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Predominant factors of institutionalisation in the elderly: A comparative study between home nursing and community dwelling

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ABSTRACT

Comparative descriptive study in 200 people older than 70 years in home nursing placement versus community dwelling conditions. The goal was the detection of the most significant factors associated with each living alternative in order to improve socialization and mental health of the elderly. The measurements included: affective evaluation, cognitive assessment, anxiety level, physical functionality, quality of life, and social relationships. Individuals in home nursing residences were older and had worse affective status, functionality, cognitive state, and quality of life. Social relationships in community people were better than in the institutionalized condition, particularly for less aged people. Multivariate analysis and logistic regression indicated that greater disability and poorer quality of social relationships were the main factors influencing the institutionalization process. Specifically, the Sociotype Questionnaire appeared as an efficient tool concerning the detection of social isolation effects as well as an acceptable integrator of prosocial information about home nursing placement. The detection of the quality of the social network through the Geriatric Sociotype could prevent the institutionalization and improve the quality of life of the elderly.

Research limitations/implications

This is a descriptive and not a prospective study, we do not know if these are causal factors or consequences of the institutionalization itself. We cannot speak of predictive

factors, or of determinants of institutionalization, because we are dealing with a transversal study.

The possibility of studying social relations in quantity and quality in a simple way throug the Geriatric Sociotype scale. The institutionalisation and the loss of the social network and functional deterioration are well-related factors.

Implications

The detection of the quality of the social network through the Geriatric Sociotype could prevent the institutionalization and improve the quality of life of the elderly.

The main dimensions of the Geriatric Sociotype (family, friends and acquaintances) are a protective factor against the current problems of loneliness that are affecting society, particularly in the elderly people. There is also a measure of subjective satisfaction not specifically evaluated but verified by the researcher, in the good response of the elderly when asked about these affects. Older people prefer quality to quantity relationships, while other age groups seek greater size of the social network.

Originality

The Geriatric Sociotype survey has shown usefulness in the evaluation of the social network of elderly people, both from the point of view of assessment and prognosis. In this sense it is considered that one of the main contributions of this study is to have included the qualitative evaluation of social relations, and to observe the differences according to the place of residence

Keywords

"elderly", "institutionalization risk", "social relationships", "loneliness", "sociotype."

1. Introduction

There is a clear trend of progressive increase of older people in Western societies. It is estimated that the elderly population will reach 9-10% by 2025 worldwide, with over 800 million people over 65 (Abellán and Pujol, 2016). One of the most important questions raised concerns their living condition – either recommending institutionalization or maintaining community home – with the respective advantages and disadvantages these alternatives present in relation to medical care, social isolation, mental health, and quality of life. Exploring about the predominant factors in that question is the fundamental objective of this article.

Older people are more likely to suffer from chronic illnesses, mental illness, and reduced personal autonomy. Most of the time they want to live at home for as long as possible. However, a lack of autonomy or a mental illness lead to states of disability that favour the process of institutionalisation with broader health care expenditure and other social repercussions. Home Nursing placement, the inclusion in residential institutions,

distorts the sense of everyday reality through the loss of contact with external life, and this can lead to an increase in comorbidities (Abizanda et al., 2015).

Mental disorders in old age are associated with a significant reduction in the quality of life, an increase in disability and mortality, and an increase in the use of health services (Glaesmer et al., 2008; Byers et al., 2010; Silva et al., 2016). Older people are at greater risk of functional loss with significant limitations in autonomy due to physical and mental factors that alter quality of life and worsen health self-assessment.

The increase in age is associated with a greater probability of living in loneliness, observing in recent decades an increase in one-person households as well as the so-called "epidemics of loneliness" that most likely affect older people (Alvarez, 2004). Feelings of loneliness have been associated with lower expectations of social contacts and poorer quality of relationships experienced (Savikko et al., 2005; Velarde-Mayol et al., 2016). Numerous mental and physical effects of loneliness have been described: functional limitations, chronic illnesses, decreased functional status, and an increase in depressive and anxiety symptoms (Hawkley et al., 2005, 2006, 2008; Cornwell and Waite, 2009; Cacioppo and Cacioppo, 2014).

