

Validation of the modified DUKE-UNC Functional Social Support Questionnaire in patients with schizophrenia

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Abstract

Purpose: The modified DUKE-UNC Functional Social Support Questionnaire (FSSQ) is considered an assessment tool for patients with schizophrenia. However, it has not been validated in this patient population. This issue is addressed here by examining the tool's psychometric properties in a clinical sample of patients with schizophrenia.

Methods: Two hundred and forty-one patients from 10 Adult Mental Health Centres (AMHC) meeting the following inclusion criteria were included: 1) International Classification of Diseases-10 (ICD-10) diagnosis of schizophrenia; 2) Global Assessment of Functioning (GAF) scores ≤ 50 ; 3) Illness duration of more than 2 years; and 4) Clinical stability. Patients were evaluated at baseline and at one-year follow-up for clinical and psychosocial variables.

Results: The factor analysis revealed two factors that explained 54.15% of the variance. Internal consistency was excellent for the total FSSQ (0.87 at baseline and 0.88 at one year follow-up) and ranged between adequate and excellent for FSSQ domains. Correlations between FSSQ scores and those of global functioning, psychiatric symptoms, disability and quality of life ranged between small and large. There were significant differences between groups of patients with schizophrenia in FSSQ scores. Patients with higher levels of somatic complaints and patients who were disabled scored significantly lower in some or all FSSQ scores. After one-year follow-

up, patients improved in overall functioning and there was a decrease in psychiatric symptoms.

Conclusions: The FSSQ is a reliable and valid instrument for the assessment of perceived social support in patients with schizophrenia.

Keywords: Modified Duke-UNC Functional Social Support Questionnaire · FSSQ · factor structure · reliability · validity · social support · schizophrenia

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1. Introduction

Social support was conceptualised by Walsh and Connelly (1996) [35] as any material, instrumental and emotional support provided by a social network. Such a network usually involves family and friends but is not restricted to them [26]. Social networks in people with severe mental illness are smaller than those in people without [8, 24] and frequently, they are restricted to the immediate family [28]. In patients with severe mental illness, poor levels of social support have been associated with poor quality of life [31, 41], poor self-esteem [15], high levels of psychiatric symptoms and more frequent hospitalisations [10, 33].

In view of this relationship between poor social support and poor outcomes in patients with severe mental illness, it is important to have specific instruments for assessing social support and there are a number of such tools which can be used in this group of patients: Social Network and Support Interview Tool [27], Arizona Social Support Inventory [3], Multidimensional Scale of Perceived Social Support [43] and Social Support Questionnaire [32].

The modified Duke-UNC Functional Social Support Questionnaire or FSSQ [6] is another example of assessment instrument that aims to measure social support. More specifically, it aims to measure the person's satisfaction with the functional and affective aspects of his or her social support. It is a brief instrument composed of 11 items taken from a larger questionnaire that was derived from a literature review [6, 7] and includes quantitative and functional measures regarding affective support and

confidant support. The FSSQ was developed in English and validated in patients recruited from a family medical practice [6]. Further validations have involved patients attending primary care health centres [5; 13]. These validation studies have explored the factor structure of the FSSQ [5, 6, 13] and have shown the following two factors 1) affective support and 2) confidant support. Table 1 summarises the results of these studies.

INSERT TABLE 1 HERE

The FSSQ is also considered an instrument for use in patients with severe mental illness [19] but so far, it has not been validated in this sample population. This issue has been addressed here by studying the psychometric properties of the FSSQ in a clinical sample of outpatients with schizophrenia.

Firstly, we aimed to establish its factor structure, its overall internal consistency and the internal consistency associated with its domains. Secondly, we addressed FSSQ validity evidence: associations with clinical and psychosocial variables, and differences in perceived social support between groups of patients with schizophrenia, established according to socio-demographic variables, psychiatric symptoms, disability and use of services. As in previous studies, we expected to find a positive relationship between perceived social support and functioning [12] and quality of life [31, 41] and a negative relationship between perceived social support and psychiatric symptoms [10, 33] and disability [9]. In the validation study of the FSSQ [6], most socio-demographic variables showed no significant associations with perceived social support. We did not expect significant differences between groups of patients with schizophrenia based on socio-demographic variables. Taking into account the above-mentioned relationships, we expected to find differences in perceived social support between groups of patients

with schizophrenia, according to psychiatric symptoms and disability. Specifically, we expected to find that patients with lower levels of psychiatric symptoms (i.e. depression, anxiety and somatic complaints) and lower disability levels would show higher levels of perceived social support. We also expected to find differences in perceived social support between groups of patients according to use of health services, i.e. that patients with lower levels of perceived social support would use health services more frequently [5, 6]. In a meta-analysis review, Ziguras & Stuart (2000) [42] showed that community treatment programs were effective in patients with severe mental illness in terms of clinical and psychosocial outcomes. We expected significant improvements in perceived social support, global functioning, psychiatric symptoms, disability and quality of life after one year follow-up linked to the effect of community treatment in patients.

