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Assessment of the Clinical Impact of the Use of A Score for Indication of Home Physical Therapy

Research Article

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Abstract

Introduction: Home physical therapy is a crucial part of home care of patients with clinical limitations that hinder care on an outpatient basis. The home physical therapy treatment plan should be designed according to the clinical assessment and treatment goals, the lack of standards for supporting this decision promotes imprecise indications with excess therapies, high cost, and consequent professional burden and dissatisfaction by the contractor.

Objective: To describe a tool for the technical indication of the frequency of home physical therapy sessions, to verify if adjusting the number of sessions based on this tool matches the clinical needs of patients, and to analyze whether this results in respiratory or functional worsening.

Method: This is an observational, longitudinal, prospective study.

Results: We evaluated 2050 patients through EfisioHD, of which 668 were identified as having indications of reducing the number of sessions or discharge; 129 had indications of discharge, and 539 had indications of weaning . Of these, 249 had the frequency of physical therapy sessions reduced according to the EfisioHD instrument (EfisioHD Group). Among patients in the EfisioHD Group, 5 presented respiratory infections, 2 presented falls, 10 were hospitalized due to respiratory reasons, and 3 patients died at home due to progression of the baseline disease. Discussion:The reduction in the number of sessions did not result in worsening of any of the clinical markers in the EfisioHD Group.

Conclusion: The study showed that the number of sessions indicated by the EfisioHD instrument were in accordance with the patients' clinical needs.

Keywords: Home care services; Physical therapists; Rehabilitation; Respiratory therapy; Therapeutic planning; Assessment tool; Physiotherapy sessions

Introduction

In Brazil, differently from the scenario in other countries, most of the post-acute care, rehabilitation, and chronic patient care is performed at home via home care services (HCS) both in the public and private sectors. HCS in Brazil have been growing exponentially in the last decades, and a million patients receive home care assistance per year in the country. Data from 2019 reveal that the number of patients under home care represents 5% of the country's hospital beds nead [1] HCS include various treatment possibilities, ranging from medication administration, enteral nutrition, wound care, rehabilitation therapies, and oxygen therapy to more complex therapies such as parenteral nutrition and invasive or noninvasive mechanical ventilation.

Home physical therapy is a crucial part of home care; it seeks to maintain and recover motor and respiratory functioning, with consequent improvements to the quality of life of patients with clinical limitations that hinder care on an outpatient basis. Around 13% of labor costs are estimated to be directed to the physical therapist, which demonstrates the importance of this occupation within the home care plan.

The home physical therapy treatment plan should be designed according to the clinical assessment and treatment goals, and the lack of standards for supporting this decision promotes imprecise indications with excess therapies, high cost, and consequent professional burden and dissatisfaction by the contractor.

Instruments currently available for predicting functioning are largely used in physical therapy assessments and support the establishment of treatment goals and plans; however, the diversity of the existing instruments and the fact that they are specific to some patient profiles, in addition to the particularities of home care patients, make it difficult to select and apply them in the context of home physical therapy.

The practical demand for a single scale that is easily applicable (by physical therapy professionals or not), contemplating the assessment of mobility and independence domains as well as respiratory criteria, in addition to serving as a standard for determining the number of home physical therapy sessions, is increasing in Brazilian home care.

Objective

To describe a tool for the technical indication of the frequency of home physical therapy sessions, to verify if adjusting the number of sessions based on this tool matches the clinical needs of patients, and to analyze whether this results in respiratory or functional worsening.

Method

This is an observational, longitudinal, prospective study initiated in July 2021 and preceded by a 5-month period of preparation and application of the EfisioHD.

Construction of the scale

The score for guiding the number of home physical therapy sessions, named EfisioHD, was constructed through the following steps: 1) literature review and assessment of the current scales for selecting what would be applicable to the profile of patients in home care; 2) meeting with experts in home physical therapy for constructing a proposal of a scale for the technical indication of home physical therapy; 3) presentation of the scale to a group of physical therapists for adjustments and validation; 4) pilot project with 200 patients; 5) elaboration of the final version of EfisioHD.

