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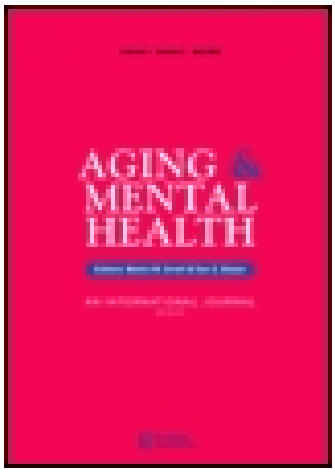

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Active ageing and quality of life: factors associated with participation in leisure activities among institutionalized older adults, with and without dementia

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Active ageing and quality of life: factors associated with participation in leisure activities among institutionalized older adults, with and without dementia

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Objectives: Active ageing, considered from the perspective of participation in leisure activities, promotes life satisfaction and personal well-being. The aims of this work are to define and explain leisure activity profiles among institutionalized older adults, considering their sociodemographic characteristics and objective and subjective conditions in relation to their quality of life.
Methods: Two samples of institutionalized people aged 60 and over were analysed together: 234 older adults without dementia and 525 with dementia. Sociodemographic, economic, family and social network, and health and functioning variables were selected. Cluster analysis was applied to obtain activity profiles according to the leisure activities, and ordinal regression models were performed to analyse factors associated to activity level.
Results: The sample was clustered into three groups of people: active (27%), moderately active (35%) and inactive people (38%). In the final regression model (Nagelkerke pseudo $R^2 = 0.500$), a higher level of activity was associated with better cognitive function (Pfeiffer scale), self-perceived health status and functional ability, as well as with a higher frequency of gathering with family and friends, and higher educational level.
Conclusion: The decline in physical and mental health, the loss of functional capabilities and the weakening of family and social ties represent a significant barrier to active ageing in a context of institutionalization.

Keywords: institutionalized older adults; leisure activities profile; active ageing; quality of life; Spain

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1. Introduction

The active ageing concept was defined by the World Health Organization (WHO) as 'the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age' (WHO, 2002). The multidimensional nature of this definition means that this concept converges with others, such as healthy ageing, productive ageing, successful ageing, etc. However, it is precisely in this multidimensionality where one might find a broad framework of reference for ageing research. Although some overlap exists between active ageing and quality of life, in the definition, active ageing is seen as a dynamic process, whereas quality of life is a state of being (Bowling, 2009).

Within this broad framework, engaging in leisure, physical, cultural and social activities, as means of measuring the participation aspect of active ageing, represents, along with health and functioning, family and social networks and economic resources, one of the most important domains for quality of life defined by older people themselves (Fernández-Mayoralas, Rojo-Pérez, Frades-Payo, Martínez-Martín, & Forjaz, 2011). This aspect has already been highlighted by the activity theory of ageing, one of the earliest and most influential theories on adaptation to ageing, which stated that well-being in old age is promoted by high levels of participation in social and leisure activities and changing roles when they have to be given up (Adams, Leibbrandt, & Moon, 2011). Currently, the influence of this theory continues in the successful ageing paradigm (Rowe & Kahn, 1997), for which well-being would be the subjective counterpart to the more objective evaluation of successful ageing (Stanley & Cheek, 2003), while outside the specific field of gerontology, well-being is defined in terms of happiness or satisfaction with life (Diener, Suh, Lucas, & Smith, 1999).

However, in this context of activity and participation, it is a remarkable fact that ageing can be accompanied by a decline in individual skills, whether in relation to deteriorating physical and mental health, the weakening of family and social ties, or a loss of economic resources, and this may compromise people's autonomy and lead to their institutionalization, as well as restricting their control over time, in general, and how it is used and the activities performed, in particular. However, the concept of active ageing has barely been explored in the context of services for long-term residential care (Van Malderen, Mets, &

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Gorus, 2013), and it has even been argued that it is incompatible with the caregiving environment, and that it is uncertain whether it contributes to residents' quality of life (Van Malderen, Mets, De Vriendt, & Gorus, 2013). The ultimate idea is that active ageing is based on the fact that it should be the individuals themselves, as active subjects, who influence the conditions of their ageing through their self-responsibility and self-care (Hasmanová Marhánková, 2011). However, the active ageing concept can be reinforced by the therapeutic landscape concept and it can help to understand the interaction between physical and social environment, and individual well-being in residential care settings (Cheng, Rosenberg, Wang, Yang, & Li, 2011), including an occupational science perspective, wherein occupations (or meaningful everyday activities) are seen as a crucial part of the person-place relationship (Cutchin, Marshall, & Aldrich, 2010).

