

Activities of daily living scales and the needs for care and help among elderly before and after geriatric hospitalization

by

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Abstract

Introduction. In Belgium, assessment of the economic charges allocated to care and help is based respectively on scale for activities of daily living (ADL) and on a local scale entitled "échelle d'aides aux personnes âgées" (APA).

Aims of the study. 1) To characterize the need for care and help of the elderly before an acute geriatric hospitalization and at discharge; 2) to study the validity of the scales used to assess the financial charges for care and help; and 3) to assess the effect of an acute geriatric hospitalization on the functional status and on the needs for care and help.

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Methods. *The need for care and help of 655 subjects were prospectively assessed according to their functional status using Katz's and APA-ADL scales. The needs for care and help were determined using the frequencies of interventions for care and for help.*

Results. *The needs before admission were respectively 18 ± 21 interventions/month (mean \pm SD) for care and 40 ± 39 for help. Katz's and APA scales were respectively 15 ± 6 and 11 ± 6 . The correlation between Katz's scale and the care index was statistically significant but concordance remained poor. Correlation between APA scale and the help index was significant and concordance better. Functional status slightly improved at discharge.*

Discussion. *There is no ground, according to the analysis of concordance between the Katz's scales and the needs for care, for dedicating more specifically Katz's scale for the assessment of the charges for care. APA scale seems to be a quite good reflection of the needs for help.*

Key-words

Autonomy, the elderly, ADL.

Introduction

The functional assessment of activities of daily living (ADL) of the elderly is included in the geriatric practice. Nevertheless, the capacity of the elderly person to assume these activities cannot be determined on the basis of the list of diagnoses or medical problems. Functional assessment seems to be a necessity as it may be able to characterize the presence and severity of a disease and to determine the needs for care and help and appropriate adjustment measures. Measurement of functional status is not included routinely in the medical practice nor in the education of the medical mind. There is a lack of consensus on the best way to proceed. Review of the literature has led some authors to conclude that most published instruments were impractical: too lengthy, requiring special equipment, or not targeted to the older population. The instruments reviewed by Lachs et al. (1) are listed in his references in several topical groups: compendia of reviews and explanation for the available instruments; reviews of the general process of functional assessment, instruments for a broad range of disabilities, instruments for special targets in mental, manual or other individual functions, and

investigations of accomplishments when the instruments were applied in special geriatric consultation or assessment units. The published instruments had often been used successfully in research, for subspecialty assessments, in institutional care settings, or to describe details of extensive disabilities when considerable time and special personnel were available for the assessments.

In Belgium, assessment of the financial charges allocated for care is based on Katz's scale (2) whereas assessment of the needs for help is based on a local scale entitled "aide aux personnes âgées" (APA, help for the elderly people). Nevertheless, these two scales are nowadays not validated in geriatric practice.

The aims of our study are: 1) to characterize the need for care and help of elderly before an acute geriatric hospitalization and at discharge; 2) to study the validity of the scales commonly used in Belgium to assess the financial charges for care and help; and 3) to assess the effect of an acute geriatric hospitalization on the functional status and on the needs for care and help.

Material and methods

Six hundred fifty five patients observed between July and December 1995 were prospectively assessed by the following geriatric divisions of the French Community of Belgium: Centre Hospitalier Universitaire Brugmann (Brussels), Centre Hospitalier Molière-Longchamp (Brussels), Centre Hospitalier Universitaire de Tivoli (La Louvière), Centre Hospitalier de Nivelles (Nivelles).

For each subject administrative, social and economic data were collected as well as a detailed assessment of the charges for care and help.

Determination of the needs for care included the assessment of the frequency of visits of the various actors assuming these charges (physician, nurses, physiotherapists, speech therapists) and that of the needs for help included the assessment of the frequencies of the visits for help (meals, houseworker, patient's guard, handyman, phone alert system).

The need for care and help before admission was in fact, the observation of the real support given to the patients during the month before their hospitalization and was assessed by the social worker of the geriatric team interviewing the patient, his relatives and caregivers.

The need for care and help at discharge was the proposition of the comprehensive geriatric assessment. It reflected the supports allowing the patient's discharge.

Activities of daily living were assessed using Katz's and APA scales. These scales involve the following items: bathing, dressing, transferring, toileting, continence, and eating for Katz's scale, and: transferring, eating, toileting, grooming, living alone, and social function for APA scale. Each task is graduated in a 4-level scale (1 to 4 for Kat's and 0 to 3 for APA scale, lower levels represent the absence of dependence, and upper level, the maximal dependence for the task).