We considered the following scales: Katz Index, Barthel Index, Functional Independence Measure (FIM), Pediatric Evaluation of Disability Inventory (PEDI), Functional Status Scale (FSS), and International Classification of Functioning, Disability and Health (ICF).

EfisioHD was constructed with 3 subcategories: Adult/Older Adult EfisioHD, Pediatric EfisioHD, and Motor Rehabilitation EfisioHD; the last is directed to patients with no respiratory impairment and with acute motor impairment and a rehabilitation prognosis.

The Pediatric and Adult/Older Adult EfisioHD assesses ten clinical criteria, of which five are respiratory and five are motor criteria. The respiratory criteria of Adult/Older Adult EfisioHD are: 1- airway, 2- ventilator dependence, 3- oxygen therapy, 4- cough efficiency, and 5- need for tracheal suctioning; the motor criteria are: 1- degree of dependence for activities of daily living (ADLs), 2- changes in decubitus, 3- ambulation, 4- trunk control, and 5- motor impairment. The Pediatric EfisioHD maintains the same respiratory criteria and presents slight differences in the motor domain, contemplating the child's motor development: 1- neuromotor development, 2- muscle tone, 3- trunk control, 4- neck control, and 5- ambulation. The indication of a specific frequency of home physical therapy was defined according to the EfisioHD score (Supplements 1 and 2).

Approach after application of EfisioHD, cohort formation, and follow-up

After application of the EfisioHD, the patients received an indication of maintenance or reduction of the frequency of sessions, or of discharge from home physical therapy care. There were no cases where EfisioHD recommended an increase in the number of sessions.

Only patients for whom EfisioHD indicated reducing the frequency of physical therapy sessions were included in this observational study. Patients whose frequency of sessions were effectively reduced were included in the EfisioHD Group, whereas patients who did not have their frequencies reduced (due to refusal) formed the Control Group (convenience sampling). The reasons for refusal were described.

The variables analyzed in both groups were: age, gender, main diagnosis, clinical complexity (Fugulin Scale), and clinical profile of complications in the 6 months prior to applying the score (respiratory infections, falls, and respiratory disease hospitalizations).

After adjusting the frequency of sessions, the patients were followed up for 6 months or until discharge from home care and the following variables were analyzed: respiratory infections, falls, respiratory disease hospitalizations, and deaths.

The results are presented as numbers (n), frequencies (%), mean or median values, and standard deviations, when appropriate, and were compared using a Fisher's exact test for categorical variables and a Mann-Whitney U test for continuous variables.

Result

We evaluated 2050 patients through EfisioHD, of which 668 (33%) were identified as having indications of reducing the number of sessions or discharge; 539 had indications of weaning (26%), and 129 (7%) had indications of discharge (Figure 1).

The 539 patients with indication of weaning were selected for the study. Of these, 249 (46%) had the frequency of physical therapy sessions reduced according to the EfisioHD instrument (EfisioHD Group). In 290 patients, the number of sessions was not reduced and the main reasons for this refusal were: nonacceptance by the family and care team (68%), clinical worsening (19%), and concessions by the health insurance company (10%). The clinical profile of both groups is presented on Table 1.

After intervention, the mean number of physical therapy sessions was 6.3/week in the Control Group and 3.2/week in the EfisioHD Group ($p<0.001$). Among patients in the EfisioHD Group, 5 (2%) presented respiratory infections, 2 (1%) presented falls, 10 (4%) were hospitalized due to respiratory reasons, and 3 patients died at home due to progression of the baseline disease (2 patients with cancer and 1 with advanced dementia). None of these results was inferior to the Control Group. No statistically significant difference was observed in these clinical markers when compared to the Control Group, except for the number of respiratory infections, which had a higher incidence in the Control Group; this had already happened in the 6 months prior to applying the score (Table 2).

