

ARTIGO ORIGINAL

Variação da independência funcional em idosos hospitalizados relacionada a variáveis sociais e de saúde

Variation in functional independence in hospitalized elderly related to social and health variables

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RESUMO

O processo de envelhecimento, as doenças crônicas não transmissíveis e as hospitalizações podem causar declínio funcional em idosos. Alguns fatores podem potencializar esse comprometimento funcional como gênero, número de internações, presença de acompanhante e medicações em uso. Objetivo: Identificar a variação da capacidade funcional em idosos no decorrer da hospitalização e relacionar a diferença com variáveis sociais e de saúde. Método: Estudo realizado no hospital universitário do município de Campinas, SP, com 28 idosos de ambos os sexos, internados para tratamento clínico, com idade média de 68 anos. Foi aplicado o instrumento de Medida da Independência Funcional (MIF) na internação, durante a hospitalização, na alta e um mês após retorno ao domicílio. Foi calculada a variação dos valores da MIF dos momentos de avaliação, expressados por meio de deltas, e a correlação com as variáveis: gênero, internação anterior, presença de acompanhante e medicações. Resultados: Houve diferença significativa nos deltas relacionados ao período de alta hospitalar e retorno no domicílio ($p=0,0010$), e ao período da admissão a alta hospitalar ($p<0,0001$), na MIF total e nos seus domínios, demonstrando declínio funcional durante o período de hospitalização e recuperação funcional após retorno ao domicílio. O gênero, internações anteriores e presença de acompanhante não influenciaram significativamente a capacidade funcional dos idosos hospitalizados, contudo o aumento do número de medicações prescritas entre a admissão e a alta apresentou uma correlação moderada ($r=0,5059$) e muito significativa ($p=0,0071$) com o declínio funcional nesse período. Conclusão: Observou-se um declínio funcional nos idosos hospitalizados, sendo mais significativa nos idosos que tiveram aumento no número de medicações prescritas durante a hospitalização.

PALAVRAS-CHAVE

avaliação da deficiência, hospitalização, idoso, qualidade de vida, atividades cotidianas

ABSTRACT

The aging process, non-transmissible chronic diseases and hospitalizations can cause functional decline in the elderly. Some factors can augment this functional impairment such as gender, number of hospitalizations, presence of caregiver and medications being used. Objective: to identify the variation in functional capacity in elderly during hospitalization and correlate it with social and health variables. Method: The study was developed at a University Hospital in Campinas, SP, with 28 elderly inpatients of both sexes, admitted for clinical treatment, with a mean age of 68 years. The Functional Independence Measure (FIM) was used at the admission, during the hospitalization, at the discharge and one month after the discharge. The variation in FIM scores was calculated at different moments of evaluation, expressed by deltas and correlated with the variables: gender, previous hospitalization, presence of caregiver and use of medications. Results: There was a significant difference in the deltas of FIM between the discharge-home return periods ($p=0.0010$) and the admission-discharge periods ($p<0.0001$), in total FIM and its domains, showing decreased functional independence during hospitalization and recovery after the return home. The gender, previous hospitalization and presence of caregiver did not significantly

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influence the functional capacity of the elderly inpatients; however the increased number of prescribed medications between the admission and the discharge periods presented a moderate ($r=0.5059$) and a very significant correlation ($p=0.0071$) with functional decline in this period. Conclusion: There was a functional decrease in elderly inpatients during the hospitalization, being more significant among inpatients that had an increased number of prescribed medications during hospitalization.

KEYWORDS

disability evaluation, hospitalization, aged, quality of life, activities of daily living

INTRODUCTION

The aging of the world's population has favored the emphasis on the functional capacity as a new attention paradigm to the elderly patient's health and an important tool for healthy aging.^{1,2,3} The functional capacity can be defined as the individual's degree of preservation regarding the capacity of performing activities of daily living (ADL), such as taking a shower/bath, getting dressed, transferences, having continence, feeding oneself as well as of developing instrumental daily living activities (IADL), such as cooking, doing housework, using a telephone, washing clothes, go shopping, taking care of one's finances and taking medications.⁴⁻⁶

During hospitalization, the elderly individual's functional capacity can be compromised and that can lead to functional dependence, considering that it is a complex and peculiar event that occurs at a moment of frailty and disequilibrium, when the elderly is removed from his/her surroundings and from the family and social setting and transferred to a hostile environment. Currently, there have been an increasing number of studies that focused on the triad aging, functional capacity and hospitalization.⁷⁻⁹

The literature shows that the functional decline affects 34 to 50% of the elderly during the hospitalization period. However, it has not been established whether this decline is secondary to the hospitalization process only, or if it is influenced by factors such as disease severity, nutritional status, employed therapeutics and the non-responsive environment.¹⁰⁻¹³

It has been observed that there are partial and inconclusive data regarding the functional decline of the hospitalized elderly. In addition, the high death rate in this population makes the follow-up of these elderly patients difficult, discouraging the carrying out of longitudinal studies that could clarify several existing questions and doubts.