As the need's assessment, the functional status before admission was assessed by the occupational therapists of the geriatric wards interviewing the patients, his relatives and caregivers for a one month period before hospitalization. The functional status at discharge was assessed during the last week of hospitalization.

The mean (SD) age of our study population was 83 ± 7 years (median = 84, range 65-95 yr.), of whom 74% females. There was no difference in age between both sexes. The mean hospitalization stay was 26 ± 19 days. The population included 69% of widows, 20% of married, 3% of divorced, and 8% of never married. The family composition was 68% living alone, 22% of couples and 10% of families of 3 or more. The number of financial source(s) per family was one for 79% of patients, two for 14% patients, and three for 3% patients, unknown for 4%. In these 655 subjects, 58% lived in their private house, and 42% in a long-care institution. The proportion of deaths among these hospitalized patients was 17%. The effect of hospitalization on the needs for care and help and on the functional status was assessed among the 548 survivors.

Patients met the Belgian criteria to be a "geriatric" patient i.e.: mean age over 75 years, presenting more than three pathologic disorders, and staying hospitalized longer than patients admitted in general medical wards.

The group of patients who died during hospitalization presented some socio-economic characteristics as compared to the survivors: an higher proportion of people living alone, institutionalized, and/or people living in city rather than in country. However these groups did not significantly differ as far as their sex ratio, mean age, functional status, and care and help charges before admission.

Statistical analysis included descriptive statistics, Spearman correlation, Kendall concordance coefficient, Mann-Whitney test, Wilcoxon test, and Chi square test (Statistica 5, Microsoft).

Results

Figure 1 shows the charges for care and help of the 655 patients before their hospitalization. These were based on the sum of the frequencies (expressed per month) of workers assuming care and help on the one hand, and using Katz’s scale for care and the APA scale for help on the other hand. The mean values \pm SD of these observations were respectively 15 (6), median = 16 for Katz’s scale, 11 (6), median = 12 for the APA scale, 18 (21), median = 6 (visits per month) for the care index, and 40 (39), median = 31 (visits per month) for the help index (N = 655).

Figure 2 represents the activities of daily living (ADL) of the 655 patients before admission according to their levels of dependence (independent, partially independent, totally dependent). As with the item “bathing” for example, 15% of the population was independent, 39% needed partial help, and 46% presented a complete dependence in this activity.

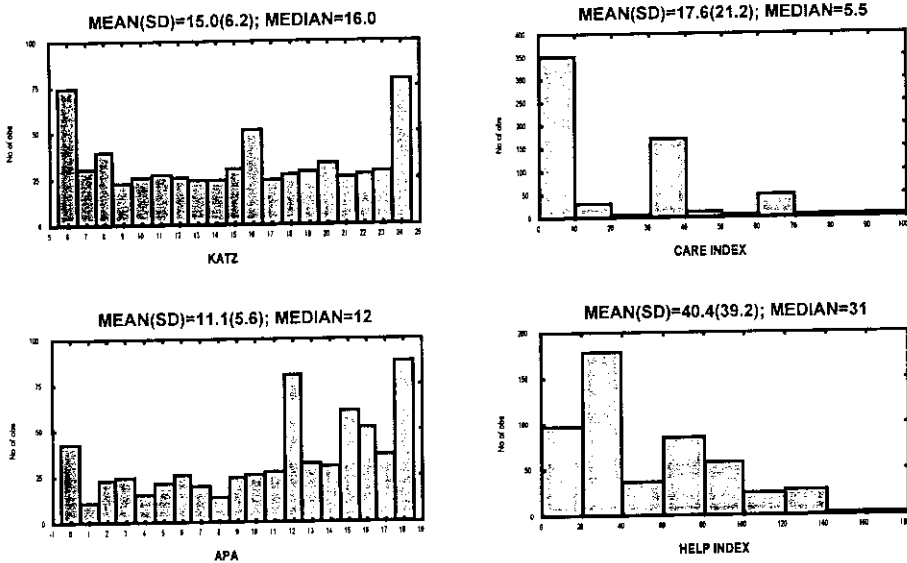


Fig. 1: Descriptive characteristics of the patients before admission (N = 655)
Histograms of scores of ADL scales (left graphs): Katz’s scale (upper) and APA (lower).
Histograms of charges for cares and help (right graphs): indexes for care (upper) and help (lower) are expressed as the sum of the frequencies (per month) of the caregivers (medical, nurses, physiotherapists, and logopedics) and the helpgivers (for hot meals, houseworkers, guard, handyman, alert phone assistance).

