



# REVISTA PORTUGUESA DE ENFERMAGEM DE REABILITAÇÃO

VOL. 7, Nº 1

*Original article reporting clinical or basic research*




DOI - 10.33194/rper.2024.366 | Electronic identifier – e366

Submission date: 05-09-2023; Acceptance date: 20-02-2024; Publication date: 21-02-2024

## INTERVENÇÃO DE ENFERMAGEM E O AUTOCUIDADO ANDAR NO ADULTO EM CONTEXTO HOSPITALAR: UM ESTUDO DESCRITIVO E CORRELACIONAL

*NURSING INTERVENTION AND SELF-CARE WALKING IN ADULTS IN A HOSPITAL SETTING:  
A DESCRIPTIVE AND CORRELATIONAL STUDY*

*INTERVENCIÓN DE ENFERMERÍA Y AUTOCUIDADO DE LA MARCHA EN ADULTOS EN EL  
CONTEXTO HOSPITALARIO: ESTUDIO DESCRITIVO Y CORRELACIONAL*

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**How to Cite:** Sobral Sousa S, Valente S, Lopes M, Ribeiro S, Abreu N, Alves E. Intervenção de enfermagem e o autocuidado andar no adulto em contexto hospitalar: um estudo descritivo e correlacional. Rev Port Enf Reab [Internet]. 21 de Fevereiro de 2024 [citado 25 de Fevereiro de 2024];7(1):e366. Available in: <https://rper.aper.pt/index.php/rper/article/view/366>

### TECHNICAL FILE

eISSN: 2184-3023 pISSN: 2184-965X

[www.rper.pt](http://www.rper.pt)

### INTELLECTUAL PROPERTY

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## RESUMO

**Introdução:** O internamento hospitalar está associado a baixos níveis de mobilidade, com impacto na capacidade para andar, sobretudo nas populações mais idosas. Este estudo tem como objetivo identificar a relação entre as intervenções de enfermagem no domínio da marcha em contexto hospitalar e o autocuidado andar.

**Metodologia:** Estudo quantitativo, retrospectivo, descritivo e correlacional com dados dos registos clínicos dos enfermeiros relativos a pessoas internadas com diagnósticos e intervenções de enfermagem no domínio do andar.

**Resultados:** A amostra é predominantemente idosa (média 65,99 anos, Desvio Padrão 16,73) e dependente no andar (69,7%). De 6546 participantes, 1142 (17,4%) apresentavam como diagnóstico de admissão patologias do foro musculoesquelético, 916 (14%) lesões de causa externa e 903 (13,8%) doenças do sistema circulatório. As intervenções de enfermagem no domínio da marcha realizaram-se em serviços de Medicina Interna (22,9%), Ortopedia (17,9%) e Neurocirurgia (13,1%). Durante o tempo de internamento hospitalar, cada participante recebeu em média 24 intervenções de enfermagem (DP 50,37), sendo o “assistir no andar”, a mais frequente (47%). Sob as intervenções no domínio da marcha, 92,15% dos participantes mantiveram ou melhoraram a sua capacidade para andar ( $p < 0,001$ ). Os programas especializados para a capacitação na marcha foram aplicados em 6,5% dos participantes, dos quais 7,9% adquiriram esta capacidade ainda no hospital. A aquisição da competência para andar com auxiliar de marcha verificou-se em 28% dos participantes que necessitaram do equipamento adaptativo ( $p < 0,001$ ). Dos participantes, 88,8% receberam alta para domicílio. Pessoas independentes na marcha à data de alta estiveram internadas menos 1,44 dias ( $p = 0,006$ ).

**Conclusão:** Neste estudo, as intervenções de enfermagem no domínio da marcha estão associadas à manutenção e recuperação dos níveis de funcionalidade durante a hospitalização, não sendo possível isolar o efeito de outras variáveis.

**Descritores:** Marcha; Autocuidado; Hospitais; Cuidados de Enfermagem

## ABSTRACT

**Introduction:** Hospitalisation is associated with low levels of mobility, with an impact on the ability to walk, especially among the elderly. This study aims to identify the relationship between nursing interventions in the gait domain in the hospital and the self-care walking.

**Methodology:** Quantitative, retrospective, descriptive and correlational study with data from the clinical records of nurses at a university hospital

related to inpatient with nursing diagnoses and interventions related to selfcare walking.

