

**PORTUGUESE OLDER PEOPLE'S SELF-PERCEPTION OF THEIR (IN)DEPENDENCY: A CROSS-SECTIONAL STUDY**

**PERCEÇÃO DAS PESSOAS IDOSAS PORTUGUESAS SOBRE A SUA (IN)DEPENDÊNCIA: UM ESTUDO TRANSVERSAL**

**LA PERCEPCIÓN DE LAS PERSONAS MAYORES PORTUGUESAS SOBRE SU (IN)DEPENDENCIA: UN ESTUDIO TRANSVERSAL**

**Autores**

MARIA BRANDÃO<sup>1</sup>, LILIANA SOUSA<sup>2,3</sup>, IAN PHILIP<sup>4</sup>, MARGARIDA CARDOSO<sup>5,6</sup>

<sup>1</sup> Adjunct Professor, ESSUA - Health School, University of Aveiro, Aveiro, <sup>2</sup> Researcher, UNIFAI/Cintesis-UA, University of Aveiro, <sup>3</sup> Assistant Professor, SACS - Health Sciences of Autonomous Section, University of Aveiro, <sup>4</sup> Honorary Professor, Warwick Medical School, University of Warwick, Coventry, United Kingdom, <sup>5</sup> Assistant Professor, ICBAS - Instituto de Ciências Biomédicas de Abel Salazar, University of Porto, Porto, <sup>6</sup> Researcher, CIIMAR - Interdisciplinary Centre of Marine and Environmental Research, University of Porto. I

Corresponding Author: [mpiedade@ua.pt](mailto:mpiedade@ua.pt)

**Abstract**

**Introduction:** The perception of (in)dependency of elderly is fundamental because it can help adjusting social and health policies, institutions and the allocation of material and human resources. This study aims to examine older Portuguese persons' self-perceptions on their (in)dependency, considering different settings.

**Materials and Methods:** Participants were selected from the most common available community settings for older people (homes for the aged, day care centres, home support services, hospital units, senior universities and primary care services). The sample comprises 477 older people aged  $\geq 65$  years. The instrument EASYcare was applied.

**Results:** Only the setting and age were found to be associated significantly ( $p < 0.001$ ) with the dependence score. For a given setting, for each 10 years increase in the age of the elders on average the dependence score value is expected to duplicate (2.38, 95%CI 2.03 to 2.77). After adjusting for age, on average dependency was higher in the hospital continuity of care unit (30.3 out of 100), followed by the hospital internal medicine unit, homes for the aged, home help services, primary care services, hospital pain units, day care centres and senior universities (between 17.6 and 2.5 out of 100).

**Conclusion:** Results of this study suggest that settings are predictive of older people's levels of dependence, and what should be taking into consideration when planning health services and social support.

**Keywords:** Elderly; Needs Assessment; Self-perception; Activities of Daily Living.

**Resumo**

**Introdução:** A percepção da (in)dependência dos idosos é fundamental, pois pode ajudar a ajustar as políticas sociais e de saúde, das instituições e da alocação de recursos materiais e humanos. Este estudo teve como objetivo avaliar a percepção dos idosos sobre o nível de dependência quando experienciam diferentes contextos.

**Materiais e Métodos:** Os participantes foram selecionados em lares, centros de dia, serviços de apoio domiciliário, unidades hospitalares, universidades seniores e serviços de cuidados de saúde primários. Foi estudada uma amostra de 477 idosos com idade  $\geq 65$  anos. Foi aplicado o instrumento EASYcare.

**Resultados:** Somente o contexto e a idade apresentaram associação significativa ( $p < 0.001$ ) com o grau de dependência. Dado o contexto, para cada aumento de 10 anos na idade dos mais velhos, em média, o valor do grau de dependência tende a duplicar (2,38, 95% CI 2,03-2,77). Após o ajuste para idade, em média, foi encontrada maior dependência na unidade de cuidados continuados do hospital (30,3 de 100), seguido da unidade de medicina interna do hospital, lares para idosos, serviços de apoio domiciliário, serviços de cuidados primários, unidades de dor hospitalares, centros de dia e universidades seniores (entre 17,6 e 2,5 em 100).

**Conclusão:** Os resultados deste estudo sugerem que os contextos são preditivos de níveis de dependência dos idosos, o que deve ser tido em consideração quando se planificam serviços de saúde e de apoio social.

**Palavras-chave:** Idosos, Avaliação de Necessidades; Auto-percepção; Atividades da Vida Diária.

## Introduction

The number of older people is increasing worldwide with higher proportion in developed countries. In Europe in 1971, older people ( $\geq 65$  years) represented 15% of the total population, 20% in 2000, and it is expected to reach as much as 35% by 2050. (Christensen, Doblhammer, Rau, & Vaupel, 2009) In Portugal, this proportion ranged from 8% in 1960 to 17% in 2007 and projections to the year 2050 suggest an increase to 32%. (INE, 2003, 2008, 2010) As individuals live longer, the quality of extended life becomes a central issue for both personal and social wellbeing. Currently chronic long term diseases dominate health care, especially amongst older people (in particular, in the Western world), entailing a change of emphasis in assessment toward quality of life (essentially a subjective variable, involving self-reporting measures that capture patients perceptions and that promote health self-management). (Haywood, Garratt, Schmidt, Makintosh, & Fitzpatrick, 2004) This has led to the increased use of patient-reported health instruments that capture the individual perception (considered subjective), instead of just collecting the practitioners evaluation of the individual (considered objective). (Haywood et al., 2004) Patients are increasingly recognised as the best judge of their health status, therefore their perceptions are recommended as a core component in clinical assessment. (Jardim, Barreto, & Giatti, 2010)