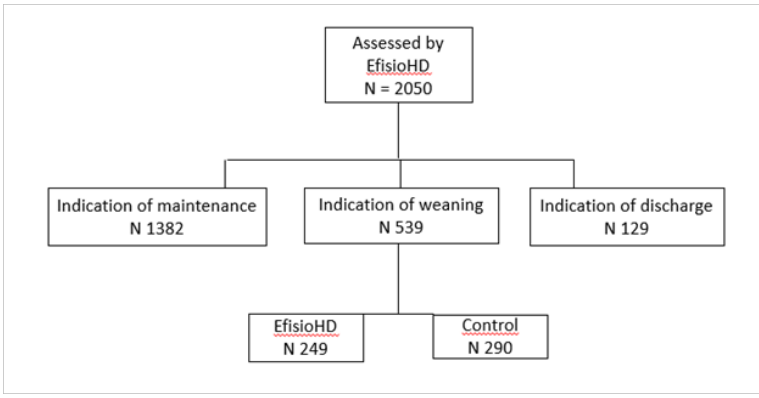

Figure 1: Patient flow after application of the EfisioHD.

Table 1: baseline of patients in this study. *Fisher's exact test; ** Mann-Whitney U test.

Gender	Total Patients 539 (%)	EfisioHD 249 (%)	Control 290 (%)	p
Female	274 (51)	126 (51)	148 (51)	0.93*
Male	265 (49)	123 (49)	142 (49)	
Age				
Years (median ± SD)	72.0 (26.7)	72.0 (21.0)	71.5 (30.5)	0.25**
Diagnosis				
Neurological disease	176 (33)	65 (26)	111 (38)	0.003*
Infectious disease	121 (22)	83 (33)	38 (13)	< 0.001*
Respiratory disease	73 (14)	31 (12)	42 (14)	0.53*
Cardiovascular disease	43 (8)	15 (6)	28 (10)	0.15*
Musculoskeletal disease	39 (7)	20 (8)	19 (7)	0.51*
Oncologic disease	22 (4)	11 (4)	11 (4)	0.83*
Others	65 (12)	24 (10)	41 (14)	0.11*
Complexity				
High	69 (13)	16 (6)	53 (18)	< 0.001*
Moderate	193 (36)	90 (36)	103 (36)	0.93*
Low	277 (51)	143 (57)	134 (46)	0.01*
Age Group				
Pediatric	61 (11)	10 (4)	51 (18)	< 0.001*
Adult	123 (23)	67 (27)	56 (19)	0.04*
Older Adult	355 (66)	172 (69)	183 (63)	0.17*
Clinical Profile Pre-EfisioHD				
Respiratory infection	41 (8)	9 (4)	32 (11)	0.001*
Hospitalization	107 (20)	49 (20)	58 (20)	1.0*
Falls	7 (1)	5 (2)	2 (1)	0.26*
Mean sessions per week	5.8±2.8	5.2±1.9	6.3±3.2	0.001**

Table 2: Post-EfisioHD follow-up. RR Risk relative; CI confidence interval; ** Mann-Whitney U test.

Post-EfisioHDFollow-Up	Total Patients 539 (%)	EfisioHD 249 (%)	Control 290 (%)	RR (CI) p
Respiratory infection	23 (4)	5 (2)	18 (6)	RR0.32 (CI 0.12 to 0.85) p 0.023
Respiratory disease hospitalization	28 (5)	10 (4)	18 (6)	RR0.64 (CI 0.30 to 1.37) p 0.25
Falls	4 (1)	2 (1)	2 (1)	RR1.16 (CI 0.16 to 8.20) p 0.87
Death	7 (1)	3 (1)	4 (1)	RR 0.87 (CI 0.19 to 3.86) p 0.85
Mean sessions per week	4.9±3.0	3.3±1.3	6.3±3.2	< 0.001**

When comparing respiratory infections, falls, and hospitalizations in the 6 months before and after weaning in the EfisioHD Group, no statistically significant differences were observed for any of the markers (Table 3).

