



Original article



Journals
BAHIANA
SCHOOL OF MEDICINE AND PUBLIC HEALTH

Knowledge and applicability of functional scales by intensive physiotherapists

Conhecimento e aplicabilidade de escalas funcionais por fisioterapeutas intensivistas

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ABSTRACT | INTRODUCTION: The role of the physiotherapist through early mobilization aims to reduce the adverse effects of immobility and improve functionality. In this sense, the use of functional scales is crucial to assess the functional condition of critically ill patients. **OBJECTIVE:** To analyze the knowledge of intensive care physiotherapists about functional scales, to know the most used scales and the main barriers to applicability in the ICU, in addition to associating the use of functional scales with safety and the perception of results. **MATERIALS AND METHODS:** This is a cross-sectional and quantitative study carried out with intensive care physiotherapists in the city of Fortaleza between August 2022 and February 2023. Data were collected via an online questionnaire (*Google Forms*). The data were analyzed using the *Jamovi Software*. Descriptive statistics and the Chi-square test were used. **RESULTS:** 75 physiotherapists participated, most with 1 to 5 years of experience in the intensive care unit. Most professionals perceive benefits in the use of functional scales and use them to prescribe conduct with safety in its applicability, with the *Intensive Care Unit Mobility Scale* being the most used. As for the barriers that most interfere with the use of functional scales, they were related to the team, the patient and the institution. **CONCLUSION:** Many physiotherapists are aware of the objectives and benefits of using functional scales, they say they are confident in applying them in their practice, and the IMS scale is the one most used by professionals. The interaction between the physiotherapist and the team was the main barrier to the application of functional scales in the Intensive Care Unit.

KEYWORDS: Intensive Care Units. Physical Therapists. Early Mobilization.

RESUMO | INTRODUÇÃO: A atuação do fisioterapeuta através da mobilização precoce visa reduzir os efeitos adversos do imobilismo e melhorar a funcionalidade. Nesse sentido, o uso de escalas funcionais é crucial para avaliar a condição funcional do paciente crítico. **OBJETIVO:** Analisar o conhecimento de fisioterapeutas intensivistas sobre escalas funcionais, conhecer as escalas mais utilizadas e as principais barreiras para aplicabilidade na UTI, além de associar o uso das escalas funcionais com a segurança e a percepção de resultados. **METODOLOGIA:** Trata-se de um estudo transversal e quantitativo realizado com fisioterapeutas intensivistas na cidade de Fortaleza entre agosto de 2022 a fevereiro de 2023. A coleta de dados ocorreu via questionário online (*Google Forms*). Os dados foram analisados através do *Software Jamovi*. Utilizou-se a estatística descritiva e o teste de Qui quadrado. **RESULTADOS:** Participaram 75 fisioterapeutas, a maioria com tempo de experiência na unidade de terapia intensiva de 1 a 5 anos. A maior parte dos profissionais percebem benefícios na utilização das escalas funcionais e utilizam para prescrição de conduta com segurança em sua aplicabilidade, sendo a escala *Intensive Care Unit Mobility Scale* a mais utilizada. Quanto às barreiras que mais interferem para utilização das escalas funcionais foram relacionadas a equipe, ao paciente e a instituição. **CONCLUSÃO:** Percebe-se que a maioria dos fisioterapeutas conhecem os objetivos e benefícios no uso de escalas funcionais, afirmam ter segurança para aplicação em sua conduta, sendo a escala IMS a mais utilizada pelos profissionais. Evidencia-se que a interação do fisioterapeuta com a equipe foi a principal barreira para a aplicação de escalas funcionais na Unidade de Terapia Intensiva.

PALAVRAS-CHAVE: Unidades de Terapia Intensiva. Fisioterapeutas. Mobilização Precoce.