Within this institutionalization scenario, people with different degrees of cognitive impairment form a specific group in which adverse mental health conditions could limit their activity profile. In this sense, another remarkable aspect of the WHO's active ageing framework is its perspective focused on human rights and equal opportunities for the individual, as an active agent rather than as a passive agent and a subject with needs (WHO, 2002), but also emphasizing intergenerational solidarity. Therefore, while participation and leisure activities are important for life satisfaction in general among people with dementia, they are usually passive, and hence at greater risk of functional decline (Kolanowski & Buettner, 2008); on the other hand, it seems that active and socially integrated lifestyles and the participation in cognitive leisure activities protect against dementia and Alzheimer's disease (Fratiglioni, Paillard-Borg, & Winblad, 2004; Verghese et al., 2003).

Be that as it may, people with dementia have a certain tendency to engage in a wide variety of activities, depending on their level of physical and mental ability (Menne, Johnson, Whitlatch, & Schwartz, 2012). Evidence seems to indicate that needs, as company and daytime activities, remain unmet and much can be done in this respect to improve the quality of life of the residents with dementia (Hancock, Woods, Challis, & Orrell, 2006). In this regard, the promotion of participation in leisure activities should be guaranteed at long-term care institutions. Furthermore, even though assessing patient-reported outcomes, such as quality of life, is complicated among these people, it does not mean it cannot be measured or that is irrelevant (Lucas-Carrasco, Peró, & March, 2011).

All of this leads us to consider, first of all, the importance of defining different activity profiles in the assessment of active ageing among institutionalized older adults; and second, the interest of obtaining a model with explanatory factors for the level of activity and type of leisure in which residents engage, taking into account their sociodemographic features, and the objective and subjective conditions that govern the most relevant areas to their individual quality of life: their family and social networks, their economic resources and their health and level of functioning (Fernández-Mayoralas et al., 2011).

2. Materials and methods

2.1. Sample

This paper is based on comparable information obtained from two quality of life surveys conducted in 2008 and 2010 among institutionalized older adults in Spain with and without dementia, respectively.

The first sample consisted of 234 people aged 60 and over, after excluding individuals with cognitive impairment, that is, people who obtained four or more errors in the Pfeiffer's Short Portable Mental Status Questionnaire (SPMSQ) (Pfeiffer, 1975). The second sample consists of 525 individuals, also aged 60 and over, who fulfilled dementia criteria according to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition revised (DSM-IV-TR) (American Psychiatric Association, 2000). The questionnaires of both surveys were designed to allow the comparison of the measures among older adults with and without dementia. The total sample used (containing the first and the second samples) is proportional to the institutionalized older population in terms of cognitive impairment (69% fulfilling dementia criteria), age (mean 84.2) and sex (77% female).

These samples belong to 14 nursing homes located in 14 municipalities of seven autonomous regions of Spain. Half of the nursing homes were public-owned managed by private entities, while the rest were private or mix. All were mixed-sex residences. The facilities provided help with personal care, health-related services and social activities for residents with different levels of dependence in activities of daily living. All the settings offered nursing care and most of them provided psychological, physiotherapeutic, medical, occupational therapeutic, social work services and socio-cultural activities. A 50 per cent of the nursing homes were mainly dedicated to older adults who needed help with all activities of daily living. The housing services consisted of individual and shared rooms, meals and housekeeping. The mean number of beds was 86.4, with a minimum number of 24 and a maximum of 150 beds. Half of the 14 settings had library, four had cafe and nine had green areas.

Both studies were approved by the Ethics Committee of the Institute of Health Carlos III. Written informed consent was obtained from the patients themselves or their legal representative in case of dementia. Data were collected by health professionals who work at the nursing homes and the interviews were supervised by researchers.

2.2. Measures

As independent variables, sociodemographic characteristics, as sex, age and marital status, together with the following conditions related to the most important individual quality of life domains (Fernández-Mayoralas et al., 2011) were selected.

- Family and social networks were measured according to whether or not they had children and frequency of direct contact with relatives, neighbours

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and friends, either by leaving the home or receiving visitors.

- Economic resources were assessed using indirect indicators such as educational level (less than primary education, primary education, and secondary education and above) and the source of income (widow's pension, retirement pension and other sources).
- Health status and health-related quality of life (HRQL) were measured using the EQ-5D-3L (EuroQol Group, 1990; Rabin, Oemar, Oppe, & EuroQol Group Executive Office, 2011). The following sections were included: (1) the descriptive system with five health dimensions (mobility, self-care, daily activities, pain/discomfort and anxiety/depression) with scores from 1 (no problems or symptoms) to 3 (severe problems or symptoms); (2) the visual analog scale (EQ-VAS) which assesses perceived health state today (from 0, worst imaginable health state, to 100, best imaginable health state) and (3) compared health state over the last 12 months (better, same and worse) (EQ-5D-12). A formula to convert the 243 health states obtained from the combination of health levels in the five dimensions results in the HRQL index (EQ-5D index), with scores ranging from 0 (death) to 1 (perfect health) and negative values indicating health states worse than death (Badia, Herdman, & Kind, 1998). Other health indicators used were the number of chronic medical conditions (a total of 20 listed) (Fernandez-Mayoralas, Giraldez-Garcia, Forjaz, Rojo-Perez, Martinez-Martin, & Prieto-Flores, 2012) and the Barthel functional capacity index, ranging from 0 (completely dependent) to 100 (fully independent) (Mahoney & Barthel, 1965). The cognitive level was assessed with the Pfeiffer's SPMSQ (Pfeiffer, 1975).

