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The validity and reliability of "The liver disease symptom index 2.0" for Turkish society

LIVER

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Original Article

ABSTRACT

Background/Aims: Chronic liver diseases have been shown to adversely affect the quality of life. Standardized tools for patient assessment are of great importance for treatment and follow-up of these patients. In this study, we aimed to determine the validity and reliability of the Liver Symptom Index 2.0 (LDSI 2.0) for Turkish society, for use in other studies and in daily clinical practice.

Materials and Methods: A total of 308 patients with chronic liver disease attending to the outpatient liver clinic of the Department of Gastroenterology, Faculty of Medicine, Dokuz Eylül University between September 2011 and May 2012 were included in this study. A sociodemographic data questionnaire, the LDSI 2.0 comprising 24 items, and the Short Form-36 (SF-36) were completed by the participating patients. After 6 weeks, these tools were re-administered to a total of 115 patients. After obtaining the required permissions, LDSI 2.0 was translated into Turkish using the translation/re-translation method.

Results: Of the 308 participants, 160 (51.9%) were male and 184 (43.1%) were female, with an average age of 48.67±13.31 years. Of all cases, 70.5% had viral hepatitis. The average Child-Pugh score was 5.9±1.2, and the average Model For End-Stage Liver Disease (MELD) score was 10.2±3.2. The assessment tool comprised the following sub-items: itching, joint pain, abdominal pain, sleepiness, worry, appetite, depression, fear, jaundice, memory, personality, financial status, use of time, sexual desire, and sexual activity. For more than 50% of the patients, worry (68.8%), depression (65.3%), joint pain (62.3%), itch (56.5%), sleepiness (54.2%), memory problems (53.6), and sexual problems (50%) were present. The internal coefficient of consistency (Cronbach alpha coefficient) was 0.908, which indicates a very high level of consistency. The correlation coefficient for the intraobserver test/re-test reliability was 0.746 ($p<0.000$), which denotes a significant and good level of reliability. The construct validity between each sub-item of the tool and sub-items of SF-36 was assessed using Spearman's correlation test, which showed a weak to moderate correlation (<0.04 and 0.4-0.7) in the reverse direction.

Conclusion: Our study findings provide supportive evidence of the reliability of the assessment tool. Its validity is similar to the original construct validity and was confirmed in our sample. Therefore, it was concluded that LDSI 2.0 was an appropriate tool for daily clinical use and research purposes. Simultaneous use of this life-quality assessment tool and SF-36 will enable a comprehensive but practical assessment of our patients.

Keywords: Chronic liver disease, quality of life, SF-36, Turkish society

INTRODUCTION

The importance of assessing quality of life has become more evident in recent decades (1-5). Inclusion of health-related quality of life (HRQoL) in the assessment of the effects of interventions for chronic diseases is now regarded as a significant component of the overall assessment procedure by clinicians, clinical researchers, funding organizations, pharmaceutical companies, patient rights groups, and the Food and Drug Administration (3). Life-quality assessment tools are gener-

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ally categorized as those providing a general assessment and those providing a disease-specific assessment. General assessment tools, such as the Short Form-36 (SF-36), Sickness Impact Profile, and Nottingham Health Profile (NHP), may be used for any type of chronic disease and enable a global assessment of the quality of life (6-9). In contrast, although these general assessment tools allow comparisons between different chronic conditions, they may not exhibit adequate sensitivity for the detection of small but clinically meaningful changes that result from therapeutic interventions or disease progression in specific conditions. Therefore, disease-specific tools may offer further sensitivity in these situations and are more useful for the assessment of HRQoL in a clinical environment by focusing on the quality of life in patient populations with specific conditions. However, these disease-specific tools inevitably fall short when seeking to compare between different conditions. In this respect, disease-specific and general life-quality assessment tools are complementary to provide a comprehensive view on the effect of chronic conditions on life quality (10).