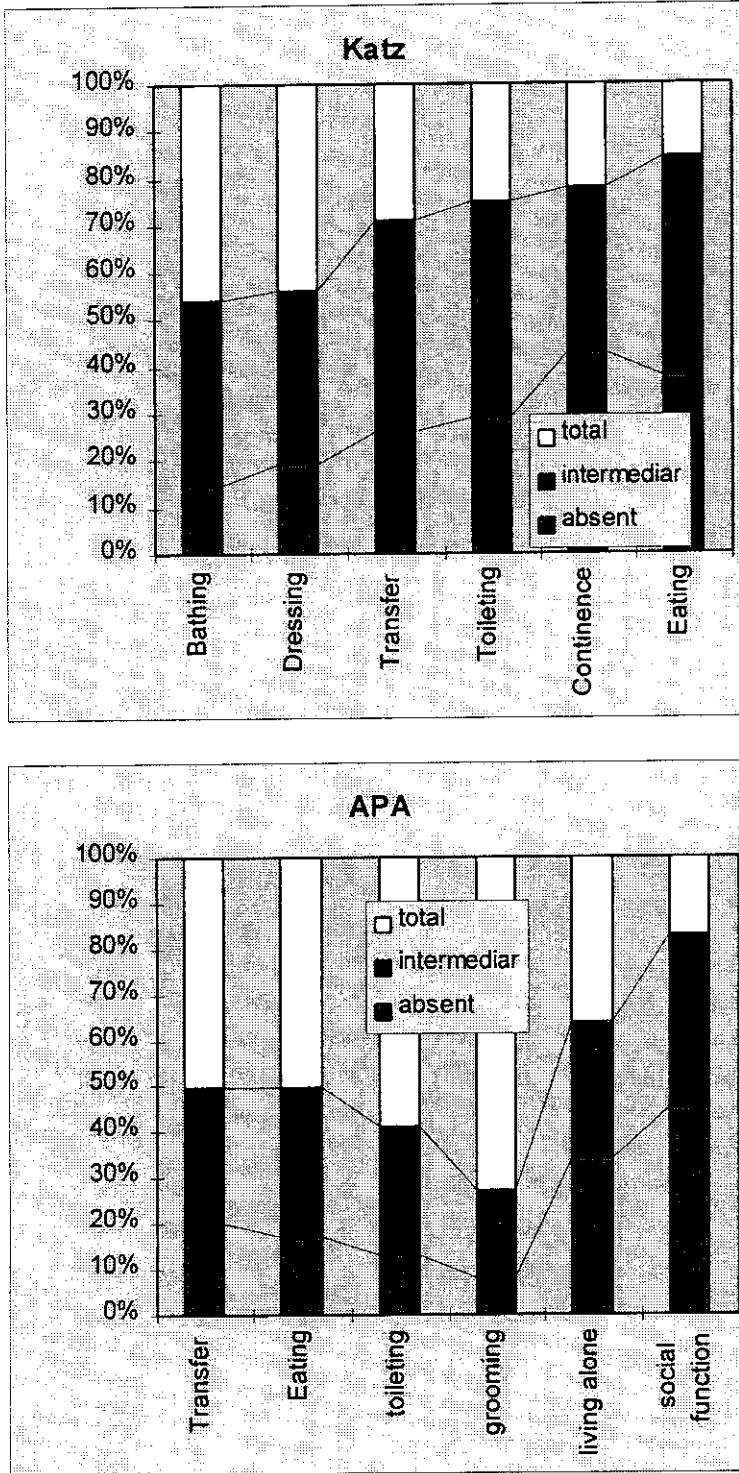


Fig. 2: Activities of daily living (ADL) of 655 patients according to their levels of dependence (independent, partially dependent, totally dependent) Katz's scale (upper), APA scale (lower).