The dependent variable was the activity profile obtained from four questions about whether or not they engaged in leisure activities: (1) physical (swimming, going to the gym, dancing, walking, playing petanque, bowling, etc.), (2) passive (watching TV, listening to the radio, listening to music, board games, handicrafts, etc.), (3) cultural (going to the movies or theatre, museums and exhibitions, reading, studying, playing a musical instrument, painting, drawing, etc.) and (4) social (go to mass or to church, meeting relatives and friends, etc.).

2.3. *Statistical analysis*

Both samples were analysed together, comparatively assessing the distributions of the variables (see Table 1).

The activity profile of the institutionalized older population was obtained by applying cluster analysis, under non-hierarchical procedure based on the K-means algorithm, to the four dichotomous activity performance variables. The initial centroids used were the scores 1.0, 1.0, 1.0 and 1.0 to define the 'active people' cluster with the highest level of activity in the four types of leisure (physical, passive, cultural and social). A second cluster corresponds to 'moderately active people', defined by the scores 0.5, 0.6, 0.3 and 0.4, which are the averages of each of the leisure performance variables (see Table 1). Finally, the scores 0.0, 0.0, 0.0 and 0.0 permitted to define the 'inactive people' cluster. Discriminant analysis was applied to validate the clusters obtained (see Table 2).

The next step was to describe the population's characteristics in each of the activity profiles according to the selected variables, in order to explore differences by bivariate analysis using the chi-square test for categorical variables and Kendall's Tau-b test for ordinal variables. After checking for normality assumptions, analysis of variance (ANOVA) was used for continuous variables, applying a *post-hoc* contrast of multiple comparisons with the Bonferroni correction (see Table 3).

Subsequently, variables that were significant in the bivariate analysis ($p < 0.05$) were used as independent variables in an ordinal regression model, in which the dependent variable was the activity level profile of the institutionalized population in the three clusters (active people, moderately active people and inactive people). First, two partial activity level models were applied according to (1) sociodemographic features and living conditions in the family, social and economic dimensions, and (2) health and functioning conditions. Second, a global model was adjusted with the variables that were significant in the partial models. Every model was controlled by sex and age.

The ordinal regression is an extension of the logistic regression, for dependent variables with more than two ranked values. As in the logistic regression models, the set of explanatory or independent variables can be covariates (continuous) or discrete, treating the latter by using auxiliary-type dummy variables. Link function used is Logit (evenly distributed categories).

Ordinal regression predicts the category to which an individual would belong according to the explanatory variables or predictors. The model parameters are estimated through the maximum-likelihood method. The effect of the explaining variables on the changes on the levels of the dependent variable is interpreted by means of the odds ratio [$\mathrm{OR} = \mathrm{Exp}(-(a - bx)$], which indicates the direction for each one-unit change in independent variables. In this study, the beta parameters sign was modified before calculating OR. Accordingly, $\mathrm{OR} > 1$ will represent an increased likelihood of higher level activity, whereas $\mathrm{OR} < 1$ will reflect an increased likelihood to lower levels of activity or inactivity (see Table 4).

3. Results

Descriptive statistics of the sociodemographic characteristics and living conditions in both samples are shown in Table 1.

Table 2 shows the classification of people according to the level of leisure activities performed obtained through cluster analysis into three groups: (1) the 'active people' group, who perform any type of leisure activity asked in the questionnaire – especially cultural activities – representing

Table 1. Sample characteristics.