Chronic liver disease may be the consequence of a number of different insults to the liver and represents a major cause of morbidity and mortality worldwide. The conditions associated with chronic liver diseases generally lead to similar clinical signs and symptoms, are associated with an increased risk of cirrhosis and end-stage liver disease (11,12) and cause multidimensional effects on the patients' lives. The individual afflicted by chronic liver disease not only struggles with the disease itself but also with its associated psychological, economic, and socially adverse consequences. The signs and symptoms of chronic liver disease (ascites, jaundice, poor nutrition, malaise, itch, pain, despair, loss of work productivity, and depression, among others) have obvious negative impacts on quality of life. Together with the increase in severity of the symptoms, self-reliance becomes increasingly more profoundly undermined; thus, the patient requires professional care or care from family members.

Many different life-quality assessment tools have been developed for use in a variety of chronic conditions (chronic pain, cardiac diseases, tuberculosis, and chronic arthritis, among others) (13-16). In contrast, there is a relative lack of these tools for chronic liver diseases, some of which include the Hepatitis Quality of Life Questionnaire, the Chronic Liver Disease Questionnaire, the Liver Disease Quality of Life Instrument, the Hepatitis B Quality of Life Instrument, and the Chronic Liver Disease Quality of Life Questionnaire. Over the past 10 years, the most frequently used assessment tool used to grade liver disease, for etiological comparisons and to plan management for chronic liver diseases is the HRQoL tool (16-20). Life-quality assessment tools developed for patients with liver disease have a narrower and focused scope to assess the effect of specific symptoms on quality of life. The symptoms and their impact on daily life are certainly important factors, and in daily clinical practice, objective clinical and psychological findings do not always match with self-perceived health (21-23). Therefore, a Liver Disease Symptom Index 2.0 (LDSI-2.0) was developed by Simone M. van der Plas et al. to provide an objective assessment of the psychological and clinical outcomes and to estimate the disease severity among patients with chronic liver disease (16). The LDSI 2.0 has been administered to patients with chronic liver disease of varying severity and has been psychometrically tested to assess not only the severity of the symptoms but also their impact on daily life.

MATERIALS AND METHODS

LDSI 2.0

Liver Symptom Index 2.0 is a 24-item assessment tool to evaluate the effect of symptoms and their severity on daily activities of patients with chronic liver disease. Appendix I includes 18 items. Nine items assess the following: itch, joint pain, right upper quadrant pain, sleepiness during the day, family worry, decreased appetite, depression, fear of complications, and jaundice. The remaining 9 items measure the effect of these symptoms on daily-living activities. There are no sub-items assessing the effect of "complication fear" on daily activities. In contrast, the effects of itch on both daily living activities and on sleepiness are measured. Appendix 2 contains the following 6 items: memory problems, personality changes, financial status, use of time, reduced libido, and reduced sexual activity. The questions refer to the preceding week and answers are rated between 0 and 4, i.e., from "none" to "always". Higher scores indicate a worsened quality of life.

Sociodemographic characteristics questionnaire

This tool comprises a total of 24 questions that address the sociodemographic characteristics and disease variables.

Appendix 1

Liver Disease Symptom Index 2.0.

1A.	To what extent in the past week: Did you have itch?	Not at all ..... To a high extent
1B.	To what extent in the past week: Has itch hampered you in your work or daily activities?	Not at all ..... To a high extent
1C.	To what extent in the past week: Has itch hampered you in your sleep?	Not at all ..... To a high extent
2A.	To what extent in the past week Did you have joint pain?	Not at all ..... To a high extent

Appendix 1. (Continued)