Submitted 06/09/2023, Accepted 10/25/2023, Published 11/29/2023

J. Physiother. Res., Salvador, 2023;13:e5272

<http://dx.doi.org/10.17267/2238-2704rpf.2023.e5272>

ISSN: 2238-2704

Assigned editors: Cristiane Dias, Ana Lúcia Góes

How to cite this article: Lemos MVF, Barros TNS, Silveira BLR, Santos

MKA, Moraes MCS, Viana MCC. Knowledge and applicability of functional scales by intensive physiotherapists. J Physiother Res.

2023;13:e5272. <http://dx.doi.org/10.17267/2238-2704rpf.2023.e5272>



1. Introduction

The Intensive Care Unit (ICU) is the place designated for the care of critically ill patients with recovery potential who require intensive and continuous care.¹ Patients admitted to this unit are susceptible to a series of systemic dysfunctions; contributing factors include immobility in bed, length of hospitalization and mechanical ventilation.²⁻⁵ In addition, the use of sedatives, neuromuscular blockers and vasoactive drugs are elements associated with functional decline in critically ill patients. These conditions can contribute to muscle weakness, decreased functionality and quality of life.³⁻⁷

In this context, the aim of physiotherapy in the ICU, through early mobilization, is to help patients reduce their stay in the intensive care unit and in the hospital, as well as reduce the adverse effects of immobility in bed. Thus, early mobilization has an impact on the patient's functional capacity, even after discharge from the ICU.⁸⁻¹⁰

It is crucial to emphasize that higher levels of functional independence, greater tolerance for physical activities and the development of activities of daily living are directly linked to early mobilization and applicability of functional scales.¹⁰ For the clinical practice of intensive care physiotherapists, functional scales play a fundamental role in adequately measuring the patient's functional condition.¹¹⁻¹³

In the intensive care environment, the most applied functional scales to measure mobility patterns and functional capacity are: the *Intensive Care Unit Mobility Scale (IMS)*, *Perme Intensive Care Unit Mobility Score* or *Perme Score*, *Manchester Mobility Score*, *Surgical Intensive Care Unit Optimal Mobilization Score (SOMS)*, *Functional Status Score for the Intensive Care Unit (FSS-ICU)*, *Physical Function Intensive Care Unit Test (PFIT)*, *Chelsea Critical Care Physical Assessment Tool (CPAx)*.^{12,13} Six of them are validated: IMS, Perme, PFIT, CPAX, SOMS and FSS-ICU) and five have been translated into Portuguese: Perme, FSS-ICU, CPAX, PFIT and IMS), in order to provide greater safety in use and facilitate the physiotherapist's management.¹⁴

Therefore, the assessment of the critical patient's functionality, using scales based on evidence, are guidelines for carrying out the kinetic-functional diagnosis and the physiotherapeutic plan, making the professional's conduct precise and efficient. However, it is necessary to understand the reality of this professional experience and consider the possible barriers that may prevent the implementation of the assessment of functionality and applicability of functional scales.^{10,12,15} With this in mind, the aim of this study was to analyze intensive care physiotherapists' knowledge of functional scales and their applicability, as well as the main scales used in the ICU and the main barriers to their applicability in the intensive care unit, in addition to associating the use of functional scales with safety and perception of results.

2. Materials and Methods

This is a cross-sectional study of a quantitative nature, using a snowball sampling technique. The research was carried out between August 2022 and February 2023, in the city of Fortaleza. The study was approved by the Ethics and Research Committee of the Centro Universitário Christus - Unichristus, under Report No. 5.517.431. The study included physiotherapists working in an ICU in the city of Fortaleza who agreed to participate in the research. Interns and their preceptors were excluded.

Data was collected using virtual means of communication and a questionnaire drawn up by the researchers, based on prior reading of articles on the subject in question.^{9,10,15} The questionnaire consisted of 11 questions, with dichotomous questions combined with multiple choice questions regarding knowledge and applicability of functional scales in intensive care units. Data collection took place in hybrid form (virtual and face-to-face). The survey was publicized through invitations sent to the heads of service, and the link (<https://forms.gle/oFbujp51K25yqYbx8>) was made available through the WhatsApp groups of their respective hospitals; it was also publicized through social media and at the Unichristus postgraduate course in Intensive Care.