There has also been growing interest in assessing the needs of the older people, especially in the context of community health care and social services. (Powell, Robison, Roberts, & Thomas, 2007) The relevance of dependence is emphasised by the research that consistently report a significant inverse

correlation between dependence and life satisfaction, in particular, in old age. (Liliana Sousa & Figueiredo, 2003) In addition, dependence has shown to have predictive power regarding mortality, institutionalization and, depression. (Béland & Zunzunegui, 1999) Literature shows that self-assessment, or self-perception, of health and dependence by older people have predictive power, in various events such as hospitalization, mortality and functional decline. (Jardim et al., 2010) The different environments of living and access to health and social care, as well as to leisure and socialization activities are relevant in terms of the older people's well-being and quality of life. So, considering self-perceptions dependency across different elderly living settings is relevant because it can help adjusting social and health policies, institutions and the allocation of material and human resources. In fact, higher dependence demands more care and during more time.

Many instruments have been used to compare overall levels of dependence in older people. EASYcare is an instrument for assessment used to obtain an overall score for need in activities of daily living. (Philp, Armstrong, Coyle, Chadwick, & Machado, 1998; Philp et al., 2001; Philp I., 2000)

This study aims to examine self-perceptions of Portuguese older persons on their level of dependency (defined in terms of activities of daily living) and considering different living contexts. Findings are relevant to understand older person's needs from their own perspectives; and, since settings are considered, to better understand different needs and how support can be organized to respond those different needs.

## Material and Methods

### Older people assessment

The instrument EASYcare (Elderly Assessment System) was administered. EASYcare is an instrument for assessment, extended worldwide (Philp et al., 1998; Philp et al., 2001; Philp I., 2000), used to identify older people's perceptions on their health and care needs, capturing competence and not performance, and designed to support a personalized response and help with efficient allocation of resources. (Kane, Rockwood, Philp, & Finch, 1998)

The EASYcare instrument consists of items structured into personal details that include personal information, biography, reason for assessment, medical history and seven domains of physical, mental and social care functioning (seeing hearing and communicating, looking after yourself, getting around, safety, accommodation and finance, staying healthy, mental health and well-being), dependence and well-being in old age. EASYcare incorporates a scale that measure functional dependency based on the self-perception of older people. It applies weights (points) to each of 18 items, including instrumental activities of daily living (IADL) items and dysfunctional activities of daily living (ADL) items (Table 1). The development of this ratio scale for dependency was based on the opinion of health experts, home carers and older people, using a magnitude estimation method. (Philp et al., 1998)

### Data collection

Data collection was performed in 7 institutions located in the North and Centre region of Portugal (from Porto to Leiria). It was performed by master students and PhD

students of Master/Doctoral Program in Gerontology from the Aveiro University. All interviewers received training in the standardized use of the questionnaire and data were collected between October 2009 and December 2010. Participants were selected from various settings reflecting different living environments namely: homes for the aged, day care centres, home help services, hospital units (pain, continuity of care and internal medicine), senior universities and primary care services.

Globally the inclusion criteria were:  $\geq 65$  years old, to be oriented in time and space, and to sign the informed consent form.

### Data analysis

Analysis of covariance was used to evaluate the impact of socio-demographic characteristics and the setting on the perceived dependence after adjusting for the age of the elders as covariate. The socio-demographic characteristics considered were gender, education (0 years, 1 to 4 years, 5 or more years of formal education) and current marital status (married/cohabiting versus others). The covariable was age. The score of the perceived dependence was log-transformed to achieve the residual normality required in analysis of covariance [ $\ln(\text{dependence score} + 1)$ ], as the score of perceived dependence could take the zero value. Qualitative variables were described as percentages and

**Table1.** Questions in EASYcare assessment of current needs and priorities.

| Indicator of need for support (score in brackets)                                                 |
|---------------------------------------------------------------------------------------------------|
| Unable to use telephone (3), with some help (2), without help (0)                                 |
| Needs help with keeping up appearance (5), without help (0)                                       |
| Unable to dress (6), with some help (4), without help (0)                                         |
| Unable to bath / shower (5), without help (0)                                                     |
| Unable to do housework (3), with some help (2), without help (0)                                  |
| Unable to prepare meals (5), with some help (2), without help (0)                                 |
| Unable to feed (8), with some help (3), without help (0)                                          |
| Unable to take medicines (4), with some help (2), without help (0)                                |
| Frequent accidents of bladder (8), occasional (6), no accidents (0)                               |
| Frequent accidents of bowels (8), occasional (6), no accidents (0)                                |
| Unable to use toilet (7), with some help (4), without help (0)                                    |
| Unable to move from bed to chair (7), with some help (4), without help (0)                        |
| Confined to bed (8), needs help moving indoors (7), in a wheelchair unaided (5), without help (0) |
| Unable to manage stairs (4), with some help (2), without help (0)                                 |
| Unable to walk outside (6), with some help (3), without help (0)                                  |
| Unable to shop (4), with some help (2), without help (0)                                          |
| Unable to get public services (5), with some help (2), no difficulty (0)                          |
| Unable to manage finances (4), able to manage (0)                                                 |
| Total Score: (0-100)                                                                              |

quantitative variables as mean or geometric means where necessary.

