

# Prospective Validation of the Short Form Liver Disease Quality of Life Questionnaire (SF-LDQOL): Specific Quality of Life Test for Spanish Patients with Chronic Liver Disease and Liver Transplantation

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## Abstract

**We analyzed the psychometric properties of the Spanish version of the Short Form Liver Disease Quality of Life Questionnaire, a specific test for the assessment of quality of life for Spanish patients with chronic liver disease and/or liver transplantation. We studied a sample of 190 subjects to show that it can be a useful tool for clinical practice. (Trends in Transplant. 2013;7:84-8)**

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## Key words

**HRQL. Chronic liver disease. Liver transplantation. Validity. Reliability.**

## Introduction

Health-related quality of life (HRQL) is the subjective perception of well-being and functional ability to perform the activities of daily life. Patients diagnosed with chronic liver disease (CLD) or receptors of liver transplantation (LT) perceive that their health status may interfere with their subjective HRQL. Among generic instruments, one of the most frequently

used is the SF-36<sup>1</sup>. Among the specific instruments for CLD patients, we rely on the Liver Disease Quality of Life (LDQOL)<sup>2</sup>, which includes the SF-36, and 75 specific items for liver disease in 12 specific scales. The LDQOL has been validated for CLD Spanish patients<sup>3</sup>, and also for candidates for LT<sup>4</sup> and post-LT<sup>5</sup>. But when these instruments are too long, they cannot be delivered during a normal scheduled medical visit. Therefore, we need to get other tools that can be delivered more conveniently.

## Objective

The aim of this study was to analyze the psychometric properties of the SF-LDQOL, the reduced version of the LDQOL, for use in our patients with CLD and LT as a specific instrument to assess their quality of life.

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**Table 1. Scores distribution and dimensions internal consistency**

Dimensions	N.º of items	Mean	Standard deviation	Missing	Interval observed	Cronbach's $\alpha$
Recommended threshold				% $\leq 5$		$\alpha \geq 0.70$
<i>Specific dimensions</i>						
Disease symptoms	6	78.1	21.4	1.0	7-100	0.71
Disease effects	3	80.1	25.9	1.0	0-100	0.79
Memory/concentration	4	75.9	24.2	0.5	0-100	0.88
Anxiety	2	80.3	27.4	1.0	0-100	0.90
Sleep	5	65.9	20.4	0	15-100	0.63
Loneliness	5	86.8	19.2	0	0-100	0.82
Hopelessness	3	62.6	26.4	0.5	0-100	0.63
Disease stigma	4	88.2	18.3	2.1	13-100	0.76
Sexual problems	4	76.15	26.6	57.4	0-100	0.90

## Methods

### Patients

A sample of 190 patients completed the SF-LDQOL. The mean age was 57.4 years (SD: 11.7), with 64.2% being men. Etiologies: hepatitis C (54.7%), hepatitis B (17.4%), alcohol (15.3%), other CLD (12.6%). Stage: cirrhosis (46.8%), hepatocellular carcinoma (26.6%). The questionnaire was delivered in an interview with a psychologist. All participants were older than 18 and signed the informed consent. The study was approved by the Ethics Committee of the hospital.

### Instruments

The SF-LDQOL<sup>6</sup> is a reduced version of the LDQOL, which includes the SF-36 and 36 specific items for CLD. The eight dimensions of the SF-36 are: physical functioning, role limitation–physical, bodily pain, general health, role limitation–emotional, vitality, emotional well-being and social functioning. The 36 specific CLD items assess nine dimensions: symptoms of liver disease, effects of liver disease, concentration/memory, anxiety, sleep, loneliness, hopelessness, self-perceived stigma, and sexual problems. It also has two additional items: symptoms' severity and days of impairment, which were added by the authors<sup>6</sup>.

### Statistical analysis

Feasibility: the extent to which the test adapts to the patients' ability to answer it; the proportion of patients leaving missing items.

Internal consistency: the consistency of the results delivered in a test, ensuring that the various items give consistent scores. This was determined with Cronbach's  $\alpha$  coefficient.

Construct validity: the evidence that the relationships between concepts, domains, and items conform to a prior hypotheses concerning logical relationships that exist with other measures. We determined it with Pearson's correlation between SF-36 and specific items for CLD, as well as Pearson's correlation between specific items for CLD and the two additional items. Construct validity also includes convergent and discriminant validity: the extent to which a dimension gathers items that converge with it. We determined this with Pearson's correlation between each item and its dimension.

Scaling success: the evidence that each item gives to the dimension to which it belongs; the percentage of items having a higher Pearson's correlation with this dimension than with other dimensions. All the operations were done with SPSS 15.0 (IBM).

**Table 2. Sociodemographic and clinical data of the patients (n = 190)**

Gender: male; n (%)	122 (64.2)
Age; mean (SD)	57.4 (11.7)
Education; n (%)	
None + primary	63 (33.2)
Secondary + college	127 (66.8)
Marital status; n (%)	
Single	24 (12.6)
Engaged + married	135 (71.1)
Separated + divorced	19 (10.0)
Widowed	12 (6.3)
Etiology; n (%)	
Hepatitis C	104 (54.7)
Hepatitis B	33 (17.4)
Alcohol	29 (15.3)
Primary biliary cirrhosis	10 (5.3)
Autoimmune hepatitis	8 (4.2)
Other	6 (3.1)
Severity; n (%)	
Cirrhosis	89 (46.8)
Associated HCC	50 (26.6)

SD: standard deviation; HCC: hepatocellular carcinoma.