**Results:** The sample refers to a predominantly elderly population (mean age 65.99 years old (Standard Deviation 16.73)) and dependent on walking (69.7%). From the 6,546 participants, 1,142 (17,4%) had musculoskeletal pathologies as their admission diagnosis, 916 (14%) external cause injuries and 903 (13.8%) diseases of the circulatory system. Nursing interventions in the field of gait were carried out in Internal Medicine (22.9%), Orthopedics (17.9%) and Neurosurgery (13.1%) department. While in hospital, each participant received an average of 24 nursing interventions (SD 50.37), with “assisting with walk” being the most frequent (47%). Under nursing interventions in the gait domain, 92.15% of participants maintained or improved their ability to walk ( $p < 0.001$ ). Specialized programs for gait training were applied to 6.5% of the participants, of which 7.9% acquired this ability while still in the hospital. The acquisition of competence to walk with a walking aid was verified in 28% of the participants who needed to use adaptive equipment ( $p < 0.001$ ). 88.8% participants were discharged home. Gait independency participants at discharge were hospitalized for less than 1.44 days ( $p = 0.006$ ).

**Conclusion:** In this study, nursing interventions in the gait domain were associated with maintaining and recovering levels of functionality during hospitalisation, although it was not possible to isolate the effect of other variables.

**Descriptors:** Gait; Self Care; Hospitals; Nursing Care

## RESUMEN

**Introducción:** La hospitalización se asocia a bajos niveles de movilidad, con un impacto en la capacidad para caminar, especialmente en las poblaciones de mayor edad. Este estudio tiene como objetivo identificar la relación entre las intervenciones de enfermería en el dominio de la marcha en el contexto hospitalario y lo autocuidado caminar.

**Metodología:** Estudio cuantitativo, retrospectivo, descriptivo y correlacional con datos de las historias clínicas de enfermeras de un hospital universitario sobre personas hospitalizadas con diagnósticos e intervenciones de enfermería en el ámbito del autocuidado de la marcha.

**Resultados:** La muestra es predominantemente de edad avanzada (edad media 65,99 años (Desviación Estandar 16,73)) y dependiente de la marcha (69,7%). De 6546 participantes, 1142 (17,4%) tenían como diagnóstico de ingreso patologías musculoesqueléticas, 916 (14%) lesiones de causa externa y 903 (13,8%) enfermedades del sistema circulatorio. Las intervenciones de enfermería en el ámbito de la marcha fueron realizadas en los servicios de

Medicina Interna (22,9%), Ortopedia (17,9%) y Neurocirugía (13,1%). Durante la estadía hospitalaria, cada participante recibió en promedio 24 intervenciones de enfermería (SD 50.37), en que “asistir a caminar” la más frecuente. Bajo las intervenciones de enfermería en el dominio de la marcha, el 92,15% de los participantes mantuvieron o mejoraron su capacidad para caminar ( $p < 0,001$ ). Se aplicaron programas especializados de entrenamiento de la marcha al 6,5% de los participantes, de los cuales el 7,9% adquirió esta habilidad estando aún en el hospital. La adquisición de la competencia para caminar con andador fue verificada en el 28% de los participantes que necesitaron el equipo adaptativo ( $p < 0,001$ ). 88,8% de los participantes fueron dados de alta. Las personas independientes el día del alta estuvieron hospitalizadas menos de 1,44 días ( $p = 0,006$ ).

**Conclusión:** En este estudio, las intervenciones de enfermería en el dominio de la marcha se asociaron con el mantenimiento y la recuperación de los niveles de funcionalidad durante la hospitalización, aunque no fue posible aislar el efecto de otras variables.

**Descriptores:** Marcha; Autocuidado; Hospitales; Atención de Enfermería

## INTRODUCTION

The ability to walk is an important health indicator and it's widely recognized as a functional vital sign<sup>(1, 2)</sup>. In recent years, several studies have found a significant relationship between gait performance and outcomes such as mortality, morbidity and quality of life<sup>(3-5)</sup>. Walking ability is also associated with a sustained reduction in healthcare costs<sup>(6, 7)</sup>.

Hospital admission is a common event that occurs at different stages of a person's life, due to a sudden illness, a surgical event or the decline of a chronic condition. This experience may have a significant impact on functional capacity, especially on the most vulnerable populations. There is plenty evidence that hospitalization produces loss of functionality, deterioration of the ability to walk and the need for help to carry out daily activities, representing a threat to an independent life after discharge<sup>(8-10)</sup>.