It is known that some variables can interfere with the performance and functional independence of the elderly, such as gender, presence of a family caregiver during the hospital stay, offering emotional support and psychological stimulation, use of certain medications during the hospital stay and the number of previous hospitalizations. All these factors can cause alterations in functional capacity.

The identification of these variables' influence on the functional capacity of the hospitalized elderly patient can benefit the elderly and the healthcare team, as the presence of the caregiver and the

medications being used are variables that can undergo interventions, aiming at the maximum preservation of the functional capacity of these hospitalized patients.

The aim of the present study is to identify the correlations between the FIM and the following variables: gender, previous hospitalizations, presence of caregiver and prescribed medications, in hospitalized elderly and one month after hospital discharge.

METHODS

This is a descriptive and exploratory study carried out at Hospital das Clínicas da Universidade Estadual de Campinas (HC/UNI-CAMP), located in the city of Campinas, state of São Paulo, Brazil; the study was carried out at the Units that receive the highest number of elderly patients for clinical treatment: Cardiology, Pneumology and General Adult Ward.

The inclusion criteria were: 60 years of age or older, to be hospitalized for clinical treatment for a minimum of 5 and a maximum of 30 days, to be able to carry out a dialogue, to sign the Informed Consent Form, agreeing to participate in the study and to return home after the hospital discharge. The exclusion criteria were: elderly patients admitted for clinical treatment, but who, during the hospitalization, needed some type of surgical treatment; patients transferred to other wards or institutions; patients in respiratory or contact isolation; patients who could not maintain a dialogue; patients whose admission had been less than 5 days and those who died during hospital stay.

Data collection was carried out during an 8-month period, with the use of an instrument that consisted of the elderly sociodemographic and clinical data and the Functional Independence Measure (FIM) instrument. These instruments were applied within the first 48 hrs after hospital admission and the FIM was reapplied every 5 days during the hospitalization period, at the hospital discharge and one month after the return home through phone interviews.

The Functional Independence Measurement (FIM) is a multidimensional instrument that evaluates the individual's performance in 18 activities distributed into the motor domain, with emphasis on the self-care, sphincter control, transference and mobility, comprehending 13 activities and the cognitive/social domain, which comprehends the communication and social cognition functions, containing 5 activities. Each item is scored from 1 to 7, corresponding to: total dependence (1) and total independence (7), with no gradient of classification for the final score obtained, but sensitive to variations, allowing a follow-up of each task performed. Its psychometric properties have been proved, as well as its sensitivity to detect small functional alterations and measure not only what the elderly is capable of doing, but also how much help the elderly needs from others to perform these activities.^{14,15}

The present study was approved by the Ethical Committee in Research of the School of Medical Sciences, under number 295/2003, having been authorized by the Heads of the Units that served as research fields. The characteristics of the sample and the study objectives allowed the descriptive analysis of the FIM values, the calculation of Spearman's Correlation Coefficient, Wilcoxon's test

and Mann – Whitney test, with the statistical significance level being set at 5% ($p \leq 0.05$) and correlation level with $r \geq 0.40$.^{16,17,18}

With the objective of evaluating the variation in the functional capacity of hospitalized elderly patients, the deltas of these periods were established, which express the difference between the final FIM value for the initial FIM value, as shown in Figure 1:

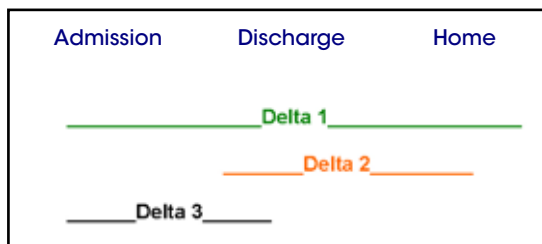


Figure 1

Representation of the deltas according to the moment of assessment. Campinas, 2004.

Delta 1 corresponds to the difference between the FIM value obtained at home and at the hospital admission; Delta 2 is the difference of the home score in relation to the hospital discharge, demonstrating the recovery or not of the functional capacity after the patients returned home. Delta 3 shows the moment of hospitalization with the difference of functional value obtained between the hospital discharge and the admission.