	Total ($n = 759$) M ± SD *n* (%)	People without dementia ($n = 234$) M ± SD *n* (%)	People with dementia ($n = 525$) M ± SD *n* (%)
Sociodemographics			
Gender ($p < 0.001$)			
Male	172 (22.7)	81 (34.6)	91 (17.3)
Female	587 (77.3)	153 (65.4)	434 (82.7)
Age ($p < 0.001$)	84.2 ± 7.2	81 *a* ± 7.1	86 *b* ± 6.7
60−69 years old	25 (3.2)	14 (6.0)	11 (2.1)
70−79	146 (19.2)	73 (31.2)	73 (13.9)
80 and more	588 (77.6)	147 (62.8)	441 (84.0)
Marital status ($p < 0.001$)			
Single	150 (20.0)	65 (27.9)	85 (16.4)
Married/with the partner in the nursing home	64 (8.5)	25 (10.7)	39 (7.5)
Married/without the partner in the nursing home	59 (7.9)	4 (1.7)	55 (10.6)
Divorced/separated	23 (3.1)	11 (4.7)	12 (2.3)
Widower/widow	455 (60.5)	128 (55.0)	327 (63.2)
Family and Social Networks			
Has children ($p < 0.001$)	474 (62.5)	114 (48.9)	360 (68.6)
Received visits of relatives and friends once per week or more ($p < 0.05$)	518 (69.1)	148 (63.5)	370 (71.6)
Met family and friends outside the nursing home ($p < 0.001$)			
Never	467 (62.5)	72 (30.9)	395 (76.7)
Occasionally	143 (19.1)	69 (29.6)	74 (14.4)
Once per month or more	138 (18.4)	92 (39.5)	46 (8.9)
Economic resources			
Source of income ($p < 0.001$)			
Widow's pension	347 (46.0)	82 (35.0)	265 (50.9)
Retirement pension	278 (36.8)	108 (46.2)	170 (32.6)
Other source	130 (17.2)	44 (18.8)	86 (16.5)
Educational level ($p < 0.001$)			
Illiterate or less than primary school	442 (58.5)	99 (42.3)	343 (65.8)
Primary school	211 (28.0)	74 (31.6)	137 (26.3)
Secondary and higher	102 (13.5)	61 (26.1)	41 (7.9)
Health and functioning			
Mobility (EQ-5D-3L) ($p < 0.001$)			
I have no problems in walking about	198 (26.8)	88 (39.5)	110 (21.4)
I have some problems in walking about	404 (54.8)	128 (57.4)	276 (53.6)
I am confined to bed	136 (18.4)	7 (3.1)	129 (25.0)
Self-care (EQ-5D-3L) ($p < 0.001$)			
I have no problems with self-care	138 (18.6)	121 (54.1)	17 (3.3)
I have some problems washing or dressing myself	217 (29.3)	72 (32.1)	145 (28.0)
I am unable to wash or dress myself	386 (52.1)	31 (13.8)	355 (68.7)
Usual activities (EQ-5D-3L) ($p < 0.001$)			
I have no problems with performing my usual activities	153 (20.6)	125 (55.8)	28 (5.4)
I have some problems with performing my usual activities	229 (30.9)	77 (34.4)	152 (29.4)
I am unable to perform my usual activities	359 (48.5)	22 (9.8)	337 (65.2)
Pain/discomfort (EQ-5D-3L) ($p < 0.001$)			
I have no pain or discomfort	409 (55.1)	76 (33.9)	333 (64.3)
I have moderate pain or discomfort	275 (37.1)	118 (52.7)	157 (30.3)
I have extreme pain or discomfort	58 (7.8)	30 (13.4)	28 (5.4)
Anxiety/depression (EQ-5D-3L) ($p < 0.003$)			
I am not anxious or depressed	433 (58.4)	110 (49.1)	323 (62.5)
I am moderately anxious or depressed	237 (32.0)	89 (39.7)	148 (28.6)
I am extremely anxious or depressed	71 (9.6)	25 (11.2)	46 (8.9)

(*continued*)

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Table 1. (*Continued*)

	Total ($n = 759$) M ± SD *n* (%)	People without dementia ($n = 234$) M ± SD *n* (%)	People with dementia ($n = 525$) M ± SD *n* (%)
Health status last 12 months ($p < 0.001$)			
Better	99 (13.4)	49 (22.0)	50 (9.7)
Same	364 (49.2)	93 (41.7)	271 (52.4)
Worse	277 (37.4)	81 (36.3)	196 (37.9)
EQ-VAS: your own health state today	55.0 ± 22.3	62.8 *a* ± 21.8	51.5 *b* ± 21.5
EQ-5D index	0.2495 ± 0.4311	0.5721 *a* ± 0.3579	0.1139 *b* ± 0.3850
Number of chronic medical conditions	7.4 ± 2.9	6.5 *a* ± 2.8	7.8 *b* ± 2.8
Barthel index (functional independence)	47.1 ± 35.6	80.1 *a* ± 24.8	32.8 *b* ± 29.5
Cognitive functioning: SPMSQ Pfeiffer (adjusted score)	4.3 ± 3.2	1.4 *a* ± 1.4	6.5 *b* ± 2.4
Leisure activities			
Physical leisure ($p < 0.001$)	364 (48.8)	179 (79.6)	185 (35.5)
Passive leisure ($p < 0.001$)	441 (59.0)	208 (92.9)	233 (44.5)
Cultural leisure ($p < 0.001$)	227 (30.4)	132 (59.2)	95 (18.1)
Social leisure ($p < 0.001$)	323 (43.2)	179 (79.9)	144 (27.5)

Note: Test of significance for categorical variables: chi-square test. For quantitative variables, tests are adjusted for all pair-wise comparisons within a row of each innermost sub-table using the Bonferroni correction (alpha = 0.05). *a* and *b* letters identify variables means with significant differences: values not sharing the same letter are significantly different at $p < 0.05$.

