

Short Health Scale: A Valid and Reliable Measure of the Quality of Life in Turkish-Speaking Patients with Inflammatory Bowel Disease

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Abstract

Objective: Severe symptoms such as bloody diarrhea and abdominal pain in inflammatory bowel disease patients, combined with a chronic course with remissions and relapses, cause significant emotional and social distress. These symptoms severely limit inflammatory bowel disease patients' daily lives, social functions, and functional capacities and have a significant impact on their quality of life. In this context, the importance of quality of life assessment in inflammatory bowel disease patients is increasing daily. The short health scale is a visual analog scale questionnaire consisting of 4 questions. We aimed to validate this scale in Turkish-speaking patients.

Methods: The short health scale was applied to 125 inflammatory bowel disease patients with 75 ulcerative colitis and 50 Crohn's disease patients. The short health scale was a 100 mm visual analog scale with 4 questions.

Results: The median disease duration of inflammatory bowel disease patients was 5.3 years (0.4-26.5), the mean age was 42.4 ± 14.2 years (19-77), and 60.8% (n=76) were male patients. A positive correlation was found in comparing Truelove–Witts index and Harvey–Bradshaw index results with short health scale scores. There was no significant difference in the distribution of disease activity severity at the eighth-week follow-up in ulcerative colitis and Crohn's disease patients.

Conclusion: The short health scale, which was determined as a valid and reliable measurement tool, can be used in Turkish-speaking patients with inflammatory bowel disease. It can be a good choice for outpatient and home care patients because it is simple and easy to use.

Keywords: Crohn's disease, inflammatory bowel disease, quality of life, short health scale, ulcerative colitis, disease activity

INTRODUCTION

Inflammatory bowel disease (IBD) is characterized by chronic or recurring inflammation of the gastrointestinal tract and comprises 2 major disorders: ulcerative colitis (UC) and Crohn's disease (CD).¹ The incidence of IBD varies according to the geographical region, race and ethnicity, socioeconomic status, age, and gender.² The incidence and prevalence of IBD have been increasing globally in the last 40-50 years.³ The incidence of UC has been reported as 0.5-24/100 000, and the incidence of CD is 0.1-16/100 000 worldwide.⁴

Quality of life (QoL) is a broad multidimensional concept that includes subjective evaluations of positive and negative events and developments. The difficulty in measuring and evaluating the QoL is that although "QoL" refers to a similar concept for all academic disciplines, individuals and groups define and address this concept differently. In recent years, quality of health life has started to be measured using questionnaires. These questionnaires contain questions about several topics, such as the patient's physical and mental symptoms, pain, and activities of daily living. This enabled doctors to understand better how a disease or treatment practices affect a person's life.⁵

When QoL scales were first developed, most were lengthy, time-consuming, comprehensive questionnaires that were difficult to use in daily life, and some were paid for.⁶⁻⁸ For this reason, new scales have been proposed for UC and CD.⁹

The short health scale (SHS) is a visual analog scale designed to objectively represent the patient's experience of how IBD affects health.^{10,11} The SHS, first used in Sweden, was later translated into Norwegian, English, Korean, and Dutch.¹⁰⁻¹⁴ The purpose of the present study was to validate SHS in Turkish patients.

METHODS

Study Population

This study was conducted on 125 patients, 75 UC and 50 CD, who applied to the Ankara Bilkent City Hospital Gastroenterology Department outpatient clinic between November 2019 and March 2020 and were diagnosed with definite IBD by clinical, endoscopic, radiological, and histopathological methods. In addition, an internal medicine specialist confirmed the patient's diagnosis. The study was started after each participant patient signed a voluntary consent form using the face-to-face interview method, and their consent was obtained.

The study followed the principles of the Declaration of Helsinki, and ethics committee approval was obtained from Ankara Yildirim Beyazit University ethics committee with the research code 2019-434 on 13.11.2019 with decision number 03. Furthermore, informed consent was obtained from all the patients participating in the study. Demographic data of the patients (age, gender, education level, region of residence (urban–rural part), diagnosis, date of diagnosis, accompanying systemic diseases, and disease activities) were recorded in the Patient Follow-up Form.

The Harvey–Bradshaw index for CD activity and the Truelove–Witts activity index for UC were used. The clinical status of the patients was determined according to these indices. The SHS was administered to all the participants. The SHS for test–retest reliability was administered to 8 UC and 5 CD patients, randomly selected among these patients, after 8 weeks as a control.

