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# Living Alone in Alzheimer's Disease — The Influence of Functional Impairment

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## Conclusions

A substantial number of AD patients, predominantly females, live alone with severe cognitive and functional impairments. The amount of home help services used did not reflect disease severity. Functional, but not cognitive, ability predicted the need for home help, suggesting that home help services meet the needs related to cognitive deterioration to a lesser extent. Increased knowledge about how community-based services can better accommodate the care needs of recipients with cognitive impairment is essential.

## Background

A large number of individuals with Alzheimer's disease (AD) live alone and receive little or no help from family members, which implies an additional pressure on the increasing societal costs of dementia care. About half of the informal help received has been reported to consist of surveillance, diversion from repetitive or dangerous activities, and management of behavioral disturbances. Lack of help in monitoring these expressions of AD might lead to safety issues for individuals who live alone. Moreover, difficulties in detecting increasing impairments in their cognitive and functional abilities could affect negatively the opportunities of solitary-living individuals to receive necessary formal help. Living alone with dementia is also a strong risk factor for nursing home placement. This study aimed to describe the cognitive and functional abilities of solitary-living AD patients, as well as the potential predictors of usage of community-based home help services (HHS).

## Methods

The Swedish Alzheimer Treatment Study (SATS) is a prospective, open, non-randomized, multicenter study undertaken to investigate the long-term effectiveness of cholinesterase inhibitor (ChEI) treatment from various perspectives, such as cognition, activities of daily living (ADL), and usage of community-based services. Among the 1,258 outpatients with a clinical diagnosis of probable or possible AD in the SATS, 1,021 had mild-to-moderate AD (Mini-Mental State Examination (MMSE) score, 10–26) at the start of ChEI therapy (baseline). Three hundred fifty-five (35%) of these individuals were living alone at the baseline, with or without HHS, and were included in the current study. Patients were assessed regarding cognitive ability (MMSE), functional capacity (Instrumental Activities of Daily Living (IADL) scale and Physical Self-Maintenance Scale (PSMS)), and the amount of HHS (hours/week), at baseline and every 6 months for a total period of 3 years. Binary logistic regression was used to determine the individuals' characteristics that affected the use of HHS at baseline. The following potential predictors were investigated: gender, APOE ε4 carrier status, years of education, illness duration, age, number of medications, and cognitive and functional abilities at baseline.