Liver Disease Symptom Index 2.0.	
2B. To what extent in the past week: Has joint pain hampered you in your work or daily activities?	Not at all ..... To a high extent
3A. To what extent in the past week: Did you have pain in the right upper belly?	Not at all ..... To a high extent
3B. To what extent in the past week: Has pain in the right upper belly hampered you in your work or daily activities?	Not at all ..... To a high extent
4A. To what extent in the past week: Were you sleepy during the day?	Not at all ..... To a high extent
4B. To what extent in the past week: Has sleepiness hampered you in your work or daily activities?	Not at all ..... To a high extent
5A. To what extent in the past week: Did you worry about the impact your liver disease may have on your home/family situation?	Not at all ..... To a high extent
5B. To what extent in the past week: Did your worrying about the impact your liver disease may have on your home/family situation, hamper you in your work or daily activities?	Not at all ..... To a high extent
6A. To what extent in the past week: Did you have a decreased appetite?	Not at all ..... To a high extent
6B. To what extent in the past week: Did decreased appetite hamper you?	Not at all ..... To a high extent
7A. To what extent in the past week: Did you feel depressed due to your disease?	Not at all ..... To a high extent
7B. To what extent in the past week: Did depression due to your disease hamper you in your work, daily activities and/or social contacts?	Not at all ..... To a high extent
8. To what extent in the past week: Were you afraid that possible liver disease complications would develop?	Not at all ..... To a high extent
9A. To what extent in the past week: Did you skin turn yellow?	Not at all ..... To a high extent
9B. To what extent in the past week: Did yellowness of your skin hamper you in your work, daily activities and/or social contacts?	Not at all ..... To a high extent

Appendix 2

Extra NLV items	
10. Since I have a liver disease I have difficulty remembering things. For example: Things, which happened recently, where I have left things and appointments I have made.	Not at all ..... To a high extent
11. Due to my liver disease my personality has changed.	Not at all ..... To a high extent
12. My liver disease is a hindrance to my financial affairs. For example: With respect to mortgaging or insuring.	Not at all ..... To a high extent
13. My liver disease forces me to use my time differently than I really want.	Not at all ..... To a high extent
14. My sexual interest has decreased since I know I have a liver disease.	Not at all ..... To a high extent
15. My sexual activity has decreased since I know I have a liver disease.	Not at all ..... To a high extent

Questions gather information on age, gender, marital status, number of household members, number of children, social insurance, income level, educational level, occupation, and contact information, such as the name, surname, address, and telephone number. Disease-related variables assessed include the diagnosis, disease severity (compensated, cirrhotic or non-cirrhotic), smoking status, alcohol consumption, number of dependent individuals, number of caregivers, presence of additional chronic conditions, lifestyle changes associated with the disease, and role-performance problems.

SF-36
The reliability and validity of the SF-36 were previously demonstrated for Turkish society. It contains the following 8 sub-items that assess the preceding 4-week period: physical functions, disabilities resulting from physical problems, bodily pain, general health, energy/fatigue, social functions, and disabilities associated with mental health and emotional problems. The score range for SF36 is between 0 and 100 with higher scores indicating a better quality of life.

Adaptation of the tool into Turkish language
The "translation/re-translation" method was used for the adaptation of the tool from English to Turkish. The initial step comprised the translation of the original English text into Turkish by a total of five individuals with a medical background who had a sound knowledge of medical terminology and both languages. The most appropriate phrases were then chosen to be translated into English by an English language specialist and four medical specialists who had had their medical training in English-speaking countries. After this stage, the text translated into English was re-translated into Turkish by two medical specialists. The final text in Turkish was compared with the initial text and revised as required before being assessed by a team of three specialists with regard to its content validity. These specialists were asked to evaluate the items of the tool in terms of clarity, fitness for purpose, and cultural appropriateness. For each item, a score ranging from 1 (not appropriate at all) to 10 (completely appropriate) was given. Based on the specialist review, all items were given a score of at least 7. Other recommendations by the specialist team were taken into consideration to yield the finalized text.

Pilot test
A pilot study was performed that included 10 patients, whose data were not included in this current analysis. The participants were asked questions regarding the clarity, readability, and ease to complete the tool to generate appropriate modifications for the final text.

'Validation of LDSI 2.0 and Turkish items'
A total of 308 patients attending the Liver Outpatient Unit of the Gastroenterology, Faculty of Medicine, Dokuz Eylul University between September 2011 and May 2012 with different chronic liver conditions were included in this study. Eligibility criteria included literacy, willingness to participate in this study, age >18 years, intact cognitive functions, presence of no more than one additional chronic disease, and a Child-Pugh class A or B score. The sociodemographic characteristics questionnaire, LDSI 2.0 and SF-36 were administered to the study subjects. Of the 308 subjects, 115 were re-administered the LDSI 2.0 after 6 weeks based on their outpatient follow-up schedule.