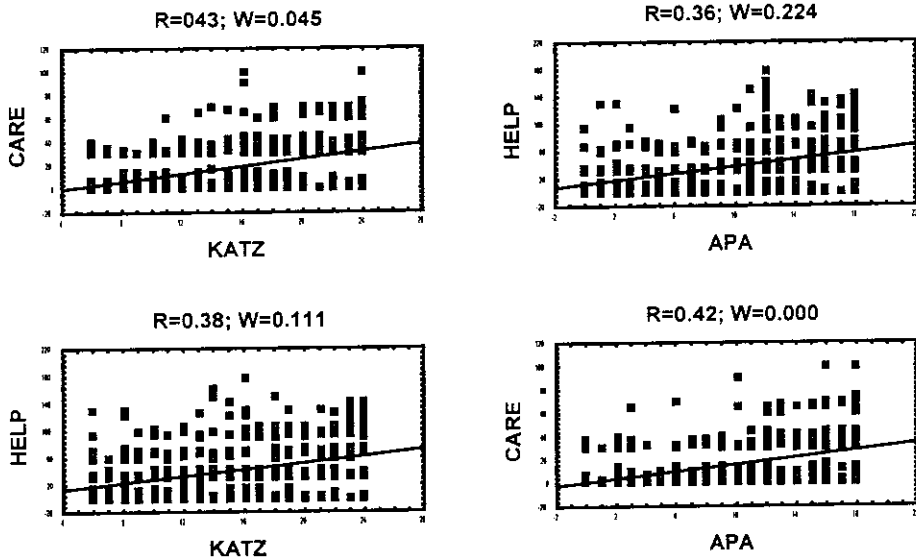


Fig. 3: Relations between scales for activities of daily living (Katz's and APA scales) and the needs for care and help

Indexes for care (upper) and help (lower) are expressed as the sum of the frequencies (per month) of the caregivers (medical, nurses, physiotherapists, and logopedics) and the helpgivers (for hot meals, houseworkers, guard, handyman, alert phone assistance). Relations between these parameters are assessed by Kendall coefficient (W) among the 655 patients.

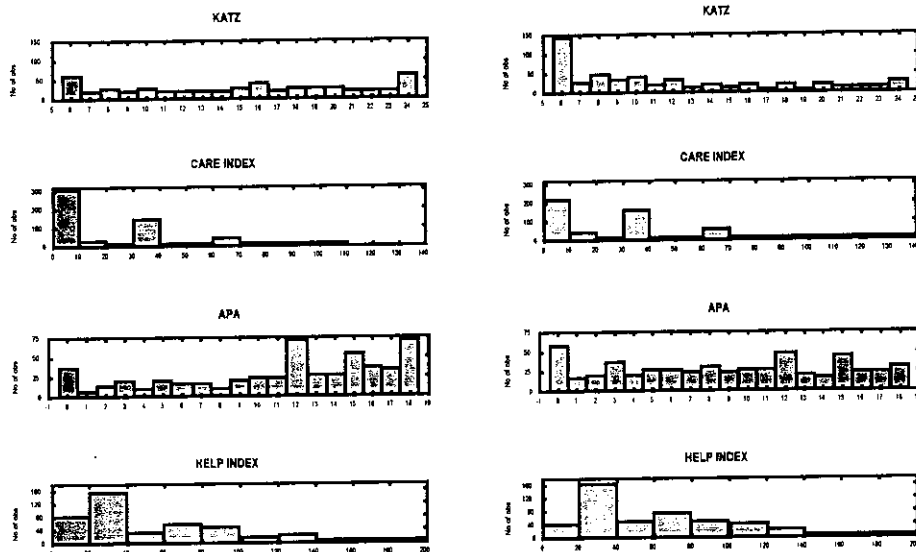


Fig. 4: Effect of hospitalization on the activities of daily living and the needs for care and help

Histograms of frequencies of scores of ADL scales (Katz's and APA scales) and care and help indexes before admission (left) and at discharge (right) (N =548). Indexes for care (upper) and help (lower) are expressed as the sum of the frequencies (per month) of the caregivers (medical, nurses, physiotherapists, and logopedics) and the helpgivers (for hot meals, houseworkers, guard, handyman, alert phone assistance).

TABLE 1
 Functional status (assessed by Katz's and APA scales) and the charges for care and help among 548 patients before admission and at discharge