On accessing the link, the professionals were informed about the objectives of the study and their participation in the research, as well as having access to the researchers' contact details if they had any questions. All participants signed the Free and Informed Consent form, which was made available on the homepage, and only had access to the data collection instrument if they agreed to take part in the study. At no time was identification required to answer the questionnaire.

On the first page, objective questions were asked related to the professional's data to characterize the sample. Next, dichotomous questions were asked regarding the use of the scales, safety for application and benefits. Multiple choice questions were then asked, related to the main scales known and used, objectives and benefits in using functional scales and barriers encountered for their use, related to the team, patient and institution. The grouping of barriers was based on the study by Barber et al.¹⁶

The data collected was first tabulated in *Excel* software version 13 and then transferred to *JAMOVI*, version 2.3.13 2010 for statistical analysis. Initially, descriptive statistics were carried out using relative and/or absolute frequencies. If the quantitative data was normal, measures of central tendency such as the mean and standard deviation were used, while if the distribution was not normal, the median and interquartile range were used. The chi-square test was used to determine the association between the variables "safety in application" and "use for conduct" and between "perception of results in the use of functional scales" and "use for conduct". A significance value of $p \leq 0.05$ was adopted.

3. Results

A total 75 physiotherapists participated in the study, 59 (78.7%) of whom were female; of these, 51 (68%) interviewed work in a public institution, 11 (14.7%) in a private institution and 13 (17.3%) in both. With regard to the existence of some protocol for using functional scales, 44 (58.7%) state its existence in the institution where they work (Table 1).

Table 1. Characterization of the sample intensive care physiotherapists, 2023

Variables	N	%
Maximum Title		
Graduation	10	13
Residence	7	9,3
Specialization	39	52
Master's Degree	17	23
Doctorate	1	1,3
Post-doctorate	1	1,3
Time since graduation		
<than a year	1	4
Between 1 and 5 years	25	33
Between 6 e 10 years	14	7
Between 11 e 15 years	6	18,7
Between 16 e 20 years	0	0
Over 20 years	27	36
ICU Experience		
<than a year	9	16
Between 1 e 5 years	30	40
Between 6 e 10 years	13	17
Between 11 e 15 years	9	12
Between 16 e 20 years	5	6,7
Over 20 years	9	12

Source: the authors (2023).

Regarding the use of functional scales, 67 (89%) of those interviewed perceive benefits in their applicability, 60 (80%) say they use them as a tool for prescribing their conduct, and 59 (78%) say they are confident in applying them. With regard to the frequency related to its use, 47 (62.7%) use them at every visit, 13 (17.3%) on admission and discharge, 13 (17.3%) only on admission and 2 (2,7%) only at the time of discharge (Table 2).

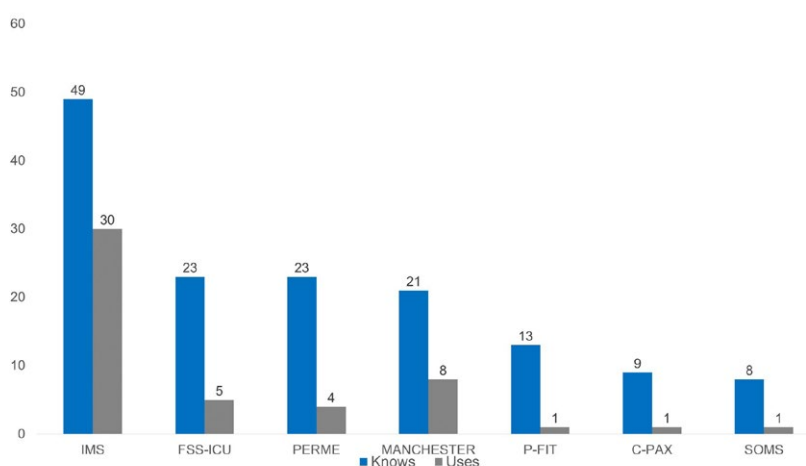
Table 2. Objectives and benefits of using functional scales in the Intensive Care Unit, 2023