For the above reasons, assessing the influence of the different factors involved in the dwelling alternative has been the goal of a number of studies, reviews, and meta-reviews (Gaugler et al., 2007; Luppa et al., 2010; Rist et al., 2016). In this study, we aim to evaluate the main statistical differences between the institutionalised population and those in the home dwelling alternative, taking into account mental and functional factors as well as social relationships. We try to observe whether there is any factors of greater influence concerning this fundamental question (Russell and Peplau, 1980; Victor et al., 2000; Pinquart and Sorensen, 2003; Cucato et al., 2016; Marijuán et al., 2017). We will

see that, together with the Barthel Index, the Sociotype Questionnaire, which gauges the quality of social relationships in different dimensions, appears as a significant factor accompanying institutionalisation—and as a useful indicator of one of the main risk factors of physical health and mental health among the elderly: social isolation.

2. Methods and materials

2.1 Study design

The present work is a descriptive observational study carried out on people aged 70 or over. The data were collected in 2017 over a period of six months, in Pamplona (Navarre, Spain), in coordination with the Department of Psychiatry (psychogeriatric program) in Huesca (Spain). The sample was selected by simple random sampling in two different environments: people institutionalised in geriatric residences on one side, and people living at home attending day centres in the community on the other. The residences, of private and public financing, included people with full autonomy and dependent people, as well as some places for temporary stay. The day centres were for older people without dementia or other severe physical pathologies, organised by associations of retired people with the collaboration of Caja Navarra Foundation. Four of these day centres (Ermitagaña, San Jorge, Oskía, and San Pedro) were included in this study.

2.2 Selection and description of participants

With the objective of obtaining significant results in the comparative between both populations, and given the multiplicity of variables involved, a size of 200 (100 + 100) participants was considered sufficient for our exploratory purposes. Assuming that the target population is sufficiently large in both cases, the size sample was calculated using

the Cochran's formula. For a desired confidence level of 95%, our sample of 100 individuals provided a statistical error of 9.8%. In total, we had tentatively recruited 217 people; but 9 refused participation along the interview, 3 were excluded for severe cognitive impairment, and another 5 had less than 70 years. Thus, we finally recruited 100 people with an age greater than or equal to 70 years who were institutionalized in geriatric residences and another 100 people with an age greater than or equal to 70 years in a day centre assistance. The interviews were carried out in the place of residence or in the day centre, where the researcher paid individualised attention to all the participants included in the sample.

The inclusion criteria were: to be over 70 years old, not to be diagnosed with severe cognitive impairment (considered as a result of MEC, the validated Spanish version of the mini-mental state examination) and to present an adequate command and understanding of the Spanish language. Exclusion criteria: age less than 70 years, severe cognitive impairment (MEC < 10 points out of 30), and comprehension difficulties (cultural or physical, e.g. aphasia). Subjects suffering severe physical illnesses were also excluded of the study.

2.3 Procedure

The complete questionnaire used for this research had an average duration of 45 ± 15 minutes, with a total of 81 questions. Each participant previously received the information and objectives of the study and collaborated voluntarily in the research, accepting the specific informed consent for this study.

2.4 Instruments and measures

The following variables were included during the clinical interview:

-- Sociodemographic data: age, sex, marital status, type of cohabitation, income level and academic background.

-- Comprehensive geriatric assessment: cognitive assessment using the Pfeiffer questionnaire (Martinez de la Iglesia et al., 2001) and the validated Spanish version of the mini-mental state examination (Lobo et al., 1999); affective evaluation by means of the Geriatric Depression Scale (GDS) version 15 items of Yesavage (Martinez de la Iglesia et al., 2002); evaluation of anxiety symptoms by means of the Goldberg anxiety subscale (Montón et al., 1993); functional evaluation by means of the Barthel index (Baztán et al., 1993); physical evaluation by means of the cumulative illness scale (Bulbena et al., 1996); and evaluation of health-related quality of life by means of the EuroQol-5D scale (Badia et al., 1999).