Ethics
The study protocol was approved by the Ethics Committee of the Medical Faculty of Dokuz Eylul University. For Turkish adaptation and translation, a prior permission was obtained from B.E. Hansen via e-mail communication. All patients provided informed consent for this study.

Statistical analysis
The statistical packages Statistical Package for the Social Sciences (SPSS) 15.0 for Windows (SPSS Inc., Chicago, IL, U.S.A.) was used for all statistical analyses. A Spearman correlation test was used to assess the construct validity of the symptom severity and symptom hindrance items of the LDSI 2.0. To assess the construct validity between LDSI 2.0 and 8 sub-items of the SF-36, Spearman correlation tests were again used. A Spearman correlation score <0.4, between 0.4-0.7, and ≥0.7 was considered weak, moderate, and strong correlation, respectively.

The same test was also administered to assess the consistency over time (test-retest reliability).

For internal consistency, Cronbach's alpha coefficient was estimated. A Cronbach alpha coefficient equal to or greater than 0.7 is considered evidence of internal consistency.

RESULTS

The sociodemographic characteristics of the patients with liver disease
A total of 308 patients with chronic liver disease attending the Liver Outpatient Unit of Gastroenterology, Faculty of Medicine, Dokuz Eylül University between September 2011 and May 2012 were included in this study. Of the 308 participants, 160 (51.9%) were male and 184 (43.1%) were female, with an average age of 48.67±13.31 years. Of all cases, 70.5% had viral hepatitis. One-hundred and thirteen patients (36.7%) had cirrhosis, and of these patients, 78.8% had compensated cirrhosis (Table 1).

Symptom severity and disability
More than 50% of the patients reported worry (68.8), depression (65.3%), joint pain (62.3%), itch (56.5%), or sleepiness (54.2%). Moreover, 53.6% reported memory problems, and 50.0% reported reduced sexual activity (Table 2).

LDSI 2.0 test-retest reliability
Of the 308 participants, 115 were re-administered the LDSI 2.0 questionnaire, and the Spearmen correlation coefficient was 0.746 ($p<0.000$). Thus, intra-observer test-retest reliability was considered good and significant.

The internal consistency and reliability of LDSI 2.0
The Cronbach alpha coefficient (internal consistency reliability coefficient) for the overall tool was 0.908, i.e., it was remarkably high. The highest Cronbach alpha coefficient was for decreased appetite (0.897), whereas the lowest was for depression (0.688) (Table 3).

Table 1. Demographic and clinical characteristics of participants

Characteristics	n=308	(%)
Age		
Mean age SD year	48.67±13.31	Age range from 18 to 80
Gender		
Men	160	51.9
Women	148	48.1
Education		
Elementary education	154	50.0
Secondary education	75	24.4
Tertiary education	79	25.6
Marial status		
Married	246	79.9
Single	32	10.4
Widow(er)/divorced	30	9.8
Type of work		
Employee	85	27.6
Housewife	83	26.9
Self-employment	60	19.5
Worker	37	12.0
Other	43	14.0
Disease stage		
Non-cirrhosis	195	63.3
Compansated cirrhosis	89	28.9
Decompansated cirrhosis	24	7.8
Aetiology		
Viral hepatitis	217	70.5
Autoimmune hepatitis	31	10.1
Cryptogenic cirrhosis	20	6.5
Alcoholic liver disease	17	5.5
PBC/PSC	15	4.9
Wilson Disease	3	1.0
Others	5	1.6

PBC: primer biliary cirrhosis; PSC: primer sclerosing cholangitis; SD: standart deviation

Construct validity

The Spearmen correlation between the sub-item scores showed a moderate to strong correlation (0.52-0.77), with the highest correlation being for the appetite (0.771) sub-item (Table 4).

