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STUDY OF QUALITY OF LIFE ON RURAL HYPERTENSIVE PATIENTS. COMPARISON WITH THE GENERAL POPULATION OF THE SAME ENVIRONMENT

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Abstract—A comparative study about quality of life was made in the community of Riosa—north of Spain—on two groups of subjects: one affected by hypertension ($n = 115$), stage I and II of WHO, and another of the general population, matched in age, sex and residence with the former group and of the same size. The subjects with loss of self-care or mobility were excluded. The quality of life was evaluated with a standardized measurement approach referring to the spheres of physical, emotional, social and sexual functions.

With this study the validation of the Spanish version of the questionnaire was made and the results obtained were found to be more or less the same as those reported by authors in other European countries of similar sociodemographic conditions. Hypertensive patients reported significant lower scores of quality of life than the general population in more than half of the dimensions explored: well-being and physical capacity, social functioning, positive mood and psychological functioning.

In conclusion, despite the many limitations inherent to this area of research, a standardized and valid measure of relevant aspects of quality of life in the general population and especially in patients with hypertension, is available in the Spanish language.

Quality of life   Hypertension   Validity   General population   Measurement
Transcultural translation

I. INTRODUCTION

Functional status, subjective well-being and the fulfilment of the social role are increasingly important issues of medical concern in industrialized societies in which a majority of suffer impacts come from chronic diseases for which there very seldom exists a curative treatment, such as hypertension [1].

There is a need to add other population health dimensions than the mere survival, because the possibility of extending the life expectancy is increasingly constrained by the biologic limits of the natural life span [2]. With the decline of infectious diseases, and cancer and cardiovascular diseases becoming major causes of morbidity and mortality, an interest in the use of quality of life methods to evaluate therapies has emerged [3].

The most important matter in the last decades of the twentieth century is how the patient feels, and not what the doctors think he "ought" to feel, based on clinical measurement alone. This is an important development in medical philos-

ophy, and one which is being steadily accepted by the medical profession [4].

Despite the fact that there is not a gold standard assessment of the quality of life (QOL), the measures are often pertinent to the following three inter-related domains of human life: physical, psychological and social [1, 5–7].

Hypertension and its therapies is the most current area of investigation on quality of life. The treatment of hypertension clearly prevents cardiovascular risks and its cost, but these advances are only effective when a continued treatment is made. However hypertension is a chronic and usually symptomless disease and all antihypertensive therapies have side effects that can interfere with quality of life and result in discontinuation of therapy with the resultant loss of long-term benefits [8].

Quality of life can be assessed from several different perspectives. First of all, it can be studied as a direct outcome of therapy or a consequence of a cardiovascular event. Secondly, quality of life can be considered as a risk factor for the subsequent development of cardiovascular events or hypertension complications. Thus, people with a poor QOL may be more likely to develop a stroke or a myocardial infarction [9].

Treatment decisions based on comprehensive individual information, the improvement of the communication between physicians and patients in a setting characterized by time pressures and the improvement of cost utility analysis and economic decisions based on it are the major benefits of assessing QOL for the chronically ill [1].

Quality of life measurements can be used both to describe the QOL of the patients with a disease and to evaluate the impact of the treatment. In descriptive studies the measurement must be able to discriminate between patients and a control group [3], in order to describe differences and with that in mind the present study is designed with three basic objectives: to make the validation of the Spanish version of the instrument selected, to know which is the standard level of QOL within a group of hypertensive patients and to establish the differences with another group of the general population matched by age and sex.

This study was made during the autumn of 1991 in the municipality of Riosa (Asturias), in the north of Spain, with rural characteristics and a mining economy and with a total population of 2977 inhabitants. Medical assistance takes place in only one centre of primary attention and all the population is treated in the same way.

