapy technique on patients hospitalized in this hospital sector.

Methodology: This is an integrative review, with a survey in March 2020, in the Scientific Electronic Library Online (SCIELO), PubMed and Virtual Health Library (VHL) databases, with the inclusion criteria: experimental articles and clinical cases with purposes included in the study strategy, written in Portuguese and English, published between 2015 and 2020, available in full in the online collection and exclusion: articles referring to another area of health, incomplete and integrative, systematic reviews, bibliographic or meta-analysis, using the descriptors: "Efficacy", "Early Mobilization" and "UCI".

Results: The findings from this research made it possible to identify that physiotherapy is effective in carrying out early mobilization protocols, providing important results, such as: length of stay, important gains in functionality, pain reduction, improvement in respiratory muscles and time reduction of mechanical ventilation.

Conclusion: Physiotherapy is important in the process of hospitalization of ICU patients, especially in the use of early mobilization protocols, and these were effective in the studies selected for this research.

Introduction

The Intensive Care Unit (ICU) is defined as a standard place to help critically ill patients in serious health situations and variants, who remained from an intensive follow-up of their condition, which is commonly present in care hospitals. Specialized, because it involves high technology and high cost, in which aggressive and invasive processes are carried out. In this way, innovative treatments and increased survival rates for pathologies lead to an increase in the number of individuals in ICUs [1,2].

Thus, the occurrence of injuries caused by the deleterious effects of immobility in Intensive Care Units (ICUs) is associated with a low level of functional autonomy, a decrease in quality of life and its permanence after the discharge period. Regarding the causes for the insertion of patients in the ICUs, infectious diseases, acute myocardial infarction, unstable angina, acute respiratory failure and acute pulmonary edema predominate, since the polyneuropathies caused by the association of two or more pathologies in these patients, they add, their dependency on Mechanical Ventilation (MV) and length of stay in the unit. The increase in length of stay is associated with muscle weakness and physical unpreparedness, which compromise individuals submitted to ICUs due to immobility [3].

According to Ordinance GM/MS nº 3432 of August 12, 1998 of the Ministry of Health, part of the basic team of an ICU: "one

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physiotherapist for every 10 beds or fraction in the morning and afternoon shift". As well as COFFITO Resolution No. 402 of August 3, 2011, which resolves: "Article 1 – Recognize and discipline the activity of the Physiotherapist in the exercise of the Professional Specialty Physiotherapy in Intensive Care".

Therefore, the presence of physiotherapy professionals in Intensive Care Units (ICU) is current and is changing over time. Previously, when physiotherapy was not constant in the hospital environment, specifically in the ICU, several patients were put back to their routine with important muscle injuries as well as inactive in relation to their activities of daily living. At the present time, we know how to prevent these complications that bring a lot of harm to these people's lives, especially those subjected to a long hospital stay. Physiotherapy performed without interruptions in the ICUs, show a lower average length of stay and dependence on devices such as mechanical ventilation, as well as a reduction in overall expenses, as opposed to those in which the physiotherapist is available only for the standard period of 12 hours a day [4].

Therefore, a rehabilitation program for ICU patients that includes early mobilization within its strategies is necessary. This is defined as an interprofessional plan that proposes to improve the inactivity of these individuals in critical situations and whose objective is to reduce the problems caused by hospitalization with appropriate exercises for high-risk individuals and their bed. The accomplishments of immediate exercises show that a refined rehabilitation, present improvements in the quality of life and autonomy, as well as, it reduces expense and does not offer risk to patients in these situations [5,6].

In view of the above, the desire was expressed to investigate the therapeutic response that brings about early mobilization when performed in patients submitted to the Intensive Care Unit (ICU). Thus, this work was based on inquiring about these effects. And the following question is raised, which will guide the present study: what are the effects of early mobilization in ICU patients? Therefore, the objective of this work is to carry out a bibliographic survey, through an integrative literature review, in order to identify the effects of this physiotherapeutic technique in patients hospitalized in this hospital sector.