Short Health Scale

The questionnaire was designed to be self-administered, and patients were asked to place a mark on a 100 mm visual analog scale that they felt was appropriate for their situation. The SHS consists of 4 questions: (1) How severe are the symptoms of your bowel disease? (2) How much do your intestinal complaints affect your daily activities? (3) How concerned are your bowel disease? and (4) What is the condition of your general state of health? For these 4 questions, a score between 0 and 100 was created by measuring the point marked by the patients on the scale using a ruler, and a total score was calculated to form a general health score. The total score ranges from 0 (best condition) to 400 (worst condition).

Statistical Analysis

Relevant software was used for all statistical analyses. The normal distribution of data was assessed using the Kolmogorov–Smirnov test. Numerical variables showing normal distribution were shown as

mean \pm SD, and numerical variables without a normal distribution were shown as median (minimum, maximum). Categorical variables were expressed as numbers and percentages. Chi-square and Fisher's exact chi-square test were used to compare categorical data. The Student *t*-test was used to compare the numerical variables with a normal distribution between the 2 groups, and the Mann–Whitney *U* test was used to compare the numerical variables that did not have a normal distribution. The relationship between disease activity and general health scale scores was analyzed by Spearman correlation analysis. The relationship between the general health scale and related disease factors was assessed using robust regression analysis. The probability value $P < .05$ (*) was considered significant in statistical analysis.

RESULTS

The mean duration of the disease in patients with IBD was 5.3 years (0.4–26.5), the mean age was 42.4 ± 14.2 years (19–77), and 76 of them were male (60.8%) patients. Of the patients, 99 (79.2%) were married, and 84 were high school or higher graduates (67.2%). The mean age, gender distribution, and marital and educational status distributions of UC and CD patients did not differ significantly. The demographic characteristics of IBD patients are shown in detail in Table 1.

Disease Severity

According to the Truelove–Witts index of UC patients, 46 had mild (61.3%), 19 had moderate (25.3%), and 10 (13.4%) had severe disease activity. According to the Harvey–Bradshaw index of CD patients, 24 had remission (48%), 17 mild (34%), 7 moderate (14%), and 2 severe (4%) disease activities (Figure 1)

Short Health Scale

A positive correlation was detected between Truelove–Witts index and SHS total score ($R=0.571$; $P < .001$), symptom burden score ($R=0.409$; $P < 0.001$), social function score ($R=0.549$; $P < .001$), anxiety scores ($R=0.366$; $P=.001$), and general well-being ($r = 0.387$; $P=.001$) levels (Table 2). There was a positive correlation between Harvey–Bradshaw index and SHS total score ($r = 0.513$; $P < .001$), symptom

Table 1. Demographic Characteristics of the Patients

Variables	All Patients	UC	CD	P
	n=125	n=75	n=50	
Age, years	42.4 \pm 14.2	44.3 \pm 14.7	39.6 \pm 13	.072
Sex				
Men, n (%)	76 (60.8)	49 (65.3)	27 (54.0)	.262
Women, n (%)	49 (39.2)	26 (34.7)	23 (46.0)	
Marital status				
Married, n (%)	99 (79.2)	62 (82.7)	37 (74.0)	.267
Single, n (%)	26 (20.8)	13 (17.3)	13 (26.0)	
Educational status				
Literate, n (%)	23 (18.4)	15 (20.0)	8 (16.0)	.563
Primary education, n (%)	18 (14.4)	8 (10.7)	10 (20.0)	
High school, n (%)	42 (33.6)	26 (34.7)	16 (32.0)	
University, n (%)	42 (33.6)	26 (34.7)	16 (32.0)	
Disease duration, years	5.3 (0.3–26.5)	5.3 (0.3–26.5)	5.3 (0.3–16.3)	.134

Numerical variables with normal distribution were shown as mean \pm SD.

Numerical variables that did not show normal distribution were shown as the median (minimum–maximum).

Categorical variables were shown as numbers (%).

CD, Crohn's disease; UC, ulcerative colitis.

* $P < .05$ indicates statistical significance.

MAIN POINTS

- The importance of evaluating quality of life in inflammatory bowel disease patients is increasing daily.
- The short health scale is a visual analog scale questionnaire consisting of 4 questions that assess the impact of inflammatory bowel disease (IBD) on symptom burden, social function (daily function), disease anxiety, and general well-being, which are 4 important aspects of subjective health.
- We aimed to validate this scale in Turkish-speaking patients.
- The SHS, determined as a valid and reliable measurement tool, can be used in Turkish-speaking patients with IBD.
- It can be a good choice for outpatient and home care patients because it is simple and easy to use.