II. PATIENTS AND METHODS

Selection of the subjects

(1) Hypertensive patients. From the total hypertensive patients known in the area (16% of the general population), who are receiving assistance in a medical centre of primary care, 115 patients with essential hypertension were selected fulfilling the following criteria:

(a) Hypertension Stages I–II of WHO (Stage I hypertension is defined as blood pressure in the hypertensive range without any signs of organ changes and Stage II is characterized by signs of left ventricular hypertrophy found on physical examination or chest X-ray, electrocardiogram or echocardiogram; the presence of generalized or focal narrowing or retinal artery or proteinuria and/or slight elevation of plasma creatine concentrations) [10].
(b) Age between 30–65 years (± 1 yr).
(c) Diagnosis >1 year.
(d) Living in the area in the moment of the study.

In the present study the treatment with drugs and the existence of some co-morbidity was not taken into account. Our interest was to study these patients with their specific characteristics as a group of chronic patients. Only the subjects with severe organic affectation were excluded.

(2) General population. The general population group or control group, was extracted at random from the Population Census and was of the same size and matched with the hypertensive group by age, sex and residence. In the same form, all the subjects with impairment of the independence of their daily living were excluded.

Subjects characteristics

Table 1 shows sociodemographic characteristics of the 230 subjects under study. The hypertensive patients did not differ from the general population, apart from their occupational status. The mean age at entry was 55.8 years ± 7.9; 40.9% are males and 59.1% females and the mean annual income is 1.2 million pesetas. 84.3% are married, 83% are living with a steady partner and the educational

level is very low (93.5% junior school or no degree). The three most frequent occupations are: housewife (47.4%); coal miner (29.1%); and farmer (9.1%). The percentage of working women in the group of hypertensive patients is 31%, and in the group of the general population it is 12%. 54.3% of the subjects have full time employment, 20.4% work part time and 25.2% are retired (Table 1).

Measurement of quality of life

A structured, standardized interview was developed which was applied by a doctor and a nurse. Previously an informed consent was obtained from each patient after the explanation of the study. The interview contains 83 questions, the majority of which are Likert-scaled items to assess frequency or intensity of the phenomena under study. A group of 59 questions assess 9 relevant dimensions of QOL: symptoms and physical well-being, physical capacity, social well-being, social functioning, positive mood, negative mood, psychological well-being, psychological functioning and sexual impairment. Other questions are related

Table 1. Sociodemographic characteristics of subjects in quality of life assessment

Variable	Hypertensive patients ($n = 115$)	General population ($n = 115$)
Age at entry, mean	55.8 ± 7.9*	55.40 ± 7.9
Males	47	47
Females	68	68
Annual income (in millions/ptas)	1.2	1.2
Marital status		
Single	6	5
Married	96	98
Widowed	13	9
Divorced/separated	—	3
Level of education		
None	3	4
Junior school or no degree	108	107
High school	2	2
High school (A-level)	1	2
University	1	—
Occupational group		
Housewife	47	62
Miner	30	37
Farmer	14	7
Other professions	24	9
Living		
Live alone	8	5
With a steady partner	95	96
Live with other people	12	14
Employment status		
Full time	62	62
Part time	22	25
Retired	31	28

*Data on means are given as means ± SEs.

Table 2. Comparative percentage complaint between hypertensive patients and general population of the same sex and age

Complaint (%)	HTA ($N = 115$)	Gral p. ($N = 115$)
Insomnia	59.1	51.3
Tiredness/fatigue	60.0	38.3
Numbness or tingling in part of body	47.8	50.4
Shortness of breath/wheeze	37.4	32.2
Dry mouth	34.8	30.4
Swelling of ankles	38.3	23.5
Faintness or dizziness	31.3	29.6
Nightmares	30.4	27.8
Blurred vision	33.9	17.4
Pain in the chest or heart	27.8	20.0
Cough/Irritating cough	23.5	18.3
Cold sensitivity of hands	20.0	19.1
Changes of taste/loss of taste	15.7	7.0
Skin rash	13.0	7.0
Unusually slow heartbeat	11.3	7.8

with life events and the socio-demographic background of patients.

