Fermina Rojo-Perez[1], Concepción Delgado-Sanz[2],
Gloria Fernandez-Mayoralas[1], M. Joao Forjaz[2],
Karim Ahmed-Mohamed[1], Pablo Martinez-Martin[3],
Maria-Eugenia Prieto-Flores[2], Jose-Manuel Rojo-Abuin[4]

[1] Instiute of Economics, Geography and Demography, Centre on Human
and Social Sciences, Madrid
[2] National School of Public Health, Carlos III Institute of Health (ISCIII), Madrid
[3] National Centre for Epidemiology, Carlos III Institute of Health (ISCIII), Madrid
[4] Unit of Statistical Analysis, Centre on Human and Social Sciences, Spanish Council
for Scientific Research (CSIC), Madrid

INFORMAL SUPPORT ACCORDING TO LEVEL OF COMPETENCE RELATED TO HEALTH AND FUNCTIONING IN QUALITY OF LATER LIFE

Abstract

Introduction: An empirical study in the Madrid Region has shown that health, family and social networks are among the most important domains spontaneously self-nominated by aged people to define their Quality of Life. Older adults frequently find, when needed, emotional and/or instrumental support to perform their Activities of Daily Living (ADL) from their spouses, children, other relatives, friends or neighbours. Moreover, among people aged 65 and more, many are caregivers as well.

Objective: This work aims at exploring the role of family and social networks as instrumental support to vulnerable or dependent older persons, under the assumption that there are differences in QoL according to the level of competence related to health and functioning and to the role of informal support and socio-demographic characteristics.

Data source and methods: The data come from a Survey on Quality of Life in Old Age carried out in 2005, with a representative sample of 499 people aged 65 and over, living in family housing in the Madrid Region (Spain).

In order to test whether there are differences in QoL among the older adults according to the level of competence related to health, independence level or functional ability (without or with functional limitation), receiving informal support and socio-demographic characteristics, univariate and multivariate statistical analysis are applied.

Results: When analysing functional level in later life, almost a half of the studied population report functional limitation and significant differences in HRQoL are found according to functional state (non-parametric test of Mann-Whitney). Based on a Logistic Regression model, the risk of having functional limitations among the old people in Madrid is higher among men, increasing age,

comorbidity and those who perceive their health worse than a year before; having functional limitation is less likely among old people with no health problems.

Among old dependent people (47%), more than a half report receiving informal care, and there are significant differences in HRQoL according to informal care received. The probability of receiving informal care when having functional limitations is higher in the oldest age groups and people with the worse health states according to the Euroqol-5D instrument.

1. Introduction and background

In recent decades the importance of studying Quality of Life (QoL) among the elderly has been shown. Knowing the most relevant areas or dimensions for the population allows establishing suitable public health policies to satisfy these needs. This paper presents results of a global QoL research among community-dwelling old people in the Madrid region[1]. This research considers QoL as a multidi-mensional concept, the result of the dynamic interaction between the external conditions of individuals' lives and their perceptions of these conditions. The results showed that family/social and health are among the most important QoL domains for old people according to their own perception. Through the SEIQoL-DW instrument [27; 41], 19 dimensions were obtained as a spontaneous answer to a generic question, and the five most nominated were: health (96% of the individuals nominated it), family network (80% of the cases), economic situation (76%), social network (57%) and leisure and free time (38%) [22] (Fig. 1). In a previous research on the Spanish elderly, the five most nominated QoL dimensions for the same instrument were family network, health, leisure and culture, social network, and religion-spirituality [35].

On a scale from 0 (low level of satisfaction) to 100 (high level of satisfaction), old people from Madrid were most satisfied with the following domains: family, health and social network. Regarding the relative weights assigned to each dimension by the interviewees, once again health and family network show the highest relative direct weighting, both exceeding 25%.

The QoL index, measured by the SEIQoL index (representing the sum of the product of satisfaction by weights), shows an average of 71%; and social network, family and leisure show partial indexes higher than the overall average, while economic situation is a domain with the lowest partial QoL index. QoL dimensions which show the highest SEIQoL index values are those related to the residential environment (the neighbourhood 77 and residents 82; housing achieved a value of 72) [22], not being among the most nominated therefore, although with very high satisfaction levels [49].
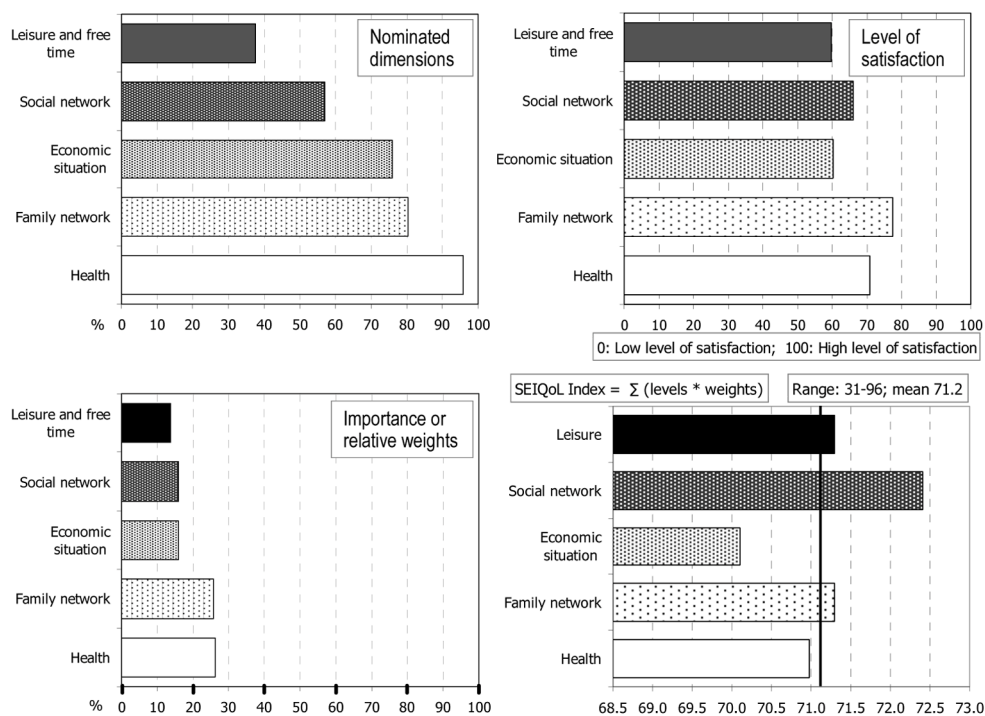
Fig. 1. Old people definitions of Quality of Life through the SEIQoL-DW instrument
(nominated dimensions, level of satisfaction, importance or relative weights and SEIQoL Index)

Source: CSIC, ISCIII. (2005). Survey on Quality of Life to old people living in family housing in
Madrid region: CadeViMa survey (made by authors).

Considering the previous results, the aim of this paper is to explore the role of the family and social networks as elements of help in cases of health vulnerability and functional dependence of old people.

There is a steady decline in functional ability and increase in disease risk with age [28]. Diseases with a higher physical component (cardiovascular diseases, diabetes, etc.) as well as depression can increase disability and the use of health services. When both coexist, an additive effect is produced [36]. Deterioration of functional ability has been associated with a poor perception of health and lower socio-economic [53; 61] and educational level [63]; gender differences have also been noticed, with women, who have greater life expectancy, suffering from some type of disability longer [17]. Cognitive deficit and depression are considered predictive factors of functional ability [8].