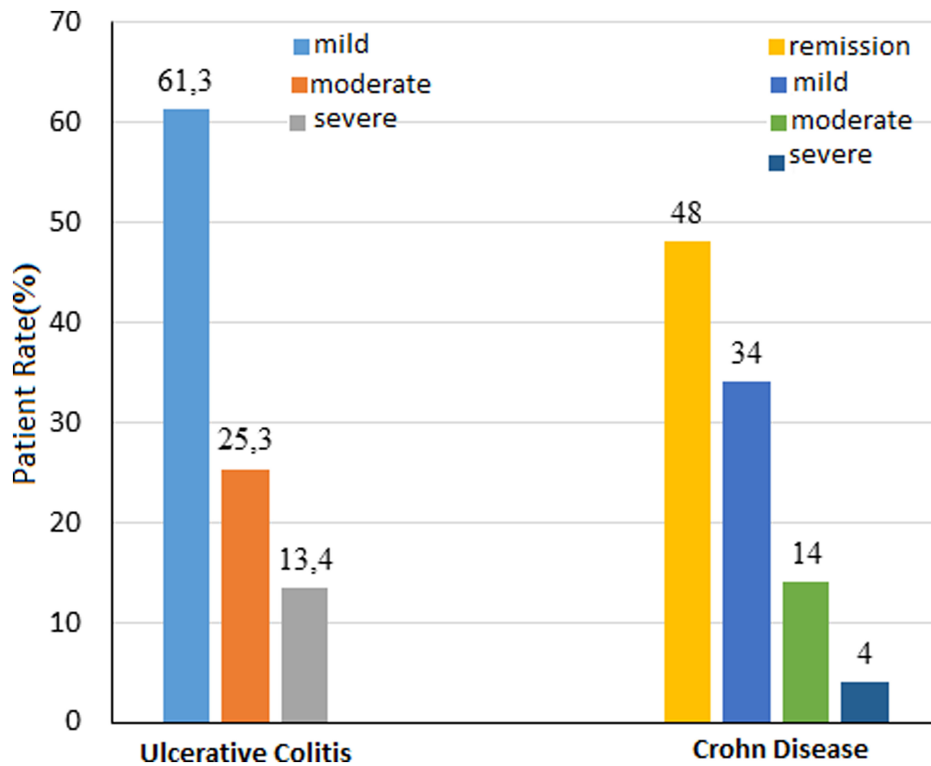


Figure 1. Distribution of disease activity in inflammatory bowel disease patients.

burden score ($r = 0.391$; $P = .005$), social function score ($r = 0.597$; $P < .001$), general well-being ($r = 0.391$; $P < .001$) ($r = 0.467$; $P = .001$), no correlation was found between Harvey–Bradshaw index and anxiety score (Table 3 and Figure 2). There was no significant difference in the distributions of disease activity severity at 8 weeks of follow-up in UC and CD patients. However, there was a substantial decrease in the total SHS and other subscales except for anxiety in both groups (Table 4).

The factors associated with the SHS total score are shown in Table 5. In the backward robust regression model, which includes disease type, disease activity, heart disease, cardiac drug use, non-biological drug use, and anti-TNF (tumor necrosis factor) drug use, disease type, disease activity, and the use of heart medication were found to be independent factors that increased the SHS total score. Accordingly, it was determined that CD reduced overall health scale scores compared to UC. It was determined that having moderate and severe disease activity increased overall health scores compared to those with remission or moderate disease activity. It was found that using heart medication has an effect that improves overall health scores.

Table 2. Correlation Between Disease Activity and Short Health Scores

Short Health Scale	Truelove–Witts Score		Harvey–Bradshaw Score	
	r_s	P	r_s	P
Symptom burden	0.409	<.001*	0.391	.005*
Social function	0.549	<.001*	0.597	<.001*
Anxiety	0.366	.001*	0.187	.194
General well-being	0.387	.001*	0.467	.001*
Total score	0.571	<.001*	0.513	<.001*

r_s , Spearman correlation coefficient.
* $P < .05$ indicates statistical significance.

DISCUSSION

The SHS is a questionnaire developed for this purpose in Sweden that evaluates the impact of IBD on symptom burden, social function (daily function), anxiety about the disease, and general well-being, which are 4 crucial aspects of subjective health. It has been shown that this questionnaire, first used in Swedish in 2002, can be used in UC in 2006 and

Table 3. Distribution of Short Health Scores According to Disease Activity Severity