As a first step an analysis of covariance of the dependence score was performed with each dependent variable and the covariable age. As a second step each non-significant variable was again evaluated in the model along with the significant variables retained in the covariance analysis.

Since the distribution of years of formal education was very heterogeneous between the

places where participants were recruited, the effect of education on the perceived dependence was analysed separately for the different places, considering both statistical significance and the measure of its effect size (partial eta squared -  $\eta^2$ ). The contribution of education was tested in the group from the internal medicine units, the group from the senior university, and the group from primary care services. The contribution of education was not evaluated in the other groups

due to the concentration of values in one of the categories, and a reduced number in the others. Only in internal medicine units the factor education was significant ( $p=0.003$ ), however the eta squared value was less than 5% ( $\eta^2=0.045$ ) revealing a very weak relationship with the perceived dependence.

Due to the reduced number of participants found in urban areas in homes for the aged, day care centres, home help services and hospital care units, those living environments were excluded in the analysis of the residence variable.

All analyses were performed using the statistical software package PASW (SPSS) for Windows, version 18.0.

### Ethical approval

The study was approved by the Ethics Committee of Hospital Infante D. Pedro (Aveiro, Portugal) and registered with the local code as 762/CA on 14th of October 2009. Before the data collection, all participants were informed about the study and signed the informed consent.

### Results

This observational descriptive study was performed in 477 individuals  $\geq 65$  years. Table 2 displays the sample socio-demographic characteristics.

With the exception of homes for the aged and senior universities, participants were equally distributed between genders. In the former settings the majority were female. About half of the subjects (51.8%) were living in rural areas.

The highest proportions of inability reported to elderly were observed in the hospital pain units and home help services (51.5% and 47.7%, respectively) and the lowest in senior universities (18.6%). In day care centres the majority of the participants were widowed (76.7%), living alone (38.5%) or with their families (46.2%). In home help services about half of the participants lived as a couple. In the hospital pain units about half of the older people reported that they lived with their extended families (48.5%) or as a couple (21.2%).

**Table 2.** Socio-demographic characteristics of the participants according to the setting.

|                            | Homes<br>for the<br>aged<br><br>(N=41) | Day<br>care<br>center<br><br>(N=13) | Home<br>help<br>service<br><br>(N=15) | Hospital<br>pain<br>unit<br><br>(N=33) | Hospita<br>l<br>continu<br>ity of<br>care<br>unit<br><br>(N=25) | Hospita<br>l<br>internal<br>medici<br>ne unit<br><br>(N=250<br>) | Senior<br>univers<br>ity<br><br>(N=70) | Health<br>primary<br>care<br><br>(N=30) |
|----------------------------|----------------------------------------|-------------------------------------|---------------------------------------|----------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------|-----------------------------------------|
| Age<br>Mean<br>( $\pm$ SD) | 8 ( $\pm$ 5.<br>2. 4)<br>3             | 7 ( $\pm$ 9.<br>8. 9)<br>0          | 8 $\pm$<br>0. (7.7<br>3 )             | 7 ( $\pm$ 4.<br>9. 5)<br>1             | 8 ( $\pm$ 5.<br>2. 1)<br>5                                      | 7 ( $\pm$ 7.<br>6. 6)<br>9                                       | 7 ( $\pm$ 6.<br>3. 2)<br>5             | 7 ( $\pm$ 6.<br>4. 1)<br>1              |

|                | n (%)           | n (%)           | n (%)         | n (%)           | n (%)           | n (%)                | n (%)           | n (%)           |
|----------------|-----------------|-----------------|---------------|-----------------|-----------------|----------------------|-----------------|-----------------|
| Male           | 1 (34.<br>4 1%) | 6 (46.<br>2%)   | 8 (53.<br>3%) | 1 (45.<br>5 5%) | 1 (44.<br>1 0%) | 1 (49.<br>2 6%)<br>4 | 1 (21.<br>5 4%) | 1 (50.<br>5 0%) |
| Residence      |                 |                 |               |                 |                 |                      |                 |                 |
| Urban          | 8 (19.<br>5%)   | 0 (0%<br>)      | 0 (0%<br>)    | 1 (45.<br>5 5%) | 4 (16<br>%)     | 1 (59.<br>4 6%)<br>9 | 3 (50.<br>5 0%) | 1 (63.<br>9 3%) |
| Marital Status |                 |                 |               |                 |                 |                      |                 |                 |
| Married        | 8 (19.<br>5%)   | 1 (7.7<br>%)    | 9 (60.<br>0%) | 1 (36.<br>2 4%) | 1 (48<br>2 %)   | 1 (49.<br>2 2%)<br>3 | 3 (52.<br>7 9%) | 2 (66.<br>0 7%) |
| Separated      | 4 (9.8<br>%)    | 1 (7.7<br>%)    | 0 (0.0<br>%)  | 4 (12.<br>1%)   | 0 (0.0<br>%)    | 6 (2.4<br>%)         | 3 (4.3<br>%)    | 0 (0.0<br>%)    |
| Single         | 3 (7.3<br>%)    | 1 (7.7<br>%)    | 1 (6.7<br>%)  | 0 (0.0<br>%)    | 2 (8.0<br>%)    | 1 (4.0<br>0 %)       | 5 (7.1<br>%)    | 1 (3.3<br>%)    |
| Widowed        | 2 (63.<br>6 4%) | 1 (76.<br>0 9%) | 5 (33.<br>3%) | 1 (33.<br>1 3%) | 1 (44.<br>1 0%) | 1 (44.<br>1 4%)<br>1 | 2 (35.<br>5 7%) | 9 (30.<br>0%)   |