Deterioration in functional ability could be used as an important predictor of dependence level or need for support [50]. In western countries, this need is associated more with being a widow or widower and not having children [23]. Dependency is understood as the distance between an individual's disability and

their personal, material and social resources for overcoming it, what Lawton calls "level of competence", which would cover both level of health and ability, as well as the sensory, behavioural and cognitive capacity with regard to the resource [30]. It is a dynamic process that can be changed or prevented if an adequate environment or care is provided. Consequently, the need for care in case of dependency is based on the level of competence related to health and functioning [1; 3; 21; 45-47]. Family plays an important role in the satisfaction of care of the old people, since family members are the ones who mainly look after the elderly [4; 5; 7; 9; 11; 14; 26; 31; 39; 40; 48; 54].

An individual's assessment of received support is defined by the degree to which a person feels that his/her needs are covered or satisfied [44]; it has been measured in terms of satisfaction with the support or help received and the perception that this help can be received if needed [52]. Some research has shown that a positive perception of support networks does not promote health or health care [16], but may help to reduce the effects of stress on health [60].

In terms of the emotional component of social support, it has been shown that relations that produce less satisfaction are those associated with greater functional deterioration and more depressive symptoms [12; 29]. Having few social relations increases risk of disability, mortality, premature death and prolongs recovery time after a major disease [53]. On the other hand, it has been shown that marriage and the size of the social network play a protective role in physical disability; the loss of a spouse has negative effects on physical and mental health, although the effect of this lessens over time [13].

When an attempt has been made to analyse the instrumental dimension of functional support in old people, consistent results identifying instrumental support factors associated with functional disability have not been obtained [56]. There is a clear relationship between the social network and risk of limitations for carrying out activities of daily living [51]; there are also gender differences in which there was a significant increase in disability associated with receiving more instrumental support only in men.

In short, family and health, together with the social network, leisure and economic situation comprise the most important dimensions in the QoL of old people. Herein lies the importance and need to further explore the role of the family in old age, especially when health and functioning, as well as other living condition parameters, create situations of risk and vulnerability.

The interest of this study relies on its contribution to raising awareness of factors that may have a more direct effect on health, the well-being of old people and the satisfaction of their care and support needs. From a public health viewpoint, there are several challenges to be established for maintaining the autonomy and QoL of the elderly in order to promote active ageing with a suitable framework of formal and informal networks which can provide care and emotional support if necessary.

Within this context, the aim of the paper focuses on the role of the family and social QoL domains as instrumental support to vulnerable or dependent old people, which is based on evaluations provided by the elderly and on their level of competence related to health and functional ability.

The specific purposes are: (i) to analyse differences in Health Related Quality of Life (HRQoL) from a health and functional perspective for performing activities of daily living (dependence, independence); (ii) to study explanatory factors within the context of level of competence related to functional ability; (iii) amongst the dependent old people, to explore features related to receiving informal care. The hypothesis guiding this objective is that there are differences in HRQoL according to the level of competence related to health and functioning, the role of informal support and socio-demographic characteristics.

2. Material and methods

2.1. Data source and participants

The data source comes from a face-to-face semi-structured survey on Quality of Life among non-institutionalised old people in the Madrid region, and was carried out in 2005 by the authors (survey on Quality of Life to old people living in family housing in Madrid region: CadeViMa survey 2005). The study sample was representative of the population universe (959,993 people) [25], and was made up of 499 people aged 65 or over (4% permitted error, $p \leq 0.05$ for a confidence level of 95%). The following strata were used to define the sample: gender, age group, and size of the residential area. People with cognitive decline, as measured by the Short Portable Mental Status Questionnaire [33; 43], that prevented them from answering the questionnaire, were excluded (> 4 errors).

The survey contains socio-demographic characteristics and objective and subjective questions about individual QoL definition and several dimensions: health, living arrangements and household, family and social networks, formal and informal support, leisure activities, residential environment, emotional well-being, values and beliefs, and economic resources.

2.2. Assessments

For the purposes of this paper, the following scales were used: depression subscale of the Hospital Anxiety and Depression Scale (HADS-D), Comorbidity Index (CI), Barthel Index (BI), Functional Independence Scale (FIS) and EuroQoL-5D (EQ-5D). In addition, several variables on social and demographic issues were used: age, gender, social class (rated in 5 points, from low to upper class), and receipt of informal care (3 groups: receiving; not receiving but in need of it; not receiving and not needed).

The HADS-D [62] is made up of 7 items, rated on a 0-3 Likert-type scale. A higher score indicates a higher degree of depressive symptoms. A cut-off point of 10/11 was used to identify depression cases (10, probable case; 11, case). The HADS-D shows good psychometric properties and a high correlation with other scales or structured interviews measuring depression [10].

The Comorbidity Index, adapted from the CIRS-G [37], assesses the presence of 19 health conditions. Each health condition is rated on a 0-4 scale (0 = normal; 4 = serious problem with poor short-term prognosis), leading to a total score (possible range: 0-80; sample range: 0-32).

The Barthel index [15; 32] is a measure of functional ability for improving activities of daily living. It comprises 10 items, scored from 0 (dependent) to 15 (independent). The total score ranges from 0 (totally dependent) to 100 (totally independent).

The Functional Independence Scale is purposely designed for this study [34]. It is made up of 23 items grouped into 4 dimensions: personal care, household chores, and interior and exterior mobility. Each item is scored on a 1 to 3 scale, with the 0 score for participants who never performed that household chore. The total score range is 23 (totally dependent for all activities) to 69 (totally independent). The scale was used for a validation study and proved to be valid and reliable, with a Cronbach's alpha of 0.79-0.94.

Based on the BI and FIS, a dummy variable on Functional State has been created; thus, participants without any limitation in either of these scales, and participants with some functional limitation (either BI or FIS, or both).

The EuroQoL-5D [6; 19] is a preference-based health-related Quality of Life measure. It is made up of a descriptive system of 5 items (mobility, self-personal care, usual activities, pain/discomfort, and anxiety/depression), rated on a scale from 1 to 3. The descriptive system leads to a health profile which was converted into a weighted health state index ranging from 0 (death) to 1 (perfect health) (EQ-5D-TT or Temporal Tariff), based on the time trade-off method. There is also a transition question about the current general state of health compared to the past 12 months (EQ-5D-12), and a visual analogue scale (EQ-5D-VAS) that records the present self-rated health status on a 0-100 vertical graduated scale.

Social classification scale, based on level of education and socio-economic status by applying Multiple Correspondence Analysis and Cluster Analysis [49], is grouped into five items: upper social class, upper-middle, middle, lower-middle, lower.

2.3. Data analysis

In order to test whether there are differences in HRQoL among the elderly according to level of competence related to health, independence level or functional ability (without or with functional limitation), informal support being received and socio-demographic characteristics, univariate and multivariate statis-

tical analysis are run to achieve the purposes. In this sense, to test the null hypothesis, i.e. (i) people with and without limitations for performing ADL are equally likely to perceive their HRQoL; and (ii) old people with functional limitations in ADL are equally likely to perceive their HRQoL depending on whether they receive informal support or not, the Mann-Whitney U non-parametric test is used. Finally, two sets of logistic regression models were computed, one for predicting functional limitation and the other for exploring informal care among people with functional limitation based on socio-demographic characteristics and health.

3. Results

3.1. Personal characteristics: socio-demographic, household and level of competence related to health and functioning

The socio-demographic and household characteristics of the community-dwelling population aged 65 and over in the Madrid region are shown in Table 1. As indicated, 6 out of every 10 non-institutionalised elderly persons are women, demonstrating a clear gender imbalance that becomes more acute among more senior age groups, with 2.5 women for every man, resulting in an over ageing rate of 14.6%. This demographic group has an average age of 75 years, since almost half of the old people are younger-elderly, particularly men, as 6 out of 10 of them are under 75 years old compared to 4.5 out of every 10 women in this same age group.

In line with this age and sex structure, most of these people are still married, although a notable 40% of them are now widowed. A clear imbalance is once again observed in terms of sex and age, since 7 out of every 10 men are still married while more than half of women are widowed, with widowhood rising with age; most of the married couples are the younger-elderly.