Ensuring physical activity levels and walking periods during hospitalization is a way to reverse these results. Assisted walking programs applied to elderly people during their hospital stay significantly improved their ability to walk at the time of discharge<sup>(11, 12)</sup>. A scoping review found that hospital gait programs have an impact on clinical and non-clinical indicators and may be associated with functional improvement and a reduction in length of stay of one to three days<sup>(13)</sup>.

This study aims to identify the relationship between nursing interventions and walking self-care,

in a hospital context. It aims to answer the guiding question - What is the relationship between walking interventions developed by nurses and walking self-care during hospital stay?

## METHODOLOGY

This is an exploratory study of a quantitative, retrospective, descriptive and correlational nature that was prepared with data from the clinical records of nurses, from the inpatient services of a university hospital in the northern region of Portugal. The inclusion criteria were defined as all hospitalizations of people aged 18 years old or over, from 01/01/2021 to 12/31/2022, with diagnoses and nursing interventions related with self-care walking. The data was provided by the institution's information and management systems service. The descriptive and inferential statistical analysis was carried out using IBM SPSS®, considering a significance threshold of 0.05% for the hypothesis tests carried out.

The person's level of dependence on self-care was measured by combining the nurse's clinical assessment and the use of Hernani Duque's self-care form, integrated into the information system. The score obtained classifies the ability to walk into four degrees: independent, dependent to a low degree, moderate degree and high degree. When operationalizing the variable, the degrees of dependence were grouped into two levels: independent and dependent. In turn, the impairment to walking with a walking aid comprises a dichotomous assessment of the effectiveness of walking with the use of a support product (walker, crutches, tripod, among others), classified as: without impairment and with impairment.

Information was collected regarding the score of the first assessment (moment 1 - M1), when defining the diagnosis and the last nursing assessment (moment 2 - M2), carried out after the implementation of nursing gait interventions and before clinical discharge. In cases in which there was only one assessment, it was assumed that the ability to walk at M2 was equal to M1.

Data were collected regarding nursing interventions such as evaluating, assisting, supervising, encouraging, teaching, instructing and training walking, with and without a walking aid. Admission diagnoses were grouped by the categories defined by the International Classification of Diseases ICD-10.

During the study, the ethical standards and rights of the participants were respected, considering what underlies the Declaration of Helsinki in the Oviedo Convention. Authorization was obtained from the Board of Directors and the Ethics Committee of the hospital center. In order to guarantee the anonymity of the participants, demographic and clinical data were anonymized, coded, inserted and analyzed in a computer program.

## RESULTS

Of the 11,190 episodes identified, 4,644 were excluded because they did not meet the inclusion criteria. The sample description is represented in table 1.

**Table 1 - Sample description**

Variables	
<b>Age (years)</b> Average (SD) Median Mode	65.99 (16.73) 68 76
<b>Gender n (%)</b> Women Men	3299 (50.4%) 3247 (49.6%)
<b>Length of stay (days)</b> Average (SD) Median Mode	12.75 (20.68) 5.75 1.03
<b>Admission type n (%)</b> Scheduled Urgency	3172 (48.5%) 3374 (51.5%)
<b>Provenance n (%)</b> Extern consult Urgency Other provenance Exterior	3096 (47.3%) 3245 (49.6%) 72 (1.1%) 133 (2%)
<b>Destination n (%)</b> Residence Another Hospital Deceased	5810 (88.8%) 493 (7.5%) 243 (3.7%)

The sample consists of 6,546 hospitalization episodes, from the emergency department (49.6%) and external consultation (47.3%). Participants' age varied between 18 and 101 years old, with an average of 65.99 (SD 16.73) years old, corresponding predominantly to an elderly population. An equitable distribution of participants' gender was observed (49.6% men vs 50.4% women). The average number of days spent in hospital was 12.75 (SD 20.68) days, although there was a variation between 1 and 369 days. Table 2 shows the distribution of participants across inpatient services.

**Table 2 - Distribution of participants by inpatient services**

Service	n	%
Internal medicine	1502	22.9
Orthopedics	1173	17.9
Neurosurgery	859	13.1
Otorhinolaryngology	652	10
Ophthalmology	582	8.9
General surgery	492	4.5
Neurology	295	4.5
Specialty surgery	281	4.3
Infectiology	192	2.9
Others	165	2.5
Cardiology	144	2.2
Urgency	98	1.5
Urology	63	1
Nephrology	48	0.7

Participants with nursing interventions within the scope of self-care were mostly hospitalized in internal medicine (22.9%), orthopedics (17.9%) and neurosurgery (13.1%) services. Table 3 presents the distribution of participants by admission diagnosis.