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27% of the population; (2) a second cluster, formed by the 'moderately active people', who mostly perform passive activities, but also with an average level in terms of physical and social leisure activities (35% of the population); and (3) the largest group, identified as 'inactive people', represented by those who are below the average level in the questioned activities (38% of the individuals).

Significant differences were observed between the three groups of people according to their level of activity in most of the variables, except for the frequency of visits by family and friends, and the pain/discomfort and anxiety/depression dimensions (Table 3). Individuals in the active group had a better situation in the analysed characteristics: sociodemographics, family and social networks, economic resources, health and functioning. The worst situation was observed in the inactive group, while the moderately active individuals ranked in an intermediate position.

The results of the partial ordinal regression models [(1) sociodemographic characteristics and living conditions in the family, social and economic dimensions, and (2) health and functioning conditions], using as dependent variable the profile of individuals based on the level of leisure activities performed in three groups (active, moderately active and inactive people), showed good fit to the data. The better fit was obtained by the model containing the health and functioning-related variables (Nagelkerke pseudo $R^2 = 0.496$) through five significant variables: the ability to perform self-care and usual activities, perceived health state today, number of chronic medical conditions, and cognitive functioning. In the partial model on sociodemographics and family, social and economic dimensions, only three variables were statistically significant: gathering with family and friends outside the nursing home, receiving visits of relatives and friends, and educational level (Nagelkerke pseudo $R^2 = 0.240$).

The final ordinal regression model (Table 4), run on the eight variables that showed significance from the partial models, explained 50% of the variance of the activity profile of the older adults through five variables (Nagelkerke pseudo $R^2 = 0.500$), indicating that the probability of reducing activity level was associated with the increase in the SPMSQ cognitive impairment, worse self-perceived health status and poorer ability to perform usual activities, with the absence of family and friends visits, and with a lower educational level.

The most important health variable in the final model was cognitive functioning (Wald contrast, Wc: 51.171), showing an OR lower than 1 (OR = 0.8318), indicating

Table 2. Classification of people according to the level of leisure activities performed: final conglomerate centres.

	Groups obtained (1)		
Leisure activities	Active people	Moderately active people	Inactive people
Physical	0.90	0.54	0.14
Passive	0.96	0.95	0.00
Cultural	1.00	0.08	0.02
Social	0.81	0.54	0.06
Valid $n = 741$	199 (26.8%)	259 (35.0%)	283 (38.2%)

(1) Discriminant analysis showed that 95.4% of the original cases were correctly classified.

Table 3. Characteristics of people according to their leisure activity profile.

	People classified in each group (%)			
	Active people $n = 199$ (26.8%)	Moderately active people $n = 259$ (35.0%)	Inactive people $n = 283$ (38.2%)	n
Sociodemographics				
Gender ($p < 0.005$)				
Male	31.9	41.0	27.1	166
Female	25.4	33.2	41.4	575
Age ($p < 0.001$)	81.6 *a*	84.4 *b*	85.9 *c*	
60−69 years old	50.0	25.0	25.0	24
70−79	38.7	32.4	28.9	142
80 and more	23.0	36.0	41.0	575
Marital status ($p < 0.01$)				
Single	33.3	36.8	29.9	144
Married/ with the partner in the nursing home	29.5	39.4	31.1	61
Married/ without the partner in the nursing home	10.7	48.2	41.1	56
Divorced / Separated	34.8	43.5	21.7	23
Widower/Widow	26.3	31.6	42.1	449
Family and Social Networks				
Has children ($p < 0.05$)	24.2	34.1	41.7	466
Received visits of relatives and friends ($p = 0.612$)				
Once per week or more	26.0	34.6	39.4	508
Less than once a week	28.6	35.7	35.7	224
Met family and friends outside the nursing home ($p < 0.001$)				
Never	16.1	31.1	52.8	460
Occasionally	37.5	44.9	17.6	136
Once per month or more	52.2	38.8	9.0	134
Economic resources				
Source of income ($p < 0.002$)				
Widow's pension	24.3	29.9	45.8	341
Retirement pension	28.1	40.8	31.1	267
Other source	31.8	34.9	33.3	129
Educational level ($p < 0.001$)				
Illiterate or less than primary school	21.9	32.3	45.8	434
Primary school	30.1	39.8	30.1	206
Secondary and higher	43.3	37.1	19.6	97
Health and functioning				
Mobility (EQ-5D-3L) ($p < 0.001$)				
I have no problems in walking about	48.0	34.0	18.0	194
I have some problems in walking about	24.3	39.9	35.8	399
I am confined to bed	3.7	22.1	74.2	136
Self-care (EQ-5D-3L) ($p < 0.001$)				
I have no problems with self-care	54.5	41.0	4.5	134
I have some problems washing or dressing myself	43.0	36.6	20.4	216
I am unable to wash or dress myself	7.9	31.7	60.4	382
Usual activities (EQ-5D-3L) ($p < 0.001$)				
I have no problems with performing my usual activities	60.1	36.5	3.4	148
I have some problems with performing my usual activities	38.2	42.5	19.3	228
I am unable to perform my usual activities	5.6	29.2	65.2	356
Pain/discomfort (EQ-5D-3L) ($p = 0.102$)				
I have no pain or discomfort	26.1	31.8	42.1	406
I have moderate pain or discomfort	27.8	39.6	32.6	270
I have extreme pain or discomfort	28.1	33.3	38.6	57