RESULTS

During the period of data collection, 445 elderly individuals were hospitalized at the chosen Hospital Units; however, 417 of these elderly were excluded from the study as they not met the inclusion criteria. Thus, the study sample consisted of 28 elderly patients, being 19 males, with a mean age of 68 years, ranging from 60 to 86 years. Regarding the civil status, 17 were married and 5 were widowed; the remaining patients were divorced or had a common-law spouse. Half of the interviewed individuals had not been hospitalized in the previous 12 months and the more frequent main diagnoses among the interviewees were related to respiratory disorders followed by cardiovascular system diseases. As for the other diseases associated to the predominant comorbidity, the most frequent was systemic arterial hypertension, followed by diabetes mellitus. The mean current hospitalization duration was 13.7 days, although it presented a wide range, from 7 to 40 days. During hospitalization, 18 of the elderly individuals did not have the presence of a caregiver. (Table 1)

The Delta values presented in Table 2 show that Delta 1, which corresponds to the difference between the values obtained at the return home and at hospital admission, presented a positive value in the total mean FIM and in its domains. The results of Delta 2 showed the functional improvement obtained with the return home, with positive and elevated values, especially in motor FIM (Delta

Table 1
Sociodemographic and hospital admission characteristics of the elderly in the present study. Campinas, 2004.

Variables	n	%	Mean (±s.d.)
Age	28	100	68.0 (±6.6)
Sex			
Male	19	67,86	-
Female	9	32,14	-
Civil status			
Separated	2	7,14	-
Common-law spouse	4	14,29	-
Married	17	60,71	-
Widowed	5	17,86	-
Main caregiver			
Spouse	14	50,00	-
Son/daughter	8	28,57	-
Sibling/Mother/Daughter-in-law	3	10,71	-
None	3	10,71	-
Previous hospital admission			
None	14	50,00	-
Once	9	32,14	10,44 (12,15)
Three times	5	17,16	9,27 (4,86)
Current hospitalization duration (days)	28	100	13,7 (8,6)
Presence of caregiver			
Yes	10	35,7	-
No	18	64,3	-

2 = 8.8) and total FIM (Delta 2 = 11.3), being statistically significant for all the domains. Delta 3 presents the hospitalization data, with the difference between the values of hospital discharge and admission. In all domains of Delta 3, the mean FIM values were negative and statistically significant, showing the functional decline throughout the hospitalization period.

Table 3 shows the values of Delta 3 of FIM, related to the hospitalization period according to the variables sex, presence of caregiver and previous hospital admission. Regarding gender, the male individuals presented a higher motor functional decline during the hospitalization (mean= -10.4), when compared to females (mean= -8.4). When considering the cognitive/social domain, the women presented a higher decline (mean= -2.6), when compared to the men (mean= -1.1); however, this difference did not present statistical difference.

Regarding the presence of a caregiver during the hospitalization period, the elderly who did not have the presence of a caregiver showed a significant motor functional decline (mean= -12.7), when compared to those who had (mean= -4.6). Inversely, the elderly who had the presence of a caregiver presented worse cognitive/social delta values (mean= -2.1), when compared with those who did not (mean= -1.3).

It is noteworthy that the elderly with no previous hospitalization presented worse Delta 3 values (mean= -13.0), when compared with

Table 2
Comparison between the FIM domains and scores according to the deltas of the different moments of assessment (Wilcoxon's Test). Campinas, 2004.

Deltas	n	mean(±s.d.)	p-value
Delta 1 (home – admission)			
mFIM	12	2,0 (±8,7)	p = 0.3096
csFIM	12	0,8 (±2,1)	p = 0.3125
tFIM	12	2,8 (±9,3)	p = 0.0723
Delta 2 (home – discharge)			
mFIM	12	8,8 (±6,6)	p = 0.0020
csFIM	12	2,4 (±2,8)	p = 0.0039
tFIM	12	11,3 (±7,6)	p = 0.0010
Delta 3 (discharge – admission)			
mFIM	28	- 9,8 (±13,9)	p < 0.0001
csFIM	28	- 1,6 (±2,7)	p = 0.0025
tFIM	28	- 11,4 (±15,3)	p < 0.0001

Legenda: mFIM: motor FIM; csFIM: cognitive-social FIM; tFIM: total FIM

those who had been hospitalized during the 12-month period prior to the current admission (mean= -9.7). Although these observed variations were important at the descriptive level, they were not statistically significant.

The most often prescribed medications were antibiotics/anti-infectious agents, followed by gastric antisecretory agents, diuretics, antihypertensive agents and anti-coughing/antiasmatic agents (Table 4). The mean number of medications prescribed was 4.9 and 6.0 at hospital admission and discharge, respectively. There was an increase of 0.9 medications, on average, during the hospitalization.