|                           |            |           |           |            |           |           |           |           |  |
|---------------------------|------------|-----------|-----------|------------|-----------|-----------|-----------|-----------|--|
| Living Arrangement        |            |           |           |            |           |           |           |           |  |
| Couple                    | 0 (0.0%)   | 1 (7.7%)  | 7 (46.7%) | 7 (21.2%)  | 1 (40.0%) | 1 (41.4%) | 3 (51.6%) | 1 (53.6%) |  |
| Ext. family               | 0 (0.0%)   | 6 (46.2%) | 2 (13.3%) | 1 (4.8%)   | 1 (40.0%) | 9 (39.8%) | 8 (11.4%) | 7 (23.3%) |  |
| Care home                 | 4 (100.0%) | 0 (0.0%)  | 0 (0.0%)  | 9 (27.3%)  | 1 (4.0%)  | 1 (5.6%)  | 0 (0.0%)  | 2 (6.7%)  |  |
| Alone                     | 0 (0.0%)   | 5 (38.5%) | 2 (13.3%) | 1 (3.0%)   | 4 (16.0%) | 3 (12.0%) | 2 (2.8%)  | 4 (13.3%) |  |
| Other                     | 0 (0.0%)   | 1 (7.7%)  | 4 (26.7%) | 0 (0.0%)   | 0 (0.0%)  | 4 (1.6%)  | 6 (8.6%)  | 1 (3.3%)  |  |
| Years of Formal Education |            |           |           |            |           |           |           |           |  |
| 0                         | 7 (17.1%)  | 4 (30.8%) | 4 (26.7%) | 0 (0.0%)   | 5 (20.0%) | 8 (32.0%) | 2 (2.9%)  | 1 (4.0%)  |  |
| 1-4                       | 2 (5.3%)   | 9 (69.2%) | 1 (7.3%)  | 3 (100.0%) | 1 (7.6%)  | 1 (5.8%)  | 1 (2.7%)  | 1 (5.6%)  |  |
| 5-11                      | 7 (17.1%)  | 0 (0.0%)  | 0 (0.0%)  | 0 (0.0%)   | 0 (0.0%)  | 2 (9.2%)  | 2 (4.1%)  | 1 (3.3%)  |  |
| >11                       | 4 (9.8%)   | 0 (0.0%)  | 0 (0.0%)  | 0 (0.0%)   | 1 (4.0%)  | 0 (0.0%)  | 2 (2.8%)  | 0 (0.0%)  |  |

| Financ<br>es at<br>the<br>end of<br>the<br>month |                 |               |               |                 |                 |                 |                 |                 |  |
|--------------------------------------------------|-----------------|---------------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|--|
| More<br>than<br>enou<br>gh                       | 5 (12.<br>2%)   | 2 (15.<br>4%) | 0 (0.0<br>%)  | 0 (0.0<br>%)    | 0 (0.0<br>%)    | 9 (3.6<br>%)    | 2 (37.<br>6 1%) | 1 (3.3<br>%)    |  |
| Just<br>enou<br>gh                               | 2 (53.<br>2 7%) | 7 (53.<br>8%) | 8 (53.<br>3%) | 1 (48.<br>6 5%) | 1 (60.<br>5 0%) | 1 (70.<br>7 0%) | 3 (44.<br>1 3%) | 1 (63.<br>9 3%) |  |
| Not<br>enou<br>gh                                | 1 (34.<br>4 1%) | 4 (30.<br>8%) | 7 (47.<br>7%) | 1 (51.<br>7 5%) | 1 (40.<br>0 0%) | 6 (26.<br>6 4%) | 1 (18.<br>3 6%) | 1 (33.<br>0 3%) |  |

The score of dependence varies from 0 to 100, but most of the values were low. The geometric mean was 17.5 (95%CI 14.5 to 21.4), the median value was 28.5 and half of the participants scored their dependence between 10 and 57.

Table 3 presents the assessment of dependence according to the setting. The analysis of the unadjusted average scores of dependence revealed considerable differences between the settings where participants were recruited. Participants from the hospital continuity of care units showed the highest average level of dependency (geometric mean = 48.5, 95% CI 33.6, 68.5). Participants from the home help

services and hospital internal medicine units had similar levels of dependency (geometric means of 18.5 and 17.1, respectively), followed by the participants from the hospital pain unit (geometric mean = 12.1), from the day care centres and primary care services (geometric means of 8.4 and 7.8, respectively). Participants from the senior universities showed the lowest levels of dependency (geometric mean = 1.5). After adjusting for the effects of other socio-demographic variables with an analysis of covariance with the covariable age, only the setting and age were found to be associated significantly ( $p < 0.001$ ) with the dependence score. After adjusting for age, gender ( $p = 0.987$ ), marital status ( $p = 0.137$ ) and residence



( $p=0.629$ ) were not associated significantly with the score of dependence, and the contribution of education was not significant or very weak ( $\eta^2=0.045$ ). The contribution of the setting ( $\eta^2=0.212$ ) and age ( $\eta^2=0.215$ ) to the variability of the dependence score value were identical. For a given setting, for each 10 years increase in the age of the older people on average the

dependence score value is expected to duplicate (2.38, 95%CI 2.03 to 2.77).

