



ORIGINAL ARTICLE

Determinants of Quality of Life in Spanish outpatients with schizophrenia spectrum disorders



J.I. Arraras^{a,*}, B. Ibañez^b, I. Basterra^c, N. Pereda^d, M. Martín^a, S. Iribarren^e

^a *Rehabilitation Unit, Servicio Navarro de Salud, Avda Villava 53, 31015 Pamplona, Spain*

^b *Fundación Miguel Servet-Navarrabiomed, Red de Investigación en Servicios Sanitarios en Enfermedades Crónicas (REDISSEC), Irunlarrea 3, 31008 Pamplona, Spain*

^c *Complejo Hospitalario de Navarra, Psychiatry Department, Irunlarrea 3, 31008 Pamplona, Spain*

^d *Centro de Atención Ambulatoria de Adicciones Aldatu, Fundación Proyecto Hombre Navarra, Avda. Zaragoza 23, 31005 Pamplona, Spain*

^e *Instituto Alicantino de la Familia, Ramón Campoamor, 25, 03550 San Juan de Alicante, Alicante, Spain*

Received 20 June 2017; accepted 24 November 2017

Available online 19 December 2017

KEYWORDS

Quality Life;
Schizophrenia;
Schizoaffective;
Determinants;
Spanish

Abstract

Background and objectives: Quality of Life (QoL) studies of patients with psychosis living in the community and of its determinants can help to improve support offered to patients. This study evaluates QoL in Spanish outpatients with schizophrenia spectrum disorders and attempts to identify the QoL determinants.

Methods: Sixty-one patients with schizophrenia or schizoaffective disorders and stable disease, completed the generic WHOQOL-BREF, EUROQOL-5D-5L and the specific SQLS-R4 QoL scales and the SCIP (cognitive impairment), SAI-E (insight), and Calgary (depression) scales. SANS (Scales for Assessment of Negative Symptoms) and SAPS (Scales for Assessment of Positive Symptoms) and selected items from the QOLI-BV were also evaluated.

Frequencies in the clinical, demographic and QoL variables were studied. Univariate and multivariate regression models were fitted to assess how clinical and demographic characteristics influence subjective QoL. Multivariate regression models were fitted with all explanatory variables found to be significant in univariate analysis.

Abbreviations: PRO, Patient Reported Outcomes; QoL, Quality of Life; QOLI-BV, Quality of Life Interview-Brief Version; SAI-E, Expanded version of the Schedule of Assessment of Insight; SANS, Scales for the Assessment of Negative Symptoms; SAPS, Scales for the Assessment of Positive Symptoms; SCIP, Screen for Cognitive Impairment in Psychiatry; SQLS-R4, Schizophrenia Quality of Life Scale Revision 4; WHOQOL-BREF, World Health Organization Quality of Life-Brief Form.

* Corresponding author.

E-mail address: Ji.arraras.urdaniz@cfnavarra.es (J.I. Arraras).

<https://doi.org/10.1016/j.ejpsy.2017.11.001>

0213-6163/© 2017 Asociación Universitaria de Zaragoza para el Progreso de la Psiquiatría y la Salud Mental. Published by Elsevier España, S.L.U. All rights reserved.

Results: Mean QoL scores were 58.8 in EUROQOL-health and 0.8 in EUROQOL-value, and ranged between 49.2 and 62.7 in WHOQOL-BREF and between 38.9 and 43.3 (QoL limitations) in SQLS-R4.

Negative symptoms and depression were significantly related to the nine QoL areas studied. Age, gender, social activities, employment status, time since diagnosis, and insight were also related to QoL. The percentage of variance in the QoL areas explained in multivariate regression models ranged from 25 to 56%.

Conclusion: QoL was moderate in this sample of Spanish schizophrenia spectrum outpatients. Sociodemographic and clinical factors were found to be determinants of QoL. These patients could benefit from multidisciplinary treatment to improve their QoL.

© 2017 Asociación Universitaria de Zaragoza para el Progreso de la Psiquiatría y la Salud Mental. Published by Elsevier España, S.L.U. All rights reserved.

Introduction

Rehabilitation and support to patients living in the community are two main interventions offered to patients with psychosis for maintaining and improving their Quality of Life (QoL). Nowadays much emphasis is placed on developing strategies for maintaining and improving the QoL of patients.¹

Community mental health services also pay attention to patients' QoL since such patients need to continuously adapt to illness-related circumstances and other daily stressful life events that can affect QoL.² QoL has also become an important outcome measure of interventions offered to patients with psychosis.³

Some cross-cultural differences in the QoL of patients with psychosis⁴ have been found, that could be related to sociodemographic factors (such as living conditions) but also to the criteria these patients have for assessing their QoL.

Several QoL studies have been performed conducted with Spanish patients living in the community.^{5–8} More QoL studies are needed in order to better understand the situation of patients in our area and compare our data with those from other cultural areas.²

QoL differences have been found between patients with schizophrenia who have or not symptomatic remission.⁹ Besides, it is suggested the need for a differential analysis of QoL in schizophrenia in the acute and long-term phases.¹⁰

Nowadays it is considered patients should assess their QoL (subjective assessment) through PRO (Patient Reported Outcomes) instruments.^{11–13} This assessment could be complemented with objective data (e.g. functional role in society).³ QoL in schizophrenia is understood to be a multidimensional concept.^{11,14,15} It is advised to assess QoL through generic QoL questionnaires (that evaluate areas common to various diseases) combined with specific QoL questionnaires for schizophrenia.⁵ Zeng et al.¹⁶ believe that interventions that focus on a single area (such as symptoms) could fail to improve a patient's QoL.