**Table 3 - Distribution of participants by admission diagnosis**

Admission for pathology	n	%
Musculoskeletal system	1142	17.4
Externally caused injuries and trauma	916	14
Circulatory system	903	13.8
Neoplasms	696	10.5
Eye diseases	504	7.7
Respiratory system	498	7.6
Contacts with health services	344	5.3
Digestive system	342	5.2



Admission for pathology	n	%
Ear diseases	256	3.9
Metabolic diseases	210	3.2
Infectious diseases	198	3
Nervous system	185	2.8
genitourinary system	162	2.5
Skin diseases	77	1.2
Undefined signs/symptoms	60	0.9
Hematological diseases	24	0.4
Congenital malformations	21	0.3
Mental illnesses	18	0.3

The most frequent admission diagnoses were musculoskeletal pathologies (17.4%), external injuries (14%) and circulatory system diseases (13.8%). Congenital malformations and mental illnesses, both at 0.3%, were the categories with the lowest representation in walking programs.

Regarding self-care, 156,511 interventions were recorded, corresponding to an average of 24 interventions (SD 50.37) per participant, during the hospitalization period. The most frequent interventions were “assisting on walking” and “assessing walking ability”. Nursing records demonstrated that interventions aimed at the care provider in this area were less frequent (Table 4).

**Table 4 – Nursing interventions in the domain of walking self-care**

Nursing intervention	N	%
Assessing walking ability	28631	18.3
Encouraging walking	2874	1.8
Assisting on walking	73494	47
Assessing walking with a walking aid	8981	5.7
Assessing ability to walk with a walking aid	2603	1.7
Providing adaptive walking device	758	0.5
Encouraging walking with a walking aid	7776	5

Nursing intervention	N	%
Assisting while walking with walking aid	14848	9.5
Assessing ability to perform walking adaptation technique	3097	2
Teaching walking adaptation techniques	1674	1.1
Instructing to walk	2831	1.8
Training walking	2446	1.6
Instructing how to walk with a walking aid	3113	1.9
Training to walk with a walking aid	3268	2.1
Assessing the caregiver's ability to assist on the walking	21	0.01
Assessing the caregiver's knowledge of assisting with walking with a walking aid	53	0.03
Instructing the caregiver to assist on the walking	30	0.02
Training the caregiver to assist on the walking	13	0.01

In assessing walking ability, in M1, there were 30.3% (n=1531) independent people and 69.7% (n=3515) dependent on walking, in turn, in M2, there were 33.4% (n =1687) and 66.3% (n=2959), respectively. The analysis of variance between the first and last assessment shows that 13.99% (n=706) improved, 7.85% (n=396) declined and 78.16% (n=3944) maintained their condition. The t-test for paired samples finds significant differences in the participants' levels of dependence, at both moments  $t(5045)=8.028$ ;  $p<0.001$ . The number of interventions performed did not demonstrate a statistically significant association with the variation in dependence in walking self-care ( $F=1.43$ ;  $df=1$ ;  $p=0.233$ ).

Regarding the destination after discharge, 88.8% (n=4484) of the participants were discharged at home and 6.72% (n=339) were transferred to another hospital, of which 84.96% (n= 288) were dependent on walking. The dependence of participants in M2 showed a significant association with the destination after discharge ( $F=170.892$ ;  $df=3$ ;  $p<0.001$ ), therefore people who are discharged to another hospital institution are more dependent.

Simultaneously, the relationship between length of stay and ability to walk at discharge was

analyzed. The average length of stay for independent people was 12.01 days (SD 19.76), while people with walking dependence were hospitalized for an average of 13.45 days (SD 22.127). This difference of 1.44 days reveals statistical significance  $t(5044)=2.259$ ;  $p=0.006$ .

Specialized interventions for walk training integrated 9.36% ( $n=329$ ) dependents into gait. Analyzing M2, 7.9% ( $n=26$ ) of people acquired the ability to walking adaptation technique during the hospitalization period, with 92.1% ( $n=303$ ) maintaining the need for continuity of care after hospital discharge. Statistical significance was verified in the analysis of the variance of the ability to walk between the two assessment moments ( $Z=-4.849$ ;  $p<0.001$ ). People who acquired this capacity were hospitalized, on average, 1.725 days longer than those who maintained the need for continuity of care, although this difference did not reach statistical significance  $t(353)=-0.647$ ;  $p=0.538$ .