The education level is relatively low, with only 3 out of every 10 elderly having secondary school level or higher, while almost another 3 are only able to read and write, or are illiterate. Since social class has been calculated according to education and socioeconomic position [49], the consequence of a low educational level is mainly predominant in lower and lower-middle social classes. Once again there are differences by sex and age, since more than 80% of women belong to lower social classes (only 65% of men) and 84% of the oldest people have lower than secondary education level (only 59% of younger-elderly).

In addition, more than half of old people are now retired from their job, which results in considerable income restriction, particularly among pensioners who mostly have this status due to being widowed. Consequently, barely 17% of this population has an income of over 900 euro a month, with the most widespread situation being an average income of 600 euro a month. Once again, women, usually housewives, who have not worked outside home, are the group most

Table 1. Socio-demographic and household characteristics of old people by sex and age (percentages and *p*-values for chi-square test)

Variables (valid cases)	Number of cases		Sex		Age		
	Total	%	Male	Female	65-74 years old	75-84	85 +
Categories	499	100.0	(204) 40.9%	(295) 59.1%	(247) 49.5%	(179) 35.9%	(73) 14.6%
Sex (499)						**	
Male	204	40.9			46.6	38.0	28.8
Female	295	59.1			53.4	62.0	71.2
Age (499)				**			
65-74 years old	247	49.5	56.4	44.7			
75-84	179	35.9	33.3	37.6			
85 +	73	14.6	10.3	17.6			
Mean age	75.0		74.2	75.5	69.1	78.5	86.5
Civil Status (499)				***		***	
Single	16	3.2	4.4	2.4	3.2	3.9	1.4
Married	265	53.1	70.1	41.4	68.8	44.7	20.5
Separated/Divorced	17	3.4	2.0	4.4	3.2	3.9	2.7
Widowed	201	40.3	23.5	51.9	24.7	47.5	75.3
Educational level (497)				NS		***	
Illiterate	13	2.6	2.9	2.4	1.2	5.1	1.4
No formal studies, but able to read and write	127	25.6	21.6	28.3	20.3	28.7	35.6
Primary studies	201	40.4	38.7	41.6	37.8	41.6	46.6
Secondary education (finished at 12-16 years old)	95	19.1	21.6	17.4	26.0	12.9	11.0
Secondary education, and Professional Studies (finished at 16 18 years old)	36	7.2	9.3	5.8	8.5	7.9	1.4
University Degree	25	5.0	5.9	4.4	6.1	3.9	4.1
Social class (499)				***		*	
Upper	19	3.8	5.4	2.7	4.0	3.9	2.7
Upper middle	22	4.4	7.8	2.0	5.7	2.2	5.5
Middle	83	16.6	21.1	13.6	19.4	16.2	8.2
Lower middle	236	47.3	42.6	50.5	49.4	44.7	46.6
Lower	139	27.9	23.0	31.2	21.5	33.0	37.0
Working activity relation (499)				***		***	
Still working	9	1.8	2.5	1.4	2.8	1.1	0.0
Retired	269	53.9	92.2	27.5	59.5	50.8	42.5
Pensionner	131	26.3	5.4	40.7	15.8	33.5	43.8
Housewife	90	18.0	0.0	30.5	21.9	14.5	13.7
Monthly income (333)				NS	**		
Without income	1	0.3	0.0	0.5	0.6	0.0	0.0
Less than 300 € (Less than 50,000 Pts)	13	3.9	1.5	5.5	4.2	3.4	4.1
301 to 600 € (50,001 to 100,000 Pts)	148	44.4	40.3	47.2	35.2	48.7	65.3
601 to 900 € (100,001 to 150,000 Pts)	114	34.2	37.3	32.2	35.8	37.0	22.4
901 to 1,200 € (150,001 to 200,000 Pts)	46	13.8	16.4	12.1	20.0	10.1	2.0
More than 1,200 € (More than 200.000 Pts)	11	3.3	4.5	2.5	4.2	0.8	6.1
Size of the residential area (499)				NS		NS	
Madrid municipality	343	68.7	66.7	70.2	67.2	69.3	72.6
Metropolitan municipalities	128	25.7	27.0	24.7	27.1	25.1	21.9
Non metropolitan municipalities	28	5.6	6.37	5.08	5.67	5.59	5.48
House or place of living (494)				NS		NS	
Temporarily with the children; other situations	9	1.8	3.0	1.0	1.6	2.3	1.4
Children's house	23	4.7	3.0	5.8	2.0	6.2	9.7
In their own house	462	93.5	94.0	93.2	96.3	91.5	88.9
Household size (499)				**		***	
1 person	160	32.1	25.0	36.9	22.7	36.9	52.1
2	259	51.9	55.9	49.2	59.1	46.9	39.7
3 +	80	16.0	19.1	13.9	18.2	16.2	8.2
Mean value	1.9		2.1	1.9	2.0	1.9	1.7
Age of the household members (499)				NS		***	
Mean value	70.7		70.1	71.1	65.8	73.4	80.6

χ² test: * *p*-values ≤ 0.05; ** *p*-values ≤ 0.01; *** *p*-values ≤ 0.001; NS *p*-values > 0.05.

Source: CadeViMa survey 2005.

negatively affected by low widow pensions. On the other hand, over 9 out of every 10 men receive a retirement pension which means more of them tend to receive a higher monthly income. As a result of the sex and age structure too, it is the oldest

groups, mostly women, that have the lowest income, with 7 out of every 10 persons aged 85 or more receiving less than 600 euro a month.

With regard to place of residence, only 6% of old people who live in the Madrid region do so in rural municipalities outside the metropolitan area. In general, they tend to live in their own house, although around 7% live in one of their children's houses either permanently or for periods. Although there is no statistical evidence, there is a trend in which there are more women and older elderly people living in the city of Madrid, with the younger old people living in their own homes while the older elderly are more likely to live in the home of one of their children.

It is important to note that old people live in very small, old homes (the average age of the home is 70 years) due to either predominantly being married and/or widowed, as well as the life cycle stage they are in at this age, in which, in most cases, their children have left home. Consequently, only 16% of this people live in homes with 3 or more people. Once again it is women and the most elderly who live in older, smaller homes alone.

In this context, the population's health conditions are crucial for understanding their functioning and level of need (Table 2). As shown, health measures generally reveal a relatively healthy population, with a score of 67 out of 100 in perceived state of health (EQ-5D-VAS), an average of 3 diagnosed diseases (out of 19 questioned), an average CI of 9 and a depression index of 3.8 out of 20 (HADS-D). The distribution of the perception of current health compared with 12 months ago (EQ-5D-12) is almost a normal curve in which over 72% of old people believe that during the last year their health has remained the same, almost 12% believe it has improved, while 16% think it has worsened. It is predominantly women and the most elderly who consider their health worse.

In this context, the HRQoL indicator (EQ-5D-TT) has an average value of 0.86 which means, as previously mentioned, that the community-dwelling elderly population from the Madrid region have relatively good health, with almost half of them having no problems at all.

In general, these health conditions are more favourable in men, observing a statistically significant association in terms of a greater number of men who consider their current state of health to be above average. They have a lower CI and a HRQoL slightly above the average value of the female population. In terms of age, the population under 75 years old is generally in the most favourable situation.

As for functional ability, there are relatively high scores in the two measures used: Barthel Index (96.1 out of 100) and Functional Independence Scale (65.2 out of 69). Consequently, less than 5 of every 10 old people have some type of functional limitation; particularly men, with the number of people with functional problems increasing with age, from a third among the younger-elderly (65 to 74 years old) up to 3 out of 4 for the very elderly (aged 85 or more).