According to Spearman's test, there was a moderate (r=0.4444) and a significant correlation (p=0.0202) between the augment in the number of prescribed medications and the motor functional decline (Delta 3 mFIM) during hospitalization; however, the cognitive/social decline (Delta 3 csFIM) showed a weak correlation (r=0.3048) with the prescribed medications, without being statisti-

cally significant (p= 0.1222). When the general functional decline at hospital admission was assessed (Delta 3 tFIM), a moderate correlation was observed (r=0.5059) with the increased number of medications, which was statistically significant (p=0.0071). The correlation between hospitalization duration and the increase in the number of prescribed medications was a weak one (r=0.3270) little significant (p=0.0959).

DISCUSSION

The majority of the elderly assessed at the present study presented functional decline during hospitalization (78.6%). This decrease in the FIM value during hospitalization was also observed by other authors, varying from 31%, 35% and 68.7% of functional impairment.^{8,19,20} In the present study, the observed functional decline was more important in the motor domain, when compared to the cognitive/social one, corresponding to the data of existing studies.^{21,22} This more accentuated motor functional decline might be associated with the higher number of FIM questions that comprehend the motor domain (13 tasks) when compared to the cognitive/social domain (5 tasks).

Through the calculation of deltas at the moment of assessment (admission, discharge and home) it was possible to identify more clearly the functional alterations of these periods. The negative values of FIM Delta 3 (discharge-admission) showed the functional decline presented at the hospitalization period, which was more significant in the motor domain.

The functional capacity that was lost during the hospitalization was often resumed after the return home; however, a number of the elderly did not reach the initial values of functional capacity. For others, the impact of the hospitalization was so intense that the functional capacity loss persisted, even after the return home, similar to what was observed in other studies, where 70% of the elderly assessed did not present any changes regarding the functional level three months after the hospital discharge, with 11% of them presenting improvement and 19% worsening in the functional capacity.^{23,24}

Table 3
Comparison of the FIM values of Delta 3, regarding the hospitalization period, according to the variables: sex, presence of caregiver and previous hospital admission (Mann – Whitney Test). Campinas, 2004.

Variable	n	mFIM Delta 3			csFIM Delta 3			tFIM Delta 3		
		Mean (±s.d.)	Observed variation	p-value	Mean (±s.d.)	Observed variation	p-value	Mean (±s.d.)	Observed variation	p-value
Sex										
Female	9	- 8,4 (±17,5)	- 40 a 19	0,61	- 2,6 (±3,3)	- 9 a 1	0,14	- 11,0 (±18,8)	- 47 a 18	0,92
Male	19	- 10,4 (±12,4)	- 44 a 2		- 1,1 (±2,4)	- 7 a 2		- 11,5 (±13,9)	- 51 a 2	
Caregiver										
Yes	10	- 4,6 (±12,1)	- 27 a 19	0,30	- 2,1 (±2,8)	- 9 a 1	0,20	- 6,7 (±12,5)	- 30 a 18	0,70
No	18	- 12,7 (±14,3)	- 44 a 2		- 1,3 (±2,7)	- 7 a 2		- 13,9 (±16,4)	- 51 a 2	
Prev. Admission										
Yes	14	- 8,6 (±8,6)	- 26 a 1	1,00	- 1,1 (±2,1)	- 6 a 2	0,81	- 9,7 (±9,6)	- 29 a 1	0,94
No	14	- 11,0 (±18,0)	- 44 a 19		- 2,0 (±3,3)	- 9 a 1		- 13,0 (±19,7)	- 51 a 18	

Table 4
Distribution of medications used by the elderly according to their frequency. Campinas, 2004.

Medications used	n
Anti-hypertensive	34
Coronary vasodilator	23
Gastric antisecretory agent	39
Antibiotics/Anti-infectious agents	55
Corticoids/ Immunosuppressive agents	21
Diuretics	38
Platelet antiaggregant agent	23
Antithrombotic/Anticoagulant agents	22
Anti-coughing/Antiasmatic agents	30
Antianemic agent/Vitamins	26
Others	111

Table 5
Spearman's coefficient of correlation between the augment in the number of medications prescribed during the hospital admission period with the Delta 3 values of FIM and hospital stay duration (HS). Campinas, 2004.