**Table 1.** Baseline characteristics

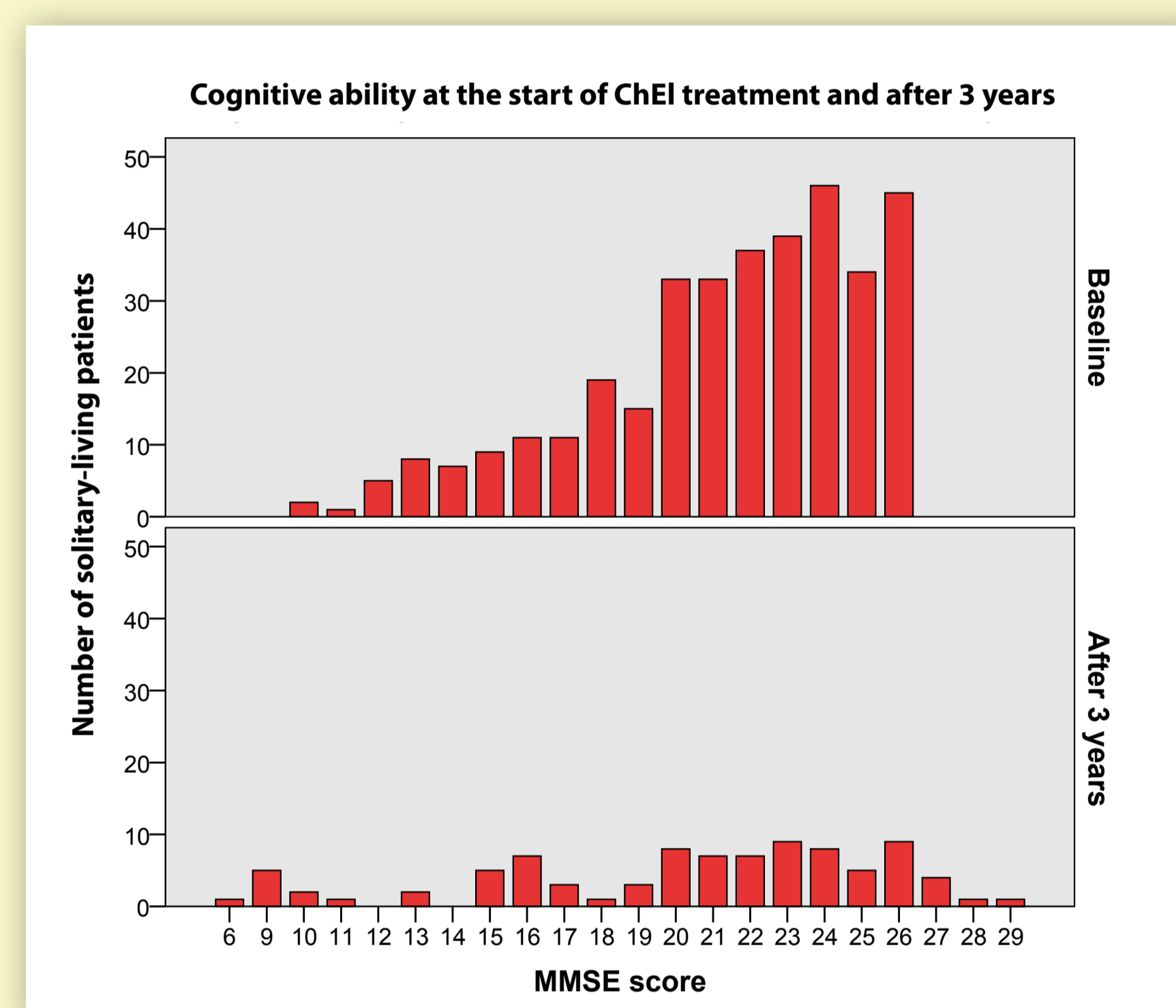
Number of patients (n)	355
Female sex	85%
APOE ε4 allele	68%
Estimated age at onset, years <sup>a</sup>	74.0 ± 7.0
Age at the start of ChEI treatment, years <sup>a</sup>	77.1 ± 6.4
Duration of AD, years <sup>a</sup>	3.1 ± 2.4
Education, years <sup>a</sup>	9.3 ± 2.4
MMSE score, range 30–0 <sup>a</sup>	21.4 ± 3.7
IADL score, range 8–31 <sup>a</sup>	15.7 ± 5.4
PSMS score, range 6–30 <sup>a</sup>	7.8 ± 2.6
Number of medications <sup>a</sup>	3.2 ± 2.7

<sup>a</sup>mean ± standard deviation (SD)

APOE, Apolipoprotein E; ChEI, cholinesterase inhibitors; IADL, Instrumental Activities of Daily Living; MMSE, Mini-Mental State Examination; PSMS, Physical Self-Maintenance Scale