Table 2. General facts on health, functioning and received care among old people by sex and age (percentages and *p*-values for chi-square test)

Variables (valid cases)	Number of cases		Sex		Age		
	Total	%	Male	Female	65-74 years old	75-84	85 +
Categories	499	100.0	(204) 40.9%	(295) 59.1%	(247) 49.5%	(179) 35.9%	(73) 14.6%
EQ-5D-VAS current health status (497)			**		***		
≤ 50	97	19.5	14.7	22.9	10.6	27.5	30.1
51 - 75	239	48.1	46.1	49.5	48.0	46.6	52.1
76 +	161	32.4	39.2	27.6	41.5	25.8	17.8
Mean value	67.3		69.6	65.7	71.8	64.0	60.2
Number of diagnosed diseases (499)			NS		***		
1	125	25.1	28.9	22.4	34.8	17.9	9.6
2	125	25.1	27.9	23.1	26.7	25.1	19.2
3	99	19.8	19.1	20.3	17.4	22.3	21.9
4 +	150	30.1	24.0	34.2	21.1	34.6	49.3
Mean value	2.9		2.6	3.1	2.4	3.3	3.5
Comorbidity index (499)			*		***		
≤ 5	140	28.1	32.4	25.1	38.1	21.8	9.6
6 - 10	186	37.3	41.2	34.6	37.2	38.5	34.2
11 - 15	82	16.4	13.2	18.6	14.6	14.5	27.4
16 +	91	18.2	13.2	21.7	10.1	25.1	28.8
Mean value	9.0		7.9	9.8	7.3	10.3	11.8
HADS-D (depression scale) (492)			NS		***		
≤ 4	313	63.6	66.7	61.5	74.2	56.6	45.2
5 - 10	118	31.1	30.3	31.6	22.1	38.3	43.8
11 +	50	5.3	3.0	6.9	3.7	5.1	11.0
Mean value	3.8		3.5	4.1	2.9	4.4	5.4
EQ-5D-12: health status today compared to the last 12 months (497)			NS		***		
Better	57	11.5	14.7	9.2	14.6	9.6	5.5
The same	361	72.6	72.5	72.7	76.8	70.2	64.4
Worse	79	15.9	12.7	18.1	8.5	20.2	30.1
EQ-5D index (temporal tariff or health states) (476)			*		***		
Extreme or severe problems	63	13.2	8.7	16.4	5.6	18.8	24.7
Some problems	177	37.2	34.9	38.8	35.2	36.5	45.2
Without problems	236	49.6	56.4	44.8	59.2	44.7	30.1
Mean value	0.86		0.89	0.83	0.90	0.81	0.79
Barthel Index of Functional Ability (498)			NS		*** (a)		
(≤ 60) Severe or total dependence	8	1.6	0.5	2.4	0.4	1.7	5.5
(61-69) Mild dependence	105	21.1	17.6	23.5	14.6	23.5	37.0
(100) Independence	385	77.3	81.9	74.1	85.0	74.9	57.5
Mean value	96.1		97.7	95.0	97.9	95.3	91.7
Functional Independece Scale (including domestic tasks) (465)			***		***		
(≤ 55) Severe or total dependence	56	12.0	20.2	6.3	11.5	10.8	16.9
(56-68) Mild dependence	127	27.3	27.5	27.2	14.1	35.5	53.8
(69) Independence	282	60.6	52.3	66.5	74.4	53.6	29.2
Mean value	65.2		64.1	66.1	66.3	64.6	63.0
Functional state (based on the Barthel index and on the Functional Independence Scale) (482)			**		***		
Without limitation	255	52.9	46.0	57.7	65.3	47.4	24.3
With limitation	227	47.1	54.0	42.3	34.7	52.6	75.7
Receiving care from family, friends, etc., living or not in the same house (499)			NS		***		
Not receive	327	65.5	69.6	62.7	82.2	57.5	28.8
Receive	172	34.5	30.4	37.3	17.8	42.5	71.2
Frequency of care (169)			NS		NS		
All or almost all days	96	56.8	60.7	54.6	59.1	55.4	56.9
1 or 2 times per week	59	34.9	32.8	36.1	25.0	36.5	41.2
1 or 2 times a month	7	4.1	1.6	5.6	6.8	4.1	2.0
Occasionally or with less frequency	7	4.1	4.9	3.7	9.1	4.1	0.0
Level of satisfaction with received care (165)			NS		NS		
Very satisfied	62	37.6	40.7	35.8	32.6	44.4	32.0
Quite satisfied	97	58.8	57.6	59.4	62.8	51.4	66.0
Fairly satisfied	2	1.2	0.0	1.9	2.3	0.0	2.0
Not very satisfied	1	0.6	0.0	0.9	0.0	1.4	0.0
Not at all satisfied	3	1.8	1.7	1.9	2.3	2.8	0.0

χ^2 test: * *p*-values ≤ 0.05; ** *p*-values ≤ 0.01; *** *p*-values ≤ 0.001; NS *p*-values > 0.05; (a) 3 cells (33.3%) have an expected count of less than 5. The minimum expected count is 1.17.

Source: CadeViMa survey 2005.

The support received from family, friends, etc., living or not in the same home, i.e. informal support, is particularly valuable to the population that needs it. Among the non-institutionalised elderly population living in the Madrid region, this support is around 35%, a figure that increases with age, from 18% in the youngest group to 71% among the most elderly. In addition, 6 out of 10 old persons receive support every or almost every day, and another significant percentage (35%) receive it once or twice a week, with no statistical differences by age or sex.

Neither are there any significant differences by age and sex with regard to satisfaction with the support received, as it is very high, with less than 4% being fairly/not very/not at all satisfied with this support.

3.2. Functional state and informal care

Taking into consideration Functional State (based on BI and the FIS), more than a half of the old people report no functional limitation and 6.3 out of 10 have no health problems according to HRQoL (EQ-5D-TT) (Table 3). Thus, with regard to the first goal, null hypothesis has to be rejected because, according to the non-parametric test of Mann-Whitney, there are significant differences in HRQoL according to the functional state among old people.

Table 3. Testing statistical differences between HRQoL and functional state among old people (the Mann-Whitney U non-parametric test)

HRQoL (EQ-5D-TT index)	Functional state (col %)		Valid cases	
	Without functional limitation	With functional limitation	Total	%
Extreme problems	4.9	**23.1**	62	13.5
Some problems	32.0	**41.2**	167	36.3
No problems	**63.1**	35.6	231	50.2
Valid cases: total (%)	244 (53.0)	216 (47.0)	460 (100.0)	

Chi square test: p-values: 0.000

Test Statistics (a)	HRQoL (EQ-5D-TT index)
Mann-Whitney U	17035
Wilcoxon W	40471
Z	-7.0156
Asymp. Sig. (2-tailed)	0.000000000002

a) Grouping Variable: functional limitation

Source: CadeViMa survey 2005.

In fact, 47% of old people report functional disability in performing activities of daily living (Table 3). Among those people with functional limitation (Table 4)

almost half do not receive informal care and 51% of them have no health problems; 52% of old people with functional limitation receive care and 78% of them suffer some or severe health problems according to HRQoL (EQ-5D-TT). In this sense, considering the non-parametric test of Mann-Whitney, there are significant differences in HRQoL among old people with functional limitation and according to informal care received.

Table 4. Testing statistical differences between HRQoL and old people with functional limitation according to the receipt of informal care (the Mann-Whitney U non-parametric test)

	People with functional limitation according to with informal care (col %)		Valid cases	
HRQoL (EQ-5D-TT index)	Not receiving care	Receiving care	Total	%
Extreme problems	14.4	**31.3**	50	23.2
Some problems	34.6	**47.3**	89	41.2
No health problems	**51.0**	21.4	77	35.6
Valid cases: total (%)	104 (48.0)	112 (52.0)	216 (100.0)	

Chi square test: p-values: 0.000

Test Statistics (a)	HRQoL (EQ-5D-TT index)
Mann-Whitney U	3608
Wilcoxon W	9936
Z	-4.9495
Asymp. Sig. (2-tailed)	0.00000074

a) Grouping Variable:
informal support of people with functional limitation

Source: CadeViMa survey 2005.