Faced with a change in clinical condition, the need to use mobility support products may arise. During the hospital stay, there was a worse impairment in the first assessment compared to the last - in M1 there were 73.13% ( $n=215$ ) participants with impairment and 26.87% ( $n=79$ ) without impairment to walk with walking aid, while in M2 there were 58.8% ( $n=167$ ) and 43.2% ( $n=127$ ), respectively, a difference with statistical significance  $t(293)=6.766$ ;  $p<0.001$ . Specialized interventions for training in walking with a walking aid were identified in 2.7% ( $n=134$ ) participants.

Of the people who required a walking aid, 77.21% ( $n=227$ ) were discharged home and 19.73% ( $n=58$ ) were transferred to another hospital. Of the latter, 72% ( $n=42$ ) continued to need assistance to walk with support products. A statistically significant association was observed between the impairment to walk with a walking aid and the destination after discharge ( $F=7.511$ ;  $df=1$ ;  $p=0.007$ ). Although not reaching statistical significance  $t(292)=0.927$ ;  $p=0.063$ , participants who at the time of discharge were competent in walking with a walking aid were, on average, hospitalized for 2.1 days longer than those who maintained their impairment.

## DISCUSSION

This study aims to identify the relationship between nursing interventions and walking self-care, having verified that gait interventions are associated with the maintenance and recovery of people's levels of functionality during hospitalization.

Walking is a basic activity of life<sup>(14)</sup> and the ability to walk is a key factor for functional independence<sup>(15)</sup>. Hospitalization has been associated with a worsening of physical condition, loss of independent walking, low levels of mobility and periods of bed

rest<sup>(10, 11, 16)</sup>. These data are measured by evaluating the activity levels of patients in acute hospitalization, in which only one of the 450 minutes observed was spent standing or walking<sup>(17)</sup>. Reducing the number of steps between the first and last 24 hours of hospitalization was also associated with a four times higher risk of death in the 2 years after discharge<sup>(18)</sup>. This reality has implications especially for the older population. Disability associated with hospital admission occurs in approximately one third of people over 70 years old and can be triggered even when the disease that required hospitalization is successfully treated<sup>(19)</sup>. In this population, immobilization can also increase the complexity of the primary disease or trauma, resulting in a bigger problem than the reason that led to admission<sup>(20)</sup>.

In this study, it was found that the services where walking programs were most developed were internal medicine, orthopedics and neurosurgery services, with musculoskeletal pathologies, external injuries and diseases of the circulatory system prevailing. The annual report on access to healthcare finds that, in 2019, problems with the circulatory system were one of the three main causes of hospitalization and the specialties of orthopedics and neurosurgery stood out in the volume of demand for healthcare<sup>(21)</sup>. In these contexts, the literature presents evidence of the importance of walking programs during hospitalization, demonstrating an improvement in functional capacity in elderly people hospitalized in medical services<sup>(11, 12)</sup>, a reduction in the length of stay in neurosurgery<sup>(22, 23)</sup> and discharge home in people hospitalized in orthopedics<sup>(24)</sup>.

The aging of the population is an inevitability that health systems must be prepared to. In Portugal, the average life expectancy is 80.96 years old<sup>(25)</sup>, slightly higher than that presented in the European Union; however, healthy life expectancy at age 65 is only 7 years<sup>(26)</sup>. This means that in subsequent years there is an increase in the use of healthcare, including hospitalization<sup>(27)</sup>. On the other hand, the 2021 census confirmed that the main difficulty reported by elderly people is walking<sup>(25)</sup>. In this study, in a population with walking care needs, the average age of the participants was 65.99 years old, and the most common age was 76 years old, corresponding to an aged population.

Understanding the health needs integrated into the complexity of older people requires an innovative care approach that is not just focused on the disease<sup>(11)</sup>. Mobility incentive programs that include walking represent intervention strategies in the face of a high incidence of iatrogenic disability<sup>(28)</sup>.

In this study, during the hospital stay, each participant was the target of around 24 nursing interventions in the field of gait, reflecting these professionals' investment in walking self-care. The majority of participants were dependent on walking in the

first assessment, verifying the positive effect of the interventions, due to the non-aggravation and reduction of dependence levels throughout the hospitalization. Only 7.85% of participants increased their level of walking dependence, which can be justified by worse health conditions<sup>(13, 29, 30)</sup> or the need for specialized walking programs<sup>(11)</sup>. These data suggest the importance of maintaining nurses' awareness to guarantee patients' mobility levels, since walking is, in some contexts, neglected to the detriment of other care<sup>(12, 31)</sup>.