(*continued*)

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Table 3. (*Continued*)

	People classified in each group (%)			
	Active people $n = 199$ (26.8%)	Moderately active people $n = 259$ (35.0%)	Inactive people $n = 283$ (38.2%)	n
Anxiety/depression (EQ-5D-3L) ($p = 0.715$)				
I am not anxious or depressed	28.0	32.0	40.0	428
I am moderately anxious or depressed	29.6	37.8	32.6	233
I am extremely anxious or depressed	11.3	42.3	46.4	71
Health status last 12 months ($p < 0.001$)				
Better	46.4	34.0	19.6	97
Same	26.7	33.9	39.4	360
Worse	20.1	36.1	43.8	274
EQ-VAS: your own health state today	68.0 *a*	57.2 *b*	43.8 *c*	
EQ-5D index	0.5730 *a*	0.2991 *b*	−0.0276 *c*	
Number of chronic medical conditions	6.6 *a*	7.3 *b*	8.1 *c*	
Barthel index (functional independence)	76.3 *a*	51.0 *b*	23.0 *c*	
Cognitive functioning: SPMSQ Pfeiffer (adjusted score)	3.2 *a*	5.5 *b*	9.2 *c*	
Leisure activities				
Physical leisure ($p < 0.001$)	49.8	39.3	10.9	359
Passive leisure ($p < 0.001$)	43.7	56.3	0.0	473
Cultural leisure ($p < 0.001$)	88.5	9.3	2.2	225
Social leisure ($p < 0.001$)	50.5	43.9	5.6	319

Note: Test of significance: for categorical variables, chi-square test; for ordinal variables, Kendall's Tau-b test; for quantitative variables, tests are adjusted for all pair-wise comparisons within a row of each innermost sub-table using the Bonferroni correction (alpha = 0.05). *a*, *b* and *c* letters identify variables means with significant differences: values not sharing the same letter are significantly different at $p < 0.05$.

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that a one-unit score increase in SPMSQ would drive to a loss of activity of 16.82%.

The second health variable in the model was perceived 'health state today' (Wc: 22.067). A one-unit increase in the 0−100 EQ-VAS (OR = 1.0197) would raise by 1.97% the likelihood of having a higher activity level, showing that the better the perceived health status, the greater the level of activity.

The activity profile among institutionalized older adults was also explained by the ability to perform usual activities. Taking as reference category those older adults unable to perform their usual activities, the level of activity was three and a half times higher among those having problems for performing their usual activities (Wc: 36.657; OR = 3.4828), representing 248.28% increase of activity in terms of leisure. The increase of the activity level was even higher, almost four and a half times, for individuals who had no problems to perform their usual activities (Wc: 29.338; OR = 4.4346), with an increase of 343.46% in the level of activity.

Compared with the residents who never leave the setting, the level of activity was double among those who occasionally (Wc: 11.258; OR = 2.0375) or more often (Wc: 9.825; OR = 2.0682) went outside the nursing home for gathering with family and friends. In percentage terms, this was 103.75% and 106.82%, respectively.

Concerning educational level, only the secondary and higher education category (Wc: 5.492; OR = 1.7890) was significant ($p = 0.019$). In this case, the increased likelihood of higher activity level was 78.90% with respect to the reference category (illiterate or less than primary studies).

4. Discussion

This study analysed active ageing of the older population living in institutions in Spain, taking into account their level of participation in physical, social and cultural leisure activities in relation to their sociodemographic characteristics and their most important quality of life dimensions in old age: health and functioning, family and social networks and economic resources (Fernández-Mayoralas et al., 2011).

No previous studies were found that examined this aspect among the institutionalized population together with varying degrees of cognitive impairment, using comparable methodology. As described, people diagnosed with dementia are older and have worse conditions in terms of their physical and mental health, and their HRQL. However, it has been shown that older people with cognitive impairment (Cahill & Diaz-Ponce, 2011) can often communicate their preferences about what is important to them (Lucas-Carrasco et al., 2011; Menne et al., 2012).