When functional ability decreases, the elderly population is in need of care. That is the case for 39% of the elderly, but of those that perceive the need for care (13.6%) do not receive any kind of care.

3.3. Explanatory factors within the context of level of competence related to functional ability

One of the goals of this paper is to study the relationship of personal characteristics and level of competence connected with functional ability to carry out ADL. For that purpose, the Logistic Regression statistical technique is used. The Logistic Regression model sets personal characteristics (related to health and socio-demographic facts) as predictors of the risk of having functional limitations among community-dwelling old people in Madrid (Table 5). The table at the top contains the estimated coefficients (under column B) and related statistics from the logistic regression model that predicts functional limitations.

Since there is a strong correlation between the number of chronic diseases and CI ($r = -0.73$), only the CI was used in the model as this takes into account the number of chronic diseases, severity and medication. Of the eight variables used (sex, age, social class, CI, HADS-D depression index, states of health based on EQ-5D-TT, EQ-5D-12 or comparative health within the last 12 months, EQ-5D--VAS or current state of health), five variables were significant: sex, age, CI, EQ--5D-TT and EQ-5D-12.

Therefore, the quotient of probability of having functional limitation is higher among men and increases with age so that people aged 75-84 years old have almost double the probability of suffering limitation and the oldest a probability of almost 5 times more. Functional ability is more limited among the old people with higher comorbidity, with it being almost 4 times higher among those with an index of 16 or more. With regard to the HRQoL based on the EQ-5D instrument, there are two significant variables in the regression model; consequently, states of health or the temporal tariff (EQ-5D-TT) are statistically significant in the category of those who do not suffer health problems, as a result of which there is a higher probability that such people do not suffer functional limitation; the health comparison (EQ-5D--12) produced by the individuals indicates that those who consider they have a poorer health now than in the last 12 months have an almost 4 times greater probability of suffering functional limitation for carrying out ADL.

The measures that attempt to quantify the proportion of explained variation in the logistic regression model are Cox and Snell R^2 and Nagelkerke R^2 (under the table entitled model summary statistics); but these measures are different to and much smaller than those of a linear regression model. Cox and Snell measures cannot achieve a maximum value of 1 making it difficult to interpret; this is why Nagelkerke proposed a modification of the Cox and Snell coefficient so that the value of 1 can be achieved. Consequently, from Nagelkerke R^2 the 32% variation in the outcome variable is explained by the logistic regression model.

One way to assess how well the model fits is to use the classification table; this table shows the observed and predicted group memberships when cases with a predicted probability of 0.500 or greater are classified as having functional limitations (0.500 is the cut value which means that probability > 0.500 is success; and probability < 0.500 is failure). Of the entire sample, 72% of the cases are correctly predicted; 78% are cases without the event which are correctly predicted to not have the event (specificity) and 64.6% are cases with the event which are correctly predicted to have the event (sensitivity).

A commonly used test for the goodness-of-fit of the observed and predicted number of events is the Hosmer-Lemeshow test; the chi-square test is used to assess the difference between the observed and expected numbers of events, and this value is 10.09 with 8 degrees of freedom, as shown in Table 5; the observed significance level for the chi-square value is 0.25 and a p-value > 0.05. Thus, the null hypothesis that there is no difference between the observed and predicted values is not rejected.

Table 5. Estimated coefficients and related statistics from the logistic regression model that predicts functional limitation among old people according to socio-demographic and health characteristics

Independent variables	B coefficients	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
Sex (male: reference category)								
Female	−1.0830	0.2319	21.8162	1	**0.0000**	**0.3386**	0.2149	0.5334
Age (65 − 74 years old: ref. category)			21.9560	2	**0.0000**			
75 − 84 years old	0.6469	0.2432	7.0776	1	**0.0078**	**1.9097**	1.1857	3.0758
85 + years old	1.5849	0.3508	20.4084	1	**0.0000**	**4.8789**	2.4530	9.7042
Comorbidity index (≤ 5: ref. category)			13.7741	3	**0.0032**			
6 − 10	0.7128	0.2793	6.5104	1	**0.0107**	**2.0396**	1.1797	3.5263
11 − 15	0.9928	0.3574	7.7178	1	**0.0055**	**2.6988**	1.3396	5.4371
16 +	1.3266	0.3898	11.5830	1	**0.0007**	**3.7681**	1.7553	8.0891
EQ-5D-Temporal Tariff (extreme problems of health: ref. category)			5.2186	2	0.0736			
Some problems of health	−0.5325	0.4163	1.6360	1	0.2009	0.5871	0.2596	1.3277
No problems of health	−0.9316	0.4383	4.5179	1	**0.0335**	**0.3939**	0.1669	0.9300
EQ-5D comparative health (better: ref. category)			10.5148	2	**0.0052**			
The same	0.1203	0.3398	0.1253	1	0.7233	1.1278	0.5795	2.1951
Worse	1.3486	0.4912	7.5393	1	**0.0060**	**3.8522**	1.4710	10.0877
Constant	*−0.2385*	*0.5813*	*0.1683*	*1*	*0.6816*	*0.7878*		

Variables in the model:

Dependent variable: functional limitation.

Independent variables: sex; age; social class; comorbidity index; depression index; EQ-5D-Temporal Tariff; EQ-5D-Temporal Tariff; EQ-5D-comparative health within the last 12 months; EQ-5D-VAS current health state.

Variable(s) entered: step 1: EQ-5D-Temporal Tariff; step 2: age; step 3: sex; step 4: comorbidity index; step 5: EQ-5D-12 comparative health within the last 12 months.

Number of valid cases: 453; Chi-square: 126.675; p-value > 0.000; Nagelkerke R Square: 0.325

Classification table: Correcty classified: 71.7; Specificity: 78.0; Sensitivity: 64.6; Hosmer and Lemeshow: chi-square: 10.0972; gl: 8; Sig.: 0.258

Source: CadeViMa survey 2005.

Table 6. Estimated coefficients and related statistics from the logistic regression model that predicts informal care received by old people with functional limitation according to socio-demographic and health characteristics

Independent variables	B coefficients	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Age (65 – 74years old: ref. category)			21.3173	2	0.0000			
75 – 84 years old	0.8980	0.3547	6.4092	1	0.0114	**2.4547**	1.2248	4.9196
85 + years old	2.0155	0.4382	21.1523	1	0.0000	**7.5045**	3.1790	17.7151
EQ-5D-Temporal Tariff (extreme problems of health: ref. category)			10.7691	2	0.0046			
Some problems of health	−0.2618	0.4029	0.4223	1	0.5158	0.7697	0.3495	1.6952
No problems of health	−1.2299	0.4259	8.3398	1	0.0039	**0.2923**	0.1269	0.6736
Constant	*−0.2085*	*0.4230*	*0.2429*	*1*	*0.6221*	*0.8118*		

Variables in the model:
Dependent variable: informal care among old people with functional limitation.
Independent variables: sex; age; social class; comorbidity index; depression index; EQ-5D-Temporal Tariff; EQ-5D-12 comparative health within the last 12 months; EQ-5D--VAS current health state household size .
Variable(s) entered: step 1: age; step 2: EQ-5D-Temporal Tariff .
Number of valid cases: 212;   Chi square: 44.695;   *p-value* < 0.0000;   Nagelkerke R Square: 0.253
Classification table: Correcty classified: 67.9;   Specificity: 64.4;   Sensitivity: 71.2;   Hosmer and Lemeshow: chi-square: 3.2095;   gl: 7;   Sig.: 0.8649

Source: CadeViMa survey 2005.