When analyzing the neurological disease, pediatric age, and high complexity subgroups, which were more prevalent in the Control Group, we did not find a statistically significant difference for any of the clinical outcomes.

Table 3 Comparison of patients in the EfisioHD Group in the 6 months prior to and after weaning.

Clinical Markers	Pre-EfisioHD (%)	Post-EfisioHD (%)	p
Respiratory infection	9 (4)	5 (2)	0.41
General hospitalization	49 (20)	46 (18.5)	0.81
Falls	5 (2)	2 (1)	0.44
Respiratory disease hospitalization	14 (6)	10 (4)	0.53

Discussion

To the best of our knowledge, this is the first Brazilian study to analyze the use of a technical score for indication of a home physical therapy treatment plan, which is a relevant subject in the context of home care, and to demonstrate its efficacy and practical applicability in the home care routine.

The home physical therapy scenario in Brazil is quite challenging, and the lack of standards for guiding the number of technically indicated sessions renders clinical practice more difficult, especially in a classical "fee for service" health care model where patients and family members culturally tend to understand that "the more, the merrier," which threatens the sustainability of HCS in the complex Brazilian health care model.

In 2006, when the Association of Home Care Companies (NEAD, Núcleo de Empresas de Atenção Domiciliar)(1) developed and launched a table for indications of HCS (widely known as the NEAD Table), important guidance was established for clinical discussions regarding technical indications of HCS, especially considering hours of nursing care. However, physical therapy care does not have a similar instrument for guiding its indications, and clinical practice thus becomes imprecise and susceptible to social pressures and commercial impositions.

The role of a physical therapist in home care, in addition to promoting rehabilitation of impairments, preventing illness, and promoting health, should also comprehend approaching the family and caregiver. Silva et al [2] highlight that the success of a rehabilitation plan should not be associated only with the number of physical therapy sessions but also with the patient's activities during the rest of the day.

Home care enables the physical therapist to get to know the patient's social context, which allows a personalization of conduct and guidance directed to the whole team and family members involved with patient care [3]. However, home care presents limitations and for this reason more complex cases should be referred, whenever possible, to specialized centers [4].

The home physical therapy treatment plan should be individualized according to the patient's profile, treatment goals, and available resources at home. National and international authors [5-7] recommend physical therapy programs varying from 2 to 5 sessions a week for patients with chronic obstructive pulmonary disease (COPD). Raso [8] reviewed 73 studies that discussed motor programs for older adults and suggested a frequency of 3 sessions a week, while Soukkio et al. [3] proposed that a physical therapy program for frail older adults should have sessions twice a week. These data are in contradiction with what is observed in the Brazilian home care reality and in our study (where the mean number of sessions before applying the EfisioHD instrument was 5.8 sessions a week), which reinforces the need for a practical guidance tool.

There is a lack of studies related with home rehabilitation programs, but the programs indicated by EfisioHD are in accordance with protocols that are currently available in the literature (even though many of them are not designed for patients under exclusive home care), with a mean number of sessions per week of 3.3 in the EfisioHD Group.

The reduction in the number of sessions did not result in worsening of any of the clinical markers in the EfisioHD Group, which demonstrated that excess sessions do not imply in better clinical results and do not protect the patient from complications such as respiratory infections, hospitalizations, falls, and death. Moreover, apart from the absence of clinical benefits, the surplus of sessions can generate a logistic, financial, and operational burden for professionals and HCS.

Finally, it is important to consider the possible harmful effects of excess therapies when it comes to energy expenditure, discomfort to the patient due to many daily sessions with multiple professionals, fatigue,

and even the risk of fractures in patients with osteopenia who undergo intense manipulation. According to Singh et al [9] activities proposed to patients should always consider the natural course of diseases, and these should aim to improve the patient's quality of life and not pressure him or her into exhaustive and forced exercises.

The study has some limitations worth noting, such as the definition of groups through convenience sampling: both groups were not exactly the same when considering clinical diagnoses and age groups, and we had a limited sample of pediatric patients.