Moreover, a joint analysis of both populations has provided further insight into the issue of ageing more actively in nursing homes. This study has managed to properly classify the institutionalized population according to their level of leisure activity, into a reasonable number of groups that goes beyond simply dividing them into older people with dementia and without dementia. It has also demonstrated the importance of considering the sociodemographics, living conditions and quality of life heterogeneity of the institutionalized elderly population.

In this regard, older people in long-term care facilities, who are able to perform any kind of activity, showed a

Table 4. Ordinal regression model: parameter estimates.[1]

	Parameter estimate	Std. error	Wald	df	Sig.	95% confidence interval		Proportional OR[2]
						Lower bound	Upper bound	
Cognitive functioning: SPMSQ Pfeiffer (adjusted score)	0.184	0.026	51.171	1	0.000	0.134	0.235	0.832
EQ-VAS: your own health state today	−0.020	0.004	22.067	1	0.000	−0.028	−0.011	1.020
Usual activities (EQ-5D-3L)								
1 – I have no problems with performing my usual activities	−1.489	0.275	29.338	1	0.000	−2.028	−0.950	4.435
2 – I have some problems with performing my usual activities	−1.248	0.206	36.657	1	0.000	−1.652	−0.844	3.483
3 – I am unable to perform my usual activities	0			0				1
Met family and friends outside the nursing home								
1 – once per month or more	−0.727	0.232	9.825	1	0.002	−1.181	−0.272	2.068
2 – occasionally	−0.712	0.212	11.258	1	0.001	−1.128	−0.296	2.038
3 – never	0			0				1.000
Educational level								
1 – secondary and higher	−0.582	0.248	5.492	1	0.019	−1.068	−0.095	1.789
2 – primary school	−0.059	0.184	0.102	1	0.749	−0.420	0.302	1.061
3 – illiterate or less than primary school	0			0				1

[1]Only significant variables obtained through partial models are included in this final model.
[2]OR is calculated after changing the sign in the parameter estimate.
Nagelkerke pseudo $R^2 = 0.500$.

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similar profile, in terms of their sociodemographic characteristics, living conditions and quality of life, to that of the non-institutionalized population also with a high level of activity (Lardiés-Bosque, 2011), except at advanced ages and having health problems that may lead to severe functional decline, features more associated with institutionalized older population (Prieto-Flores, Fernandez-Mayoralas, Forjaz, Rojo-Perez, & Martinez-Martin, 2011a). This similarity could be explained because age is a factor that influences health and quality of life to a greater extent among non-institutionalized than among institutionalized individuals (Rodriguez-Blazquez et al., 2012). In this line, a central role of contextual factors in the moderation and mediation of the relationship between impairment and limitations in activity and participation has been highlighted (Fellinghauer, Reinhardt, Stucki, & Bickenbach, 2012). Moreover, for some residents, institutions can compensate for loss of functional capacity, independence and social networks (Asakawa, Feeny, Senthilselvan, Johnson, & Rolfson, 2009; Grenade & Boldy, 2008), providing this way a stable supportive environment which is critical for older individuals.

As for the group of moderately active individuals, their sociodemographic profile also points to a predominance of men, with higher educational level and a good economic status, even if one might observe a certain degree of vulnerability defined by deteriorating health conditions, associated with an older age than in the group of active individuals. This group would benefit from participating in programs that promote physical and mental activity and active ageing, which have proven effective in delaying not only physical decline, but more importantly, cognitive impairment (Fratiglioni et al., 2004) and for maintaining or improving the HRQL (Dechamps et al., 2010). On the other hand, the interest to engage in activities could be a variable potentially mediating the relationship between activity level, health and functional ability. However, our study did not include this variable.

The inactive group is the most clearly differentiated from the previous two groups, with a predominance of women, who are older, widows, with lower educational level and economic status, and have very poor physical and mental health and HRQL, with high levels of depression and cognitive impairment. Passivity is one of the commonest symptoms or behaviours of people diagnosed with dementia, placing this population group at an even greater risk of cognitive and functional decline (Kolanowski & Buettner, 2008), and makes this group the preferred target of activity programs based on specific occupational therapy for people with disability.