2. Method

2.1. Sample

Patients were recruited from 10 Adult Mental Health Centres (AMHC) in Barcelona (Spain). AMHC belong to the Catalan Department of Health and provide care to patients in a similar way. Multidisciplinary community mental health teams (including psychiatrists, psychologists, community mental health nurses and social workers) offer a comprehensive intervention to patients with schizophrenia. Such intervention is usually managed by a community mental health nurse, provides care at a medical and psychosocial level and its intensity depends on patients' needs. Patient data came from a study conducted in these AMHC from December 2006 to January 2008. That study consisted of a one-year follow-up of patients in contact with services meeting the following inclusion criteria: 1) Global Assessment of Functioning (GAF) [2] scores of 50 or lower; 2) Illness duration greater than 2 years; 3) International Classification of

Diseases-10 (ICD-10) [38] diagnosis of schizophrenia; and 4) Clinical stability at time of assessment. The following exclusion criteria were used: dementia, organic brain injury or mental retardation. Patients visited consecutively by one of the members of the community mental health teams and meeting the study inclusion criteria were asked to participate. Two hundred and sixty patients met the inclusion criteria but 19 did not consent to take part in the study.

Details of the clinical and socio-demographic characteristics of the final sample at baseline have been described elsewhere [25].

Two hundred and nineteen patients (90.9%) were re-evaluated one year after the first assessment. Sixteen patients (out of 22) were not evaluated because they were not clinically stable at time of assessment or had lost contact with services, 3 died (2 by suicide and 1 from terminal illness), 2 did not finish the assessments and 1 left the study.

2.2. Instruments

Patients were evaluated at baseline and at one year follow-up with the following assessment tools:

-The FSSQ[6]. The FSSQ is composed of 11 items. Each item is rated on a five-point Likert Scale, ranging from 1 (“Much less than I would like”) to 5 (“As much as I would like”). The higher the score, the better the social support perceived. The FSSQ can be interviewer- or self-rated, requires 5 minutes to administer and assesses subjective social support in two domains: 1) Confidant support (e.g. “My family and friends visit me”; theoretical range: 6-30); and 2) Affective support (e.g. “I get love and affection”; theoretical range: 5-25); and provides an overall social support measure (theoretical range: 11-55). The FSSQ showed test-retest reliability coefficient of 0.66 and internal

consistency, evaluated by means of item-remainder correlations, ranged from 0.50 to 0.85 [7]. It showed significant correlations with symptoms, emotional functioning and activities as measured by the DUKE-UNC Health Profile.

The FSSQ was translated and validated in Spanish [13] in a sample of patients attending a primary care health centre in a socio-economically deprived area. The internal consistency for the FFSQ total score was 0.82. Another Spanish validation in a sample of patients attending primary care health centres in a less socio-economically deprived area [5] showed reliability coefficients of 0.80 and 0.92 for hetero-report and self-report, respectively. Concurrent validity with other health measures ranged in absolute values from 0.13 to 0.81 [5].

-*The Positive and Negative Syndrome Scale* or PANSS [21]. This is an instrument used to assess the severity of symptoms in patients with schizophrenia and has been translated into and validated in Spanish [29]. It includes three domains: positive (theoretical range: 7-49 where 49 indicates higher levels of positive psychiatric symptoms); negative (theoretical range: 7-49 where 49 denotes higher levels of negative psychiatric symptoms); general (theoretical range: 16-112; where 112 represents higher levels of general psychiatric symptoms); and provides a measure of psychiatric symptoms in general terms (theoretical range: 30-210, where 210 means higher levels of psychiatric symptoms). Its subscales showed internal consistency values that ranged between medium and high and its convergent validity with other measures of psychiatric symptoms was high and ranged from 0.70 to 0.81 [29].

-The GAF from the *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition* (DSM-IV) [2] is a reliable and valid instrument to measure global functioning in

psychiatric patients. Its theoretical range oscillates between 1 and 100. The higher the score, the better the global functioning of patient.