Understanding a patient's perception of his or her QoL and the factors that may determine this QoL is necessary for developing support strategies.^{12,13} Several studies of the sociodemographic determinants of QoL in patients with

psychosis have been conducted.^{2,17,18} Others have assessed the role of clinical factors such as negative symptoms^{1,16} and depression^{11,17} (which are often found to be related to QoL), cognitive dysfunction^{18,21} and insight^{4,5,20,22,23} as determinants of QoL. Kao et al.¹ report that the extent to which patients are aware of their schizophrenic disorders and its consequences appears to influence QoL, though direction of this influence is unclear.

Studies with a combination of determinants may help to develop more targeted treatments for improving patients' QoL.²⁴ Different studies have combined sociodemographic and clinical QoL determinants^{11,17,20,23,24} but few have combined demographic factors with symptoms, insight and cognitive functioning in patients with psychosis¹⁴ and none has been conducted in our area. More studies of the determinants of subjective QoL are needed.¹⁴

Studies of QoL determinants in psychosis have usually administered generic measures, while a combination of generic with disease-specific QoL questionnaires has rarely been used.¹⁶

The aims of this study are to assess QoL in a sample of Spanish schizophrenia spectrum outpatients with stable disease and evaluate the determinants of general and disease-specific QoL areas. We expected the determinants of these QoL areas to be a combination of clinical and demographic variables.

Materials and methods

Participants

A consecutive sample of schizophrenia and schizoaffective disorder patients treated at a rehabilitation service (a community day center) or at an outpatients clinic were recruited between May 2015 and June 2016. Patients at the rehabilitation service received a multi-professional intervention aimed at improving QoL and other aspects.

All participants were adults (18–65 years) with stable disease and mild or no positive symptoms (scores ≤ 2 in all SAPS- Scale for the Assessment of Positive Symptoms items).²⁵ They had spent at least three weeks in the service

or had over three consultations in the outpatients unit. Patients with organic mental disorders or whose cognitive level prevented them from completing the questionnaires were excluded.

Measures

All patients completed three subjective QoL questionnaires: the EUROQOL-5D-5L,²⁶ the WHOQOL-BREF,²⁷ which had previously been validated for use in Spain,^{5,28} and the SQLS-R4.²⁹

The EUROQOL-5D-5L is a generic QoL self-report questionnaire comprising 5 health dimensions that can be combined to produce a societal preferential value of health status (EUROQOL value). Scores range from 0 to 1. It also includes a self-rated health status (EUROQOL health), a visual analog scale whose scores range from 0 to 100. In both cases, a high score represents a high QoL.

The World Health Organization Quality of Life-Brief Form (WHOQOL-BREF) is also a generic QoL instrument that has been used in patients with schizophrenia.^{5,28} It comprises 30 items divided into four domains (physical, psychological, social relationship and environment) plus two general items (which were not included in our study). Scores for the four specific QoL domains range from 0 to 100. High scores indicate good QoL.

The Schizophrenia Quality of Life Scale Revision 4 (SQLS-R4) is a specific QoL scale for people with schizophrenia. The SQLS-R4 comprises 33 items divided into two sub-scales (vitality and psychosocial feelings) and a global QoL score. Scores in the two areas and in the global scale range from 0 to 100, with high values indicating low QoL. Objective QoL was assessed through selected items of the Quality of Life Interview-Brief Version (QOLI-BV).³⁰ The QOLI-BV is a specific QoL instrument that includes objective and subjective QoL measures. Its psychometric properties have been studied in French patients with schizophrenia.³¹ Included in the study were the items of family life (frequency of contact with a family member during the previous year), social activities (frequency of pre-planned activities with another person during the previous year), and income.

Other instruments

The SCIP (Screen for Cognitive Impairment in Psychiatry)³² is a brief screening tool designed to assess cognitive impairment in psychiatric patients. It comprises five subscales for immediate and delayed verbal learning, working memory, verbal fluency, and processing speed. The range of scores varies for each subscale, with high scores indicating high preservation in all cognitive domains. The psychometric properties of the SCIP have been studied in Spanish patients with schizophrenia.^{33,34}

Schizophrenia symptomatology was assessed by the specific symptom rating scales SANS (Scale for the Assessment of Negative Symptoms) and SAPS (Scale for the Assessment of Positive Symptoms).²⁵ These two instruments are administered to all patients on a regular basis in both centers. SANS assesses five negative symptoms while SAPS assesses four positive symptoms complexes. Global scores in the SANS range from 0 to 30, while in the SAPS they range from 0 to 20.

High scores indicate high levels of symptoms in both cases. Depression was measured with the Calgary Depression Scale for Schizophrenia,³⁵ whose scores range from 0 to 27. High scores indicate high depression level.

Finally, the expanded version of the Schedule of Assessment of Insight (SAI-E)³⁶ evaluates three insight dimensions: awareness of disease, relabeling of symptoms as pathological, and treatment compliance. Scores range 0–12 for illness and symptom areas, and 0–4 for treatment. A high score indicates a high level of insight. A total insight score (range 0–28) is created after the three areas are added.

Data collection procedures

All patients who satisfied the inclusion criteria were addressed during one of their visits to their treating professionals. They were interviewed, given oral and written information about the study, and invited to participate. Patients who provided informed consent completed the EUROQOL-5D-5L, the WHOQOL-BREF, the Calgary questionnaires and selected items from the QOLI-BV. After completing the questionnaires, the patients were able to discuss their answers with a psychologist. Questionnaires with less than 80% of items answered were excluded. SAPS, SANS and SAI-E were assessed by the clinician (psychiatrist or psychologist) who coordinated in each center the intervention patient received. Interrater reliability was obtained in meetings in which clinicians participating in the study agreed on the scores of three patients from each center that several of the participating professionals had previously evaluated. Other demographic data (gender, age, cohabitation and employment status) were obtained from the patient, while other clinical data (time since diagnosis, number of acute episodes) were obtained from the clinical record. The study was approved by the Research Ethics Committee of the Health Department and conducted in accordance with the ethical standards of the Declaration of Helsinki.