Medications	D3mFIM	D3csFIM	D3IFIM	HS
Increase	r = 0,4444	r = 0,3048	r = 0,5059	r = 0,3270
	p = 0,0202	p = 0,1222	p = 0,0071	p = 0,0959

The association between functional capacity and gender was not statistically significant; however, some differences were identified and are worth mentioning. The hospitalized male elderly presented higher motor functional impairment when compared to the hospitalized female elderly, but the latter presented a higher degree of impairment in the cognitive/social FIM. This is similar to the data obtained in a study with Japanese elderly after a stroke, where the males presented lower scores for the motor domain activities, with a less positive result in rehabilitation, when compared to the females. According to the authors, this outcome might be related to the difference in the social roles of men and women, according to the time when the study was carried out, where the man is often dependent on the woman for daily living activities, but the woman is more dependent on the man for problem-solving and decision-making.²⁵

Regarding the presence of a caregiver during hospitalization, the elderly without the presence of a caregiver showed a higher degree of motor impairment, as they presented a more passive posture due to the fact they were alone and submitted to the decisions made by the healthcare team. The presence of the family member allows the elderly to perform the activities calmly and according to their capacities, as they have the full attention of the caregiver, which results in a better motor performance. However, regarding the cognitive/social domain, the opposite occurred, as the individuals with the presence of a caregiver presented lower FIM values, possibly caused by the behavioral dependence of the

elderly on the caregiver, who frequently takes up the functions of problem-solving and decision-making, as a way to protect the elderly in a moment of frailty.²⁶

The patients with no previous hospital admissions presented a higher functional decline, when compared to those who had undergone hospitalization in the previous year. In some cases, the current hospitalization was the first experience in a lifetime and, considering that it is a strange, adverse and unprecedented event, it might have caused a higher functional decline. However, some studies show that hospital readmissions can be a risk factor for the elderly health, by identifying that a previous hospitalization episode (previous 12 months) increases 4-fold the risk of repeated readmissions, which can lead to functional impairment. The elderly that present functional decline during the hospitalization show a 50% higher likelihood of having readmission episodes, which creates a vicious circle.^{2,27}

The presence of non-transmissible chronic diseases and multiple affections observed among the elderly, often require the continuous use of several drugs. Associated to these concerns, hospitalized elderly people receive a larger number of drugs for the treatment of the acute state of a disease and for the prevention of complications due to this process. The concomitant use of several drugs can trigger the functional capacity impairment and increase hospital stay duration, according to the positive correlation observed in the present study and others. In the present study, the increase in the number of medications at the moment of hospital admission until the discharge was observed in 13 elderly patients, with a mean of prescribed medications of 4.9 at the admission and 6.0 at the hospital discharge, similar to what was observed in another study with a mean of 4.9 at the admission and 5.3 at the discharge.^{28,29}

It is noteworthy the fact that many medications present adverse reactions that can interfere with the elderly's functional capacity, such as anti-hypertensive drugs, which can trigger orthostatic hypotension and, consequently, gait and transference disorders; the antiemetic drugs, which can cause excessive somnolence and thus, motor capacity decline; and the ansiolitic and anti-depressive drugs, which can trigger an acute confusional state.

Despite the importance of the effect of these adverse reactions on the functional capacity of the elderly, these factors have not been explored in this study due to the diversity of the prescribed medications and the size of the obtained sample.

The construction of a specific unit for these hospitalized elderly with environmental adaptations and a duly qualified multiprofessional healthcare team would be more adequate to treat this population, which grows every year.²⁰ However, alternatives to this hospitalization must be considered, which will expose the fragile elderly patient to fewer risks and reduce the costs of healthcare, such as ambulatory treatment or homecare.

CONCLUSIONS

The results obtained in the present study with hospitalized elderly patients, admitted at Internal Medicine Units, allowed us to conclude that at Delta 1 (home-admission) and at Delta 2 (Home-

Discharge), the FIM mean in all domains were positive, showing a functional gain of the elderly after the discharge. However, at Delta 3 (Discharge-Admission) the mean FIM in all domains were negative, demonstrating the functional decline of the elderly during the hospitalization.

Regarding the social and health variables, the gender, the presence of a caregiver and previous hospitalizations were not determinant for the functional decline of the elderly patients during the hospitalization; the increase in the number of prescribed medications presented a moderate and a very significant correlation with the general functional decline during hospitalization.

Further studies are necessary to attain more clarity on the problems regarding the alteration of the functional capacity of the hospitalized elderly, with larger and more varied samples, using a longitudinal follow-up, as well as the analysis of other variables such as the type and severity of diseases, nutritional status, employed therapeutics, environmental interferences, among others. And finally, we suggest that hospital administration and healthcare professionals involved with elderly care be made aware of the functional vulnerability of the hospitalized elderly, so that administrative and healthcare measures are adopted aiming at minimizing the functional decline during this process and thus, contributing to healthy aging.

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