-*The World Health Organization Short Disability Assessment Schedule (DAS-s)* [18] from the *ICD-10* [38]. This is a valid instrument to assess disability composed of seven items and developed by the World Health Organization. Its theoretical range is 0-30. The higher the score, the higher the patient disability.

-*The World Health Organization Quality of Life Scale Brief Version (WHOQOL-BREF)* [39]. This is a short instrument to assess subjective quality of life that is derived from the World Health Organization Quality of Life Scale [39]. It showed internal consistency values that ranged between 0.66 and 0.84; correlations with the WHOQOL-100 subscales ranged from 0.89 to 0.95 [39]. Its translation into Spanish [23] showed proper psychometric properties in outpatients suffering from schizophrenia [25].

2.3. Procedure

The Ethics Committee of the Catalan Union of Hospitals approved the study in accordance with the ethical standards of the 1964 Declaration of Helsinki. Patients provided informed consent after the procedures and assessments had been explained to them.

The AMHC community mental health teams performed the study assessments. Namely, the psychiatrists established patient diagnoses by an interview according to the ICD-10 [38] research diagnosis criteria and self and caregiver reports.

The psychiatrists also assessed psychiatric symptoms and global functioning, and the other members of the community mental health teams conducted the rest of the assessments under the psychiatrists' supervision. The psychiatrists were in charge of

setting up the assessment agenda, managing its progress and sending the score sheets to the psychologist responsible for the study database.

Different measures were taken to ensure the quality of assessment data. Firstly, all psychiatrists participated in a schizophrenia diagnostic agreement workshop by means of two clinical vignettes. Secondly, all researchers received a 4-hour training session on the use of assessment instruments run by a psychologist with experience in the assessment of psychiatric patients, especially those with psychosis. Moreover, patient data were contrasted with data from AMHC and systematic examinations of the coding and registration of data were run.

Patients were evaluated at baseline and at one-year follow-up according to the following procedure. First, to check patient inclusion criteria, the psychiatrist assessed global functioning and psychiatric symptoms with the GAF and the PANSS respectively. Second, the other community mental health team members conducted the other assessments in the following order: 1) DAS-s; 2) the WHOQOL-BREF; and 3) the FSSQ. Systematic reviews of data coding and registration were run after each assessment and patient information was contrasted with data from family interviews and data registered in AMHC.

2.4. Data analysis

Data were analysed using the *Statistical Package for the Social Sciences* v.15.

Exploratory factor analysis (EFA) was performed using principal axis factoring and varimax rotation. Factors were selected using the following criteria: 1) the analysis of the scree plot, and 2) eigenvalues > 1 [17, 20].

Internal consistency was evaluated at baseline and at one-year follow-up by means of Cronbach's α . We studied the contribution of FSSQ items to the overall α , and the α associated with their domains. Cronbach's α coefficients were established as follows: $0.60 \leq \alpha < 0.80$ adequate; $0.80 \leq \alpha < 0.85$ good; and $\alpha \geq 0.85$ excellent [16].

Pearson's correlations between FSSQ scores at baseline and the GAF, PANSS, DAS-s and WHOQOL-BREF scores at baseline were calculated to assess validity evidence [1]. We considered the correlation coefficients as follows: 1) < 0.3 = small; 2) 0.3 to 0.5 = moderate; and 3) ≥ 0.5 large [11].

To test differences in FSSQ scores between groups of patients with schizophrenia, we used T-tests and analysis of variance test. The groups of patients were classified according to socio-demographic variables, the existence of psychiatric symptoms such as anxiety [21] (item 2 of PANSS general ≥ 4), depression [21] (item 6 of PANSS general ≥ 4) and somatic complaints [21] (item 1 of PANSS general ≥ 4) and disability (DAS-s total mean score ≥ 4). We considered a cut-off item score of ≥ 4 for the DAS-s since a score of ≥ 4 indicates disability, although with the presence of external help [18]. Groups of patients were also established according to use of health services during the year prior to baseline assessment.

To assess change in patient status between baseline and at one-year follow-up, we used T-tests for dependent samples. FSSQ, GAF, PANSS, DAS-s and WHOQOL-BREF scores and use of community mental health services (i.e. community psychiatric visits and community nursing visits) were considered for those analyses. For community mental health services, we compared the frequency of patient visits during the year prior to baseline assessment and the frequency of patient visits during the year following that assessment. We applied the Bonferroni correction for multiple comparisons [14] and we

considered significant a p value ≤ 0.004 . We estimated the effect size [30] which was considered as follows: 1) < 0.3 =small; 2) 0.3 to 0.5=moderate; and 3) ≥ 0.5 large [11].