The Spearman correlation test between each sub-item of the tool and SF-36 sub-items showed a negative or weak to moderate correlation (<0.4 and between 0.4 and 0.7, respectively) (Table 5, 6). High correlations observed in the study by Simone M. van der Plas are underlined in the tables.

Table 2. Frequencies of symptomatic respondents per LDSI and within these groups the percentage respondents with symptom hindrance to daily activities in the Turkish patients (n=308)

LDSI 2.0	Symptomatic n (%)	With symptom hindrance among symptomatic n (%)
Itch	174 (56.5)	53 (17.2) (daily activity) 68 (22.1) (sleep)
Joint pain	192 (62.3)	110 (35.7)
Pain in right upper abdomen	138 (44.8)	69 (22.4)
Sleepiness during day	167 (54.2)	106 (34.4)
Worry about family situations	212 (68.8)	122 (39.6)
Decreased appetite	114 (37)	72 (23.4)
Depression	201 (65.3)	0.774
Fear of complications	141 (45.8)	--
Jaundice	87 (28.2)	44 (14.3)
Appendix 2		
Memory	165 (53.6)	--
Change of personality	89 (28.9)	--
Financials affairs	53 (17.2)	--
Involuntary change in use of time	129 (41.9)	--
Decreased sexual interest	142 (46.1)	--
Decreased sexual activity	154 (50.0)	--

LDSI 2.0: Liver Disease Symptom Index 2.0

Table 3. Internal consistency reliability of the translated LDSI 2.0 (by means of alpha coefficient between symptom items and their accompanying symptom hindrance items among patients with liver cirrhosis in Turkey (n=308)

Severity and hindrance item pairs concerning items	Cronbach's alpha
LDSI 2.0	0.908
Itch	0.806
Joint pain	0.807
Pain in right upper abdomen	0.787
Sleepiness during day	0.782
Worry about family situations	0.688
Decreased appetite	0.897
Depression	0.812
Jaundice	0.792

LDSI 2.0: Liver Disease Symptom Index 2.0

DISCUSSION

The LDSI 2.0 is a disease-specific tool that was developed by Simone M. van der Plas et al. in Holland in 2003 to assess the impact of chronic liver disease on quality of life and on daily activities. Our study was a descriptive and methodological study that aimed to determine the validity and reliability of the LDSI 2.0 for Turkish patients. Proof of its reliability and validity will allow the use of this tool in other studies and in clinical practice.

After the required permissions were obtained from the author, the tool was adapted to the Turkish language using the translation-retranslation method with additional psycholinguistic and psychometric analyses assisting in the validation process for Turkish society. A total of 10 patients who were not included the main analysis were subjected to a pilot test to finalize the text. The tool was re-administered to a total of 115 patients after 6 weeks.

The internal consistency analysis revealed a Cronbach alpha reliability coefficient of 0.908 indicating a very high level of correlation. The Cronbach alpha reliability coefficients for the individual sub-items ranged between 0.688 and 0.987 (Table 3) and were similar to those in the original report (0.79-0.86).

The Spearmen correlation between the sub-item scores showed a moderate to strong correlation (0.52-0.77) with the highest correlation being for the appetite (0.771) sub-item. The original study describing the tool showed similar correlations of between 0.52 and 0.80 (Table 4).

Table 4. LDSI construct validity

Severity and hindrance item pairs concerning	R spearman
Itch -daily activity	0.53
-sleep	0.56
Joint pain	0.63
Pain in the right upper abdomen	0.65
Sleepiness during the day	0.65
Worry about the family situation	0.52
Decreased appetite	0.77
Depression	0.69
Jaundice	0.66

Spearman correlations between a specific symptom severity item and the accompanying symptom hindrance item

The construct validity between each sub-item of the LDSI 2.0 and sub-items of the SF-36 was estimated using Spearman's correlations, and they revealed negative or weak to moderate (<0.4 and 0.4-0.7, respectively) correlations (Tables 5, 6). The highest correlation (-0.626 rho value) was detected between use of time and the vitality sub-item of SF-36. The highest correlation with SF-36 sub-items was observed in the sub-items of depression and impact of depression on daily activities. This