Statistical analysis

Sample characteristics, QoL and clinical scores were described using frequencies and percentages for the categorical variables and means and standard deviations for the continuous ones. To identify which patients' characteristics were related to better subjective QoL (dependent variables), linear univariate regression models were fitted with the QoL scores in the WHOQOL-BREF, the SQLS-R4 and the EUROQOL-5D-5L as response variables. Explanatory (independent) variables were: (1) sociodemographic variables: gender, age, family life (frequency of contact with a family member during the previous year: 1 = less than once a day; 2 = higher frequency), social activities (frequency of activities with another person during the previous year: 1 = less than once a month; 2 = once or more times a month); cohabitation (1 = family of origin; 2 = other); employment status (1 = unemployed; 2 = other situation: student, on sick leave, pensioner, or working); (2) economic income; and (3) clinical variables: time since diagnoses, number of acute episodes, diagnoses, insight (SAI-E in the three dimensions and total score), cognitive impairment (total score and in

the five subscales), negative symptoms (SANS), and depression (Calgary), and treatment center (rehabilitation service or outpatient clinic). Multivariate regression models were fitted with all the explanatory variables found to be significant in univariate analysis. The final model was selected by including all significant predictors and maximizing the goodness of fit according to the R^2 , while preserving the principle of parsimony. No correction for multiple comparisons was made.

Results

A total of 61 patients out of 65 candidates were interviewed. Reasons for not completing the questionnaires were administrative failure (2 cases) and patient refusal (2).

All questionnaires included in the study had over 80% of their items answered. The sociodemographic and clinical characteristics of the patients are shown in Table 1: 61%

Table 1 Sociodemographic and clinical characteristics of the sample.

Characteristics	N	Percentage
<i>Gender</i>		
Female	40	66
Male	21	34
<i>Cohabitation</i>		
Alone	3	5
Partner	6	10
Partner and children	5	8
Family of origin	37	61
Other	10	16
<i>Frequency of contacts with family</i>		
Less than once a day	19	31
At least once a day	42	69
<i>Social activities</i>		
Less than once a month	13	21
At least once a month	48	79
<i>Employment status</i>		
Student	2	3
Working	3	5
Sick leave	4	7
Unemployed	25	43
Pensioner	24	41
<i>Diagnosis</i>		
Schizophrenia	36	59
Schizoaffective disorder	25	41
<i>Center</i>		
Rehabilitation service	37	61
Outpatient clinic	24	39
	Mean	S.D.
Present age (range 18–60)	37.9	10.5
Income (range: 80–2500)	662.7	589.1
Number of acute episodes (range: 0–15)	3.3	2.9
Time in years since diagnosis (range: 2–41)	12.5	9.2

of the patients were living with their family of origin; 5% were working (with a salary), while 43% were unemployed (considered candidates for a job – including at special working centers; some of them could be receiving unemployment benefit or state financial aid), and 41% were pensioners (who could no longer work and were receiving a pension); 20% attended an occupational center and 21% attended a leisure center. There are no significant differences between the two treatment centers (Rehabilitation service, Outpatient clinic) in the clinical and sociodemographic characteristics of the patients, except in time since diagnoses ($p=0.002$, *U-Mann Whitney*), that is higher in the outpatients clinic (mean 7.3 years higher).

Table 2 shows that the mean scores were moderate in most subjective QoL areas: between 49.2 and 62.7 in the WHOQOL BREF, 58.8 in the EUROQOL health and 0.8 in the EUROQOL value, and between 38.9 and 43.3 in the SQLS-R4 (this last questionnaire assesses QoL limitations).

No significant relationship was found between cohabitation, family life, income, diagnosis, number of acute episodes, cognitive impairment (total score and subscales) and any of the QoL areas. Negative symptoms (SANS) and

Table 2 Mean scores in the questionnaires for immediate and delayed verbal learning, working memory, verbal fluency, and processing speed.

	Mean	S.D.	Range
<i>Clinical questionnaires</i>			
<i>SCIP total</i>	62.4	16.1	29–81
Verbal Learning			
Test-Immediate	18.0	5.6	7–29
Working Memory Test	17.1	4.4	7–24
Verbal fluency Test	14.7	4.9	7–28
Verbal Learning			
Test-Delayed	4.6	2.8	0–10
Processing speed Test	8.1	3.1	1–14
SANS	9.1	4.9	0–24
Calgary	6.3	5.1	0–19
<i>SAIE</i>			
SAIE disease	9.9	2.5	1–12
SAIE symptoms	9.1	2.7	2–12
SAIE treatment	3.2	1.1	0–4
SAIE total	22.1	5.3	3–28
<i>Subjective Quality of Life</i>			
<i>EUROQOL 5D-5L</i>			
EURQOL value	0.8	2.1	0.11–1
EUROQOL health	58.8	19.6	10–100
<i>SQLS-R4</i>			
Psychosocial	38.9	18.6	6.3–68.8
Vitality	43.3	17.3	3.9–73.1
Global	40.7	17.2	6.1–66.7
<i>WHOQOL</i>			
Physical	56.2	15.9	21.4–89.3
Psychological	49.2	21.1	8.3–95.8
Environment	62.7	15.6	31.2–96.9
Social	51.9	20.2	8.3–100

depression showed a significant relationship with the nine QoL areas studied. Age, gender, social activities, employment status, time since diagnosis, center and SAIE individual areas and global score were also related to QoL (see Table 3). A higher age, a higher score in negative symptoms, depression and SAIE disease, and being unemployed were related to lower QoL. More time since diagnosis, being a woman, being treated at the outpatient clinic, having more social activities, and a higher score in SAIE symptoms, SAIE treatment and SAIE total were related to higher QoL.