The questionnaire of QOL, designed by J. Siegrist, M. Broer and A. Junge, is called "PLC" (Profil der Lebensqualität bei Chronischkranken) [11] and was translated into Spanish, retranslated into German, discussed again and finally adapted. A pre-test of this version was carried out with a group of 20 outpatients and was easily understood.

Data collection and management

All the subjects ($n = 230$) were interviewed on a site or via a previous telephone appointment and in relaxed conditions. None gave up. Quality of Life subscales were calculated as means of the corresponding items where ordinal scaling from 0 to 5 was applied to indicate better (higher mean scores) or poorer (lower mean scores) quality of life.

Statistical analysis

The statistical analysis was performed on a personal computer using the SPSS-X statistical package. Standardized multivariate and univariate test statistics were used for between-group comparisons. Multivariate analysis of variance for each scale and the score of symptoms to control the effects of age and sex was made. The internal consistency was evaluated with factoral analysis of all items and Cronbach's alpha coefficient. Within-group change was evaluated by means of the samples t-test with logarithmic transformations. Probability values were based on two-tailed tests of significance.

III. RESULTS

Symptoms

The hypertensive patients had higher incidence of symptoms than the general population. The differences were significant and the most reported symptoms were tiredness/fatigue, insomnia, change of taste, blurred vision and cardiac symptoms. The results are shown in Table 2.

Internal consistency

Table 3 shows the values of Cronbach's alpha coefficient and the size of subscales of QOL and the Table 4 shows the results of factoral analysis. Sufficient internal consistency was found except for the social well-being subscale (Tables 3 and 4).

Results of QOL

For each group under study. Tables 5 and 6 show final scores of QOL for each group according to sex and age variables. Males showed higher scores than females and this difference was very significant ($p < 0.001$) and higher age groups corresponded to higher deterioration, especially until 55 years old and for higher age groups the deterioration was slower or even some improvement appeared in the spheres of social W-B, social and psychological functioning. The physical capacity was the most affected subscale according to age ($p < 0.01$) and hypertensive patients showed lower scores ($p < 0.05$) in symptoms, psychological and sexual functioning than the general population group (Tables 5 and 6).

Comparison between the two groups. Table 7 shows the final scores of QOL for the two compared groups. Hypertensive patients reported lower scores than the general population in all dimensions explored and the differences were very significant ($p < 0.01$) in physical W-B, physical capacity, social functioning, positive mood and psychological functioning (Table 7).

The multivariate analysis of variance for the two groups as a factor and with sex and age as covariates and the multivariate analysis of variance for the two groups and sex as a factor and with age as a covariate showed the main effects of factor and covariates and the deviation of groups from the grand mean in the right

Table 3. Internal consistency of scale items (Spanish version of the Siegrist *et al.* questionnaire of quality of life)

Scales	Items	Cronbach's alpha
Physical W-B	17 items	—
Sexual impairment	5 items	0.97
Physical capacity	5 items	0.85
Social W-B	5 items	0.39
Social functioning	6 items	0.60
Positive mood*	5 items	0.83
Negative mood*	8 items	0.90
Psychological funct.	8 items	0.80

*Positive mood + negative mood = psychological W-B.