We calculated differences between scores at baseline and at one-year follow-up for FSSQ, GAF, PANSS, DAS-s, WHOQOL-BREF and use of community mental health services. Pearson's correlation coefficients were used to calculate sensitivity to change between FSSQ score differences and differences in the rest of the scores.

3. Results

3.1. Factor analysis

The EFA revealed a two-factor structure with eigenvalues greater than 1 which explained 54.15% of the variance. Table 2 shows item loading on each factor and the explained variance. Factor 1 (Confidant Support) included 6 items relating to the possibilities of counting on someone to communicate; factor 2 (Affective Support) included 5 items relating to counting on someone for love, care and empathy. Items number 3 and 5 had almost identical loadings in factor 1 and 2. Taking their conceptual meaning into account, we considered them in Factor 2 for the subsequent analyses.

INSERT TABLE 2 HERE

3.2. Internal consistency

Internal consistency coefficient for FSSQ total score at baseline was 0.87 and 0.88 at one-year follow-up. For the FSSQ domains according to Broadhead (1988)[6], coefficients were 0.66 for FSSQ affective and 0.83 for FSSQ confidant at baseline, while at one year follow-up, they were 0.69 for FSSQ affective and 0.86 for FSSQ confidant. We also tested the change in Cronbach's alpha values when items are suppressed. Only the suppression of item 2 (i.e. "Chances to talk to someone I trust

about my personal and family problems”) increased the level of internal consistency of the FSSQ total by 0.002 at baseline. The suppression of any other items maintained or decreased internal coefficients by 0.02 maximum, which may be considered negligible. Regarding the FSSQ domains, the suppression of item 1 (i.e. “Love and affection”) increased internal consistency levels by 0.03 and 0.02 at baseline and at one year follow-up, respectively. The suppression of any other items maintained or decreased internal coefficients by 0.12 maximum.

3.3. Validity evidence

Pearson's correlations between FSSQ scores and GAF, PANSS, DAS-s and WHOQOL-BREF scores at baseline were mostly significant, and ranged from 0.00 to 0.55 (see Table 3). Specifically: correlations between FSSQ and GAF scores were positive and small; correlations between FSSQ and PANSS scores were mostly negative and small; correlations between FSSQ and DAS-s scores were also negative but moderate; and correlations between FSSQ and WHOQOL-BREF scores were positive and ranged between small and large.

Table 3 also shows the differences in FSSQ scores in groups of patients with schizophrenia. There were no statistically significant differences in FSSQ scores between groups established according to socio-demographic variables. There were significant differences between groups of patients with schizophrenia based on levels of somatic complaints and levels of disability. In particular, patients with higher levels of somatic complaints scored significantly lower in FSSQ total. Patients who were disabled scored significantly lower in FSSQ total and FSSQ domain scores. No other differences were observed.

INSERT TABLE 3 HERE

3.4. Changes over time

FSSQ scores remained about the same over time. There were statistically significant changes over time regarding all PANSS and GAF scores. There was a decrease in psychiatric symptoms as revealed by changes in PANSS scores over time and an improvement in overall functioning as shown by changes in GAF scores over time. Effect sizes were medium for most scores but small for GAF social scores. DAS-s scores decreased over time but not significantly and WHOQOL-BREF scores remained the same over time. With regard to use of health services, there were statistically significant changes over time in community nursing visits. Specifically, there was an increase in community nursing visits with a small effect size. No other statistically significant differences over time were observed (See Table 4).

INSERT TABLE 4 HERE

3.5. Sensitivity to change

Firstly, score differences between baseline and one-year follow-up were calculated for FSSQ scores, the other assessment instruments and community service visits. Secondly, Pearson's correlation coefficients between FSSQ score differences and all other score differences were calculated (see Table 5): Pearson's correlations between changes in FSSQ scores and changes in GAF were non-significant; Pearson's correlations between changes in FSSQ scores and changes in PANSS general and total scores were significant except for FSSQ affective scores; Pearson's correlations between changes in FSSQ scores and changes in DAS-s and WHOQOL-BREF scores were all significant; and Pearson's correlations between changes in FSSQ scores and community service visits were non-significant. Those coefficients ranged from -0.01 to 0.36. In particular: correlations between the change in FSSQ and the change in GAF scores were positive

and small; correlations between changes in FSSQ and changes in PANSS and DAS-s scores were mostly negative and small; correlations between changes in FSSQ and changes in WHOQOL-BREF scores were positive and ranged between small and moderate. As for use of health services, correlations were mostly negative and small.