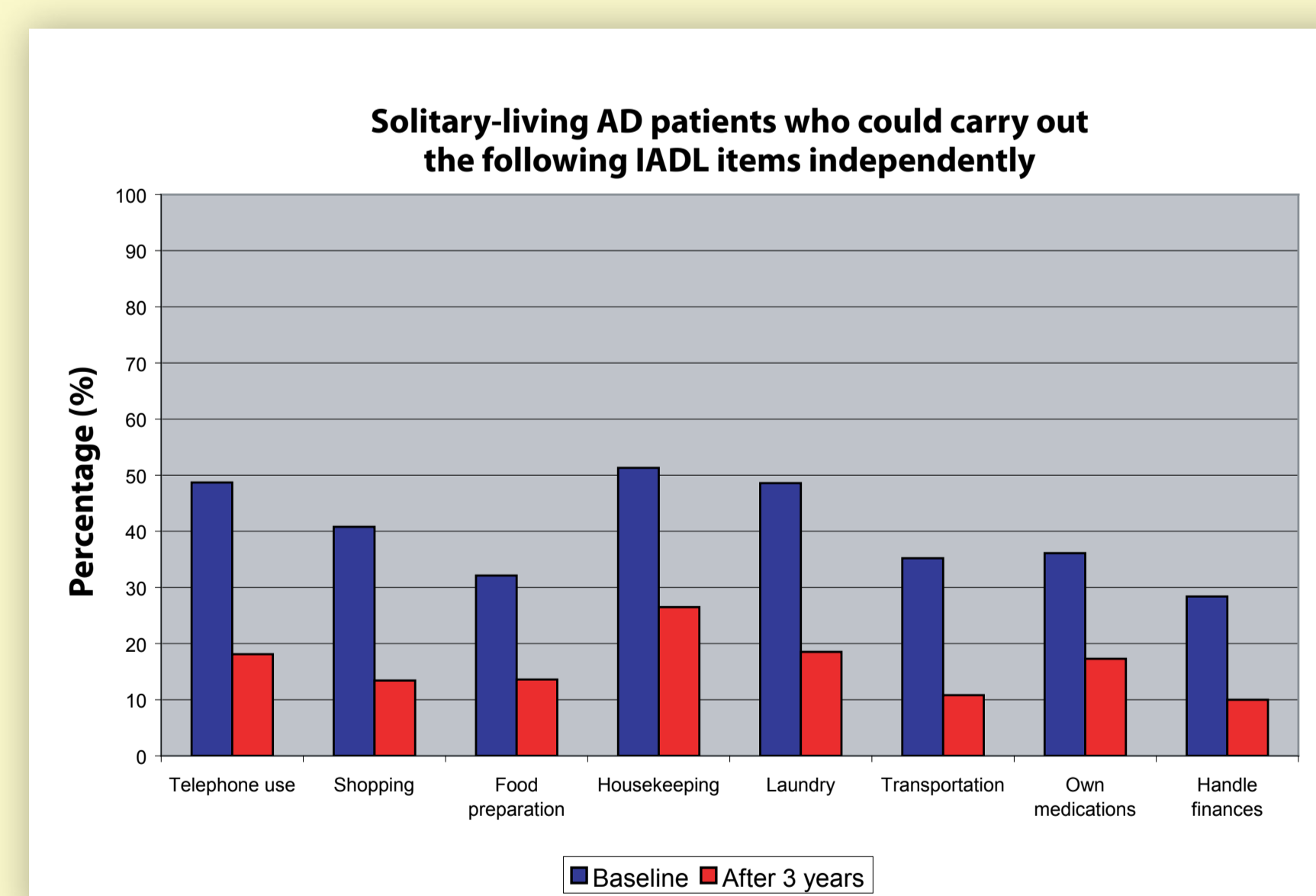
## Results

**Figure 1.**



At the start of ChEI therapy, 267 of the 355 (75%) solitary-living patients were in the mild stage of AD (MMSE score, 20–26). After 3 years of ChEI treatment, 89 individuals (25%) were still living alone in their own home. The cognitive ability of those patients varied appreciably.