Methodology

This is an integrative review survey, defined as a method that has greater attributions for the scientific community, associated with the various types of reviews, which are within the scope of Evidence-Based Practice (EBP), which are involved in the systematization and publication of the results of a bibliographic research in health, which are relevant to health care. It admits a rich and current study of a certain strategy, which investigates, verifies and proves the results of studies by various authors according to the topic addressed, adequately directing the integration between scientific research and professional practice, being a useful method in the field of health [7].

A survey was carried out in March 2020, in the Scientific Electronic Library Online (SCIELO), PubMed and Virtual Health Library (BVS) databases, using the keywords: "Effectiveness", "Early Mobilization" and "UCI", using the Boolean operator "AND" to operationalize the search for publications. It should be noted that all the terms mentioned above are descriptors standardized by DeCS.

Inclusion criteria were: experimental articles and clinical cases with purposes included in the study strategy, written in Portuguese and English, published between the years 2015 to 2020, available in full in the online collection. Articles referring to another area of health, incomplete and integrative, systematic, bibliographical or meta-analysis reviews were excluded from the research.

The descriptive statistics of the data were approached using *Microsoft Word 2016 and Microsoft Office Excel 2016* programs to organize the data and acquire simple frequencies, presented through graphs, tables and conceptual map, investigated and discussed based on the related literature.

Figure 1 illustrates a sample of the number of articles found and the relationship of the research sample, allowing the selection of articles that were later analyzed to contribute to this study. The abstracts of these articles were read and selected according to the inclusion and exclusion factors, with the applied filters and descriptors defined in the pre-established criteria to refine the sample.

Results

102 articles were found from the selected descriptors, however, 96 of them were eliminated due to the application of the inclusion and exclusion criteria. With that, 06 articles were selected that were consistent with the theme of the study, and these, according to the pre-established criteria for analysis and discussion of the results. Table 1 shows a sample with the list of articles selected for analysis with their titles, authors, year and country, respectively.

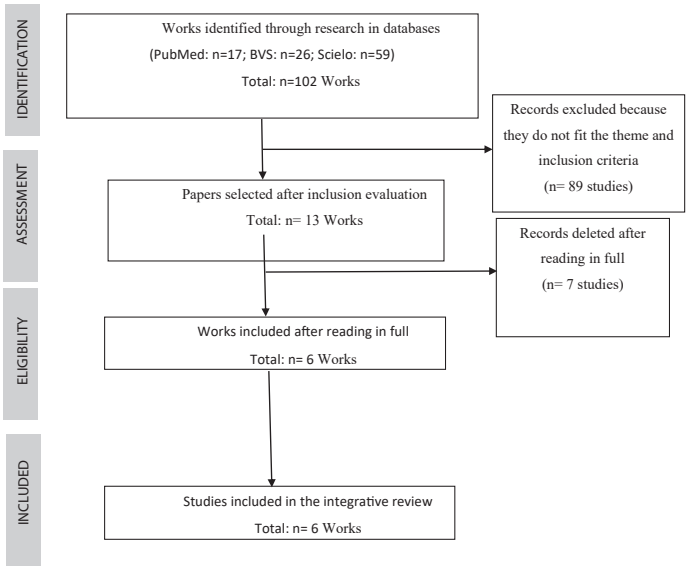

Figure 1: Sample of the number of articles found and the ratio of the research sample.

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Therefore, referring to the number of identified articles, it was verified that according to the research, there is an average of one to two studies for each year. Thus, the topic has been addressed periodically over the last 5 years. In the second Table, the journals that were published, the selected articles and the percentages of publications were distributed.

Through the journals mentioned above, a total of one article published in each of them on the subject of the study was observed. Thus, totaling 16.67% each journal, in accordance with Table 2.

Table 3 shows the demographic data of the articles selected for the study. As shown in the table below, there was a prevalence of both sexes and the age group of over 18 years.