-- Social relations: evaluated through the Sociotype Questionnaire (SOCQ), an instrument that evaluates social interaction in the elderly, and which is composed of several subscales that measure different kinds of relationships: family, friends, and acquaintances. It has a total of 12 items, with answers that are graded from "never" to "always" and is measured from 0 to 5 (0 never, 1 almost never, 2 sometimes, 3 often, 4 almost always and 5 always). This questionnaire is applicable for old people, designed and validated by the authors' team (Marijuán et al., 2017); it shows a high correlation with scales of loneliness such as the scale UCLA (Russell and Peplau,1980). See Appendix.

2.5 Data analysis

The sample data were collected on the SurveyMonkey® online platform. The statistical analysis was performed using the software package SPSS® version 22.

The main variable was considered the living place: institutionalisation (residence) versus home dwelling (day centre). For all the other variables, the sufficient number of participants (200) granted the use of means, standard deviations, and Student's t. Subsequently, the significance of the variables was analysed, and a multivariate general linear model was developed in order to control the influence of the age variable. Afterwards, the most relevant variables were dichotomised and a logistic equation was built that established the validity of the main predictors of institutionalisation.

2.6 Ethical aspects

The methodology and design of the study were approved by the Ethics Committee of the Hospital Complex of Navarre in the Act of 18 January 2017.

3. **Results**

3.1 Sociodemographic data

The mean age of the total sample was 80'37 years (SD=5,67) within a range of values between 70 and 97 years. In the day centre, the mean age was lower (78.76 years, SD=5.2) than in the residence group (81.98 years, SD=5.69). In terms of gender, 73.5% were female, with men representing 26.5% of the sample. See Table 1 with the whole sociodemographic results. They will be dicussed later on.

[Insert Table 1 about here]

3.2 Questionnaire Measurements

The measurements of the different tests for both groups and the statistical differences found between them through the Student's t for two independent samples appear in Table 2. Some sociodemographic variables have also been included in order to check for the significance of their differences, particularly age. Thus, Table 2 shows: means, standard deviations, and significance of differences in means depending on the procedence or environment of the variables.

[Insert Table 2 about here]

There are no differences in education level or income level according to the participants' procedence or in Goldberg tests for anxiety and depression. There are differences, however, in the GDS, Barthel, Pfeiffer, EuroQol-5D and Sociotype tests. The differences found in the age variable are also very significant, which would lead us to think that it could be a more important variable than physical or cognitive impairment, or than social isolation.

3.3. Multivariate analysis

Given that the differences found in these variables depending on the procedence could be due to the participants' age, since this is a variable that is very much involved in the physical and mental deterioration of people, we decided to control this variable in order to eliminate its possible influence. A multivariate analysis was carried out in which we took the environment as an independent variable, the other tests were taken as dependent variables, and the age as a disturbing or covariant variable. See Table 3.

[Insert Table 3 about here]

Both the original model that analyses the differences between the two environments studied (column 1) and the corrected model, which eliminates the possible effect of age

on test results (column 2), establish that the differences between the two environments are very significant ($p < .001$ for all tests). On the other hand, the age covariate (column 3) does not influence the test results ($p > .05$ for all tests). Effect size values (column 4) are bigger for Barthel, EuroQol-5D, and Sociotype, and medium for GDS and Pfeiffer. The F values decrease when the possible influence of age is removed in the corrected model, but this decrease is not significant.

3.4 Logistic regression function

Once ruled out the differences in the tests due to age, we analysed the statistical importance of the physical, cognitive and social deficits of the participants according to their environment. As this variable is a dichotomous variable, we also dichotomized the tests carried out in order to establish a logistic regression function. This kind of logistic regression function allows us, firstly, to find out which are the important variables related to the fact of being in a day centre or residence and, secondly, the magnitude of the importance of these variables.

The cut-off points for dichotomising the variables were calculated trying to maximize the discrimination between day centre and residence from the ROC curves used in signal detection theory. The minimum and maximum values and cut-off points for the significant tests are shown in Table 4.