Table 4. Factoral analysis of scale items

	Factor
Sexual impairment, sex	
Disminuc	0.90
Problema	0.93
Mantener	0.95
Orgasmo	0.95
Satisfac	0.93
Social W-B, Sozbef	
Realment	−0.06
Solo	0.67
Bien	0.44
Impresio	0.68
Sentimie	0.28
*Positive mood, Stipos**	
Alerta	0.59
Feliz	0.83
Activo	0.67
Equilibr	0.77
Esperanz	0.68
Psychological functioning, Psyver	
Quitar	0.80
Expresar	0.48
Relajars	0.75
Dehacer	0.61
Disfruta	0.30
Dormir	0.55
Tolerar	0.54
Disfrual	0.65
Physical capacity, Physhv	
Capafunc	0.76
Trabdiar	0.76
Trabfis	0.66
Concentr	0.54
Sopostre	0.61
Continua	0.58
Animarse	0.50
Fatigoso	0.73
Social functioning, Sozver	
Contamig	0.37
Ayudar	0.56
Contar	0.30
Interesa	0.36
Haceralg	0.66
Mostrar	0.45
*Negative mood, Stineg**	
Triste	0.83
Nervioso	0.79
Apatico	0.64
Preocupa	0.74
Exhausto	0.71
Irritado	0.66
Ansioso	0.81
Desesper	0.74

The physical W-B scale is based on a sum score of 17 items measuring physical symptoms. Factor analysis does not apply. *Positive mood + negative mood = psychological W-B.

Table 5. Quality of life scale scores for general population according to sex and group of age

	Sex			Group of age			
Scale	Male ($n = 47$)	Female ($n = 68$)	t-test p	$\leqslant 45$ ($n = 17$)	$>45 \leqslant 55$ ($n = 28$)	$>55 \leqslant 65$ ($n = 70$)	t-test p
Physical W-B	4.38	4.08	***	4.62	4.41	4.32	
Physical capacity	3.01	2.67	***	3.16	2.83	2.65	**
Social W-B	2.80	2.57	**	2.92	2.48	2.59	*
Social functioning	2.31	2.13		2.54	2.15	2.15	*
Psychological W-B	3.32	2.86	***	3.31	2.85	2.81	*
Positive mood	2.63	2.06	***	2.70	2.29	2.20	*
Negative mood	3.76	3.37	***	3.69	3.20	3.19	
Psycholog functioning	2.84	2.40	***	2.85	2.50	2.51	
Sexual impairment	3.82	3.33	***	3.76	3.33	3.09	

Values given are means. Higher scores signify more quality of life.
All items range from 0 to 5. $^*p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

Table 6. Quality of life scale scores for hypertensive patients according to sex and group of age

	Sex			Group of age			
Scale	Male ($n = 47$)	Female ($n = 68$)	t-test p	$\leqslant 45$ ($n = 16$)	$>45 \leqslant 55$ ($n = 28$)	$>55 \leqslant 65$ ($n = 71$)	t-test p
Physical W-B	4.29	3.89	***	4.67	4.15	4.13	*
Physical capacity	2.90	2.38	***	3.02	2.50	2.44	**
Social W-B	2.77	2.52	**	2.71	2.56	2.53	
Social functioning	2.24	1.90	**	2.26	2.19	1.93	
Psychological W-B	3.16	2.70	***	3.08	2.57	2.64	*
Positive mood	2.39	1.83	***	2.35	2.04	2.00	
Negative mood	3.65	3.24	***	3.53	2.90	3.04	*
Psycholog functioning	2.73	2.24	***	2.83	2.45	2.34	*
Sexual impairment	3.62	3.40	*	3.77	3.12	3.01	*

Values given are means. Higher scores signify more quality of life.
All items range from 0 to 5. $^*p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

Table 7. Comparative quality of life scale scores between groups in study

Scale of QOL	Hypertensive patients ($n = 115$)	General population ($n = 115$)	t-test p
Physical W-B	4.21 ± 0.06	4.39 ± 0.6	0.040*
Physical capacity	2.54 ± 0.6	2.77 ± 0.5	0.005**
Social W-B	2.56 ± 0.4	2.61 ± 0.5	0.411
Social functioning	2.04 ± 0.6	2.21 ± 0.5	0.036*
Psychological W-B	2.68 ± 0.6	2.89 ± 0.7	0.027*
Positive mood	2.06 ± 0.6	2.29 ± 0.7	0.011*
Negative mood	3.07 ± 0.8	3.27 ± 0.8	0.073
Psychological functioning	2.44 ± 0.5	2.58 ± 0.5	0.066
Sexual impairment	3.14 ± 1.1	3.25 ± 1.0	0.472

Values given are means $\pm$ SEs. Higher scores signify more quality of life.
All items range from 0 to 5. $^*p < 0.05$; $^{**}p < 0.01$.