Table 4 shows the physiotherapeutic resources and the results found by each author of the chosen articles regarding the effectiveness of the early mobilization protocol in patients in the intensive care unit.

Discussion

Schaller [8] conducted a study with 200 patients in five university hospitals in Austria, the United States and Germany using early mobilization as a research object. In this study, patients were divided into two groups: a control group and a group undergoing early mobilization. The following aspects were evaluated: the average level of patients achieved with the protocol during their stay in the ICU, length of stay and functional independence. There was an improvement in the level of mobilization in the intervention group compared to the control group, as well as an average of 7 days in the intervention group compared to 10 days in the control group.

Thus, Schaller [8] divided the groups into 96 from the intervention group and 104 from the control group and found that 47 of the 87 surviving patients in the intervention group showed complete independence compared to 27 of the 88 survivors in the group control and also showed that no significant differences were found related to the levels of muscle weakness between the control and intervention groups, in addition, they also did not find significant differences in relation to quality of life.

Similarly, Corcoran [5], carried out a study with 283 patients, 123 before the mobilization protocol and 160 who underwent early mobilization in a medical and surgical ICU of a level 2 hospital trauma that, on average, there is a significant decrease of 18% in the average length of stay in the ICU and

Table 1: List of articles selected for analysis.

Title	Authors	Year	Country
Early rehabilitation in medical and surgical intensive care units for patients with and without mechanical ventilation: an interprofessional performance improvement project.	Corcoran, et al. [5]	2016	USA
Early goal-directed mobilization in the surgical intensive care unit unit of care: a randomized controlled trial.	Schaller, et al. [8]	2016	UK
Early rehabilitation in the general ward after an intensive. Does unit stay reduce the length of hospital stay in survivors of critical illness? A randomized clinical trial.	Gruther, et al. [9]	2017	Austria
Clinical attitudes and perceived barriers to early mobilization of critically ill patients in adult intensive care units.	Fontela; Forgiarini & Friedman. [10]	2018	Brazil
Patients hospitalized in an intensive care unit who do not adopt an antigravity posture are more likely to die.	Santos, et al. [11]	2019	Brazil
Effectiveness of an early mobility protocol for stroke patients in the Intensive Care Unit.	Alamri, et al. [12]	2019	Saudi Arabia

Table 2: Distribution of articles by journals (n = 06).

Magazines	N	%
PM&R	1	16,67
The Lancet	1	16,67
Physical Medicine & Rehabilitation	1	16,67
Revista Brasileira de Terapia Intensiva	1	16,67
Revista Fisioterapia e Pesquisa	1	16,67
Neuroscience	1	16,67
Total	6	100

Table 3: Demographic data of the participants of the selected articles.

Authors	N° of participants	age range	Sex
Corcoran, et al. [5]	283	+18 years old	Uninformed
Schaller, et al. [8]	200	+ 18 years old	Male/Female
Gruther, et al. [9]	53	59 - 64 years old	Male/Female
Fontela; Forgiarini JR; Friedman. [10]	98	Uninformed	Male/Female
Santos, et al. [11]	92	average of 54 years old	Male /Female
Alamri, et al. [12]	60	40 – 60 years old	Male/Female

Table 4: Collection instrument and results found.

Authors	Physiotherapeutic resource	Results
Corcoran, et al. [5]	Early Mobilization	- Decrease in the average length of stay in the ICU by 20%; - Decreased stay in bed; - 40.5% of patients were discharged home; - Decrease in the average cost per day.
Schaller, et al. [8]	Early Mobilization	- Improvement in the level of mobilization; - Decreased length of stay; -Improved functional mobility at hospital discharge.
Gruther, et al. [9]	Early mobilization and neuromuscular electrical stimulation.	- Statistically significant earlier hospital discharge;
Fontanela; Forgiarini & Friedman. [10]	Early Mobilization	- Decreased pain;
Santos, et al. [11]	Early Mobilization	- Higher chances of discharge; - Decreased risk of death.
Alamri, et al. [12]	Transcutaneous electrical stimulation and early mobilization.	- Significant improvement in muscle strength; - Improvement of lung function; - Improved quality of life.