Table 6. Convergent validity of the translated LDSI 2.0 (extra six items) by means of Spearman's rho correlation (rs) between these items and SF-36 scales among Turkish patients with liver cirrhosis (n=308)

SF36	MEMO	PERSOCH	TIME	FINANCIAL	SEXINT	SEXACT
PF	-.39**	-.33**	-.33**	-.52**	-.40**	-.44**
RP	-.32**	-.38**	-.43**	-.56**	-.40**	-.41**
BP	-.05	-.06	-.11	-.13	-.00	-.08
GH	-.36**	-.31**	-.32**	-.43**	-.33**	-.35**
VI	-.25	-.21	-.49*	-.62**	-.56**	-.48*
SF	-.29**	-.38**	-.26**	-.45**	-.35**	-.36**
RE	-.33**	-.35**	-.40**	-.49**	-.36**	-.40**
MH	.29	-.39	-.39	-.39	-.14	-.00

BP: bodily pain; FINANCIAL: hindrance in financial affairs; GH: general health; LDSI 2.0: Liver Disease Symptom Index 2.0; MEMO: severity of remembering; MH: mental health; PERSOCH: severity of changing personality; PF: physical functioning; RE: role limitation due to emotional problems; RP: role limitation due to physical problems; SEXACT: severity of decreasing sexual activity; SEXINT: severity of decreasing sexual interest; SF: social functioning; SF-36: short form-36; TIME: severity of difficulty managing time; VI: vitality

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table 5. Construct validity of LDSI 2.0 items in relation to SF-36 scales by means of Spearman's correlations (r) between its items and Short Form (SF) 36 scales among Turkish patients with liver cirrhosis (n=308)

SF36	ITCH	HITCH	JP	HJP	ABP	HABP	SLP	HSLP	WOR	HWOR	DAP	HDAP	DPR	HDPR	FEAR	JAU	HJAU
PF	-.17**	-.26**	-.27**	-34**	-31**	-.30**	-25**	-.35**	-.29**	-.41**	-30**	-.30**	-46**	-.46**	-.27**	-31**	-.30*
RP	-.12*	-.16**	-.16**	-28**	-31**	-.30**	-21**	-.28**	-.30**	-.36**	-36**	-.37**	-40**	-.42**	-.24**	-33**	-.32*
BP	-.20*	-.09	-.14	-.18*	-26**	-.19*	-.07	-.13	.05	-.04	-26**	-.26**	-.14	-.20*	-.06	-.18*	-.29*
GH	-.20**	-.21**	-.28**	-27**	-33**	-.32**	-26**	-.31**	-.35**	-.41**	-31**	-.37**	-46**	-.39**	-.35**	-36**	-.25**
VI	-.00	-.35	-.39*	-.39	-.28	-.44*	-34	-.31	-.41*	-.60**	-.39	-.49*	-54**	-.61**	-.61**	-.21	-.49*
SF	-.14*	-.13*	-.20**	-.26**	-33**	-.28**	-24**	-.30**	-.38**	-.47**	-35**	-.38**	-48**	-.47**	-.36**	-30**	-.26**
RE	-.15**	-.22**	-.18**	-24**	-31**	-.30**	-25**	-.31**	-.26**	-.38**	-26**	-.32**	-36**	-.42**	-.28**	-33**	-.32**
MH	-.30	-.39	-.17	-.39	-.00	-.55*	-.14	-.39	-.04	.	-.39	-.39	-.20	.	.23	.23	.

