SHORT REPORT

Association of individual activities of daily living with self-rated health in older people

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Abstract

Objective: to evaluate the associations of 18 activities of daily living with self-rated health in older people.

Design and setting: cross-sectional study of a representative sample of 781 people aged 65 or over (response rate: 89.9%).

Methods: self-rated health was assessed by the question: "Overall, how would you rate your current health status—very good, good, fair, poor or very poor?" We used the Barthel index and Lawton and Brody’s index for basic and instrumental activities of daily living, respectively. We classified subjects into three groups according to their Barthel index score: level 1 (score 100), level 2 (score 91–99) and level 3 (score 0–90). Logistic regression was used to identify associations between each activity and self-rated health.

Results: use of stairs [odds ratio (OR) = 4.28, 95% confidence interval (95% CI): 2.82–6.52], ambulation (OR = 3.67, 95% CI: 2.39–5.64) and chair/bed transfer (OR = 3.00, 95% CI: 1.68–5.36) were the basic activities of daily living best associated with self-rated health. Among instrumental activities of daily living, ability to handle finances (OR = 2.20), laundry (OR = 2.15) and transport (OR = 2.12) were associated with self-rated health. On the Barthel index, only transport was associated with self-rated health in subjects at levels 1 (OR = 2.55) and 2 (OR = 2.72). For subjects with poor functional status (level 3), no instrumental activities of daily living were related to self-rated health.

Conclusion: in terms of self-rated health, the most important activities of daily living were those involving mobility. The effect of each instrumental activity of daily living on self-rated health depends on the level of functional capacity in basic activities of daily living.

Keywords: activities of daily living, aged, Barthel index, functional status, rehabilitation

Introduction

Functional dependence is a component of theoretical models of self-rated health (SRH) [1–3], and is associated with SRH in some studies [4–8]. However, in most studies, functional status is either used as a summary score or people are classified as ‘dependent in one or more activities of daily living’ (ADLs), irrespective of the number or the nature of the activities [5–7, 9, 10]. Furthermore, the different weight that each ADL might have in health ratings has not been well studied. Since some rehabilitation techniques have been related to improvements of SRH [9], rehabilitation focused on restoring independence in those activities most related to SRH could theoretically improve SRH. We have analysed the individual associations of 18 ADLs with SRH in older people.

Methods

We performed a cross-sectional study of older people in
Cabra, a rural region of Spain. The sampling frame included all non-institutionalized people 65 or older registered on the 1991 municipal roll (5139 subjects, 16.5% of the population). We drew up a stratified random sample with six strata by sex and age group (65–74, 75–84, 85+). Sampling was non-proportional with respect to age group: we assigned more weight to the oldest groups.

**Study variables**

We evaluated SRH by asking: “Overall, how would you rate your current health status—very good, good, fair, poor or very poor?” For basic ADLs (BADLs) we used the modified Barthel index [11]. As suggested by Shah et al., we grouped subjects into three levels: 1 (good functional status; Barthel score 100), 2 (fair functional status; 91–99) and 3 (poor functional status; 0–90). For instrumental ADLs (IADLs) we used Lawton and Brody’s index [12]. We used both scales as a record of what a subject actually did rather than what they could do [13].

**Statistical analysis**

We used logistic regression to estimate the association of each ADL with SRH. For this purpose, we grouped SRH into two categories: good (comprising good and very good health) and poor (comprising fair, poor and very poor health). For each ADL, we classified subjects as completely independent or not. We examined associations between each ADL and SRH in all subjects, and associations between each IADL and SRH at the three Barthel index levels. Logistic regression models included age and sex. We weighted summary estimators to re-establish proportionality. All analyses were done by using SPSS–Windows.

**Results**

Of the 869 eligible subjects, 34 were not located after two visits and eight refused to participate. We further excluded 46 interviews answered by proxies, resulting in a final sample of 781 subjects (89.9% of the eligible