[Insert Table 4 about here]

Further, using the Forward Stepwise (Conditional) Method to avoid multicollinearity we obtain the results below. See Table 5.

[Insert Table 5 about here]

The Wald test in the context of logistic regression determines whether a certain predictor variable X is significant or not. It rejects the null hypothesis of the corresponding coefficient being zero. Only 3 of the 5 variables reach the minimum significance (.05) to enter the equation. First Barthel, the most significant, second the sociotype, and third EuroQol in order of importance.

Although the most complete model is model 3 since it includes the EuroQol variable, this variable is the least significant (p = .038) and its introduction is ruled out if we take the significance criterion p = .01 since the complexity of the model increases from two to three variables without the contribution of this third variable being very relevant.

According to the above, the logistic equation for model 2 would be as follows:

$$logit(p_i) = ln\left(\frac{p_i}{1-p_i}\right) = 1.888 - 2.740 \cdot Barthel - 1.563 \cdot Sociotype$$

But if we end up with model 3, the equation should be:

$$logit(p_i) = ln\left(\frac{p_i}{1-p_i}\right) = 1.424 - 2.347 \cdot Barthel + 1.120 \cdot EuroQol - 1.479 \cdot Sociotype$$

The equation estimates the corresponding environment of the subjects based on the values of the three tests; the results are shown in the table 6, with an overall percentage of 79.5 % for Barthel and sociotype, which decreases to 77.0% with the introduction of EuroQol.

[Insert Table 6 about here]

4. Discussion

Sociodemographic variables: (Table 1) The sample included in the present study represents an aged population group, with 49% of people over 80 years. In this respect, significant differences of age are observed according to the environment. In the group of people who are in residence, the people over 85 years old are 25%, and in the community group they represent 10%. A greater frequency of women has been observed in the sample studied, a result compatible with other studies in which the predominance of the female gender is reflected in samples of people over 65 years of age (Domènech Abella et al., 2017). In the group that lives at home there is a higher percentage of married people or in couples. In the residence group there is a higher percentage of single persons, data which supports the possibility that loneliness may be related to institutionalisation (Table 1), so we agree with the studies that point to 'other' marital status as implying a greater risk of institutionalization (Hawkley et al., 2005). Finally, there appear no significant group differences in education level nor in income level.

Test measurements: The affective status of the sample indicates moderate frequency of depressive disorder. In the Yesavage GDS only 21.50% had depression: 14% mild symptoms (6-9 points) and 7.5% severe (≥10 points). As Table 2 shows, there are significant differences between the two groups. In the anxiety assessment (Goldberg), 30% have anxious symptoms and indicate the possibility of an anxiety disorder, but here are no significant differences between the two groups. The cognitive symptoms evaluated by means of the Mini Cognitive Examination (MEC 30 points) show 60% of mild cognitive impairment, 35% moderate impairment and only 6% severe impairment (15-10 points), with a significant difference between the two groups (see Table 2). As for physical functionality (Barthel), 49% are completely independent (score 100), 34.5% are mild functional dependence (score >60) and only 4% of the sample studied

have total dependence (score <20); again, Table 2 shows significant differences between the two groups. In the Cumulative Illness Rating Scale (IAE-T), low physical affectation with mild-moderate intensity predominates in the sample (59%), with significant difference between the groups. In terms of health-related quality of life (EuroQol-5D), almost 50% find their state of health at the time as "adequate", again with significant group difference. The results of the Sociotype SOCQ survey also present significant difference, with higher scores in the community group (about 25 %).

Summing up, people who are in residence are older, have more depressive symptoms, less functionality and worse autonomy, less physical impairment, greater cognitive impairment, worse health-related quality of life, and poorer social relationships. These differences are statistically significant (p 0,000).