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that at discharge, only 8.1% of patients were able to walk independently before mobilization, in contrast to 25.3% of those undergoing mobilization and that both groups showed significant improvement in relation to self-reported pain.

Another retrospective and analytical study carried out by Santos [11] in an adult ICU with 10 beds and 92 patients undergoing early mobilization at Hospital Geral Prado Valadares (HGPV), in Jequié (BA) - Brazil, also showed that this protocol performed gradually and progressively in hospitalized patients decrease the chances of mortality and that a protocol followed congruently with each patient improves their functional capacity, as it is associated with an increase in the strength of the peripheral muscles and respiratory muscles, thus reducing the use of MV . And it is worth mentioning that the early mobilization protocol aimed at positioning patients in the intensive care unit brings important benefits, proving an important relationship that the non-adoption of the antigravity posture in bed is associated with the risk of death still inside the ICU.

Corcoran [5] also show that it is important to maintain good interprofessional collaboration and an increase in the intensity of services of an average of 60 minutes per day for each service. It also showed that the significantly reduction in the use of antipsychotic drugs is related to the delirium presented by the patients, as well as the reduction of benzodiazepines alone brings functional improvements. Santos [11] also showed that mobilization can be a prognostic factor and that it decreases the chances of complications that can aggravate the situation of critical ICU patients.

Likewise, a cross-sectional study by Fontela, Forgiarini Junior and Friedman [10] was carried out through a survey of professionals from six ICUs of two university hospitals in Brazil. This study also agreed that early mobilization decreases the risk of patients, especially those on Mechanical Ventilation (MV), as well as reducing MV time. Despite this, the study also observed that the patients' range of motion alone was insufficient to maintain the muscle strength guaranteed by early mobilization.

At the general hospital in Riyadh, Saudi Arabia, Alamri [12] conducted a survey with 60 patients who underwent the physiotherapeutic resource of early mobilization, however, associated with transcutaneous electrical stimulation. Better efficacy was observed in the quality of life of patients submitted to the association of the two techniques evaluated by the score on the modified Rankin scale. In addition, they suggested that patients using mechanical ventilation as a supportive therapy can begin early mobilization within 24 hours after admission to an Intensive Care Unit. Thus, there is a significant increase in muscle strength and pulmonary function after discharge in patients undergoing early mobilization, as well as a progression in the level of activity from mild to moderate, generating a positive effect on the functional capacity of patients and reduction of the total hospital stay.

Gruther [9] conducted a study similar to the above, also involving early mobilization techniques and neuromuscular electrical stimulation. Fifty-three patients from a general hospital of the Medical University of Vienna participated in the study. It was observed that patients who underwent the combination of the two techniques were discharged from the hospital statistically significantly earlier than patients in the standard care group. It also stated that ICU-acquired weakness was prevented in 63% of patients in the early rehabilitation group against 33% in the control group, in addition, there was a decrease in pain in the early rehabilitation group and an increase in pain in the control group.

Final considerations

Thus, with this study, it was possible to observe that the physiotherapeutic resource of early mobilization techniques is effective with regard to hospitalization time, being reduced, as well as important gains in functionality, pain reduction, improvement in respiratory muscles and reduction of mechanical ventilation time.

In addition, it was observed through other studies that the association of transcutaneous electrical stimulation and neuromuscular electrical stimulation brought effectiveness in the quality of life of critical patients, in addition to allowing the beginning of the early mobilization protocol within 24 hours of the ICU. And also, increased muscle strength and lung function.

It should be noted that this subject is very important and pertinent related to the care of critical patients and, therefore, it encourages further research in the area with the aim of absorbing greater deductions about this theme.

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