After adjusting for age, on average dependency was higher in the hospital continuity of care unit, followed by the hospital internal medicine unit, homes for the aged, home help services, primary care services, hospital pain units, day care centres and senior universities (Table 3).

**Table 3.** Assessment of the functional score of dependence<sup>a</sup> according to the setting.

|                           | Homes<br>for the<br>aged<br><br>(N=41) | Day<br>care<br>center<br><br>(N=13)  | Home<br>help<br>service<br><br>(N=15) | Hospita<br>l pain<br>unit<br><br>(N=33) | Hospita<br>l<br>continu<br>ity of<br>care<br>unit<br><br>(N=25) | Hospita<br>l<br>internal<br>medicin<br>e unit<br><br>(N=250) | Senior<br>universi<br>ty<br><br>(N=70) | Health<br>primary<br>care<br><br>(N=30) |
|---------------------------|----------------------------------------|--------------------------------------|---------------------------------------|-----------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------|-----------------------------------------|
|                           | Geomet<br>ric<br>Mean<br>(95%CI<br>)   | Geomet<br>ric<br>Mean<br>(95%CI<br>) | Geomet<br>ric<br>Mean<br>(95%CI<br>)  | Geomet<br>ric<br>Mean<br>(95%CI<br>)    | Geomet<br>ric<br>Mean<br>(95%CI<br>)                            | Geomet<br>ric<br>Mean<br>(95%CI<br>)                         | Geomet<br>ric<br>Mean<br>(95%CI<br>)   | Geomet<br>ric<br>Mean<br>(95%CI<br>)    |
| Unadj<br>usted            | 23.8<br><br>(17.7,<br>31.9)            | 8.4<br><br>(3.2,<br>20.2)            | 18.5<br><br>(8.9,<br>37.2)            | 12.1<br><br>(7.0,<br>20.6)              | 48.1<br><br>(33.6,<br>68.5)                                     | 17.1<br><br>(14.1,<br>20.6)                                  | 1.5<br><br>(1.0,<br>2.3)               | 7.8<br><br>(4.4,<br>13.5)               |
| Adjust<br>ed <sup>b</sup> | 15.1<br><br>(10.2,<br>22.1)            | 7.8<br><br>(3.7,<br>15.5)            | 13.9<br><br>(7.3,<br>25.8)            | 10.3<br><br>(6.6,<br>15.7)              | 30.3<br><br>(18.8,<br>48.6)                                     | 17.6<br><br>(15.2,<br>20.5)                                  | 2.5<br><br>(1.7,<br>3.6)               | 10.6<br><br>(6.7,<br>16.6)              |

<sup>a</sup> Dependence score (out of 100) – high scores are associated with high needs of support.

<sup>b</sup> Marginal means adjusted for age.

To better understand the self-perceived dependence of the older people, the disability proportions were calculated separately for each setting (Table 4). Overall, this table shows that the disabilities to take a bath/shower, doing housework, preparing meals and shopping are those with the highest proportions (40.3%, 43.3%, 42.8% and 40.7% respectively).

Considering each setting, the hospital continuing of care units are the ones with the larger proportions of disability, and unable to take a bath/shower that stands out the most (92.0%). The lowest proportions of inability can be observed within the Senior Universities (1.4%). Also health primary care presents small proportions of inability in each functional score.

**Table 4.** Proportions of the inability EASYcare functional score self-perceptions among 477 participants aged 65 and over in centre of Portugal.