Table 8. Comparative quality of life scale scores between hypertensive patients and general population according to sex

	Male			Female		
Scale	Hypertensives ($n = 47$)	Gral populat. ($n = 47$)	p	Hypertensives ($n = 68$)	Gral populat. ($n = 68$)	p
Physical W-B	4.29 ± 0.3	4.38 ± 0.3	NS	3.89 ± 0.4	4.08 ± 0.4	*
Physical capacity	2.96 ± 0.5	3.01 ± 0.4	NS	2.38 ± 0.5	2.67 ± 0.5	**
Social W-B	2.77 ± 0.2	2.80 ± 0.3	NS	2.52 ± 0.4	2.57 ± 0.4	NS
Social functioning	2.24 ± 0.4	2.31 ± 0.5	NS	1.90 ± 0.6	2.13 ± 0.6	*
Psychological W-B	3.16 ± 0.3	3.32 ± 0.3	*	2.70 ± 0.3	2.86 ± 0.4	*
Positive mood	2.39 ± 0.6	2.63 ± 0.5	NS	1.83 ± 0.5	2.06 ± 0.7	*
Negative mood	3.65 ± 0.3	3.76 ± 0.2	NS	3.24 ± 0.3	3.37 ± 0.4	NS
Psycholog functioning	2.73 ± 0.4	2.84 ± 0.5	NS	2.24 ± 0.5	2.40 ± 0.5	NS
Sexual impairment	3.62 ± 0.5	3.82 ± 0.3	*	3.40 ± 0.6	3.33 ± 0.7	NS

Values given are means $\pm$ SEs. All items range from 0 to 5. $^*p < 0.05$. $^{**}p < 0.01$. NS = not significant.

Table 9. Comparative quality of life scale scores between hypertensive patients and general population according to groups of age

	⩾30 < 45			⩾45 ⩽ 55			⩾55 ⩽ 65		
Scale	HTA ($n = 16$)	Gral p. ($n = 17$)	p	HTA ($n = 28$)	Gral p. ($n = 28$)	p	HTA ($n = 71$)	Gral p. ($n = 70$)	p
Physical W-B	4.38	4.38	NS	4.01	4.22	NS	4.00	4.15	*
Physical capacity	3.03	3.16	NS	2.58	2.86	NS	2.50	2.71	*
Social W-B	2.76	2.92	NS	2.65	2.51	NS	2.58	2.67	NS
Social functioning	2.26	2.54	NS	2.19	2.15	NS	1.93	2.15	*
Psychological W-B	3.10	3.32	NS	2.81	2.98	NS	2.87	3.02	*
Positive mood	2.35	2.70	NS	2.04	2.29	NS	2.00	2.20	NS
Negative mood	3.57	3.70	NS	3.29	3.42	NS	3.42	3.53	NS
Psycholog functioning	2.83	2.85	NS	2.45	2.58	NS	2.34	2.51	NS
Sexual impairment	3.90	3.90	NS	3.45	3.46	NS	3.41	3.46	NS

Values given are means ± SEs. All items range from 0 to 5. *$p < 0.05$. **$p < 0.01$. NS, not significant.

direction and for the most of the scales highly significant.

Comparison between groups according to sex. The hypertensive males showed higher deterioration than the general population males in psychological W-B and sexual functions ($p < 0.05$). The hypertensive females showed lower scores in physical capacity ($p < 0.01$), symptoms, social functioning, positive mood and psychological functioning ($p < 0.05$) than the general population females, see Table 8.

Comparison between groups according to age. The final scores QOL were not significant until the 55-year-old group between hypertensive and the general population. For ages older than 55 significant ($p < 0.05$) differences appeared between groups, with better scores for the general population group in physical W-B, physical capacity, social functioning and psychological W-B than hypertensive patients. See Table 9.