Short Health Scale	UC			P
	Mild n=46	Moderate n=19	Severe n=10	
Symptom burden	20 (0-100)	40 (8-83)	65 (25-100)	.002*
Social function	23.5 (0-100)	62 (7-95)	87.5 (35-100)	<.001*
Anxiety	50 (0-100)	70 (30-100)	82.5 (50-100)	.007*
General well-being	31.5 (0-85)	50 (8-80)	52.5 (5-90)	.004*
Total score	139 (0-360)	220 (126-312)	281.5 (225-345)	<.001*
	CD			P
	Remission n=24	Mild n=17	Moderate/ Severe n=9	
Symptom burden	7.5 (0-82)	10 (0-70)	55 (0-100)	.009*
Social function	4.5 (0-60)	50 (0-95)	60 (25-100)	<.001*
Anxiety	49 (0-100)	60 (0-100)	60 (0-100)	.271
General well-being	5 (0-55)	35 (0-70)	50 (0-80)	.004*
Total score	98.5 (0-269)	154 (0-302)	212 (66-360)	.002*

Short health scale levels that did not show normal distribution were shown as median (minimum–maximum).

Bold characters represent those that differ significantly between groups.

UC, ulcerative colitis.

* $P < .05$ indicates statistical significance.

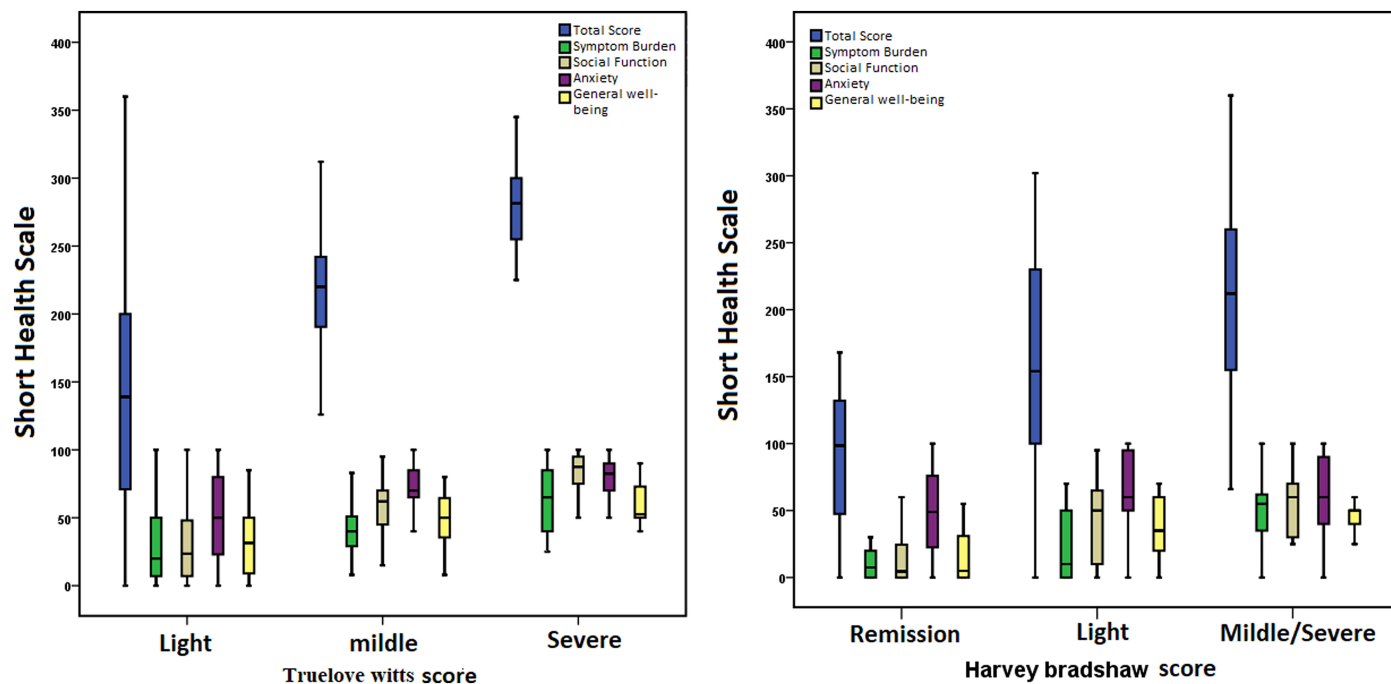


Figure 2. Distribution of short health scale scores according to disease activity.

in CD in 2008 by conducting validity and reliability studies. After its validity and reliability study in children diagnosed with IBD in 2015, it was also used in the pediatric population. After it was translated into Norwegian in 2011 and used, it was translated into English in 2013, Korean in 2017, and Dutch in 2019, which proved valid and reliable

and came into use.^{10,11,12,15-19} This study demonstrated that the SHS can also be used in Turkish-speaking patients.