3.4. Explanatory factors of receiving informal care by dependent old people

The logistic regression model to explain the probability of receiving informal care among old people with functional limitation is shown in Table 6. The independent variables considered in the model are related to personal and socio-
-demographic characteristics (sex, age, social class) and level of competence is related to health (CI, HADS-S depression, states of health from EQ-5D-TT, comparative health within the last twelve months or EQ-5D-12, perceived current health status based on EQ-5D-VAS), as well as household size. But only two of these variables are entered in the equation. This indicates that the quotient of probability of receiving informal care among old people with functional limitation is seven and a half times higher among the oldest age groups. Variable states of health, measured by the EQ-5D-TT, are statistically significant, meaning that old people in good health or without health problems, albeit with poor functioning, are less likely to receive informal care.

The classification table shows how well the model assigns cases to groups. Of the entire sample, 67.9% of cases are correctly classified. The table shows the observed and predicted group memberships when cases with a predicted probability of 0.500 or greater are classified as having functional limitations. Consequently, 76.7% of cases are correctly classified, 64.4% are cases without the event which are correctly predicted to not have the event (specificity) and 71.2% are cases with the event which are correctly predicted to have the event (sensitivity). Considering the Hosmer and Lemeshow test (chi-square: 3.20; gl: 7; p-values: 0.864), there are significant differences between the observed and predicted values.

4. Discussion and conclusions

Analysis of the association between level of competence factors related to health and functional level for performing ADL is important for knowing the underlying factors of need for support and satisfaction with it among non-institutionalised elderly people in the Madrid region. This study has shown that the proportion of elderly people with functional limitation (47%) is slightly higher than that obtained by the National Health Survey carried out in Spain in 2006 [38], in which just over 40% of the population aged 65 and over have some type of limitation for carrying out the ADL over the last 6 months. Related to this, i.e. also with a lower proportion (37.3%), are the results of the study carried out for elderly residents in Saragossa, Spain [55]. The proportion in the Madrid region is lower than the results obtained in one of its metropolitan area municipalities, Leganés, based on the study ''Ageing in Leganés'' which shows that 62.2% of elderly people say they suffer functional limitations [8].

One of the main objectives of the study is to find out and analyse the association between factors related to elderly people's health and their functional

level for carrying out ADL, with the aim of establishing the underlying relationship between the level of competence variables related to functioning and personal characteristics (health and socio-demographic aspects). For this, a logistic regression model was designed taking the functional state as the response variable.

The results show that the probability of suffering functional limitation is higher among men, a proportion which also seems to be higher in the results produced by other authors in studies on Leganés (Madrid, Spain) [8], Israel [59], Saragossa (Spain) [55] and Barcelona (Spain) [42]. This could be explained because in this case in order to discover the "functional level" variable response, joint use has been made of both the BI and the FIS, which includes, as one of its four dimensions for measuring daily life instrumental activities, household chores with six items (doing the shopping, preparing food, cleaning the house, making the beds, washing clothes and administering one's own money). As a result, there is a likelihood of finding gender differences in the carrying out of household chores by men and women, particularly if the study cohort and its socio-cultural characteristics are taken into consideration, an aspect that has been described for both Spain and other Western countries [20; 21; 58].

In terms of gender differences, perhaps the results, rather than showing a functional inability in men, indicate a limitation for doing household chores due to lack of habit because they have never done them (as another of the possibilities considered in the answers to the FIS items). To check this assumption it would be advisable to repeat the study using the FIS as a dependent variable in its shortened version, i.e. without including the items that assess ability for doing household chores.

This study has shown that functional limitation increases with age by almost double for those aged 75-84 years old and by almost five times among the most elderly. These data coincide with most studies carried out in Spain [8; 18; 55; 57]. It has also been observed that morbidity, measured in this study according to the comorbidity index, increases the possibility of functional ability deterioration, results shared by Beland et al. [8] and Orfila et al. [42], although not with those found in Israel [59].

Assessment of health state is a frequently used health indicator. When there is a poor perception of state of health there is a higher probability that it is related to functional deterioration. Less than 20% of elderly Madrilenians assess their health below the 50 level according to the EQ-5D-VAS scale (average value of 68); considering the classic scale (in five levels from a very poor to a very good state of health) only 5.6% believe they have poor or very poor health, a percentage clearly inferior to the 10.6% reported in the Saragossa study [55]. The differences found could be related to age, since the population in the Saragossa study is older. This variable was not selected in the regression model, although the comparison of current state of health with that over the last 12 months (EQ-5D-12) was indicating

a greater incidence of functional limitation in elderly people who believe their health has worsened.

In terms of the analysis of the underlying factors in predicting the receipt of support among old people according to socio-demographic and health variables, only two of these variables are entered in the equation, which means the probability of receiving informal care among old people with functional limitation is higher among the oldest age group, with it being less likely that informal care is received by old people with no health problems according to the EQ-5D-Temporal Tariff or states of health.

Among old people in the Madrid region, age was a predictor of receiving of support, confirming what has already been established in other research [23; 55; 59].

With regard to sex, although there is a higher proportion of women than men receiving support, both the descriptive analyses and the logistic regression model have not found statistically significant differences between men and women and receiving informal support or not, in line with the results of the Saragossa (Spain) [55] and Israel studies [23]. However, in the research carried out in Sweden [24], differences were observed, with it being women who mainly received support. This may be due more to the effect of age rather than sex though, since the Swedish study was carried out in elderly people over 75 years old, an age in which there is a higher proportion of women, with an increased risk of need for support the older one gets.

In summary, the research revealed that the studied population, living in family housing in the Madrid region, has a relative good level of competence related to health and functional ability. Results show differences in QoL according to functional ability and support received from family and social networks.

The risk of having functional limitation is higher among men, and increases with age, comorbidity, states of health and when people perceive their health to be worse than over the last 12 months. The fact that functional ability observed in this study is worse among the male population could be due to the variable dummy used, based both on the BI and FIS; the latter takes into account activities related to household chores, which might explain poorer functional ability among men. That is why, in order to determine this different incidence compared to other studies [8; 23; 55], it would be necessary to repeat the statistical analysis using a functional ability variable that does not consider one of the four FIS dimensions, i.e. household chores, to check the incidence of the socio-cultural differences of the gender with regard to doing household chores.

References

[1] Abellán García A., *Nuevo modelo de funcionamiento de la discapacidad*, "Revista Multidisciplinar de Gerontología" 2000, vol. 10, no. 3, pp. 189-192.

[2] Abellán García A., del Barrio Truchado E., Castejón Villarejo P., Esparza Catalán C., Fernández-Mayoralas Fernández G., Pérez Ortiz G., Puga González M.D., Rojo Pérez F., Sancho Castiello M., *A propósito de las condiciones de vida de las personas mayores. Encuesta 2006*, Instituto de Mayores y Servicios Sociales (IMSERSO), Colección Estudios, Serie Documentos Estadísticos, no. 22009, Madrid 2007, 167 pp.

[3] Abellán García A., Puga González M.D., *Estudio monográfico. La discapacidad en la población española*, [in:] *Informe 2004. Las personas mayores en España. Tomo I: Datos estadísticos estatales y por comunidades autónomas*, ed. M.T. Sancho Castiello, Ministerio de Trabajo y Asuntos Sociales, Instituto de Mayores y Servicios Sociales, Madrid 2005, pp. 777-809.

[4] Alberdi I., *La tercera edad y las redes familiares*, [in:] *La Nueva Familia Española*, ed. I. Alberdi, Taurus, Madrid 1999, pp. 319-348.

[5] Allen K.R., Blieszner R., Roberto K.A., *Families in the middle and later years: A review and critique of research in the 1990s*, "Journal of Marriage and the Family" 2000, vol. 62, no. 4, pp. 911-926.