IV. DISCUSSION

The election of the instrument of QOL was made according to the properties of the tool: multidimensional concept, acceptability, availability, selectivity, repeatability, sensitivity and validity demonstrated by previous similar studies [1, 12].

The Spanish version of the instrument was considered very accurate after obtaining translations and back-translations by bilingual people, taking into account special details associated with translation and transcultural investigation. The scale was translated using a literal and "idiomatic" methodology [13], and a pilot study to determine its acceptability was made.

In this preliminary validation of the Spanish version sufficient internal consistency was found, similar to previous results reported by the authors of the instrument in Germany. Some previous studies using this questionnaire have reported Cronbach's alpha between 0.87 and 0.75 and the test–retest reliability between 0.83 and 0.75 with a three week interval [14–16]. With the Spanish version new studies are required to complete the validation of the test. The social well-being subscale needs a more exhaustive future consideration.

The interviewers were involved in the routine assistance and we think that this fact was an important help to have all the subjects studied. Joint training sessions were made between interviewers to reduce the variability and to establish a good rapport with the respondent without influencing the response.

When we explored the sexual function we observed that the answers of females were better than males if the interviewer was female and vice versa. That observation was taken into account at the time of the interview. In low cultural level situations—like this one—we think that the sanitary personal is adequate to obtain the acceptability of the instrument and reliable information from the subjects in opposition to the idea that the physicians are poor interviewers [3].

The more affected domains of QOL in the hypertensive patients compared with the general population were the capacity and physical W-B, the psychological W-B and social functioning, and this contrasts, in some way, with the traditional idea that hypertension is generally a symptomless disease. The scores of the physical well-being and capacity were lower in older ages, which is coherent with what was expected. The severe sexual impairment (3.5%) reported

by the subjects were found in similar proportions by Hogan *et al.* [17].

Percentages of some complaints such as insomnia, faintness/dizziness, dry mouth, nightmares and cardiac symptoms were found comparable with other authors [18–20]. In general, all the subjects reported high level of physical function and low level of social well-being and social functioning. This was showed by a poor social estimation and proximity to friends and also poor tendency to explain their problems to other people due to a strong individualism. All the considerations leading to improve the social W-B of the population should be taken into account.

The most important problem detected in the psychological functioning of the subjects was the insomnia and it affected more than half of them in some way and with moderate or severe manifestation in 28.7%. This problem should have a special consideration for its importance in the genesis of the cardiovascular risk of sleep disturbances [21].

Our results show clearly that men consistently indicated that their QOL was better than women's and the age had a negative effect, but some improvement appeared in the domains of psychological functioning in people older than 55. The results of multivariate analysis of the variance showed that the differences in QOL scores by groups appear in all strata of age–sex categories. The interaction effects of group and sex with age as covariate are not significant.

It is known that the elderly has a perceived health better than younger people even in the presence of a pathology. Young men suffer a high emotional and social distress and young women have important family or at home duties, but they don't develop a process of adaptation as the elderly have. This could mean, too, that women complain more, men complain less: or men have, in fact, more opportunities to enhance the quality of their lives in the Spanish society. Other authors reported similar results in other countries [22–24].

Hunt *et al.* reported consistently higher rates of perceived illness among housewives as compared with working women and that housewives had, significantly, the poorest health status [23]. Although within the group of hypertensive patients the percentage of working women is higher that in the group of the general population, the final scores of QOL are lower in the former group; therefore the sense of the differences between both groups could not be explained only by the differences in the number of working women.

Clearly, further information on the validity of this measure and on their sensitivity to change over the time is needed. Yet, in view of the emerging interest in QOL measures in clinical medicine, this new approximation of the assessment of QOL in the Spanish language and its results may be viewed as a starting point aiming at more comprehensive clinical evaluation of chronically ill patients.

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