The best multivariate models to explain each of the subjective QoL areas presented R^2 between 0.25 and 0.56 (see Table 4). The determinants more often found to be related with QoL areas were negative symptoms and depression, where higher values were associated with lower QoL in both cases.

Discussion

This study shows that general and specific QoL of patients with schizophrenia spectrum disorders with stable disease and mild or no positive symptoms treated at a Spanish rehabilitation service and at an outpatients clinic is moderate, and that it is related both to sociodemographic characteristics such as age, gender, employment status and social activities, and to disease-related clinical aspects, such as time since diagnosis, depression, negative symptoms, insight, and treatment center.

Scores in the SQLS-R4 are in line with those from other European studies: of outpatients and inpatients from the UK²⁹ and of outpatients with prominent negative symptoms from several cultural areas (including European countries).³⁷ Scores in vitality and psychosocial feelings were slightly worse in our study (7–14 points lower in the QoL areas) than in two studies conducted in different cultural areas: Malaysia³⁸ with outpatients and China³⁹ with inpatients and outpatients. A study conducted in Korea with outpatients⁴⁰ found better vitality (7) and lower psychosocial feelings (13). Our scores in the SQLS-R4 were slightly higher than those from a study conducted in Taiwan⁴¹ on inpatients with non-symptom remission (≥ 8 points in psychosocial, vitality and total QoL).

Scores in the WHOQOL-BREF were in line with those from other studies performed with outpatients from Spain⁵ and other cultures: Thailand³ and Taiwan.² Scores in the EUROQOL-health were in line with those of a study with Spanish outpatients⁸ and a study of outpatients from 10 countries (including Spain).⁷

Our study found few relationships between the sociodemographic variables and QoL. Other studies have shown that sociodemographic variables are less strongly correlated with subjective QoL than clinical variables.^{2,17} Social activities have also been related to higher QoL (EUROQOL) in outpatients from 10 countries (including Spain).^{7,19} Social activities have a key role in our cultural area, where fostering supportive social relationships in patients is considered highly important.¹⁸ Unemployed patients had lower QoL in several areas than the other patients. Other studies have found higher QoL scores in employed patients than in those who did not have a job (we included more categories in the employed patients group). Higher QoL has been related to

being employed in outpatients from 10 countries (including Spain),^{7,19} from France²⁰ and in outpatients from another cultural area (Taiwan)² (in these two last studies other QoL questionnaires were administered). Differences in income may be a reason for the relationship between employment status and QoL in our study, since unemployed patients had lower incomes than the rest of the patients (data not shown). There were no significant differences between unemployed patients and patients with a different employment status with regard to the frequency of attendance at occupational centers or leisure centers (data not shown). We understand that these two factors did not influence the differences in QoL between employment status groups in our study.

Age and gender were related to just one QoL area. Few or no relationships have been found between age and QoL in other studies. Mas-Expósito et al.⁵ found no relationship among Spanish outpatients between age and the WHOQOL-BREF areas included in our study, while Lanfredi et al.¹⁸ found a relationship with just one WHOQOL-BREF area among Italian inpatients: as in our study, a younger age was related to a higher QoL. Hsiao et al.² (Taiwan) and Nakamura et al.¹³ (Japan) found no relationship between age and any QoL area in outpatients (in both those studies, other QoL were administered). With regard to gender, no relation with the WHOQOL-BREF was found in Spanish outpatients,⁵ and also no relation between gender and other QoL questionnaires in outpatients from four European countries (including Spain),⁴ or from Japan.¹³

Like other European studies (with similar or other QoL instruments),^{18,20} we did not find cohabitation to be a QoL determinant. We should point out that a high percentage of patients in our sample live with their family of origin, which may have influenced these analyses. This high percentage may be particular to Spain and could indicate the need for the support of relatives (who may well be elderly).

Factors more often related to QoL in our study were negative symptoms and depression. It is also remarkable that negative symptoms and depression are the factors that have been found as determinants of specific QoL (and also Employment status in one SQLS-R4 area), whereas the other demographic and clinical factors have just been found as determinants of general QoL.

Negative symptoms also appeared as determinants of lower QoL in other studies conducted on outpatients from our cultural area (and with the same QoL questionnaires) in Spain⁵ (WHOQOL-BREF), from 10 countries (including Spain, EUROQOL-5D),⁶ and from other cultural areas: Japan (SQLS)⁴² and Thailand³ (WHOQOL-BREF). Strauss et al.⁴³ consider that negative symptoms may be a more prominent determinant of well-being during the chronic phase of illness.

Depression has been considered a key determinant of subjective QoL in schizophrenia.^{11,17,42} One explanation for this is that patients with depression may have negative views of their situation that could negatively influence how they evaluate their QL.²⁴ Depression has been associated with low QoL in Spanish²² and French⁴⁴ outpatients (Calgary scale and a different QoL questionnaire in both studies) as well as in studies of outpatients from other cultures that used similar questionnaires to ours: Thailand³ (Calgary and WHOQOL-BREF), Japan⁴² (Calgary and SQLS questionnaire),

Table 3 Association between independent factors and subjective Quality of Life.