Variables	N	%
Objectives when using functional scales		
To identify functional capacity	53	70,7
To qualify functional capacity	53	70,7
To classify degree of mobility	46	61,3
To assess muscle strength	39	52
To check level of mobility	29	38,7
To evaluate activities of daily living	26	34,7
Benefits of using functional scales		
Assist in therapeutic planning	66	88
Monitoring patient progress	55	73,3
Quantify degree of functional impairment	50	66,7
Minimize the impact of immobility	40	53,3
Ensure clinical improvement	26	34,7

Source: the authors (2023).

When asked about the functional scales they know, the most frequently cited were: IMS (65%), FSS-ICU (30%), PERME (30%), Manchester (28%), P-FIT (17%), C-Pax (12%), SOMS (10%), and 20% don't know any of these scales. With regard to the most commonly used scales, 40% use IMS, 10% Manchester, 6% FSS-ICU, 5% PERME, 1% P-FIT, 1% C-Pax, 1% SOMS, 58% don't use any of the scales mentioned and 22% use other scales, including MRC, Katz and Barthel. It's important to mention that, in both questions, more than one scale could be selected. Figure 1 reveals the absolute values of knowledge and use of functional scales in the ICU.

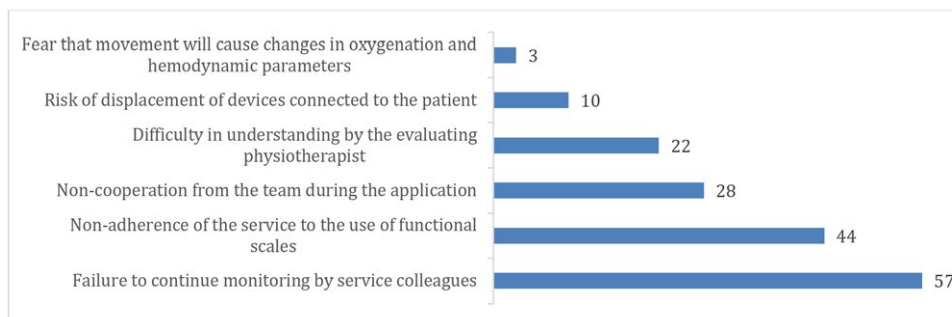
Figure 1. Absolute values of knowledge and use of functional scales in ICU



Source: the authors (2023).

With the regard of the barriers that most interfere during the assessment, the most cited were: barriers related to the team 32 (42%), the patient 20 (26%) and the institution 13 (17%) (Figure 2).

Figure 2. Absolute values of the barriers found for the application of functional scales in the ICU



Source: the authors (2023).

When the association was made between having the confidence to apply the functional scales and their use for conduct, there was statistical significance ($p=0.04$). As for the association between the perception of results when using the functional scales and their use for conduct, there was no statistical significance ($p=0.19$).

4. Discussion

With regard to functional scales, most professionals are aware of the objectives and benefits of using them to help plan therapy. Assessment using functional scales for critically ill patients aims to identify and monitor the patient's level of functionality, guiding intervention protocols. Furthermore, mastering the use of functional scales is essential for a more assertive approach, enabling the professional to identify the most appropriate tool to be used to assess the patient.^{15,17}

Our results show that the IMS scale was the one most used by the participants. Tiping et al.¹⁷ consider the IMS scale to be easy to use, adding to the list of available parameters used to assess the level of mobility and function in ICU patients. This scale determines the patient's degree of mobility, serving as a daily check for mobilization. It ranges from the patient with no activity to the patient who can ambulate independently.^{13,14}