INSERT TABLE 5 ABOUT HERE

4. Discussion

The aim of this study was to validate the FSSQ in patients with schizophrenia. The FSSQ showed suitable psychometric properties in this patient population.

The EFA of the FSSQ revealed the existence of two factors, Confidant Social Support and Affective Social Support, that gather information regarding the possibilities of counting on someone for communication and the possibilities of counting on someone for love, care and empathy, respectively. This factor structure is similar to that observed in other studies [5, 6; 13] in which items 6, 7, 8 and 10 load in the same factor 1, and item 5 loads in factor 2. Item 3 also loads in factor 2 in the studies conducted by de la Revilla Ahumada (1991) [13] and Bellón Saameño (1996) [5] and their results are consistent with ours. Items 1 and 11 loaded in Factor 1 and 2 respectively [5, 13], while in our study it was the other way around. The differences regarding the loadings of items 1 and 11 across studies may be explained by differences in perceptions between patients with schizophrenia and other informants [34, 36, 40]. The loading of items 2, 4 and 9 in factor 2 is only consistent with the factor structure of de la Revilla Ahumada (1991) [13] which, in fact, is the most similar to that shown in the present study except for items 1 and 11. This could be related to similarities in the characteristics of the samples included. De la Revilla Ahumada (1991) [13] included patients from primary care services with a low socio-economical status, which might be similar to the status of

patients included in our sample and the deprived socio-economic situation of patients with schizophrenia [22].

Internal consistency values at baseline and at one year follow-up were excellent. With regard to FSSQ domains, the FSSQ confidant showed good internal consistency at baseline and excellent at one year follow-up. The FSSQ affective showed appropriate internal consistency values both at baseline and at one year follow-up. In the study validation of the FSSQ [6], the internal consistency value of the FSSQ affective was 0.64, which is very similar to that observed in the present study (i.e. 0.66 at baseline and 0.69 at one year follow-up). Even so, the internal consistency value for FSSQ confidant was 0.62, which is lower than that observed in the present study (i.e. 0.83 and 0.86). This could be related to differences in the samples included in the two studies. Other studies that deal with the psychometric properties of the FSSQ domains show similar results to ours. For example, Bellón Saameño [5] showed internal consistency values for affective FSSQ and confidant FSSQ of 0.79 and 0.88, respectively. The internal consistency values observed in this study for the total FSSQ are also in agreement with the body of evidence regarding the psychometric properties of the FSSQ. For example, de la Revilla Ahumada [13] and Bellón Saameño [5] showed internal consistency values for the total FSSQ of 0.81 and 0.90 respectively.

We expected to find that perceived social support had a positive relationship with functioning [12] and quality of life [31, 41], while the severity of symptoms [10, 33] and disability [9] would have a negative one. Those were the directional relationships observed. It is relevant to highlight that the correlation coefficients of perceived social support with those variables ranged between small and large, with disability and quality of life showing the largest coefficients. This might suggest that disability and quality of life are more closely related to perceived social support than psychiatric symptoms and

global functioning. It should be also emphasised that psychiatric symptoms and functioning were assessed by clinicians, while perceived social support and quality of life were self-rated. Again, it seems that the results may reflect differences between the perceptions made by patients with schizophrenia and other informants [34, 36, 40]. Therefore, the highest correlations might have been observed for those measures provided by the same informant as is shown in other studies [4].

There were no differences in FSSQ scores between groups of patients with schizophrenia established according to socio-demographic variables. Our results are, in general terms, consistent with the results of the validation study of the FSSQ [6]. In this study, most of the socio-demographic variables included (i.e. gender, marital status, employment status, age, education and socio-economic status) did not show significant associations with FSSQ domains except for race, which was associated with confident support, and living situation, which was associated with both FSSQ domains. We did not include race in our study since 100% of the sample was Caucasian and the lack of association between employment and FSSQ domains could be explained by sample differences between our study and the study conducted by Broadhead [6]. While in our study the sample included outpatients with diagnosis of schizophrenia, the study conducted by Broadhead [6] included patients attending a family medical practice. Even so, McFarlane [26] showed that four out of five social support measures were not associated with employment status. McFarlane [26] also observed a similar trend for education, which is also consistent with our results.