	WHOQOL-BREF psychological	WHOQOL-BREF physical	WHOQOL-BREF social	WHOQOL-BREF environment	EUROQOL-5D-5L health	EUROQOL-5D-5L value	SQLS-R4 psychosocial	SQLS-R4 vitality	SQLS-R4 total
Age	0.09 (-0.49; 0.68)	-0.12 (-0.55; 0.30)	0.30 (-0.27; 0.89)	0.39 (-0.02; 0.80)	-0.13 (-0.67; 0.40)	-0.007 (-0.01; -0.002)	0.11 (-0.41; 0.63)	0.14 (-0.34; 0.62)	0.13 (-0.36; 0.62)
Male (versus female)	-0.79 (-13.08; 11.51)	-4.22 (-13.13; 4.69)	-13.79 (-25.49; -2.10)	-6.50 (-15.31; 2.31)	-2.13 (-13.64; 9.38)	0.07 (-0.05; 0.19)	5.99 (-5.16; 17.14)	4.46 (-5.96; 14.87)	5.61 (-4.88; 16.10)
Center rehabilitation service (versus outpatient clinic)	-6.79 (-19.45; 5.85)	-5.29 (-15.05; 4.48)	-11.04 (-23.49; 1.41)	-13.40 (-22.11; -4.70)	-1.11 (-13.10; 10.87)	-0.30 (-0.16; 0.09)	-1.42 (-13.73; 10.89)	-0.90 (-11.84; 10.03)	-1.39 (-12.77; 9.98)
Low level of social activities versus high level	-12.89 (-25.85; 0.07)	-6.16 (-16.08; 3.76)	-20.88 (-32.97; -8.89)	-11.61 (-21.05; -2.17)	-12.88 (-24.88; -0.88)	-0.02 (-0.31; -0.07)	6.98 (-5.63; 19.61)	6.11 (-5.13; 17.35)	6.70 (-4.93; 18.33)
Unemployed versus others	-7.09 (-18.43; 4.25)	-5.53 (-13.92; 3.07)	-1.22 (-12.32; 9.87)	1.59 (-1.73; 14.93)	-10.43 (-20.93; 0.06)	-0.13 (-0.25; -0.02)	5.38 (-4.98; 15.74)	-10.51 (-1.43; -19.59)	7.56 (-1.86; 16.98)
Time since diagnosis	0.42 (-0.39; 1.23)	0.10 (-0.49; 0.69)	0.16 (-0.68; 0.99)	0.66 (0.16; 1.16)	0.41 (-0.38; 1.20)	0.01 (0.02; 0.001)	0.26 (-0.47; 0.99)	0.11 (-0.56; -0.77)	0.21 (-0.47; 0.88)
SANS	-2.20 (-3.24; -1.16)	-1.62 (-2.40; -0.84)	-1.86 (-2.93; -0.79)	-1.69 (-2.47; -0.91)	-1.72 (-2.78; -0.66)	-0.02 (-0.03; -0.07)	1.73 (0.75; 2.72)	1.53 (0.57; 2.49)	1.67 (0.74; 2.59)
Calgary	-2.53 (-3.41; -1.56)	-1.13 (-1.90; -0.36)	1.92 (-2.88; -0.95)	-0.93 (-1.71; -0.15)	-1.69 (-2.62; -0.76)	-0.02 (-0.03; -0.01)	2.52 (1.71; 3.32)	1.47 (0.63; 2.32)	2.16 (1.38; 2.94)
SAIE disease	-0.72 (-3.08; 1.65)	-0.70 (-2.51; 1.10)	0.09 (-2.16; 2.34)	1.53 (-0.22; 3.27)	-2.22 (-4.36; -0.08)	0.01 (-0.01; 0.04)	0.17 (-2.02; 2.36)	0.17 (-1.86; 2.20)	0.27 (-1.80; 2.34)
SAIE symptoms	0.12 (-2.06; 2.30)	0.55 (-1.11; 2.21)	-0.37 (-2.50; 1.75)	0.76 (-0.87; 2.39)	-0.58 (-2.62; 1.46)	0.03 (0.01; 0.05)	-1.12 (-3.05; 0.82)	-1.16 (-3.01; 0.68)	-1.10 (-2.93; 0.72)
SAIE treatment	2.11 (-3.16; 7.38)	0.98 (-3.06; 5.02)	1.21 (-3.83; 6.25)	5.25 (1.52; 8.98)	-0.36 (-5.36; 4.61)	0.01 (-0.04; 0.06)	-0.74 (-5.39; 3.89)	2.97 (-7.36; 1.42)	-1.60 (-5.97; 2.77)
SAIE total	-0.04 (-1.17; 1.10)	0.03 (-0.84; 0.90)	-0.02 (-1.10; 1.06)	0.03 (-0.84; 0.89)	-0.68 (-1.74; 0.37)	0.01 (2.16; 0.02)	-0.29 (-1.29; 0.71)	-0.40 (-1.35; 0.55)	-0.31 (-1.26; 0.64)

B values (95% CI)

B values in bold: a significant relationship was found between an independent factor and a subjective QoL area.

EUROQOL Health: EUROQOL-5D-5L self-rated health status.

EUROQOL value: EUROQOL-5D-5L societal preferential value of health status.

Table 4 Multivariate analyses: predictive factors of subjective QoL.