**Figure 2.**

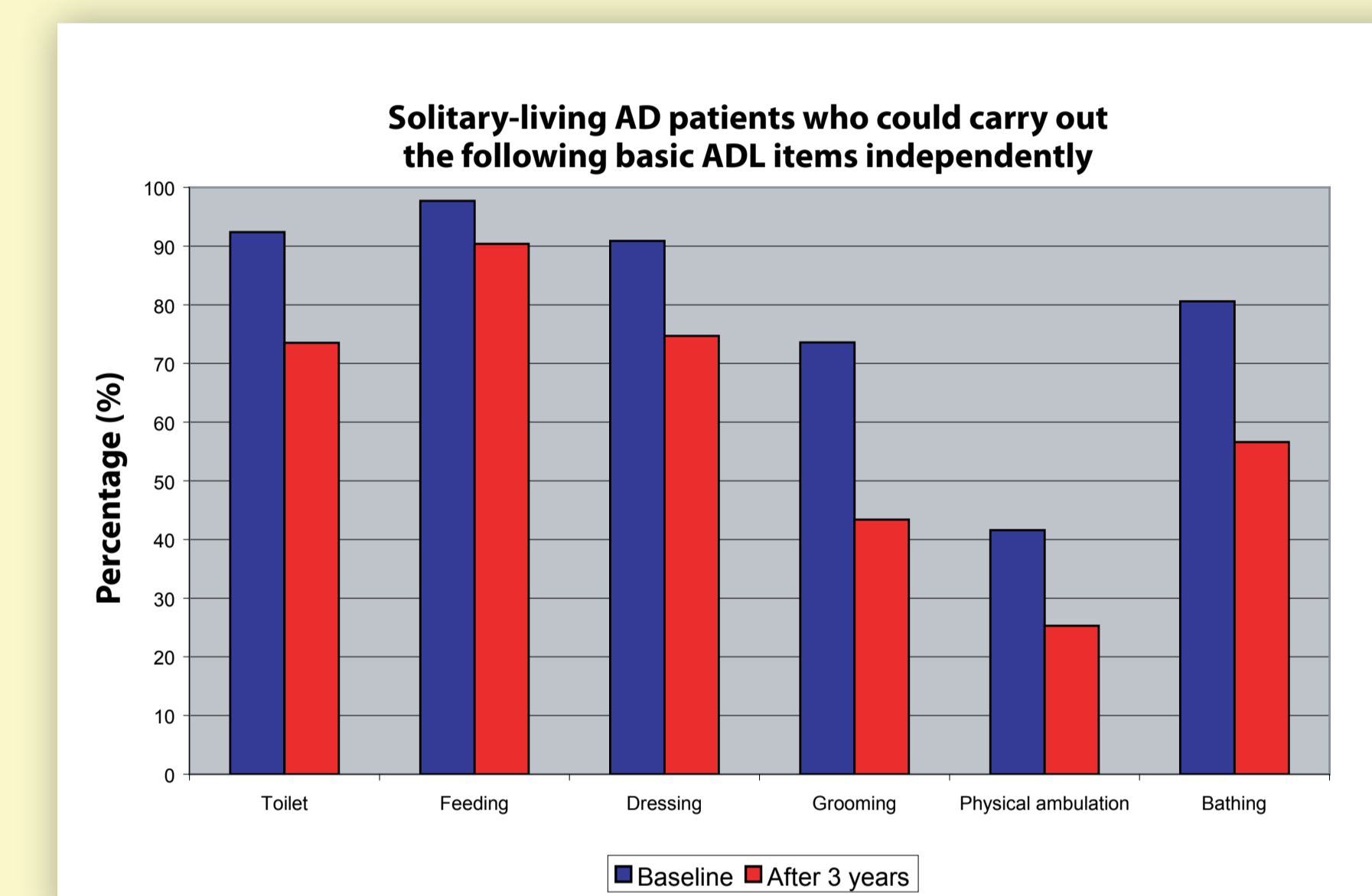


The IADL capacity was already markedly impaired at baseline: 50%–65% of the solitary-living AD patients were dependent on assistance to perform these activities (IADL score, 2–5). After 3 years of ChEI therapy, 80%–90% could not carry out IADL tasks independently.

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**Figure 3.**



Regarding basic ADL, most solitary-living AD patients were able to manage themselves independently at baseline, with the exception of physical ambulation (almost 60% of individuals needed some assistance; PSMS score, 2–5). After 3 years of ChEI treatment, more than 50% of the individuals needed assistance in performing the basic ADL items of grooming and physical ambulation.

**Table 2.** Binary logistic regression analysis of the presence of home help services at baseline and significantly associated variables

Independent variables	Odds ratio	Odds ratio, 95% CI	p-value
IADL score at baseline	1.27	1.17–1.38	<0.001
Number of medications at baseline	1.19	1.07–1.33	0.002

CI, Confidence interval

The two variables IADL score and number of medications at baseline classified 80.2% of the solitary-living AD patients correctly regarding whether they used home help services. The variables of sex, age, APOE ε4 carrier status, level of education, illness duration, MMSE and PSMS scores were not significant in the multivariate model. HHS was used by 85 (32%) of the mild and 48 (55%) of the moderate AD patients ( $P < 0.001$ ). The mean hours of HHS used per week was 5.7 (95% CI, 5.0–6.5); no difference in this parameter was detected among the disease stages. After 3 years of ChEI treatment, 65 of the 89 individuals (73%) still living alone in their own home used a mean of 9.5 hours (95% CI, 7.8–11.3) of HHS per week.