For a long time, walking was considered an automatic process, with lower control, dependent on the function of muscles, reflexes and joint range of motion. Currently, studies demonstrate that gait is controlled by cognitive processes involving a complex neuronal network, essential to allow walking in challenging circumstances, but also during the usual conditions of everyday life<sup>(15)</sup>. Motor training programs have the potential to improve gait, balance and cognition<sup>(32-34)</sup>. The results of this study reveal that at the time of hospital discharge, independent people had a shorter length of stay compared to people who were dependent on walking, highlighting the importance of a systematic assessment of the ability to walk and investment in training processes. The adoption of specialized gait training programs during hospitalization, although in a small number of participants, was related to the acquisition of walking competence, with or without a walking aid, being associated with an increase in the length of hospital stay of between 1.7 and 2.1 days. Similar findings were obtained in other studies, suggesting that the type of rehabilitation programs and the individual recovery process determine a longer hospital stay, with a view to maximizing the ability to walk<sup>(29, 30)</sup>. The increase in hospital stay cannot be justified solely by the implementation of walking programs, as it was not possible to isolate their effect, representing another of the limitations of this study.

In the last assessment, before the discharge date, the majority of participants who were dependent on walking and/or impaired to walk with a walking aid, were discharged to another hospital institution, resulting in a need for continuity of care at various levels, including walking. These results corroborate that the loss of skills and the deterioration of health conditions caused by age and immobilization favor hospital discharge to other institutions<sup>(35, 36)</sup>. On the other hand, a better ability to walk translates into a reduced need for care after discharge, since dependence on self-care plays a preponderant role in the care process<sup>(37)</sup>. In this sense and knowing that a threshold of 400 daily steps is a predictor of discharge to home<sup>(12)</sup>, gait rehabilitation programs enhance the ability to go home after hospitalization<sup>(24)</sup>. The same results were obtained in this research in which 88.8% of participants subject to

walking programs were discharged home, resulting in less need for transition of care to other institutions and, consequently, lower overall cost for the health system.

The integration of walking programs into the care plan is related to improving the clinical condition of people, especially elderly people, promoting greater autonomy. This fact unquestionably promotes a sustained reduction in healthcare consumption and associated costs, however, in this study the economic gains inherent to walking programs were difficult to measure. Therefore, there is a need for more studies, in specific contexts, to validate these results and estimate the effect of these programs.

## CONCLUSION

Walking is a basic activity of life and an important indicator of health. Aging is associated with lower levels of mobility, and this problem may be worsened by functional decline during hospitalization. Nursing interventions in the field of gait appear as a strategy to overcome the iatrogenic disability associated with hospitalization.

This study showed that people undergoing these programs are mainly elders, with musculoskeletal pathologies, external injuries and diseases of the circulatory system, admitted to internal medicine, orthopedics and neurosurgery services. People who were independent in walking at discharge spent less time in hospital and gait interventions carried out by nurses showed significant measurable effects in maintaining and improving the ability to walk throughout hospitalization. The majority of people were discharged home, verifying an association between the destination after discharge and dependence on walking.

The ability to walk is already considered a functional vital sign. Given the importance of this indicator, we suggest the systematic assessment of the ability to walk in all hospitalized patients and intervention in the training processes, by nurses, in order to guarantee the maintenance of mobility levels during hospitalization, maximizing the ability to walk, increasing functional capacity and a greater number of discharges home, resulting in a reduction in healthcare costs.

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## ETHICAL DISCLOSURES

### Contribution of the author(s):

Conceptualization: SSS, SV, SR, ML, NA, EA

Data treatment: SSS, SV, SR, ML

Formal analysis: SSS, SV, SR, ML

Investigação: SSS, SV, SR, ML

Methodology: SSS, SV, SR, ML

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Visualization: SSS, SV, SR, ML, NA, EA

Original draft writing: SSS, SV, SR, ML

Writing - review and editing: SSS, SV, SR, ML, NA, EA

All authors read and agreed to the published version of the manuscript.

### Ethics Committee:

Authorized by the ethics committee of the Centro Hospitalar e Universitário de Santo António with registration 2022.085 (067-DEFI/068-CE)