	B (95% IC)	P	R ²
<i>WHOQOL-BREF environment</i>			
SANS	-1.73 (-2.38; -1.08)	0.001	0.56
Time since diagnosis	0.59 (0.22; 0.96)	0.003	
<i>WHOQOL-BREF SOCIAL</i>			
Calgary	-1.76 (-2.72; -0.95)	0.001	0.47
Social activities 1	-16.53 (-26.98; -6.09)	0.003	
Gender male (vs female)	-16.21 (-25.47; -7.01)	0.001	
<i>WHOQOL-BREF physical</i>			
SANS	-1.6 (-2.39; -0.84)	0.001	0.25
<i>WHOQOL-BREF psychological</i>			
Calgary	-1.99 (-2.93; -1.06)	0.001	0.45
SANS	-1.47 (-2.44; -0.51)	0.003	
<i>SQLS-R4 vitality</i>			
SANS	1.68 (0.79; 2.57)	0.002	0.41
Unemployed (vs others)	-13.43 (-4.53; -21.72)	0.004	
<i>SQLS-R4 psychosocial</i>			
SANS	1.08 (0.19; 1.96)	0.019	0.45
Calgary	1.99 (1.10; 2.90)	0.001	
<i>SQLS-R4 Global</i>			
SANS	1.23 (0.39; 2.06)	0.005	0.46
Calgary	1.53 (0.67; 2.40)	0.010	
Unemployed (vs others)	-7.77 (-0.53; -15.49)	0.049	
<i>EUROQOL-5D-5L value</i>			
Calgary	-0.01 (-0.02; -0.001)	0.039	0.54
SANS	-0.01 (-0.03; -0.004)	0.011	
SAIE symptoms	0.03 (0.01; 0.04)	0.009	
Age	-0.01 (0.012; -0.002)	0.006	
<i>EUROQOL-5D-5L health</i>			
SANS	-1.25 (-2.23; -0.27)	0.014	0.40
Calgary	-1.43 (-2.8; -0.47)	0.004	
SAIE disease	-2.71 (-4.55; -0.88)	0.005	

Social activities. Frequency of pre-planned activities with another person during the previous year: 1 = less than once a week; 2 at least once a week.

and other Depression and QoL questionnaires in USA.²⁴ Contrary to these results, Mas-Expósito et al.⁵ found no relationship between depression and QoL in Spanish outpatients (WHOQOL-BREF): in that study, depression was assessed with just the PANNS general item.

Like in our study, Boyer et al.²⁰ found a positive relationship between insight on symptoms and QoL but a negative relationship between insight on illness and QoL in French outpatients (using different questionnaires). These authors consider that a better insight on symptoms may help develop care skills that mitigate these symptoms, whereas a better insight on illness may be related to lower QoL, since patients may better understand the negative consequences of their illness (including stigmatization). Moreover, patients with a lower insight on their illness may consider themselves more competent and overestimate their QoL. Other studies (using different instruments), such as that by Kurtz and Tolman¹⁴ also found that subjective QoL was lower in outpatients from the USA with a better insight on their illness.

SCIP scores show moderate limitations and are in line with the scores found in the standardization study for Spanish patients with schizophrenia or schizoaffective disorder.³⁴ Other studies also found no relationship between subjective QoL and cognitive dysfunction when assessed in areas similar to ours: Lanfredi et al.¹⁸ between attention, verbal fluency, denomination, visospacial skill, immediate verbal learning, delayed verbal and historical learning and the WHOQOL-BREF in Italian inpatients; Fujimaki et al.¹¹ between verbal fluency and the SQLS in Japanese inpatients; Boyer et al.²⁰ between verbal and visual learning, attention and executive function and a different QoL questionnaire in French outpatients; and Ueoka et al.²¹ between the BACS questionnaire (verbal and working memory, motor function, verbal fluency, processing speed and executive function) and the SQLS in Japanese outpatients. Unlike our study, Kurtz and Tolman¹⁴ found lower subjective QoL (a different questionnaire) in outpatients from USA with lower cognitive functioning (attention, working memory, problem solving).

Studies of cognitive dysfunction and QoL have produced results that may be considered contradictory. Tolman and Kutz¹⁵ assert that this may partly be due to the fact that some studies assessed objective QoL while others subjective QoL. Some studies have shown weaker relationships between cognitive dysfunction and subjective QoL than between cognitive dysfunction and objective QoL: PANNS cognitive dysfunction had a greater influence on objective QoL than on subjective QoL (SQLS) in Japanese outpatients⁴⁵ and was related to objective QoL but not with subjective QoL (WHOQOL-BREF) in Chinese inpatients.¹

A higher QoL in patients with more time since diagnosis may be related to a process involving patients adapting to their situation.¹ This relationship has appeared in just two QoL areas in our study, while Mas-Expósito et al.⁵ found no relationship in Spanish outpatients (WHOQOL-BREF). Diagnosis was not found to be a QoL determinant in our study, perhaps because patients with just schizophrenia or schizoaffective disorder were included. Fleury et al.¹⁷ found a relationship between diagnosis and QoL but their study also included patients with a variety of diagnoses (such as mood disorders). Like in our study, Hsiao et al.² found no relationship between QoL and the number of hospitalizations in Taiwanese outpatients (WHOQOL-BREF).

These patients might benefit from multidisciplinary treatment to improve their QoL. Interventions aimed at negative and depressive symptoms⁴³ (through behavioral therapy or cognitive social skills training) may improve patients' subjective QoL.^{11,12,44,45} Boyer et al.²⁰ assert that it would be good to treat patients' perceptions of disease-related stigma in order to improve its negative effect on QoL.

The patients from the present study might benefit from multidisciplinary treatment to improve their QoL. Interventions aimed at negative and depressive symptoms⁴² (through behavioral therapy or cognitive social skills training) may improve patients' subjective QoL.^{11,12,43,44} Boyer et al.²⁰ assert that it would be good to treat patients' perceptions of disease-related stigma in order to improve its negative effect on QoL.

The strengths of this study are the combination of determinants evaluated, that general and disease-specific QoL areas have been assessed, and the fact that it was conducted in Spain. However, it could have benefited from a larger sample and a longitudinal design in which QoL was measured before and after an intervention in order to identify risk and protective QoL factors more accurately. It would be interesting to study QoL in patients at the acute disease phases, with positive symptoms⁴⁵ and to include other cognitive determinants such as social cognition or metacognitive skills.