| Questions                             | Homes for the aged |        | Day care center |        | Home help service |        | Hospital pain unit |        | Hospital continuity of care unit |        | Hospital internal medicine unit |        | Senior university |       | Health primary care |        | All settings |        |
|---------------------------------------|--------------------|--------|-----------------|--------|-------------------|--------|--------------------|--------|----------------------------------|--------|---------------------------------|--------|-------------------|-------|---------------------|--------|--------------|--------|
|                                       | (N=41)             |        | (N=13)          |        | (N=15)            |        | (N=33)             |        | (N=25)                           |        | (N=250)                         |        | (N=70)            |       | (N=30)              |        | (N=477)      |        |
|                                       | n                  | (%)    | n               | (%)    | n                 | (%)    | n                  | (%)    | n                                | (%)    | n                               | (%)    | n                 | (%)   | n                   | (%)    | n            | (%)    |
| Unable to use telephone               | 4                  | (9.8)  | 1               | (7.7)  | 2                 | (13.3) | 5                  | (15.2) | 11                               | (44.0) | 77                              | (30.8) | 1                 | (1.4) | 3                   | (10.0) | 104          | (21.8) |
| Needs help with keeping up appearance | 11                 | (26.8) | 4               | (30.8) | 3                 | (20.0) | 7                  | (21.2) | 16                               | (64.0) | 57                              | (22.8) | 1                 | (1.4) | 4                   | (13.3) | 103          | (21.6) |
| Unable to dress                       | 6                  | (14.6) | 1               | (7.7)  | 3                 | (20.0) | 5                  | (15.2) | 10                               | (40.0) | 13                              | (5.2)  | 0                 | (0.0) | 2                   | (6.7)  | 40           | (8.4)  |
| Unable to bath / shower               | 30                 | (73.2) | 4               | (30.8) | 5                 | (33.3) | 11                 | (33.3) | 23                               | (92.0) | 111                             | (44.4) | 1                 | (1.4) | 7                   | (23.3) | 192          | (40.3) |
| Unable to do housework                | 29                 | (70.7) | 6               | (46.2) | 7                 | (46.7) | 8                  | (24.2) | 14                               | (56.0) | 133                             | (53.2) | 0                 | (0.0) | 8                   | (26.7) | 205          | (43.3) |
| Unable to prepare meals               | 27                 | (65.9) | 7               | (53.8) | 13                | (86.7) | 12                 | (36.4) | 16                               | (64.0) | 118                             | (47.2) | 1                 | (1.4) | 10                  | (33.3) | 204          | (42.8) |
| Unable to feed                        | 0                  | (0.0)  | 0               | (0.0)  | 0                 | (0.0)  | 0                  | (0.0)  | 2                                | (8.0)  | 7                               | (2.8)  | 0                 | (0.0) | 0                   | (0.0)  | 9            | (1.9)  |
| Unable to take medicines              | 0                  | (0.0)  | 0               | (0.0)  | 0                 | (0.0)  | 0                  | (0.0)  | 8                                | (32.0) | 12                              | (4.8)  | 0                 | (0.0) | 3                   | (10.0) | 23           | (4.8)  |
| Frequent accidents of bladder         | 4                  | (9.8)  | 0               | (0.0)  | 5                 | (33.3) | 5                  | (15.2) | 4                                | (16.0) | 16                              | (6.4)  | 1                 | (1.4) | 7                   | (23.3) | 42           | (8.8)  |
| Frequent accidents of bowels          | 0                  | (0.0)  | 0               | (0.0)  | 1                 | (6.7)  | 1                  | (3.0)  | 3                                | (12.0) | 9                               | (3.6)  | 0                 | (0.0) | 3                   | (10.0) | 17           | (3.6)  |
| Unable to use toilet                  | 0                  | (0.0)  | 0               | (0.0)  | 3                 | (20.0) | 1                  | (3.0)  | 8                                | (32.0) | 14                              | (5.6)  | 0                 | (0.0) | 2                   | (6.7)  | 28           | (5.9)  |
| Unable to move from bed to chair      | 5                  | (12.2) | 0               | (0.0)  | 3                 | (20.0) | 1                  | (3.0)  | 8                                | (32.0) | 13                              | (5.2)  | 0                 | (0.0) | 2                   | (6.7)  | 32           | (6.7)  |
| Confined to bed                       | 0                  | (0.0)  | 0               | (0.0)  | 3                 | (20.0) | 1                  | (3.0)  | 5                                | (20.0) | 11                              | (4.4)  | 0                 | (0.0) | 2                   | (6.7)  | 22           | (4.6)  |
| Unable to manage stairs               | 17                 | (41.5) | 1               | (7.7)  | 4                 | (26.7) | 5                  | (15.2) | 17                               | (68.0) | 34                              | (13.6) | 0                 | (0.0) | 4                   | (13.3) | 82           | (17.2) |
| Unable to walk outside                | 2                  | (4.9)  | 0               | (0.0)  | 3                 | (20.0) | 3                  | (9.1)  | 11                               | (44.0) | 94                              | (37.6) | 0                 | (0.0) | 3                   | (10.0) | 116          | (24.3) |
| Unable to shop                        | 17                 | (41.5) | 6               | (46.2) | 9                 | (60.0) | 17                 | (51.5) | 14                               | (56.0) | 123                             | (49.2) | 1                 | (1.4) | 7                   | (23.3) | 194          | (40.7) |
| Unable to get public services         | 1                  | (2.4)  | 0               | (0.0)  | 4                 | (26.7) | 6                  | (18.2) | 14                               | (56.0) | 120                             | (48.0) | 0                 | (0.0) | 3                   | (10.0) | 148          | (31.0) |
| Unable to manage finances             | 20                 | (48.8) | 6               | (46.2) | 8                 | (53.3) | 9                  | (27.3) | 14                               | (56.0) | 111                             | (44.4) | 1                 | (1.4) | 1                   | (3.3)  | 170          | (35.6) |

The EASYcare instrument includes a specific question about the self-perceptions about global health: excellent, very good, good, fair or poor. 23.5% rated their overall health as poor, without significant differences between genders ( $P=0.257$ ). Although there was a significant correlation between the self-classification of health and the perceived dependence, this correlation was not very strong ( $R=0.381$ ,  $P<0.001$ ).

## Discussion

This study provided a description of the self-perceptions of Portuguese older people about their functional dependency in different contexts, reflecting their perceived (in)dependency.

The fact that dependency levels are higher in care homes and hospitals is unsurprising. However our study is the first to record levels of dependency using the EASYcare Independence score in these settings.

As expected the perceived dependency of the older people assessed with the scale incorporated in the EASYcare instrument, increased with age, but there were no significant differences considering gender, academic levels, marital status, and urban/rural residential areas. Our study corroborates other findings, regarding age (Tapia P et al., 2010), gender (Aguero-Torres et al., 1998; Boulton, Kane, Louis, Boulton, & McCaffrey, 1994), education (Moe & Hagen, 2011) and residence (Kim KR et al., 2009). Nevertheless, regarding education some studies have reported that higher levels of education are related to lowest levels of dependency (L. Sousa, Galante, & Figueiredo, 2003). This study shows a weak contribution of education, probably due to the low variation of academic level among participants.