	Before admission		At discharge		P <
	mean	SD	mean	SD	
<i>Katz</i>	15.01	6.02	11.85	5.82	0.001
Bathing	3.01	1.07	2.30	1.15	0.001
Dressing	2.90	1.14	2.25	1.17	0.001
Transfer	2.56	1.16	1.98	1.05	0.001
Toileting	2.44	1.13	1.89	1.02	0.001
Continence	2.08	1.19	1.79	1.10	0.001
Eating	2.04	1.05	1.63	0.90	0.001
<i>APA</i>	11.20	5.52	8.82	5.65	0.001
Transfer	1.95	1.21	1.35	1.22	0.001
Eating	1.99	1.17	1.53	1.22	0.001
Toileting	2.22	1.08	1.68	1.25	0.001
Grooming	2.49	0.97	2.31	1.06	0.001
Safety	1.53	1.29	1.25	1.28	0.001
Social function	1.02	1.13	0.76	1.01	0.001
<i>Care index</i>	17.17	20.90	24.08	24.59	0.001
Physical therapy	2.48	5.14	3.18	6.53	0.005
Nursing	11.66	14.87	15.10	15.33	0.001
Physiotherapist	3.02	7.77	5.66	10.04	0.001
Speech therapy	0.01	0.17	0.14	1.84	0.062
<i>Help index</i>	39.15	39.22	47.52	10.08	0.001
Meals	18.81	15.02	22.41	13.84	0.001
Houseworker	3.99	9.59	3.99	9.49	0.943
Guard	8.70	14.34	10.97	15.28	0.001
Handyman	6.04	10.53	7.23	11.27	0.001
Phone alert	1.61	7.01	2.91	9.24	0.001

The correlation between the Katz's scale and the care index was statistically significant ($r = 0.43$) as the relation between the APA scale and the help index ($r = 0.36$) (figures 3 and 4). We also observed a significant correlation between Katz's scale and the index for help ($r = 0.37$, $p < 0.001$) and between APA and the care scale ($r = 0.42$, $p < 0.001$).

The correlation between Katz's and the APA scales was the most significant ($r = 0.85$).

Compared to the pre-admission status, the dependence for the activities of daily living among the survivors ($N = 548$) tended to slightly improve: from 15 ± 6 before admission to 12 ± 6 at discharge for Katz's scale ($p < 0.001$) and 11 ± 6 to 9 ± 6 for APA scale ($p < 0.001$). However,

TABLE 2
Spearman correlation (*r*) and Kendall concordance coefficient (*W*) between the scales and the indexes, before admission and at discharge (N= 548)

	R	p<	W	p< Chi2	Y	p<	
Katz and							
Care Index	0.43	0.001	0.056	0.001	0.345	0.001	<i>Before admission</i>
	0.61	0.001	0.028	0.001	0.512	0.001	<i>At discharge</i>
Help Index	0.37	0.001	0.091	0.001	0.307	0.001	<i>Before admission</i>
	0.45	0.001	0.302	0.001	0.376	0.001	<i>At discharge</i>
APA and							
Help Index	0.38	0.001	0.197	0.001	0.312	0.001	<i>Before admission</i>
	0.49	0.001	0.472	0.001	0.397	0.001	<i>At discharge</i>
Care Index	0.42	0.001	0.209	0.001	0.339	0.001	<i>Before admission</i>
	0.59	0.001	0.205	0.001	0.474	0.001	<i>At discharge</i>

the needs for care and help assessed by the frequency of intervention (per month) increased at discharge: 17 ± 21 to 24 ± 5 for care ($p < 0.001$) and 39 ± 39 to 47 ± 40 for help ($p < 0.001$) (table 1).

Both Spearman correlation and Kendall concordance coefficients between the scales and the indexes were studied before admission and at discharge to determine whether the concordance between these parameters would be more appropriate in one of these two situations (table 2). Considering the concordance coefficients, the more appropriate scale to assess the care and the help before admission is the APA scale ($W = 0.209$ for care and 0.197 for help). At discharge, APA scale remained the more appropriate scale assessing the charges for care and help.

Discussion

The elderly represent the portion of the population with the fastest rate of growth in countries of high living standards (3) consequential upon a marked reduction of mortality among aged people. The increased longevity is associated with an increased prevalence of chronic diseases and disabilities, particularly in subjects over 75 years (3, 4). The latter consume a disproportionate amount of medical services because of their poorer health status (5).

Although most non-institutionalized elderly adults are functionally competent, the percentage who needs help in everyday activities doubles with each successive decade up to 84, and triples between ages

85-94 (6). Although physicians may identify these needs through communication and observation during office visits, failure to recognize them should be minimized by structure and reliable procedures (6-9).

The severity and the lack of autonomy of the institutionalized subjects described in our study agrees with the data of the literature. Warschaw et al. (6) reported a high incidence of functional disability among those patients 70 years and older at a single variable time during admission to a community hospital. 65% of the study population had difficulty with mobility, 21% suffered from incontinence, and 53% were impaired in their self-care activities. If we look at European (7), French (8-10), and Belgian (11-13) studies, the population of our study presents a lower functional status which might be explained by the bias of selection of our patients as they had to be hospitalized.