Conclusion

Sociodemographic and clinical factors have been found to be determinants of general and specific QoL in a sample of Spanish schizophrenia and schizoaffective outpatients with stable disease and mild or no positive symptoms. More in detail, the demographic factors being a woman (WHOQOL-BREF) and having more social activities (WHOQOL-BREF and EUROQOL-5D), and the clinical factors more time since

diagnosis (WHOQOL-BREF and EUROQOL-5D), being treated at the outpatient clinic (WHOQOL-BREF), and a higher score in SAIE symptoms (EUROQOL-5D), SAIE treatment (WHOQOL-BREF) and SAIE total (EUROQOL-5D), have been related to higher QoL. A higher age (EUROQOL-5D), being unemployed (EUROQOL-5D and SQLS-R4), a higher score in SAIE disease (EUROQOL-5D), have been related to lower QoL. Negative symptoms and depression showed a negative relationship with all the QoL areas studied.

Conflict of interest

The authors have no conflict of interest to declare.

Funding

The present study has not received the support from any grant.

Acknowledgments

We would like to thank all the professionals at the Rehabilitation Unit and the Outpatient Centre Ansoain in the Mental Health Department of Navarra for their support in this study.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. Kao YC, Liu YP, Chou MK, Cheng TH. Subjective quality of life in patients with chronic schizophrenia: relationships between psychosocial and clinical characteristics. *Compr Psychiatry*. 2011;52:171–80.
2. Hsiao CY, Hsieh MH, Tseng CJ, Chien SH, Chang CC. Quality of life of individuals with schizophrenia living in the community: relationship to socio-demographic, clinical and psychosocial characteristics. *J Clin Nurs*. 2012;21:2367–76.
3. Suttajit S, Pilakanta S. Predictors of quality of life among individuals with schizophrenia. *Neuropsychiatr Dis Treat*. 2015;28:1371–9.
4. Kovess-Masféty V, Xavier M, Moreno Kustner B, Suchocka A, Sevilla-Dedieu C, Dubuis J, et al. Schizophrenia and quality of life: a one-year follow-up in four EU countries. *BMC Psychiatry*. 2006;6:39.
5. Mas-Expósito L, Amador-Campos JA, Gómez-Benito J, Lalucat-Jo L. Research Group on Severe Mental Disorder, The World Health Organization Quality of Life Scale Brief Version: a validation study in patients with schizophrenia. *Qual Life Res*. 2011;20:1079–89.
6. Novick D, Montgomery W, Cheng Y, Moneta V, Haro JM. Impact of negative symptoms on quality of life in patients with schizophrenia. *Value Health*. 2015;18:A836–7.
7. Alonso J, Croudace T, Brown J, Gasquet I, Knapp MR, Suárez D, et al. Health-related quality of life (HRQL) and continuous antipsychotic treatment: 3-year results from the Schizophrenia Health Outcomes (SOHO) study. *Value Health*. 2009;12:536–43.
8. Fe Bravo-Ortiz M, Gutiérrez-Casares JR, Rodríguez-Morales A, García MA, Hidalgo-Borrajo R. Influence of type of treatment on the well-being of Spanish patients with schizophrenia and their caregivers. *Int J Psychiatry Clin Pract*. 2011;15:286–95.
9. Brissos S, Dias VV, Balanzá-Martínez V, Carita AI, Figueira ML. Symptomatic remission in schizophrenia patients: relationship