There were significant differences between groups of patients with schizophrenia according to clinical and psychosocial variables. Patients who had higher levels of somatic complaints and patients who were disabled showed poorer levels of perceived social support in almost all FSSQ scores. Bellón Saameño [5] also showed similar

associations between perceived social support and psychosomatic symptoms and Cechnicki [9] between the former and disability. As for psychiatric symptoms, a body of evidence supports negative associations between perceived social support and psychiatric symptoms in general terms [10, 33]. This has only been observed to a certain extent in our study since depressed and anxious patients did not show lower levels of social support and only patients with somatic complaints scored lower in the overall measure of perceived social support. Group differences may not be wholly accurate since they were made according to cut-offs of single instrument items rather than through diagnostic interviews, which may explain our results. Broadhead (1988) [6] described lower levels of social support for patients with higher levels of health service use, but no association can be seen in the present study. Specifically, patients who used primary care services and social care services did not show lower levels of social support. This might be related to the fact that all patients received services from community treatment programmes, which have been shown to decrease use of services in patients with severe mental illness [42].

At one-year follow-up, as a consequence of the role of AMHC in the provision of care to patients with schizophrenia, we expected an increase in levels of social support, global functioning and quality of life and a decrease in levels of psychiatric symptoms and disability. There were only improvements in psychiatric symptoms and global functioning along with a rise of the frequency of visits to community psychiatric nurses. We observed a decrease in disability, although non-significant, and we did not observe improvements regarding social support and quality of life as perceived by patients. This might somehow reflect the need for more specific psychosocial interventions aimed at improving social support and quality of life and decreasing disability [37]. The lack of changes in FSSQ scores at one year follow-up might be one of the reasons for the

mainly small significant associations between changes in FSSQ scores from baseline to one year follow-up and changes in the rest of the test scores, and AMHC visits between baseline and one year follow-up.

The FSSQ has been considered for the assessment of patients with schizophrenia although it has yet to be validated. The present findings provide evidence regarding the psychometric properties of the FSSQ in patients with schizophrenia which supports its use in this patient population. It shows that the FSSQ is reliable and valid, and that it could be used for the assessment of perceived social support in patients with schizophrenia for research or clinical practice purposes. Further studies should involve psychometric properties in other samples, such as other mental disorders, as well as other populations.

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Conflicts of interest

The authors declare no conflict of interest.

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Table 1. Results of the studies including exploratory factor analyses regarding the FSSQ¹

Authors	Sample	Setting	Factors	Internal consistency	Items in each factor
Broadhead (1988)	401 patients	Family medicine practice	F1: Confidant Support	0.62 ^a	6,7,8,9,10
			F2: Affective Support	0.64 ^a	4,5,11
			Remaining single items		1,2,3
De La Revilla Ahumada (1991)	139 patients	Health centre in a socio-economically deprived area	F1: Confidant Support	0.82 ^b	1,4,6,7,8,10
			F2: Affective Support		2,3,5,9,11
Bellón-Saameño (1996)	656 patients	Urban health centre	F1: Confidant Support	0.88 ^c	1,2,6,7,8,9,10
			F2: Affective Support	0.79 ^c	3,4,5,11

^a: Average item reminder correlations; ^b: Overall Cronbach's α coefficient of the FSSQ; ^c: Cronbach's α coefficient of the FSSQ domains

1. FSSQ: The modified DUKE-UNC Functional Social Support Questionnaire

Table 2. Factor structure of the FSSQ¹ (n=241)

Items	FACTOR 1	FACTOR 2
1	0.025	<i>0.871</i>
2	0.226	<i>0.502</i>
3	0.431	<i>0.455</i>
4	<i>0.736</i>	0.208
5	0.500	<i>0.480</i>
6	<i>0.781</i>	0.221
7	<i>0.827</i>	0.139
8	<i>0.733</i>	0.227
9	0.220	<i>0.629</i>
10	<i>0.722</i>	0.255
11	<i>0.646</i>	0.197
Explained variance (%)	43.85	10.30
Measure of sampling adequacy	0.90	
Bartlett's test of sphericity (χ^2 ; p)	(967.64 ; p < 0.001)	
Cronbach's alpha	0.87	0.68