The perceived dependency of the older people was associated with the setting, even when adjusting for age. The literature has shown that diseases negatively influence functionality (Aguero-Torres et al., 1998; Balboa-Castillo et al., 2011; Boulton et al., 1994; Clifford, Ciper, & Roper, 2005; Hung, Wu, Chiang, Wu, & Yeh, 2010). In the current study, setting is a proxy of the perceived dependency of the older people, and as expected the higher levels of perceived dependency were found in hospital environments (internal medicine and continuity of care unit) and the lowest were found in the community environments (in particular senior universities). However after adjusting for the effect of age the differences between dependence of the older people recruited in different settings decreased considerably.

The results suggest that the Portuguese older people's perceived independence is relatively high, even when they are in hospital units, in homes for the aged or for those requiring home help services. In a scale that varies from 0 to 100, the highest average value of dependency was below 50 and was observed in the hospital continuing of care units (unadjusted geometric mean 48.1, 95%CI 33.6 to 68.5). These data provide a useful reference range to compare levels of dependency by setting of care within and amongst countries. The overall positive perceived independence found in the Portuguese older people, conforms with those found in a study with institutionalized elders who also scored high in independence (Hwang, Lin, Tung, & Wu, 2006).

Béland and Zunzunegui (1999) referred that highest levels of dependency correspond to the IADL activities. Our study is consistent with that

and corroborate others (Hall, Colantonio, & Yoshida, 2003), that showed that housework, preparing meals and shopping were the activities with more elevated proportions in inability EASYcare functional score.

EASYcare instruments have now been validated for use in a large number of countries and are recommended for widespread use (Olde-Rikkert, Long, & Philp, 2013; Philip et al., 2014) which increases the value of the independence score for comparative purposes in different care settings.

Among the different contexts, except in the “homes for the aged” and “home help services”, inability to take a bath was the most common. However, this finding is also in agreement with other study with a similar age group (Huang, Lin, & Li, 2008). Although there was a correlation between the perceived dependence and self-rated global health, this was very weak.

This study has some limitations. Measuring functional dependency among older adults is challenging and there is no aggregated measure that covers all relevant aspects of this dimension. We focused on self-perceptions of functional capacities of daily living, as these are associated with needs for care.

The comparison of the results of this study with others that were based on other instruments, showed similar prevalence of dependency (Laukkanen, Karppi, Heikkinen, & Kauppinen, 2001) which seems to indicate the relevance and applicability of the EASYcare instrument.

## Conclusions

Although the results of this study showed that functional dependency was statistically associated with the living environments, it also showed that this association was not very

strong. After adjusting for the effect of age, only older people recruited in hospital continuity of care units showed a significant higher level of dependency. On average the dependency levels evaluated in the other living contexts, corresponding to older people living in institutions and in the community, were on average all below 20 in a scale ranging from 0 to 100. The results suggest that higher levels of dependency of the elderly who attend the involved institutions are mainly due to their higher average age. This finding encourages i) health professionals to develop individual plans for maintenance of independency; ii) older people to making use of individual plans to boost its potential for self-care in order to remain independent for as long as possible.

Results show a higher prevalence of disabilities among household tasks (such as preparing meals, bathing and shopping), indicate that health promotion should be encouraged, both among older people living in the community and living in institutions.

EASYcare is currently being validated for use in more than 40 countries. Evaluation of dependency and its correlation to the living environment will be enhanced through comparative study across samples drawn from these different countries.

This study will help develop normative values for comparing populations within and amongst countries.

## References

1. Aguero-Torres, H., Fratiglioni, L., Guo, Z., Viitanen, M., von Strauss, E., & Winblad, B. (1998). Dementia is the major cause of functional dependence in the elderly: 3-year follow-up data from a population-based study. *Am J Public Health*, 88(10),

1452-1456. doi: 10.2105/ajph.88.10.1452

2. Balboa-Castillo, T., Guallar-Castillon, P., Leon-Munoz, L. M., Graciani, A., Lopez-Garcia, E., & Rodriguez-Artalejo, F. (2011). Physical activity and mortality related to obesity and functional status in older adults in Spain. *Am J Prev Med*, 40(1), 39-46. doi: S0749-3797(10)00582-9 [pii] 10.1016/j.amepre.2010.10.005
3. Béland, F., & Zunzunegui, M. V. (1999). Predictors of functional status in older people living at home. *Age and Ageing*, 28(2), 153-159. doi: 10.1093/ageing/28.2.153
4. Boulton, C., Kane, R. L., Louis, T. A., Boulton, L., & McCaffrey, D. (1994). Chronic Conditions That Lead to Functional Limitation in the Elderly. *Journal of Gerontology*, 49(1), M28-M36. doi: 10.1093/geronj/49.1.M28
5. Christensen, K., Doblhammer, G., Rau, R., & Vaupel, J. W. (2009). Ageing populations: the challenges ahead. *Lancet*, 374(9696), 1196-1208. doi: S0140-6736(09)61460-4 [pii]
6. 10.1016/S0140-6736(09)61460-4
7. Clifford, P. A., Cipher, D. J., & Roper, K. D. (2005). Assessing dysfunctional behaviors in long-term care. *J Am Med Dir Assoc*, 6(5), 300-309. doi: S1525-8610(05)00247-1 [pii]
8. 10.1016/j.jamda.2005.04.006
9. Hall, L., Colantonio, A., & Yoshida, K. (2003). Barriers to nutrition as a health promotion practice for women with disabilities. *Int J Rehabil Res*, 26(3), 245-247. doi: 10.1097/01.mrr.0000088450.78481.aa
10. Haywood, K., Garratt, A., Schmidt, L., Makintosh, A., & Fitzpatrick, R. (Eds.). (2004). *Health status and quality of life in older people: a structured review of patient-reported health instruments*. University of Oxford: UK: National Centre of Health Care Outcomes.
11. Huang, J.-J., Lin, K.-C., & Li, I. C. (2008). Service needs of residents in community-based long-term care facilities in northern Taiwan. *Journal of Clinical Nursing*, 17(1), 99-108. doi: 10.1111/j.1365-2702.2007.01974.x
12. Hung, J. W., Wu, Y. H., Chiang, Y. C., Wu, W. C., & Yeh, C. H. (2010). Mental health of parents having children with physical disabilities. *Chang Gung Med J*, 33(1), 82-91. doi: 3301/330110 [pii]
13. Hwang, H.-L., Lin, H.-S., Tung, Y.-L., & Wu, H.-C. (2006). Correlates of perceived autonomy among elders in a senior citizen home: A cross-sectional survey. *International Journal of Nursing Studies*, 43(4), 429-437.
14. INE. (2003). INE (Instituto Nacional de Estatística), Resident Population Projections 2000–2050 (Portugal), INE, Lisbon, Portugal (2003). Retrieved 30