- with social functioning, quality of life, and neurocognitive performance. *Schizophr Res.* 2011;129:133–6.
10. Karow A, Moritz S, Lambert M, Schoder S, Krausz M. PANSS syndromes and quality of life in schizophrenia. *Psychopathology.* 2005;38:320–6.
 11. Fujimaki K, Morinobu S, Yamashita H, Takahashi T, Yamawaki S. Predictors of quality of life in inpatients with schizophrenia. *Psychiatry Res.* 2012;197:199–205.
 12. Tomotake M. Quality of life and its predictors in people with schizophrenia. *J Med Invest.* 2011;58:167–74.
 13. Nakamura H, Watanabe N, Matsushima E. Structural equation model of factors related to quality of life for community-dwelling schizophrenic patients in Japan. *Int J Ment Health Syst.* 2014;25:32.
 14. Kurtz MM, Tolman A. Neurocognition, insight into illness and subjective quality-of-life in schizophrenia: what is their relationship? *Schizophr Res.* 2011;127:157–62.
 15. Tolman AW, Kurtz MM. Neurocognitive predictors of objective and subjective quality of life in individuals with schizophrenia: a meta-analytic investigation. *Schizophr Bull.* 2012;38:304–15.
 16. Zeng Y, Zhou Y, Lin J, Zhou Y, Yu J. Generic and disease-specific quality of life and its predictors among Chinese inpatients with schizophrenia. *Psychiatry Res.* 2015;30:724–8.
 17. Fleury MJ, Grenier G, Bamvita JM, Tremblay J, Schmitz N, Caron J. Predictors of quality of life in a longitudinal study of users with severe mental disorders. *Health Qual Life Outcomes.* 2013;11:92.
 18. Lanfredi M, Candini V, Buizza C, Ferrari C, Boero ME, Giobio GM, et al. The effect of service satisfaction and spiritual well-being on the quality of life of patients with schizophrenia. *Psychiatry Res.* 2014;5:185–91.
 19. Haro JM, Novick D, Perrin E, Bertsch J, Knapp M. Symptomatic remission and patient quality of life in an observational study of schizophrenia: is there a relationship? *Psychiatry Res.* 2014;15:163–9.
 20. Boyer L, Aghababian V, Richieri R, Loundou A, Padovani R, Simeoni MC, et al. Insight into illness, neurocognition and quality of life in schizophrenia. *Prog Neuropsychopharmacol Biol Psychiatry.* 2012;36:271–6.
 21. Ueoka Y, Tomotake M, Tanaka T, Kaneda Y, Taniguchi K, Nakataki M, et al. Quality of life and cognitive dysfunction in people with schizophrenia. *Prog Neuropsychopharmacol Biol Psychiatry.* 2011;15:53–9.
 22. Mauriño J, Sanjúan J, Haro JM, Díez T, Ballesteros J. Impact of depressive symptoms on subjective well-being: the importance of patient-reported outcomes in schizophrenia. *Patient Prefer Adherence.* 2011;5:471–4.
 23. Ojeda N, Sánchez P, Peña J, Elizagárate E, Yoller AB, Gutiérrez-Fraile M, et al. An explanatory model of quality of life in schizophrenia: the role of processing speed and negative symptoms. *Actas Esp Psiquiatr.* 2012;40:10–8.
 24. Narvaez JM, Twamley EW, McKibbin CL, Heaton RK, Patterson TL. Subjective and objective quality of life in schizophrenia. *Schizophr Res.* 2008;98:201–8.
 25. Andreasen NC. Methods for assessing positive and negative symptoms. *Mod Probl Pharmacopsychiatry.* 1990;24:73–88.
 26. Herdman M, Gudex C, Lloyd A, Janssen M, Kind P, Parkin D, et al. Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Qual Life Res.* 2011;20:1727–36.
 27. WHOQOL Group. Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psychol Medic.* 1998;28:551–8.
 28. Lucas-Carrasco R. The WHO quality of life (WHOQOL) questionnaire: Spanish development and validation studies. *Qual Life Res.* 2012;21:161–5.
 29. Martin CR, Allan R. Factor structure of the Schizophrenia Quality of Life Scale Revision 4 (SQLS-R4). *Psychol Health Med.* 2007;12:126–34.
 30. Lehman AF. Evaluating quality of life for persons with severe mental illness: assessment toolkit. Cambridge: Evaluation Center at Health Services Research Institute; 1995.
 31. Lançon C, Auquier P, Launois R, Toumi M, Llorca PM, Bebbington P, et al. Evaluation of the quality of life of schizophrenic patients: validation of the brief version of the Quality of Life Interview. *Encephale.* 2000;26:11–6.
 32. Hurford IM, Marder SR, Keefe RS, Reise SP, Bilder RM. A brief cognitive assessment tool for schizophrenia: construction of a tool for clinicians. *Schizophr Bull.* 2011;37:538–45.
 33. Pino O, Guilera G, Rojo JE, Gómez-Benito J, Bernardo M, Crespo-Facorro B, et al. Spanish version of the Screen for Cognitive Impairment in Psychiatry (SCIP-S): psychometric properties of a brief scale for cognitive evaluation in schizophrenia. *Schizophr Res.* 2008;99:139–48.
 34. Gómez-Benito J, Guilera G, Pino Ó, Rojo E, Tabarés-Seisdedos R, Safont G, et al. The screen for cognitive impairment in psychiatry: diagnostic-specific standardization in psychiatric ill patients. *BMC Psychiatry.* 2013;13:127.
 35. Addington D, Addington J, Schissel B. A depression rating scale for schizophrenics. *Schizophr Res.* 1990;3:247–51.
 36. Kemp R, David A. Psychological predictors of insight and compliance in psychotic patients. *Br J Psychiatry.* 1996;169:444–50.
 37. Rofail D, Regnault A, le Scouiller S, Berardo CG, Umbricht D, Fitzpatrick R. Health-related quality of life in patients with prominent negative symptoms: results from a multicenter randomized Phase II trial on bitopertin. *Qual Life Res.* 2016;25:201–11.
 38. Taha NA, Ibrahim MI, Rahman AF, Asrul Akmal Shafie AA, Rahman AH. Validation of the schizophrenia quality of life scale revision 4 among chronic schizophrenia patients in Malaysia. *Value health.* 2012;1:82–6.
 39. Kuo PJ, Ma HI, Kuo CC, Huang WC, Chung MS. Factor analysis of the Schizophrenia Quality of Life Scale Revision 4 (SQLS-R4) Chinese version and related factors. *Int J Psychiatry Clin Pract.* 2009;13:278–84.
 40. Kim JH, Lee S, Han AY, Kim K, Lee J. Relationship between cognitive insight and subjective quality of life in outpatients with schizophrenia. *Neuropsychiatr Dis Treat.* 2015;7:2041–8.
 41. Chou CY, Yang TT, Ma MC, Teng PR, Cheng TC. Psychometric validations and comparisons of schizophrenia-specific health-related quality of life measures. *Psychiatry Res.* 2015;226:257–63.
 42. Strauss GP, Sandt AR, Catalano LT, Allen DN. Negative symptoms and depression predict lower psychological well-being in individuals with schizophrenia. *Compr Psychiatry.* 2012;53:1137–44.
 43. Reine G, Lançon C, Di Tucci S, Sapin C, Auquier P. Depression and subjective quality of life in chronic phase schizophrenic patients. *Acta Psychiatr Scand.* 2003;108:297–303.
 44. Yamauchi K, Aki H, Tomotake M, Iga J, Numata S, Motoki I, et al. Predictors of subjective and objective quality of life in outpatients with schizophrenia. *Psychiatry Clin Neurosci.* 2008;62:404–11.
 45. Tomotake M, Kaneda Y, Iga J, Kinouchi S, Tayoshi S, Motoki I, et al. Subjective and objective measures of quality of life have different predictors for people with schizophrenia. *Psychol Rep.* 2006;99:477–87.