Multivariate analysis of age. Given that people living in residence are older, have a poorer social network, and suffer higher physical and cognitive impairment, we asked whether age by itself implied a greater risk to internment in residence. The main differences seen in Table 2 were in GDS, Barthel, Pfeiffer, EuroQol-5D, and Sociotype tests. The differences found in the age variable were also significant. Thus, it was necessary to control this variable to eliminate its possible influence by carrying out a multivariate analysis in which the environment or precedence was the independent variable and the tests were dependent variables, with the age as a disturbing or covariant variable. In the corrected model of Table 3, which eliminated the possible effect of age on test results (column 2), the differences between the two environments were very significant ($p < .001$ for all tests); but the age covariate (column 3) did not influence the test results ($p > .05$ for all tests). Therefore we concluded that there were significant differences in the tests analyzed regardless of the participants age. In other words:

although there were significant differences in age between day centre and residence, these differences were not reflected in the test results. We appreciated, however, that the F values decreased when the possible influence of age was removed in the corrected model, but this decrease was not significant.

Logistic regression function. Once ruled out that the differences in the tests were due to age, we analysed the specific importance of the physical, cognitive and social deficits according to their respective environment. As this variable is a dichotomous variable, we dichotomized the tests in order to carry out a logistic regression function. This logistic regression function allowed us, firstly, to find out which were the important variables related to the fact of being in a day centre or residence and, secondly, the magnitude of the importance of these variables. The cut-off points were calculated trying to maximize the discrimination between day centre and residence from the ROC curves used in the signal detection theory. Only 3 of the 5 variables reached the minimum significance (.05) to enter the equation. First Barthel, the most significant, second the Sociotype and third EuroQol, in order of importance. Although the most complete model was model 3 since it included the EuroQol variable, this variable was the least significant ($p = .038$) and its introduction was ruled out taking the significance criterion $p = .01$, since the complexity of the model increased from two to three variables without the contribution of this third variable being very relevant.

If the equation obtained was used to estimate the corresponding environment based on these three tests, the results would be those shown in the classification table, with an overall percentage of 79.5 % for Barthel and sociotype, which decreased to 77.0% with the introduction of EuroQol. Only Barthel and Sociotype are really significant variables. Neither GDS, Pfeiffer, nor EuroQol are significant enough to be taken into account,

even though they initially (t for Student) show significant differences. Nor is age a determinant variable. This can be interpreted as the existence of differential characteristics in the people of the two environments that are mostly related to the two former variables, Barthel and Sociotype, while EuroQol would present more overlapping between the two environments and somehow introduces some relative confusion.

Therefore, we have to remark that the introduction of the EuroQol variable for a criterion p = .05 reduces the success rate by 2.5% which makes its inclusion inadvisable. That same Table 6 indicates that what Barthel and Sociotype classify together has the same estimative success as what Barthel classifies alone, without any loss of information. This cannot be said of EuroQol, nor of course of the other variables that do not enter the equation.

Sociotype Questionnaire. As stated, the sociotype is significant p = .001 in the Table 5 above. Having a poorer social network in quantity as well as in quality could be an important feature in terms of implementing practical measures to prevent feelings of loneliness in older people who enter in residence. In general, living alone has been related to loneliness in the elderly population (Pinquart et al., 2003) and studies in the Spanish population over 65 also confirm it (Losada et al., 2012; Ausín et al., 2017). It seems that institutionalization could mean a greater frequency of feelings of loneliness, and people with cognitive and functional impairment show a decrease in the ability to interact, affecting relationships significantly (Sutin et al., 2018; Cohen-Mansfield et al., 2016; Hawkley et al., 2008), up to the point that social isolation is one of the first prodromal symptoms of dementia (Porcelli et al., 2019). Thus, the systematic detection of poor social relationships becomes an important aspect that the Sociotype

Questionaire, SOCQ, seems to cover adequately. There is also a measure of subjective satisfaction, not specifically evaluated but verified by the researcher in charge of this fieldwork, in the good response of the elderly when asked about the friends and family questions of the Sociotype (particularly, the two items about laughter). See Appendix. Older people prefer quality to quantity relationships, while other age groups seek greater size of the social network. Finally, although our work has not detected association between social relationships, income level, and academic background, let us point out that the personal improvement in academic and cultural activities could be useful in order to promote socialisation in the elderly (Cornwell and Waite, 2009).