[6] Badia X., Roset M., Montserrat S., Herdman M., Segura A., *The Spanish version of EuroQol: A description and its applications, European Quality of Life scale*, "Medicina Clínica" (Barcelona) 1999, vol. 112, suppl. 1, pp. 79-85.

[7] Bazo M.T., Domínguez-Alcón C., *Los cuidados familiares de salud en las personas ancianas y las politicas sociales*, "Revista Española de Investigaciones Sociológicas" 1996, no. 73, pp. 43--56.

[8] Beland F., Zunzunegui M., *Predictor of functional status in older people living at home*, "Age and Ageing" 1999, vol. 28, no. 2, pp. 153-159.

[9] Bengtson V., Rosenthal C., Burton L., *Families and aging: Diversity and heterogeneity*, [in:] *Handbook of Aging and the Social Sciences*, eds. R. Binstock, L. George, Academic Press, San Diego 1990, pp. 263-281.

[10] Bjelland I., Dahl A.A., Haug T.T., Neckelmann D., *The validity of the Hospital Anxiety and Depression Scale. An updated literature review*, "Journal of Psychosomatic Research" 2002, vol. 52, no. 2, pp. 69-77.

[11] Blieszner R., Alley J.M., *Family caregiving for the elderly: An overview of resources*, "Family Relations" 1990, Vol. 39, no. 1, pp. 97-102.

[12] Bosworth H.B., Steffens D.C., Kuchibhatla M.N., Jiang W.J., Arias R.M., O'Connor C.M., Krishnan K.R.R., *The relationship of social support, social networks and negative events with depression in patients with coronary artery diseases*, "Aging and Mental Health" 2000, vol. 4, no. 3, pp. 253-258.

[13] Boult C., Kane R.L., Louis T.A., Boult L., Mccaffrey D., *Chronic conditions that lead to functional limitation in the elderly*, "Journal of Gerontology" 1994, vol. 49, no. 1, pp. M28--M36.

[14] Brubaker T.H., *Families in later life: A burgeoning research area*, "Journal of Marriage and the Family" 1990, vol. 52, no. 4, pp. 959-981.

[15] Cid-Ruzafa J., Damian-Moreno J., *Disability evaluation: Barthel's index*, "Revista Española de Salud Pública" 1997, vol. 71, no. 2, pp. 127-137.

[16] Doeglas D., Suurmeijer T., Briançon S., Moum T., Krol B., Bjelle A., Sanderman R., Heuvel W., *An international study on measuring social support: Interactions and satisfaction*, "Social Science and Medicine" 1996, vol. 43, no. 9, pp.1389-1397.

[17] Dunlop D.D., Hughes S.L., Manheim L.M., Disability in activities of daily living: Patterns of change and hierarchy of disability, "American Journal of Public Health" 1997, vol. 87, pp. 378--383.

[18] Espejo Espejo J., Martínez de la Iglesia J., Aranda Lara J.M., Rubio Cuadrado V., Enciso Bergé I., Zunzunegui Pastor M.V., Pérula Torres L.M., Fonseca del Pozo F.J., *Capacidad funcional en mayores de 60 años y factores sociosanitarios asociados (proyecto ANCO)*, "Atención Primaria" 1997, vol. 20, no. 1, pp. 21-35.

[19] EuroQoL Group, *EuroQol – a new facility for the measurement of health-related quality of life*, "Health Policy' 1990, vol. 16, no. 3, pp. 199-208.

[20] Fernández Ballesteros R., Zamarrón M.D., Maciá A., *Calidad de Vida en la vejez en distintos contextos*, Ministerio de Trabajo y Asuntos Sociales, Instituto Nacional de Servicios Sociales, Madrid 1996, 229 pp.

[21] Fernández-Mayoralas G., Rodríguez V., *La capacidad funcional de los ancianos Españoles*, "Revista de Gerontología" 1995, vol. 5, no. 1, pp. 16-22.

[22] Fernández-Mayoralas G., Rojo Pérez F., Prieto Flores M.E., León Salas B., Martínez Martín P., Forjaz M.J., Frades Payo B., García Izaguirre C., *El significado de la salud en la calidad de vida de los mayores*, Portal Mayores, Informes Portal Mayores, no. 74, Madrid 2007, 67 pp., URL:http://www.imsersomayores.csic.es/documentacion/estudiosyresultados/informes/index.html

[23] Giacomin K.C., Uchôa E., Firmo J.O.A., Lima-Costa M.F., *The Bambuí Health and Aging Study (BHAS): A population-based cohort study of prevalence and factors associated with the needs of caregivers for the elderly*, "Cadernos de Saúde Pública" 2005, vol. 21, no. 1, pp. 80-91.

[24] Hellström Y., Hallberg I.R., *Determinants and characteristics of help provision for elderly people living at home and in relation to Quality of Life*, "Scandinavian Journal of Caring Sciences" 2004, vol. 18, no. 4, pp. 387-395.

[25] Instituto de Estadística, *Padrón Continuo de Habitantes, diciembre de 2004*, Comunidad de Madrid 2004.

[26] Jokinen N.S., Brown R.I., *Family Quality of Life from the perspective of older parents*, "Journal of Intellectual Disability Research" 2005, vol. 49, no. 10, pp. 789-793.

[27] Joyce C.R.B., Hickey A., McGee H.M., O'Boyle C.A., *A theory-based method for the evaluation of individual Quality of Life: The SEIQoL*, "Quality of Life Research" 2003, vol. 12, no. 3, pp. 275-280.

[28] Kirwood T., *Mechanism of ageing*, [in:] *Epidemiology in Old Age*, eds. S. Ebrahim, A. Kalache, BMJ Publishing Group, London 1996, pp. 3-11.

[29] Koening H.G., Hays J.C., George L.K., Blazer D.G., Larson D.B., Landerman L.R., *Modelling the cross-sectional relationships between religion, physical health, social support and depressive symptoms*, "American Journal of Geriatric Psychiatry" 1997, vol. 5, no. 2, pp. 131--144.

[30] Lawton M.P., *Competence, environmental press and adaptation of older people*, [in:] *Aging and the Environment: Theoretical Approaches*, eds. M.P. Lawton, P.G. Windley, T.O. Byerts, Springer Publishing, New York 1982, pp. 33-59.

[31] López Doblas J., *Las personas mayores viviendo solas. La autonomía como valor en alza*, IMSERSO, Col. Estudios, Serie: Personas mayores, no. 11001, Madrid 2005, 377 pp.

[32] Mahoney F.I., Barthel D.W., *Functional evaluation: The Barthel Index*, "Maryland State Medical Journal" 1965, vol. 14, pp. 61-65.

[33] Martinez D.L.I., Duenas H.R., Onis Vilches M.C., Aguado T.C., Albert C.C., Luque L.R., *Spanish language adaptation and validation of the Pfeiffer's questionnaire (SPMSQ) to detect cognitive deterioration in people over 65 years of age*, "Medicina Clínica" (Barcelona) 2001, vol. 117, no. 4, pp. 129-134.

[34] Martínez-Martín P., Fernández-Mayoralas G., Frades Payo B., Rojo-Pérez F., Petidier R., Rodríguez-Rodríguez V., Forjaz M.J., Prieto Flores M.E., De Pedro Cuesta J., *Escala de independencia funcional. Primer estudio de validación*, "Gaceta Sanitaria" (forthcoming).

[35] Martínez-Martín P., Frades B., Forjaz M.J., García C., Rojo-Pérez F., Fernández-Mayoralas G., *Estudio piloto sobre la aplicación de un instrumento de medida de la Calidad de Vida individual (SEIQoL-DW) en población mayor*, "Revista Española de Geriatría y Gerontología" 2006, vol. 41, Special issue, p. 80.

[36] Meeks S., Murrell S., Mehl R., *Longitudinal relationships between depressive symptoms and health in normal older and middle-aged adults*, "Psychology and Aging" 2000, vol. 15, pp. 100-109.