Items in factors highlighted in italics

1. FSSQ: The modified DUKE-UNC Functional Social Support Questionnaire

Table 3. Validity evidence of the FSSQ¹ for patients with schizophrenia

	FSSQ TOTAL	FSSQ CONFIDANT	FSSQ AFFECTIVE
Association with clinical and psychosocial variables			
	[r (p value)] (n=241)		
GAF ² -clinical	0.14 (p=0.037)	0.10 (p=0.144)	0.11 (p=0.080)
GAF-social	0.14 (p=0.032)	0.14 (p=0.027)	0.10 (p=0.132)
PANSS ³ positive	-0.09 (p=0.147)	-0.03 (p=0.684)	-0.11 (p=0.101)
PANSS negative	0.06 (p=0.327)	0.03 (p=0.679)	0.13 (p=0.048)
PANSS general	-0.07 (p=0.293)	-0.05 (p=0.426)	-0.02 (p=0.752)
PANSS total	-0.05 (p=0.486)	-0.03 (p=0.664)	0.00 (p=0.975)
DAS-s ³	-0.36 (p<0.001)	-0.32 (p<0.001)	-0.31 (p<0.001)
WHOQOL-BREF ⁴ physical	0.35 (p<0.001)	0.34 (p<0.001)	0.25 (p<0.001)
WHOQOL-BREF psychological	0.35 (p<0.001)	0.34 (p<0.001)	0.29 (p<0.001)
WHOQOL-BREF social relations	0.55 (p<0.001)	0.53 (p<0.001)	0.41 (p<0.001)
WHOQOL-BREF environment	0.51 (p<0.001)	0.49 (p<0.001)	0.40 (p<0.001)
WHOQOL-BREF total	0.52 (p<0.001)	0.50 (p<0.001)	0.42 (p<0.001)
Group differences			
	[t test(p value)] (n=241)		
Age (≤42years old:>42 years old)	1.24 (p=0.218)	1.42 (p=0.158)	1.18 (p=0.239)
Gender (male:female)	0.16 (p=0.875)	1.00 (p=0.316)	-0.04 (p=0.971)
Illness duration (≤10 years:>10 years)	-1.41 (p=0.162)	-1.62 (p=0.108)	-1.21 (p=0.230)
Education (≤ primary school: >primary school)	-1.41 (p=0.161)	-1.57 (p=0.118)	-1.04 (p=0.300)
Employment status (active: non active)	0.26 (p=0.799)	0.33 (p=0.741)	-0.17 (p=0.868)
Diagnosis (paranoid schizophrenia: other schizophrenias)	1.19 (p=0.234)	1.21 (p=0.230)	0.97 (p=0.331)
Living arrangement (family property: others)	1.29 (p=0.198)	0.20 (p=0.840)	2.34 (p=0.020)
[F (p value)]			
Marital status (single: married or living with partner: divorced or separated or widowed)	0.83 (p=0.438)	1.13 (p=0.325)	0.55 (p=0.581)
[t test (p value)]			
Depressed vs. non depressed (PANSS general: item number 6 ≥ 4 vs. item number 6 < 4)	0.31 (p=0.754)	0.33 (p=0.746)	0.42 (p=0.673)
Anxious vs. no anxious (PANSS general: item number 2 ≥ 4 vs. item number 2 < 4)	-0.97 (p=0.336)	-0.13 (p=0.897)	-1.17 (p=0.249)
Somatic complaints vs. no somatic complaints (PANSS general: item 1 ≥ 4 vs. item number 1 < 4)	2.88 (p=0.004)	2.46 (p=0.015)	1.86 (p=0.064)
Disabled vs. non disabled (DAS-s ≥ 4 vs. DAS-s < 4)	4.78 (p<0.001)	4.47 (p<0.001)	4.39 (p<0.001)
Use of general practitioner services vs. no use of general practitioner services [†]	0.41 (p=0.683)	1.01 (p=0.316)	0.36 (p=0.722)
Use of primary care nurse services vs. no use of primary care nurse services [†]	-0.13 (p=0.898)	0.93 (p=0.356)	-0.45 (p=0.657)
Use of social services vs. no use of social services [†]	-2.09 (p=0.037)	-1.17 (p=0.244)	-2.40 (p=0.017)

n=sample size at baseline

1. FSSQ: The modified DUKE-UNC Functional Social Support Questionnaire; 2.GAF: Global Assessment of Functioning; 3.PANSS: Positive and Negative Syndrome Scale; 3. DAS-s: The World Health Organization Short Disability Assessment Schedule; 4. WHOQOL-BREF: World Health Organization Quality of Life Brief Version

†: Time frame : patient visits during the year prior to the first assessment versus patients visits during the year after the first assessment

Table 4. Clinical and psychosocial variables and use of health services at baseline and at one year follow-up (n=219)