ITCH: severity of itch; HITCH: hindrance of itch in daily activities; JP: severity of joint pain; HJP: hindrance of joint pain in daily activities; ABP: severity of pain in right upper abdomen; HABP: hindrance of pain in right upper abdomen in daily activities; SLP: severity of sleepiness during the day; HSLP: hindrance of sleepiness during the day in daily activities; WOR: severity of worry about the family situation; HWOR: hindrance of worry about the family situation in daily activities; DAP: severity of decreased appetite; HDAP: hindrance of decreased appetite in daily activities; DPR: severity of depression; HDPR: hindrance of depression in daily activities or social contacts; FEAR: severity of fear of complications of disease; JAU: severity of jaundice; HJAU: hindrance of jaundice in daily activities or social contacts; PF: physical functioning; RP: role limitations due to physical problems; BP: bodily pain; GH: general health; VI: vitality; SF: social functioning; RE: role limitations due to emotional problems; MH: mental health

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

finding was similar to those of Simone M. van der Plas in their original study. Depression is a commonly observed phenomenon in patients with chronic diseases with multi-faceted effects on quality of life. It is likely that the presence of an additional chronic disease in 31.5% of the cases may underlie this observation thereby further reducing the quality of life. Additionally, living alone (20.2% of our patients) may be expected to have a similar effect. Worry, depression, and sleepiness exhibited a weak-to-moderate correlation with approximately all SF-36 sub-items. These correlations with SF-36, which is a tool that allows multi-dimensional assessments (physical, mental, and social, among others), are an indication of the profound effects of the symptoms on daily activities in patients with chronic conditions. The original paper also emphasized this crucial point.

Weak or absent correlations for jaundice and itch suggest that these symptoms may be internalized and ignored by the patient, thus resulting in no effect on daily activities. This finding also suggests that patients are more severely affected by their physical and psychological health rather than being concerned with their physical appearance.

The observed correlation of the worry sub-item with almost all sub-items of SF-36 both in our study and in the original study demonstrates that chronic diseases affect the social life of the patients via daily activities and family life. In 52.9% of the cases, the family was economically dependent on the patient, thereby placing more economic responsibility on the patient. Another factor that may exacerbate the worry level may be related to the absence of a caregiver at home in 34.1% of the patients.

In the original scale developed by Simone M. van der Plas et al. for Flemish society, weak or moderate correlations were observed, and there were higher correlations for joint pain, sleepiness, depression, and for the effect of these sub-items on daily activities. Joint paint correlated moderately with the physical health sub-item of SF-36. In our study, there was a weak correlation between joint pain and SF-36.

In the original tool, decreased appetite correlated weakly with SF-36, whereas in our study, despite the absence of a correlation between appetite and vitality and mental health sub-items, it did correlated weakly with other sub-items. These discrepancies may reflect cultural differences.

Memory and personality symptoms correlated weakly with the sub-items of SF-36.

There was a correlation between use of time and physical health, physical hindrance, general health, vitality, social health, and emotional health, particularly in cirrhotic patients (55.7%). These correlations are likely due to the self-isolation of liver-disease patients due to a number of factors, such as the fear of infecting others, complications, intervening infections, hospitalization, fatigue and weakness, and despair. Chronic liver disease eventually leads to a more lonesome life or the adoption of a lifestyle where patients execute only activities for which their energy level is sufficient.

The economic status sub-item correlated with emotional health, vitality, and physical health.

Similar to the original assessment tool, there was a correlation between sexual desire and activity and physical health, physical hindrance, vitality, and emotional health.

Some limitations of our study should be mentioned. First, despite modifications to the text based on feedback from the pilot study, the results suggest that some questions were not adequately comprehended by the sample population. Furthermore, the possibility for patients providing misleading answers due to specific factors, such as self-administering the tool or the inability to bestow adequate time and care while assessing the questions, should be borne in mind.

Within the context of our study population, the tool was found to be reliable. Validity results are akin to those of the original tool and provide evidence of its validity. Thus, we believe that the Turkish version may be used readily for clinical research purposes and for daily clinical practice.

In conclusion, the concurrent use of this life-quality assessment tool with SF-36 may offer the advantage of providing a comprehensive but practical assessment for clinical use.

Educational activities for patients and families together with the use of related printed material, such as brochures or booklets, may help improve awareness and quality of life in patients with chronic liver disease.

Clinical assessments generally focus more on physical dimensions of the problem than on the psychological aspects. Thus, we recommend the provision of psychological support in gastroenterology units for improved social and psychological health parameters.

Ethics Committee Approval: Ethics committee approval was received for this study from Dokuz Eylül University Ethics Committee.

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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