[37] Miller M.D. Paradis C.F., Houck P.R., Mazumdar S., Stack J.A., Rifai A.H., Mulsant B., Reynolds C.F. III, *Rating chronic medical illness burden in geropsychiatric practice and research: application of the Cumulative Illness Rating Scale*, "Psychiatry Research" 1992, vol. 41, no. 3, pp. 237-248.

[38] Ministerio de Sanidad y Consumo and Instituto Nacional de Estadística, *Encuesta Nacional de Salud de España. Avance de resultados junio 2006 – enero 2007* (actualized 30.03.2007; accessed 25.05.2007), URL: http://www.msc.es/estadEstudios/estadisticas/encuestaNacional/encuesta2006.htm.

[39] Ministerio de Trabajo and Asuntos Sociales, *Atención a las personas mayores en situación de dependencia en España. Libro blanco*, Ministerio de Trabajo y Asuntos Sociales, Secretaría de Estado de Servicios Sociales, Familias y Discapacidad, IMSERSO, Madrid 2005, 820 pp.

[40] Montgomery R.J.V., *The family role in the context of long-term care*, "Journal of Aging and Health" 1999, vol. 11, no. 3, pp. 383-416.

[41] O'Boyle C.A., McGee H.M., Hickey A., Joyce C.R.B., Browne J., O'Malley K., Hiltbrunner B., *The Schedule for the Evaluation of Individual Quality of Life. User Manual*, Department of Psychology, Royal College of Surgeons in Ireland, Dublin 1993, 9 pp. + annexes.

[42] Orfila, F., Ferré M., Lamarca R., Tebe C., Domingo-Salvany A., Alonso J., *Gender differences in health-related quality of life among the elderly: The role of objective functional capacity and chronic conditions*, "Social Science & Medicine" 2006, vol. 63, no. 9, pp. 2367-2380.

[43] Pfeiffer E., *A short portable mental status questionnaire for the assessment of organic brain deficit in elderly patients*, "Journal of the American Geriatric Society" 1975, vol. 23, no. 10, pp. 433-441.

[44] Procidano M.E., Heller K., *Measures of perceived social support from friends and from family: Three validation studies*, "American Journal of Community Psychology" 1983, vol. 11, pp. 1-24.

[45] Puga González M.D., Abellán García A., *Nuevos riesgos y demandas del envejecimiento en España: Las situaciones de dependencia*, [in:] *Las claves demográficas del futuro de España*, ed. M. Fraga, Fundación Cánovas del Castillo, Madrid 2001, pp. 247-276.

[46] Puga González M.D., Abellán García A., *La predicción de una vejez dependiente*, "Revista Fuentes Estadísticas" 2002, vol. 68, pp. 20-22.

[47] Puga González M.D., Abellán García A., *El proceso de discapacidad. Un análisis de la encuesta sobre discapacidades, deficiencias y estado de salud*, Pfizer, Madrid 2004, 216 pp.

[48] Riley M.W., *The family in an aging society. A matrix of latent relationships*, "Journal of Family Issues" 1983, vol. 4, no. 3, pp. 439-454.

[49] Rojo-Pérez F., Fernández-Mayoralas G., Rodríguez-Rodríguez V., Rojo-Abuín J.-M., *The environments of ageing in the context of the global Quality of Life among older people living in family housing*, [in:] *Quality of Life in Old Age. International and Multidisciplinary Perspectives*, eds. H. Mollenkopf, A. Walker, Social Indicators Research Series, vol. 31, Springer, Dordrecht 2007, pp. 123-150.

[50] Santos-Eggimann B., Zobel F., Clerc Bérod A., *Functional status of elderly home care users: Do subjects, informal and professional caregivers agree?*, "Journal of Clinical Epidemiology" 1999, vol. 52, pp. 1086-1097.

[51] Seeman T.E., Bruce M.L., McAvay G.J., *Social network characteristics and onset of ADL disability: MacArthur studies of successful aging*, "The Journal of Gerontology, Series B: Psychological Sciences and Social Sciences" 1996, vol. 51, no. 4, pp. S191-S200.

[52] *Social Support: An Interactional View*, eds. B.R. Sarason, I.G. Sarason, G.R. Pierce, John Wiley, New York 1990, pp. 9-25.

[53] Stuck A.E., Walter J.M., Nikolaus T., Büla C.J., Hohmann C., Beck J.C., *Risk factor for functional status decline in community-living elderly people: A systematic literature review*, "Social Science and Medicine" 1999, vol. 48, no. 4, pp. 445-469.

[54] Sussman M.B., *The family life of old people*, [in:] *Handbook of Aging and the Social Sciences*, eds. R. Binstock, E. Shanas, G.L. Maddox, G.C. Myers, J.H. Schulz, Van Nostrand Reinhold, New York 1985, pp. 415-449.

[55] Tomás C., Moreno L.A., Germán C., Alcalá T., Andrés E., *Dependencia y necesidades de cuidados no cubiertas de las personas mayores de una zona de salud de Zaragoza*, "Revista Española de Salud Pública" 2002, vol. 76, pp. 215-226.

[56] Travis L.A., Lyness J.M., Shields G., King D.A., Cox C., *Social support, depression and functional disability in older adult primary-care patients*, "American Journal of Geriatric Psychiatry" 2004, vol. 12, no. 3, pp. 265-271.

[57] Valderrama E., Damián J., Pérez J., Romero M., López M., Gavira F.J., *Association of individual activities of daily living with self-rated health in older people*, "Age and Ageing" 2000, vol. 29, no. 3, pp. 267-270.

[58] Verbrugge L.M., *Gender, aging and health*, [in:] *Aging and Health. Perspectives on Gender, Race, Ethnicity, and Class*, ed. K.S. Markides, Sage Publications, Newbury Park 1989, pp. 23-76.

[59] Walter-Ginzburg A., Guralnik J.M., Blumstein T., Gindin J., Modan B., *Assistance with personal care activities among the old-old in Israel: A national epidemiological study*, "Journal of the American Geriatrics Society" 2001, vol. 49, pp. 1176-1184.

[60] Wethington E., Kessler R.C., *Perceived support, received support, and adjustment to stressful life events*, "Journal of Health and Social Behavior" 1986, vol. 27, no. 1, pp. 78-89.

[61] Winbland I., Jaaskelainen M., Kivela S.L., Hiltunen P., Laippala P., *Prevalence of disability in three birth cohorts at old age over time spans of 10 and 20 years*, "Journal of Clinical Epidemiology" 2001, vol. 54, no. 10, pp. 1019-1024.

[62] Zigmond A.S., Snaith R.P., *The hospital anxiety and depression scale*, "Acta Psychiatrica Scandinavica" 1983, vol. 67, no. 6, pp. 361-370.

[63] Zunzunegui M.V., Núñez O., Durban M., García de Yébenes M.J., Otero A., *Decreasing prevalence of disability in activities of daily living, functional limitations and poor self-rated health: A 6-year follow-up study in Spain*, 'Aging Clinical and Experimental Research" 2006, vol. 18, pp. 352-358.

NIEFORMALNE WSPARCIE
W ZALEŻNOŚCI OD KOMPETENCJI DOTYCZĄCEJ ZDROWIA
I FUNKCJONOWANIA W PODESZŁYM WIEKU

Streszczenie

Ten artykuł dotyczy wyjaśnienia roli rodziny i powiązań społecznych, jaką odgrywają w pomocy i wspieraniu ludzi w podeszłym wieku w zależności od poziomu jakości ich życia i od kompetencji źródeł wspierających. Przeprowadzone badania dotyczyły grupy 499 osób z regionu Madrytu. Do badań wykorzystano standardowe kwestionariusze. Do analizy zebranych wyników zastosowano typowe procedury statystyczne, w szczególności regresję logistyczną oraz nieparametryczny test Manna-Whitneya.