As for the factors explaining the level of activity, the two partial models, namely health and functioning conditions, on the one hand, and sociodemographic characteristics and family and social networks, on the other, showed good fit to the data. The first was better, explaining near 50% of the variance in the activity profile by means of the functional capacity, perceived health state, chronic conditions and cognitive functioning variables. This is consistent with other studies showing a positive association between active ageing and good health and quality of life (Bowling, 2008) and, particularly, with research that emphasizes the protective role that leisure activities have against the occurrence of dementia in old age (Fratiglioni et al., 2004; Wang, Xu, & Pei, 2012). However, it is noteworthy that the model that includes the sociodemographic and network characteristics explains almost 25% of the

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variance of the activity profile, through variables such as gathering with family and friends outside the facility, receiving visits of relatives and friends, and educational level. In this direction, evidence exists about the positive contribution of gathering with family, friends or neighbours in the sense of belonging of institutionalized older people, while satisfaction with relationship with other residents would contribute to the satisfaction with the care setting (Prieto-Flores et al., 2011a). Moreover, social contacts and going outside the setting might promote a feeling of social integration. In fact, it has been observed that gathering with family, friends and neighbours is negatively associated with loneliness among institutionalized older people and institutionalization per se seems to affect loneliness, being the latter associated with depression (Prieto-Flores, Fernandez-Mayoralas, Forjaz, Rojo-Perez, & Martinez-Martin, 2011b).

In the final model, along with health conditions and functioning, the sociodemographic and social network characteristics remain significant, confirming the important role of these variables in the level of activity.

In our analyses, age per se does not seem to be a significant factor in explaining the risk for an active person to become a moderately active or inactive person in terms of performing leisure activities in an institutionalized context. There is evidence that health and functioning conditions play a stronger role and could absorb the explanatory power of age. Competence in health and functioning may also derives in how often individuals leave the nursing home to meet family and friends as an explanatory variable. Thus, leisure activity participation seems to diminish due to worsening of health and functioning conditions, particularly cognitive functioning, and the loss of ability to interrelate with family and friends outside the residential environment.

In this context, a higher educational level implies a greater cognitive reserve which, at least in the first stages of dementia, would also promote greater activity level (Stern, 2012). Besides, people with higher educational level might continue their activity level by engaging in passive and culture leisure, such as reading or studying, which require less physical effort. In contrast, older adults with a lower educational level probably tend to engage in physical and social leisure, which involves a higher level of functioning and therefore is compromised in early stages of dementia. Further studies are needed to test this hypothesis.

A novel contribution of this manuscript is to jointly study active, moderately active and inactive institutionalized older adults. Much of the research, both in community and institutional settings, use to only draw distinctions between the active and the inactive, which might be inaccurate and counterproductive. In addition, active ageing literature specially focuses on older adults who live in the community, and excludes those with dementia or other cognitive impairments. In our work, we observed that socioeconomic characteristics and social networks are important to differentiate levels of active ageing among older people and that even in the inactive group, socioeconomic characteristics and social networks matter.

However, our study was subject to two particularly relevant limitations. The convenience samples analysed cannot be considered representative of the whole institutionalized population. Nevertheless, the total sample used reflects the distribution of the institutionalized older people in terms of cognitive status, sex and age. This distribution is similar to the data estimations made in Spain, about dementia prevalence in institutionalized older people, and is close to the distributions of other countries of analogous sociocultural contexts, such as France, United Kingdom, USA or Canada (López Mongil et al., 2009). In addition, the sample size and its geographic diversity are a noticeable strength. Moreover, the fact that it is a cross-sectional study limits the ability to identify causal relationships and only associations between the facts can be defined. In this regard, longitudinal studies are required to confirm the findings. Another point of interest would be the distinction between performing activities inside or outside the residential care facility, which could be affected by the mobility and health status of the residents. Unfortunately, our data did not allow exploring this aspect.

The obtained model explains half of the variance in the data, and therefore other factors that were not included in the analysis might also be important to understand the differences among activity levels in institutionalized older adults. Future analyses could include objective characteristics of the residences and perceptions of the residents about them. Specifically, previews studies have shown an association of residence factors with quality of life in institutionalized older adults with dementia (Marventano et al., 2014).

5. Conclusions

Active ageing provides a broad and multidimensional framework for ageing research. However, the active ageing model emphasizes individual responsibility in terms of engaging in a life-long preparation for old age and active participation. In this sense, the role of institutions for the care of the elderly, as therapeutic landscapes, is also important for providing facilities, services and management mechanisms to facilitate the participation and increase the opportunities for elderly residents (Cheng et al., 2011).

Among the quality of life dimensions, the health-related dimension, in terms of the aspects of cognitive status, ability to perform daily life activities and the perceived health state, along with educational level and contacts with the family and social network, play a central role among the factors associated with active ageing, in terms of participation in leisure activities among institutionalized older adults in Spain.

Our results indicate that the decline in physical and mental health, the weakening of family and social ties, and the loss of functional capabilities form a significant barrier to active ageing in an institutionalized context. In this respect, promoting active ageing engaging people with or without dementia in activities that they find meaningful (Menne et al., 2012), trying to taking into account

each person's abilities and preferences (Hancock et al., 2006), and avoiding isolation and further cognitive and functional decline, would be the key aspects in the design of public policies for old age.

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