5. Conclusions

In our research, older people institutionalised in residences present a worse cognitive, affective and functional state and a worse quality of life than older people who live in their own homes. The perception of a poor functional autonomy and of a collapsed social network, respectively evaluated through the Barthel index and the SOCQ Sociotype Questionnaire, seem to represent two main factors that accompany institutionalisation. However, this is a descriptive and not a prospective study, we do not know if these are causal factors or consequences of the institutionalization itself. We cannot speak of predictive factors, or of determinants of institutionalization, because we are dealing with a transversal study. It may well be that institutionalisation itself favours the loss of the social network and functional deterioration.

We emphasize the use of SOCQ in geriatric clinics, for it has shown usefulness in the evaluation of the social network of elderly people—both from the point of view of assessment and prognosis. In this sense, one of the main contributions of this study is to have included the qualitative evaluation of social relations, and to observe the differences according to the place were subjects live (Marijuán, 2009; Aarts et al., 2015; Marron et al., 2017; Marijuán et al., 2017).

Detection of social network quality through the SOCQ Sociotype could help to prevent early institutionalization and improve the quality of life of older people. As is well known (Hawkley et al., 2006), the people with adequate social support networks and interactive relationships are better protected from stress even if stressful events are still present. Thereupon, the systematic detection of poor social relationships becomes an important goal in itself.

Geriatric 'Sociotype' Construct questionnaire may be a useful instrument in predicting institutionalisation and other adverse events among the elderly. A quality social network detected via the Geriatric 'Sociotype' Thus a quality social network also improves the adaptation mechanisms and strategies among the elderly; furthermore the Geriatric 'Sociotype' Construct questionnaire has proven useful for exhaustive assessment of these social networks. It is also a simple to use instrument, which could be carried out in a standardized interview in geriatric consultations to obtain valuable information on the social status of the elderly person.

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Conflict of interest

The authors report no biomedical financial interests or other potential conflicts of interest.

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TABLES

Table 1. Sociodemographic characteristics of the total sample and differences between the two groups.

Sociodemographic characteristics	**Total sample Mean (SD)**	**Residence (n=100)**	**Day centre (n=100)**	**P value**
Age	80,37 (5,67)	78.76 (5.20)	81.98 (5.69)	0,000
Gender	73,5% female 26,5% males	74 females 26 males	73 females 27 males	>0,05
Widows	50%	51	49	0,000
Married people	24%	4	44	0,000
Singles	23%	44	2	0,000
Separated divorced	3%	1	5	0,000
Basic studies	69%	67	71	>0,05
Average pension	39,5%	35	44	0,296

Table 2. Independent samples test

	Procedence			
	Day center M (SD)	Residence M (SD)	Student's t	Signification level
Age	78.76 (5.2)	81.98 (5.69)	-4.180	< .001
Education level	2.45 (0.99)	2.68 (1.21)	-1.470	.143
Income level	2.82 (0.98)	2.8 (1.02)	0.142	.887

GDS	2.33 (2.67)	4.74 (3.66)	-5.32	< .001
Barthel	100.2 (13.69)	75 (27.5)	8.21	< .001
Pfeiffer	0.45 (1.26)	1.64 (2.66)	-4.04	< .001
MEC	29.33 (2.58)	27 (5.34)	3.93	0.001
IAE-T	6.40 (3.11)	8.30 (4.25)	-3.61	<0.001
Goldberg Anxiety	1.74 (0.39)	1.71 (0.40)	0.406	.685
Goldberg Depression	1.40 (0.22)	1.37 (0.16)	0.742	.461
EuroQol-5D	6.24 (1.49)	8.58 (2.58)	-7.86	< .001
Sociotype	45.11 (11.42)	33.49 (13.13)	6.677	< .001

Table 3. Multivariate General Linear Model (GLM) of the significant variables with age as covariate