Conclusion

The study showed that the number of sessions indicated by the EfisioHD instrument were in accordance with the patients' clinical needs, and the home physical therapy care plan indicated by this tool did not lead to motor or respiratory worsening.

EfisioHD should serve as a standard for guiding the number and frequency of home physical therapy sessions.

Acknowledgment

Although this study did not receive any financial support from public, private or non-profit institutions, it was possible thanks to the involvement of the Home Doctor physiotherapy team, who participated in the training and meetings necessary for the implementation of the physiotherapy score and readjustments of the physiotherapy sessions.

Conflict of interest

We have no conflicts of interest.

Supplement 1: Adult EfisioHD.

	Respiratory Assessment	**Score**
I. Airway	Artificial	1
	Physiological	5
II. Oxygen therapy	Continuous	1
	Nocturnal	2
	Intermittent	3
	Isolated - during a specific activity	4
	Does not use	5
III. Mechanical ventilation	Continuous	1
	Nocturnal use (does not include sleep apnea)	2
	Intermittent – periods of the day	3
	Only exercise or sleep apnea	4
	Does not use	5
IV. Suctioning	Suctioning >12x/day	1
	Suctioning 4 to 12x/day	2
	Suctioning >4x/day	3
	Suctioning, if required	4
	No suctioning	5
V. Cough	The patient cannot cough	1
	Ineffective productive cough	2
	Effective productive cough	3
	Dry cough	4
	No cough	5
	Motor - Functional Assessment	**Score**
I. ADLs	Unable to perform ADLs - completely dependent	1
	Partially dependent	4
	Completely independent	5
II. Posture changes	Unable - completely dependent	1
	Partially dependent	3
	Completely independent	5
III. Ambulation	Bed bound or moving exclusively with wheelchair, with help from others	1
	Requires bilateral support - from others or a walker	2
	Requires unilateral support	3

	Requires minimal supervision and/ or support - or independent wheelchair user	4
	Completely independent	5
IV. Trunk control	Absent	1
	With help	3
	No deficit	5
V. Motor disability	Acute with a rehabilitation prognosis	1
	Chronic/ no deficit	5

Programs*		
Rehabilitation I	10 points	2x/day for 7 days, with reassessment for adjusting the program
Rehabilitation II	11 to 20 points	1x/day for 30 days
Rehabilitation III	21 to 30 points	5x/week, for 30 days
Rehabilitation IV	31 to 40 points	3x/week, for 30 days
Rehabilitation V	41 to 45 points	2x/week for 30 days
No indication of home care	Above 46 points	If receiving care, schedule an approach for possible discharge

*The score should be reapplied monthly for monthly programs or after 7 days for the Rehabilitation I cases, for identifying the need to change programs (or not) according to the score obtained in the corresponding period.

Supplement 2: Pediatric EfisioHD.

	Respiratory Assessment	**Score**
I. Airway	Artificial - Tracheostomy	1
	Physiological	5
II. Oxygen therapy	Continuous	1
	Nocturnal	2
	Intermittent	3
	Isolated - during a specific activity	4
	Does not use	5
III. Mechanical ventilation	Continuous	1
	Nocturnal use (does not include sleep apnea)	2
	Intermittent	3
	Only exercise or sleep apnea	4
	Does not use	5
IV. Suctioning	Suctioning >12x/day	1
	Suctioning 4 to 12x/day	2
	Suctioning >4x/day	3
	Suctioning, if required	4
	No suctioning	5
V. Cough	The patient cannot cough	1
	Ineffective productive cough	2
	Effective productive cough	3
	Dry cough	4
	No cough	5
	Motor Assessment	**Score**
I. Motor development	Delayed neuromuscular development	3
	Neuromuscular development according to age	5

II. Muscle tone	Hypotonia/hypertonia	3
	No changes	5
III. Ambulation	Bed bound	1
	Wheelchair user	3
	Requires bilateral support, from others or a walker	3
	Ambulates in accordance with age or below 2 years or age	5
IV. Trunk control	Absent	1
	With help	3
	No deficit or in accordance with age	5
V. Neck control	Absent/deficit	2
	Present or in accordance with age	5