The SHS is a visual analog scale designed to objectively represent the patient’s experience of how IBD affects health. It is a short, simple, quickly applicable, visual, analog, and user-friendly scoring questionnaire. For this reason, its easy and fast applicability in outpatient clinic conditions during normal controls and home conditions in home care patients and the reliability and usefulness of its results are some of the most important reasons for conducting this study. The present study

Table 4. Change Between Disease Activity and Short Health Scores at Follow-Up

IBD	Disease Activity	Baseline	8 Weeks	r _s	P
UC	Truelove–Witts score				
	Mild	46 (61.3)	6 (75.0)	0.333	.420
	Moderate	19 (25.3)	2 (25.0)		
	Severe	10 (13.4)	–		
	Short health scale				
	Symptom burden	35 (0-100)	20 (0-45)	0.790	.010*
	Social function	40 (0-100)	38 (0-65)	0.761	.018*
CH	Harvey–Bradshaw index				
	Remission	24 (48.0)	4 (80.0)	0.395	.510
	Mild	17 (34.0)	1 (20.0)		
	Moderate	7 (14.0)	–		
	Severe	2 (4.0)	–		
	Short Health Scale				
	Symptom burden	13 (0-100)	5 (0-75)	0.911	<.001*
Social Function	25 (0-100)	5 (0-50)	0.884	.004*	
Anxiety	53 (0-100)	40 (50-90)	0.145	.986	
General well-being	30 (0-80)	45 (0-60)	0.700	.028*	
Total score	127 (0-360)	100 (90-245)	0.911	<.001*	

Short health scale levels that did not show normal distribution were shown as median (minimum–maximum).

CD, Crohn’s disease; IBD, inflammatory bowel disease; UC, ulcerative colitis.

*P < .05 indicates statistical significance.

Table 5. Inflammatory Bowel Disease Factors Affecting General Health Scores

Factors	B ± SE	95% CI		P
		Lower Limit	Upper Limit	
Univariable regression				
Disease, CD (reference: UC)	-41.19 ± 16.47	-73.8	-8.59	.014*
Disease activity is moderate to severe (reference: remission or moderate)	69.32 ± 10.92	47.69	90.94	<.001*
Presence of heart disease	78.52 ± 38.05	3.21	153.83	.041*
Use of heart medication	100.55 ± 46.12	9.26	191.84	.031*
Use of non-biological drugs	-48.37 ± 20.54	-89.04	-7.70	.020*
Anti-TNF use	-45.44 ± 22.19	-89.36	-1.51	.043*
Multivariable regression				
Disease, CD (reference: UC)	-52.59 ± 14.67	-81.63	-23.55	<.001*
Disease activity is moderate to severe (reference: remission or moderate)	107.79 ± 19.91	68.38	147.20	<.001*
Use of heart medication	136.49 ± 40.87	55.58	217.41	.001*
R ² = 0.256; P < .001*				

B, regression coefficient; CD, Crohn’s disease; SE, standard error; TNF, tumor necrosis factor; UC, ulcerative colitis.

*P < .05 indicates statistical significance.

confirmed these characteristics of the questionnaire. The average time for the patients to complete our survey was 1 minute. The easiness and rapid implementation of the SHS made it convenient for repeated measurements in IBD patients. It provides an objective view of IBD patients' subjective perceptions because it is easy to interpret and does not require additional calculations.

The fact that some surveys that evaluate the QoL are paid limits their use.⁹ The fact that the SHS survey is free also ensures its widespread availability. The SHS questionnaire is the first disease-specific questionnaire translated into Turkish for IBD patients. Therefore, the validity and reliability study was performed by comparing SHS and clinical disease activity scores (Harvey–Bradshaw and Truelove–Witts index). The correlation between the 4 dimensions of subjective health and the total and disease activity scores in the SHS was confirmed.

The present study also had some limitations. The IBDQ (inflammatory bowel disease questionnaire) and QoLQ (quality of life questionnaire),¹⁶ which were compared with the SDS used in other validity and reliability studies, could not be performed due to the lack of Turkish translation. In addition, no objective markers have been used to assess disease activity.

The reliability of the SDS was demonstrated by repeating the questionnaire 8 weeks later in a selected subgroup of patients enrolled in the study. Baseline and retest scores were similar for all dimensions of the SDS and overall scores for all of the patients. This confirmed that the SDS score is a valid and reliable questionnaire for assessing the QoL value.

Ethics Committee Approval: Ethics committee approval was obtained from Ankara Yıldırım Beyazıt University Ethics Committee with the research code 2019-434 (Approval Number 03, Date: 13.11.2019).

Informed Consent: Written informed consent was obtained from the patients participating in this study.

Peer-review: Externally peer-reviewed.

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