	F General Linear Model			Partial Eta
	Environment	Corrected Model	Age	Squared[a]
GDS	22.22*	15.17*	1.93	.101
Barthel	56.88*	34.38*	1.34	.224
Pfeiffer	13.72*	8.31*	0.33	.065
EuroQol-5D	54.35*	32.65*	1.15	.216
Sociotype	44.69*	22.79*	1.00	.185

[a]Univariate test results * p < .001

Table 4. Cut off points

	Minimun	Maximun	Cut point
GDS	0	14	5.01
Barthel	5	105	99
Pfeiffer	0	10	2.01
EuroQol-5D	5	15	9.99
Sociotype	7	60	50

Table 5. Variables in the Equation, coefficients and significance

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	BarthelDic	-2.757	.357	59.498	1	.000	.063
	Constant	1.545	.275	31.473	1	.000	4.687
Step 2[b]	BarthelDic	-2.740	.375	53.281	1	.000	.065
	Sociotipo12Dic	-1.563	.461	11.501	1	.001	.210
	Constant	1.888	.314	36.170	1	.000	6.603
Step 3[c]	BarthelDic	-2.347	.406	33.415	1	.000	.096
	EuroQolDic	1.120	.539	4.314	1	.038	3.065
	Sociotipo12Dic	-1.479	.467	10.018	1	.002	.228
	Constant	1.424	.364	15.305	1	.000	4.153

a. Variable(s) entered on step 1: Barthel.

b. Variable(s) entered on step 2: Sociotype.

c. Variable(s) entered on step 3: EuroQol.

Table 6. Classification Table[a]

			Predicted		
			Procedence		Percentage
	Observed		Day Centre	Residence	Correct
Step 1	Procedence	Day Centre	84	16	84.0
		Residence	25	75	75.0
	Overall Percentage				79,5
Step 2	Procedence	Day Centre	84	16	84.0
		Residence	25	75	75.0
	Overall Percentage				79,5
Step 3	Procedence	Day Centre	84	16	84.0
		Residence	30	70	70.0
	Overall Percentage				77,0

a. The cut value is .50

APPENDIX

English version of the "Sociotype Questionnaire"

The following is a series of statements to asses the relationships with your family, friends, acquaintances and work/study colleagues. Read each statement carefully and mark with an X the option that best represents how you feel, what you do, and what you think about your social relationships. There are no right or wrong answers. In any case, please DO NOT LEAVE ANY STATEMENT UNANSWERED.

	Never	Hardly Ever	Sometimes	Often	Usually	Always
1. I speak and relate with my family	O	O	O	O	O	O
2. My family is important for me	O	O	O	O	O	O
3. The family members care about me	O	O	O	O	O	O
4. I have fun and laugh with my family	O	O	O	O	O	O
5. I speak and relate with my friends	O	O	O	O	O	O
6. I have friends to tell and share problems	O	O	O	O	O	O
7. I consider important to maintain relationships with friends	O	O	O	O	O	O
8. I have fun and laugh with my friends	O	O	O	O	O	O
9. I speak and relate comfortably with acquaintances	O	O	O	O	O	O

10. It costs me make conversation with people I do not know	O	O	O	O	O	O
11. It is easy for me to win support from acquaintances	O	O	O	O	O	O
12. Relations with my acquaintances are forced	O	O	O	O	O	O

Scoring

Answers are scored from 0 (never) to 5 (always) for all items except nº 10 and 12 that have a reverse score from 5 (never) to 0 (always). General SOCQ covers all items, and is made up of 3 subscales: 'family' (items nº 1 to 4), 'friends' (items nº 5 to 8), and 'acquaintances' (items nº 9 to 12).

SOCQ Family: Normal >12 (medium 16)

SOCQ Friends: Normal >7 (medium 13)

SOCQ Acquaintances: Normal>7 (medium 13)

SOCQ General: Normal >32 (medium 42)

	scores
SOCQ Family	
SOCQ Friends	
SOCQ Acquaintances	
SOCQ GENERAL	

If any clinician and/or researcher would like an extended version of the Geriatric Sociotype survey, please contact the corresponding author of the article.