Programs*		
Rehabilitation I	15 points	2x/day for 7 days
Rehabilitation II	16 to 30 points	1x/day for 30 days
Rehabilitation III	20 to 29 points	5x/week, for 30 days
Rehabilitation IV	31 to 36 points	3x/week, for 30 days
Rehabilitation V	37 to 43 points	2x/week for 30 days
No indication of home care	≥ 46 points	If receiving care, schedule an approach for possible discharge

*The score should be reapplied monthly for monthly programs or after 7 days for the Rehabilitation I cases, for identifying the need to change programs (or not) according to the score obtained in the corresponding period.

Supplement 3: Motor Rehabilitation EfisioHD.

	Motor - Functional Assessment	**Score**
I. ADLs	Unable to perform ADLs - completely dependent	1
	Partially dependent	4
	Completely independent	5
II. Posture changes	Unable - completely dependent	1
	Partially dependent	3
	Completely independent	5
III. Ambulation	Bed bound or moving exclusively with wheelchair, with help from others	1
	Requires bilateral support - from others and/or walker	2
	Requires unilateral support	3
	Requires minimal supervision and/ or support - or independent wheelchair user	4
	Completely independent	5
IV. Trunk control	Absent	1
	With help	3
	No deficit	5
V. Motor Disability	Acute with a rehabilitation prognosis	1
	Chronic/ no deficit	5

Programs		
Rehabilitation I	5 to 9 points	5x/week for 30 days
Rehabilitation II	10 to 15 points	3x/week for 30 days
Rehabilitation III	16 to 20 points	2x/week for 30 days
No indication of home care	Above 21 points	If receiving care, schedule an approach for possible discharge

*The score should be applied monthly for identifying the need to change programs (or not) according to thescore obtained in the corresponding period.

References

1. CENSO NEAD-FIPE de Atenção Domiciliar. Accessed in July 25th 2022.
2. Luzia WSS, Argleydsson MD,Roberta A (2011)Fisioterapia domiciliar: pesquisa sobre o estado da arte a partir do Niefam1. Fisioterapia em Movimento. Physical Therapy in Movement24(3).
3. Paula Soukkio, Sara Suikkanen, Sanna Kääriä, Hannu Kautiainen, Sarianna Sipilä, et al. (2018)Effects of 12-month home-based physiotherapy on duration of living at home and functional capacity among older persons with signs of frailty or with a recent hip fracture-protocol of a randomized controlled trial (HIPFRA study). BMC geriatrics 18(1):1-10.
4. Ragasson CAP, Almeida DCS, Comparin K, Mischiati MF, Gomes JT (2009) Atribuições do fisioterapeuta no Programa de Saúde da Família: reflexões a partir da prática profissional. Conselho Regional de Fisioterapia e Terapia Ocupacional. Região 5, Rio Grande do Sul, 2006.
5. Spruit Ma, Singh Js, Garvey C,Zuwallack R , Nici L, et al. (2013) AnOfficial American Thoracic Society/European Respiratory Society Statement: Key Concepts and Advances in Pulmonary Rehabilitation. Am J Respir Crit Care Med188:e13-e64.
6. Sociedade paulista de pneumologia e tissologia.
7. PJ Wijkstra, TW van der Mark, J Kraan, R van Altena, GH Koeter, et al (1996) Effects of home rehabilitation on physical performance in patients with chronic obstructive pulmonary disease (COPD). European Respiratory Journal9(1):104-110.
8. RASOVagner (2003) Análise meta-analítica preliminar dos programas de exercícios com pesos para pessoas idosas saudáveis. Rev Bras Ciêne Mov.Brasília 11(1): 59-68.
9. Aditi Singh,Poonam Dalal, Jasbir Singh, Pooja Tripathi(2018) Type 0 spinal muscular atrophy in rare association with congenital contracture and generalized osteopenia. Iranian Journal of Child Neurology12(1):105.