In addition to the IMS scale, other scales were mentioned by physiotherapists, such as the FSS-ICU and the PERME scale. In relation to the FSS-ICU, Silva et al.¹⁹ report its reliability and validation into Portuguese with good applicability. The authors describe the scale as an instrument that involves five functional activities (rolling over, transferring from lying to sitting, transferring from lying to standing, sitting at the bedside and walking), graded from 0 to 7, with 0 being the inability to perform the task and 7 being total independence in performing it.¹⁹

Adapted into Portuguese in 2016, the Perme scale is a tool that offers a reliable assessment of the patient's level of mobility and functional capacity in the intensive care unit. It is also the only scale that assesses potential barriers to mobilization.^{13,14,20} In this study, although some professionals were familiar with this scale, only four participants used it in their clinical practice. Its lack of use may be related to the number of variables to be assessed when compared to other functional scales, which may require more time to assess the patient and lead professionals to use other assessment measures.

With regard to the barriers encountered in applying the functional scales, physiotherapist-team interaction was the most frequently reported. This finding points to the importance of a good relationship between the professionals in the multidisciplinary team and continuity of care. A similar result was observed by Tadyanemhandu et al.²¹

when they reported a lack of engagement by the multidisciplinary team and a lack of continuity by colleagues in implementing strategies to minimize immobility in bed.

In contrast to our results, Silva, Souza and Fernandes¹⁰ observed that patient-related barriers (hemodynamic instability, level of sedation and use of vasoactive and analgesic drugs) were the ones that most interfered with the functional assessment of critically ill patients. Zhang et al.²² recognize other barriers to the application of strategies that improve patient mobility, such as the lack of adequate training and lack of awareness on the part of professionals, which can be considered barriers related to the institution and the professional responsible for mobilization.

Other studies have also found barriers to the use of functional scales and the implementation of early mobilization, such as lack of time, excessive sedation, neurological and respiratory instability and a shortage of therapeutic resources.²³⁻²⁶ Thus, intervening in organizational issues, such as time management, investing in new equipment and technologies, and encouraging the multidisciplinary team to adopt a culture of early mobilization are the ways to bring better functional results and better care to critically ill patients.

This study had some limitations. Firstly, the sample size was small, which is explained by the low level of participation by professionals in the survey, which could interfere with the study's external validity. In addition, the online questionnaire collection instrument brought with it the possibility of measurement bias, since the interpretation of the questions could be different for each participant, and also a possible memorization bias, since the participants might not remember some of the scales they knew.

The usefulness and internal validity of these results stands out considering the originality in investigating the applicability of functional scales and identifying the main barriers to its applicability in the Intensive Care Unit in the city of Fortaleza, in addition to the development of strategies in order to minimize such

barriers, to that early mobilization is applied based on the patient's functional assessment, thus obtaining better management efficiency. In view of this, there is a need for more studies on the knowledge and application of functional scales by intensive care physiotherapists, as well as the barriers that may hinder the applicability of functional scales, in order to favor a better prognosis and functionality for critically ill patients.

5. Conclusion

This study provided a better understanding of the knowledge and applicability of functional scales by intensive care physiotherapists, identifying barriers to the use of functional scales. It is clear that most physiotherapists know the objectives and benefits of using functional scales and claim to be confident in their application, with the IMS scale being the most used by professionals.

It is evident that the physiotherapist's interaction with the team was the main barrier to the application of functional scales. It is important that teamwork is implemented assertively, and institutions promote training and encourage professionals to use scales.

Authors' contributions

Lemos MVF and Viana MCC participated in the conception, design, search and statistical analysis of research data, interpretation of results, writing of the scientific article and forwarding of the scientific article. Silveira BLR and Barros TNS participated in data collection and analysis. Morais MCS and Santos MKA participated in the writing, conception and design.

Conflicts of interest

No financial, legal, or political conflicts involving third parties (government, private corporations and foundations, etc.) have been declared for any aspect of the submitted work (including, but not limited to, grants and financing, advisory board participation, study design, preparation manuscript, statistical analysis, etc.).

Indexers

The Journal of Physiotherapy Research is indexed by [DOAJ](#), [EBSCO](#), [LILACS](#) and [Scopus](#).



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