March 2011 [www.ine.pt](http://www.ine.pt)

15. INE. (2008). INE (Instituto Nacional de Estatística), Estatísticas Demográficas 2007 [Demographic Statistics 2007] (Portugal), INE, Lisbon, Portugal (2008). Retrieved 30 March 2011 [www.ine.pt](http://www.ine.pt)
16. INE. (2010). INE (Instituto Nacional de Estatística), Estatísticas territoriais 2009. Retrieved 18 Mar 2011 [http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine\\_unid\\_territorial&menuBOUI=13707095&contexto=ut&selTab=tab3](http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_unid_territorial&menuBOUI=13707095&contexto=ut&selTab=tab3)
17. Jardim, R., Barreto, S. M., & Giatti, L. (2010). Self-reporting and secondary informant reporting in health assessments among elderly people. *Rev Saude Publica*, 44(6), 1120-1129. doi: S0034-89102010000600018 [pii]
18. Kane, R. L., Rockwood, T., Philp, I., & Finch, M. (1998). Differences in valuation of functional status components among consumers and professionals in Europe and the United States. *J Clin Epidemiol*, 51(8), 657-666. doi: S0895-4356(98)00038-9 [pii]
19. Kim KR, Lee KS, Cheong HK, Eom JS, Oh BH, & CH., H. (2009). Characteristic profiles of instrumental activities of daily living in different subtypes of mild cognitive impairment. *Dement Geriatr Cogn Disord*, 27(3), 278-285.
20. Laukkanen, P., Karppi, P., Heikkinen, E., & Kauppinen, M. (2001). Coping with activities of daily living in different care settings. *Age and Ageing*, 30(6), 489-494. doi: 10.1093/ageing/30.6.489
21. Moe, J., & Hagen, T. (2011). Trends and variation in mild disability and functional limitations among older adults in Norway, 1986–2008. *European Journal of Ageing*, 8(1), 49-61. doi: 10.1007/s10433-011-0179-3
22. Olde-Rikkert, M. G., Long, J. F., & Philp, I. (2013). Development and evidence base of a new efficient assessment instrument for international use by nurses in community settings with older people. *International journal of nursing studies*, 50(9), 1180-1183. doi: 10.1016/j.ijnurstu.2012.08.007
23. Philip, K. E., Alizad, V., Oates, A., Donkin, D. B., Pitsillides, C., Syddall, S. P., & Philp, I. (2014). Development of EASY-Care, for Brief Standardized Assessment of the Health and Care Needs of Older People; With Latest Information About Cross-National Acceptability. *Journal of the American Medical Directors Association*, 15(1), 42-46. doi: 10.1016/j.jamda.2013.09.007
24. Philp, I., Armstrong, G. K., Coyle, G. G., Chadwick, I., & Machado, A. B. (1998). A better way to measure disability in older people. *Age Ageing*, 27(4), 519-522.
25. Philp, I., Newton, P., McKee, K. J., Dixon, S., Rowse, G., & Bath, P. A. (2001). Geriatric assessment in primary care:



formulating best practice. *Br J Community Nurs*, 6(6), 290-295. doi: <ARTICLE\_ID IdType=""/> [pii]

1. Philp I. (2000). EASY-care: A systematic approach to the assessment of older people. *Geriatric Medicine*, 30(5), 15-19.
2. Powell, J., Robison, J., Roberts, H., & Thomas, G. (2007). The single assessment process in primary care: Older people's accounts of the process. *British Journal of Social Work*, 37(6), 1043-1058. doi: 10.1093/bjsw/bc132
3. Sousa, L., & Figueiredo, D. (2003). (In)dependência na população idosa – um estudo exploratório na população portuguesa. *Psychologica*, 33, 109-122.
4. Sousa, L., Galante, H., & Figueiredo, D. (2003). [Quality of life and well-being of elderly people: an exploratory study in the Portuguese population]. *Rev Saude Publica*, 37(3), 364-371. doi: S0034-89102003000300016 [pii]
5. Tapia P, C., Varela V, H., Barra A, L., Ubilla V, M. D., Iturra M, V., Collao A, C., & Silva Z, R. (2010). Valoración multidimensional del envejecimiento en la ciudad de Antofagasta. *Revista médica de Chile*, 138, 444-451.