Despite some similar items in the two scale (eating, transfer), the percentages of limitations on those items are different. This observation could reflect the fact that the APA's scale assesses more instrumental aspects of these activities of daily living (I-ADL) than the Katz's scale which is known to assess basic activities of daily living.

There is no ground, according to the analysis of concordance between the Katz's scales and the needs for care, for dedicating more specifically Katz's scale for the assessment of the charges for care. Katz's scale which is used in Belgium to assess the financial charges allocated to care in institution does not seem to be an appropriate tool for this. APA scale seems to be a quite good reflection of the needs for help.

Katz's and APA's scales commonly assess the levels of dependence. They are not necessarily related to the functional abilities. Moreover, we must be careful not to overinterpret the results of this study as it is known that difficulty and dependence are two components of the disability continuum among older persons (14).

Some investigators (6) have suggested that, although the outcome of acute medical or surgical treatment may be successful, hospitalization may have a further negative effect on the functional status of elderly patients. One important objective of a geriatric department is to provide interdisciplinary treatment and rehabilitation for improving functional performance and preventing functional decline (15). Several investigators have studied highly selected groups of elderly patients and have shown improvement in functional status during hospitalization in specialized geriatric units (16, 17, 18-20). The possible reasons for the positive

effect of such inpatient geriatric units are not clear and include intensive rehabilitation efforts coupled with additional time allowed to convalescence, positive staff attitudes, improved diagnostic accuracy, appropriate goal setting based on individual potential and longitudinal follow-up care. Nevertheless, the functional status improved less in our study than in the other studies. One factor to explain this, is that, in our study, the initial functional measurement represents the patient situation before admission and not at admission where the acute disease may interfere with the patient's ability. Another possible factor to explain the only slight improvement of functional status of our patients is the relative short duration of hospitalization in our service.

If the functional status assessed by the used scales slightly improves during hospitalization, the charges for care and help also increase at discharge. These charges might be underestimated before hospitalization and it would be an objective of the interdisciplinary geriatric team to organize care and help at discharge to maintain functional status. Concordance coefficients between ADL scales and the indexes for care and help improved after hospitalization suggesting a more appropriate assessment of the needs of care and help according to the functional status.

The discrepancy between the ADL scales and the needs for care and help suggests a possible underestimation of the needs before hospitalization. Moreover, the use of services does not reflect necessarily the optimal need (meaning the health status) but was also a function of other determinants such the attitude of the individual, the availability of the services and the accessibility. Although the effect of geriatric hospitalization on functional status remains scant, a geriatric interdisciplinary evaluation allows a more appropriate assessment of the needs for care and help.

The underestimation of needs for care and help before admission associated with poor functional status lead us to propose the development of programs including regular home evaluation of daily living activities as suggested by Carpenter et al. (21).

Résumé

Introduction. En Belgique, l'évaluation des charges financières allouées aux soins et aux aides est basée respectivement sur la détermination de l'échelle de Katz et «l'échelle d'aides aux personnes âgées» (APA).

Buts de l'étude. 1) Caractériser les besoins et soins et en aides de sujets avant une hospitalisation gériatrique et à la sortie; 2) évaluer la validité de ces échelles; et 3) évaluer les effets d'une hospitalisation gériatrique sur l'état fonctionnel et sur les besoins en soins et en aides.

Méthodes. Le status fonctionnel évalué par les échelles de Katz et d'APA a été déterminé de manière prospective auprès de 655 sujets. Les besoins en soins et en aides ont été exprimés en fréquences d'interventions de prestataires par mois.

Résultats. Avant l'admission, les besoins étaient respectivement de 18 ± 21 interventions/mois (moyenne \pm SD) pour les soins et 40 ± 39 pour les aides. Les échelles de Katz et d'APA étaient respectivement de 15 ± 6 et 11 ± 6 . La corrélation entre l'échelle de Katz et la charge en soins étaient statistiquement significative mais la concordance entre ces mesures était faible. La corrélation entre l'échelle d'APA et la charge en aides était significative et la concordance entre ces mesures était meilleure. Le status fonctionnel était légèrement amélioré à la sortie.

Discussion. Au vu de l'analyse de concordance entre l'échelle de Katz et la charge en soins, il n'y a pas de raison de privilégier l'échelle de Katz pour cette évaluation. L'échelle d'APA semble être une assez bonne appréciation des besoins en aides.

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