Measure	Baseline		1 year follow-up		Differences over time		
	Mean	SD	Mean	SD	t	p	ES
FSSQ ¹ total social support	36.68	9.47	36.57	9.72	0.22	0.823	0.02
FSSQ confidant support	16.55	4.99	16.37	5.17	0.63	0.531	0.00
FSSQ affective support	10.90	3.14	10.78	3.22	0.68	0.500	0.00
PANSS ² positive	16.67	6.26	15.22	6.10	5.02	<0.001	0.32
PANSS negative	24.07	6.99	22.34	6.90	5.08	<0.001	0.33
PANSS general	42.35	12.73	39.22	12.30	5.30	<0.001	0.34
PANSS total	83.10	22.47	76.79	21.96	6.14	<0.001	0.38
GAF ³ clinic	47.07	9.69	49.58	11.01	-4.94	<0.001	0.32
GAF social	44.29	10.00	46.26	10.36	-3.45	<0.001	0.23
DAS-s ⁴	9.09	4.46	8.59	4.46	2.37	0.018	0.16
WHOQOL-BREF ⁵ physical health	13.25	2.42	13.27	2.54	-0.95	0.924	0.01
WHOQOL-BREF psychological health	12.18	2.86	12.19	2.81	-0.01	0.990	0.00
WHOQOL-BREF social relationships	10.54	3.26	10.50	3.24	0.23	0.816	0.02
WHOQOL-BREF environment	13.24	2.26	13.31	2.36	-0.51	0.612	0.04
WHOQOL-BREF general	81.82	13.94	81.95	14.11	-0.18	0.856	0.01
Community psychiatric visits ^Y	5.76	4.22	6.28	4.43	-1.75	0.082	0.12
Community nursing visits ^Y	5.92	7.13	8.38	9.03	-4.35	<0.001	0.28

1. FSSQ: The modified DUKE-UNC Functional Social Support Questionnaire; 2. PANSS: Positive and Negative Syndrome Scale; 3. GAF: Global Assessment of Functioning; 4. DAS-s: The World Health Organization Short Disability Assessment Schedule; 5. WHOQOL-BREF: World Health Organization Quality of Life Scale Brief Version.

SD: standard deviation; Y: Time frame: patient visits during the year prior to the first assessment versus patient visits during the year after the first assessment

Table 5. Sensitivity to change of the FSSQ¹ for patients with schizophrenia (n= 219)

	FSSQ TOTAL r(p)	FSSQ CONFIDANT r(p)	FSSQ AFFECTIVE r(p)
Sensitivity to change			
GAF ² clinical	0.08 (p=0.218)	0.09 (p=0.168)	0.04 (p=0.608)
GAF social	0.09 (p=0.183)	0.12 (p=0.066)	0.02 (p=0.793)
PANSS ³ positive	-0.06 (p=0.364)	-0.08 (p=0.250)	0.05 (p=0.449)
PANSS negative	-0.09 (p=0.187)	-0.10 (p=0.140)	-0.03 (p=0.654)
PANSS general	-0.15 (p=0.024)	-0.16 (p=0.019)	0.01 (p=0.880)
PANSS total	-0.13 (p=0.047)	-0.15 (p=0.030)	0.01 (p=0.880)
DAS ⁴ -s	-0.17 (p=0.015)	-0.13 (p=0.050)	-0.15 (p=0.028)
WHOQOL-BREF ⁵ physical	0.24 (p<0.001)	0.25 (p<0.001)	0.17 (p=0.014)
WHOQOL-BREF psychological	0.27 (p<0.001)	0.27 (p<0.001)	0.21 (p=0.002)
WHOQOL-BREF social relations	0.28 (p<0.001)	0.31 (p<0.001)	0.07 (p=0.299)
WHOQOL-BREF environment	0.27 (p<0.001)	0.26 (p<0.001)	0.21 (p=0.002)
WHOQOL-BREF total	0.36 (p<0.001)	0.36 (p<0.001)	0.25 (p<0.001)
Community nursing visits (n=218) ^Y	0.06 (p=0.363)	-0.01 (p=0.922)	0.10 (p=0.157)
Community psychiatric visits (n=218) ^Y	-0.10 (p=0.158)	-0.09 (p=0.203)	-0.12 (p=0.080)

n = sample size

1. FSSQ: The modified DUKE-UNC Functional Social Support Questionnaire; 2.GAF: Global Assessment of Functioning; 3. PANSS: Positive and Negative Syndrome Scale; 4. DAS-s: The World Health Organization Short Disability Assessment Schedule; 5. WHOQOL-BREF: World Health Organization Quality of Life Brief Version

Y. Time frame: patient visits during the year after the first assessment vs. patient visits during the year after the second assessment.