## Results

The results of the scoring distribution and the internal consistency of the SF-LDQOL dimensions are presented in table 1. The reliability coefficients exceeded the recommended threshold for internal consistency (0.70) in all of the dimensions, except sleep (0.63) and hopelessness (0.63). In all of the scales the missing values were below 5%, except for sexual problems (57.4%). On the convergent validity of the dimensions of the specific

domains for CLD, the correlation between each item and its dimension exceeded the recommended threshold (0.4) in all of the items, except for naps (from sleep dimension) that got 0.37. All the values were statistically significant ( $p < 0.01$ ). The scaling success reached 100% in each item. The correlation between the two added items and the whole SF-LDQOL was also significant, ranging from  $-0.20$  to  $-0.60$ , and from  $-0.21$  to  $-0.56$ , respectively (all the values,  $p < 0.01$ ).

## Discussion

The internal consistency of all the dimensions was satisfactory, however, “sleep” and “hopelessness” didn’t exceed the threshold of 0.70 for Cronbach’s  $\alpha$  coefficient. An explanation for why the sleep dimension remained at 0.63 could be that its items measure issues that could be uncomplimentary: the “quantity (hours) and quality of sleep” and the “daily waking hours”. And the fact that the hopelessness dimension also reached only a Cronbach’s  $\alpha$  of 0.63 might be because patients perceive that although they can make future plans, they realize these plans are unlikely to come true. The percentage of missing values was barely countable. The dimension “sexual problems” was the only one that reached an unusually high percentage of

**Table 3. Convergent/discriminant validity of the items of the specific dimensions for chronic liver disease**

Specific dimensions of SF-LDQOL	Internal consistency of the items*	Scaling success, %†
Disease symptoms	0.51-0.69	100
Disease effects	0.63-0.89	100
Memory/concentration	0.80-0.86	100
Anxiety	0.94	100
Sleep	0.37-0.75	100
Loneliness	0.66-0.82	100
Hopelessness	0.73-0.76	100
Disease stigma	0.69-0.79	100
Sexual Problems	0.55-0.90	100

\*Correlation item-dimension range inside the hypothetical scale. All the coefficients are statistically significant ( $p < 0.01$ ).

†Percentages indicate the proportion of items from a dimension that have greater correlations with its own scale than with any other scale.

**Table 4. Pearson's correlation coefficients between Short Form Liver Disease Quality of Life Questionnaire specific dimensions and Short Form-36 dimensions**

Specific dimensions	SF-36 Dimensions							
	PF	RP	BP	GH	V	SF	RE	EW
Disease symptoms	0.56	0.53	0.60	0.45	0.57	0.61	0.49	0.51
Disease effects	0.45	0.49	0.36	0.35	0.53	0.49	0.43	0.45
Memory/concentration	0.28	0.25	0.23	0.29	0.41	0.31	0.36	0.39
Anxiety	0.29	0.45	0.25	0.44	0.43	0.39	0.33	0.40
Sleep	0.47	0.43	0.51	0.46	0.57	0.41	0.40	0.52
Loneliness	0.24	0.27	0.29	0.28	0.35	0.32	0.35	0.42
Hopelessness	0.37	0.35	0.26	0.43	0.50	0.32	0.28	0.41
Disease stigma	0.15*	0.20	0.13 <sup>†</sup>	0.31	0.21	0.28	0.16*	0.19
Sexual problems	0.46	0.38	0.21 <sup>†</sup>	0.40	0.56	0.47	0.18 <sup>†</sup>	0.42

PF: physical functioning; RP: role limitation - physical; BP: bodily pain; GH: general health; V: vitality; SF: social functioning; RE: role limitation - emotional; EW: emotional well-being. All the coefficients are statistically significant ( $p < 0.01$ ; \* $p < 0.05$ ), except for <sup>†</sup> ( $p > 0.05$ ).

missing values. This is because the item "16. Did you have any sexual activity in the last 4 weeks?" may be sifting: Patients answering "No", can't respond to the next three items (only applicable for patients answering "Yes" to the former). In relation to the scaling and the convergent/discriminant validity, each item was assigned to the dimension to which it theoretically belonged. We checked whether this distribution corresponded with the Spanish version and all the items exceeded the recommended threshold (0.4) in their correlation with the dimension that they were originally assigned to. The only exception was with the item "naps" (from the sleep dimension), which remained at 0.37. This could mean that in Spain, a nap has more of a cultural background

than a physiological one. Furthermore, the high correlations between the additional items "symptoms' severity" and "days of impairment" and the other questionnaire items proved to be significant, meaning that they are related. The values were negative: the higher the scores in these additional items (worse status), the more impairment on HRQL and, so, the lower the values in SF-LDQOL scales.

## Conclusion

This study supports that the Spanish version of SF-LDQOL has good psychometric properties for CLD and LT patients, and

**Table 5. Pearson's correlation coefficients between Short Form Liver Disease Quality of Life Questionnaire specific dimensions and additional items "Symptoms' severity" and "Days of impairment"**

Dimensions	Symptoms' severity	Days of impairment
Disease symptoms	-0.45	-0.51
Disease effects	-0.60	-0.56
Memory/concentration	-0.29	-0.21
Anxiety	-0.50	-0.50
Sleep	-0.35	-0.36
Loneliness	-0.20	-0.23
Hopelessness	-0.20	-0.22
Disease stigma	-0.25	-0.22
Sexual problems	-0.40	-0.27

All of the coefficients are statistically significant ( $p < 0.01$ ).

suggests that it can be useful for both clinical practice and research. In future investigations, we need to do a longitudinal prospective study to evaluate the sensitivity to change, and to improve the “sexual problems” scale.

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