<table>
<thead>
<tr>
<th>Activity</th>
<th>Perception of good health, odds ratio (95% confidence interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>By functional status</td>
</tr>
<tr>
<td></td>
<td>All  (n = 781)</td>
</tr>
<tr>
<td>Personal hygiene</td>
<td>2.25 (1.36–3.70)</td>
</tr>
<tr>
<td>Bathing self</td>
<td>2.49 (1.78–3.48)</td>
</tr>
<tr>
<td>Feeding</td>
<td>2.06 (1.23–3.46)</td>
</tr>
<tr>
<td>Toilet</td>
<td>1.72 (0.97–3.06)</td>
</tr>
<tr>
<td>Use of stairs</td>
<td>4.28 (2.82–6.52)</td>
</tr>
<tr>
<td>Dressing</td>
<td>2.23 (1.39–3.59)</td>
</tr>
<tr>
<td>Bowel control</td>
<td>1.81 (1.11–2.95)</td>
</tr>
<tr>
<td>Bladder control</td>
<td>2.16 (1.59–2.93)</td>
</tr>
<tr>
<td>Ambulation/wheelchair</td>
<td>3.67 (2.39–5.64)</td>
</tr>
<tr>
<td>Chair/bed transfers</td>
<td>3.00 (1.68–5.36)</td>
</tr>
<tr>
<td>Use of telephone</td>
<td>1.84 (1.28–2.64)</td>
</tr>
<tr>
<td>Shopping</td>
<td>1.69 (1.22–2.34)</td>
</tr>
<tr>
<td>Food preparation</td>
<td>1.29 (0.88–1.89)</td>
</tr>
<tr>
<td>Housekeeping</td>
<td>1.92 (1.30–2.83)</td>
</tr>
<tr>
<td>Laundry</td>
<td>2.15 (1.42–3.23)</td>
</tr>
<tr>
<td>Transport</td>
<td>2.12 (1.46–3.07)</td>
</tr>
<tr>
<td>Responsibility for own medication</td>
<td>1.38 (0.82–2.32)</td>
</tr>
<tr>
<td>Ability to handle finances</td>
<td>2.20 (1.38–3.50)</td>
</tr>
</tbody>
</table>

In all analyses the reference category (odds ratio = 1) was dependence in that activity. All estimators are adjusted for age group and sex.

*By Barthel index (BI): level 1 (good, BI = 100); level 2 (fair, BI = 91–99); level 3 (poor, BI = 0–90).

+Only 47 subjects had severe or total dependence (BI = 0–60).

+P < 0.05.

+Analyses not performed due to high proportions of independence (>96%).
population). Mean age (standard deviation) was 73.9 (7.0) years; 48.4% rated their health as very good or good. Only 5.3% had education beyond high school. Fifty-nine percent were married, 32.6% were widowed and 8.2% had never been married. Only 14.1% lived alone. Table 1 presents associations of independence in each ADL with the perception of good health in all subjects, and associations of IADLs by levels of Barthel index.

In the whole sample, almost all activities were clearly associated with SRH. Independence in using stairs showed the strongest association [odds ratio (OR) = 4.28, 95% confidence interval (95% CI): 2.82–6.52], followed by ambulation (OR = 3.67, 95% CI: 2.39–5.64). Among IADLs, ability to handle finances (OR = 2.20, 95% CI: 1.38–3.50), laundry (OR = 2.15, 95% CI: 1.42–3.23) and transport (OR = 2.12, 95% CI: 1.46–3.07) were the best related to SRH.

By levels of Barthel index functional status, only transport (use of public transport or driving own car) was significantly associated with SRH in subjects of levels 1 (OR = 2.55, 95% CI: 1.28–5.08) and 2 (OR = 2.72, 95% CI: 1.41–5.26). Among level 3 subjects, those independent in transport showed a worse health perception than people dependent in that activity (OR = 0.72, 95% CI: 0.34–1.54).

Discussion

We found that activities involving mobility (use of stairs, ambulation and chair/bed transfers) were strongly associated with SRH. In subjects with good and fair functional status in BADLs, use of transport (public or own car) was the only IADL significantly associated with SRH. This probably means that for these people mobility outdoors and the relationship with the environment are also essential. At level 3, however, the direction of the association changed: people independent in using transport had a worse health perception than those with some degree of dependence. An explanation for this unexpected finding could be that these subjects performed the activity independently but with great difficulty, leading to worse health perception than those with an assumed state of dependence. IADLs showed a clear association with SRH in level 3 subjects. This may suggest that independence in IADLs may contribute to improve SRH only in subjects with an adequate BADL status.

In older people it is usually unrealistic to expect large improvements in functional status [14]. Thus, improving independence in selected activities (use of stairs, ambulation and chair/bed transfer) may be a more practical approach. In subjects with good or fair functional status it might be productive to improve the capacity to manage outdoors (transport), but in subjects with poorer status, rehabilitation of IADLs would not be a priority.

This study has some limitations. The final objective of this line of research should be the improvement of quality of life through the selection of an efficient rehabilitation strategy. In this sense, caution should be exercised when interpreting SRH as a surrogate of quality of life, although such an association doubtless exists [15]. Also, the cross-sectional nature of the data makes some associations difficult to interpret, and longitudinal research in this area is desirable. We did not control for the number or type of chronic conditions, which might have reduced the magnitude of some associations. However, we believe that these results suggest that individual ADLs may exert different impacts on health perceptions, and that these impacts may change in accordance with the global functional capacity of the subjects.

Key points

- The associations of different instrumental activities of daily living with self-rated health may depend on general abilities in basic activities of daily living.
- In people with good or fair status in basic activities of daily living, use of transport appears to be the most important instrumental activity of daily living.
- In people with poorer status, it may be more efficient to focus rehabilitation on basic rather than instrumental activities of daily living.

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