

# The relation between life quality and subtype of the disease in patients with irritable bowel syndrome

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## Abstract

**Aim:** Irritable bowel syndrome (IBS) is not a life-threatening condition; however, people with IBS have a low quality of life (QOL) that might affect their education, social and professional achievements. Many studies have shown that patients who have IBS have lower QOL compared to the general population together with patients who have chronic diseases. The relation between IBS subtype and QOL is still not clear. For this reason, our study aims to evaluate the relationship between subtypes of the disease and QOL in patients who have IBS.

**Material and Methods:** The 100 patients with IBS and 100 healthy individuals who were aged from 18 to 65 years, were included in our study. The relationship between disease subtype and quality of life in IBS patients were analyzed.

**Results:** Regarding quality of life between the groups in the examination; the overall health scores were lower at a significant level in the patients who had IBS subtype as predominant-constipation than those who had IBS subtypes as predominant-diarrhea and mixed type ( $p=0.013$ ;  $p=0.045$ ;  $p<0.05$ , respectively). The vitality scores were higher at a significant level in patients whose IBS subtypes were predominant-diarrhea than those who had the IBS subtype as predominant-constipation ( $p=0.007$ ;  $p<0.01$ ). There were no statistically significant differences between the IBS subtypes and other parameters ( $p>0.05$ ).

**Conclusion:** It was shown that the QOL of IBS patients were significantly lower than the healthy population, but some differences were also found between the disease subtypes. QOL measurement as part of future therapeutic trials in IBS will help ensure optimal treatment.

**Keywords:** Irritable Bowel Syndrome; Type of Disease; Quality of Life.

## INTRODUCTION

Characterized by abdominal pain and changes in intestinal habits, Irritable Bowel Syndrome (IBS) is a common gastrointestinal disease (1), and is a biopsychosocial dysfunction condition, which means that it is the result of brain-intestine relation and biological dysfunction affected by social, environmental and psychological factors (2). Its global prevalence is predicted to be 11.2%. Studies have shown that annual healthcare visits of IBS patients are 2-3-fold more compared to controls regarding age (3,4). IBS brings a significant economic burden to the healthcare system. According to previous studies, the direct costs of the diagnosis and treatment of IBS in the United States of America (USA) is between 1.7 and 10 billion USA Dollars. The values that are indirect, in other

words, the prices appearing due to absenteeism at work and similar reasons double the direct costs (5).

Although IBS is not a condition that threatens life, people who have IBS have a low life quality, which affects their educational status, social-professional successes (6). Many studies have shown that patients who have IBS have lower Quality of Life (QOL) compared to the general population together with patients who have chronic diseases like gastroesophageal reflux disease, diabetes, depression and end-stage kidney failure (4,7). It was also shown that QOL is associated with clinical response to treatment and healthcare resource use. For this reason, understanding the variables that affect QOL in patients with IBS is essential (8). Although it was shown that QOL is affected by psychiatric symptoms, extraintestinal

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symptoms, gender and disease severity in IBS, the relation between IBS subtype and QOL is still not clear; and conflicting results were reported in this respect (8,9). Gralnek et al. conducted a study and said that IBS patients had lower Quality of Life compared to healthy population and patients who have other chronic diseases (7). Sinharoy et al. (10) conducted a study and analyzed the relation between the subtypes of IBS and QOL. They reported that QOL was lower at a significant level in patients who had predominant-diarrhea IBS compared to other groups. Singh et al. (11) conducted another study and reported that QOL was lower at a significant level in patients who had diarrhea-predominant and mixed type IBS than in constipation-predominant IBS patients.

Although there are studies conducted worldwide comparing IBS patients with a healthy population for QOL and make analyses on the subtypes of IBS, it is seen that the reported data are conflicting (7-11). There are no studies conducted in Turkey analyzing QOL by comparing IBS patients diagnosed using Roman IV diagnostic criteria and healthy control groups. For this reason, our research aims to examine the QOL between IBS patients and healthy control group as well as to evaluate the relationship between subtypes of the disease and QOL in patients who have IBS.

## MATERIAL and METHODS

### The Patients and Selection

The present study of ours was conducted prospectively between June 2016 and September 2016 at Bezmialem Vakif University Hospital and included 100 IBS patients who were between 18 to 65 years of age, who were under follow up at our gastroenterology clinic. A control group which had 100 healthy individuals were included in the present study. Written informed consent forms were received from the participants, who were examined by a gastroenterologist; and a psychiatrist evaluated them for somatoform.

### Inclusion Criteria

IBS was diagnosed according to Rome IV criteria. According to these criteria, complaints start at least 6 months before the diagnosis, abdominal pain is seen 1 day a week in the past 3 months, abdominal discomfort is seen 1 day a week in the past 3 months. There should be at least two of these findings for diagnosis. The scoring is made as follows; 1:The pain is relieved after defecation; 2:Stool frequency is altered; 3:Stool form is altered (12). Medical history was recorded, and physical examination was made. Routine examination results were also recorded: Fasting glucose, urea, creatinine, AST, ALT, ALP, GGT, total bilirubin, albumin, prothrombin time, total cholesterol, LDL, triglycerides, complete blood count, CRP, erythrocyte sedimentation rate, TSH, HbA1c, fecal occult blood test, microscopic examination of stool in terms of parasites and stool *Helicobacter pylori* antigen.

### Exclusion criteria

The exclusion criteria were as follows: Having fever,

persistent diarrhea, refractory constipation, rectal bleeding, weight loss, physical examination findings that were abnormal, nocturnal pain and defecation, family history for inflammatory bowel disease, celiac disease, history of bowel cancer, and symptom onset after 50 years of age. Also pregnant and lactating women, patients <18 and >65 years of age, patients with gastrointestinal disease (stomach-duodenal ulcer, gastric cancer, small and large intestine cancer, inflammatory bowel disease [Crohn's Disease or ulcerative colitis], gastroparesis, chronic intestinal ischemia) or pancreaticobiliary disorders (pancreatitis, biliary colic because of gallbladder stone, acute cholecystitis, choledocholithiasis, hepatitis, hepatobiliary malignancies), major abdominal surgery, systemic disorders (collagen tissue disorders, kidney failure, systemic infection), psychiatric disorders or alcohol use were also excluded from the study.

### The Subtypes of IBS

The types of IBS were determined by using the Bristol Stool Scale. The patients were divided into three groups as Diarrhea, Constipation and Alternant Types. If the constipation rates were > 25% and the diarrhea rates were < 25% in all defecations, the patients were defined as constipation-predominant IBS. On the contrary, if the diarrhea rates were > 25% and constipation rates were < 25%, they were identified as diarrhea-predominant IBS. Finally, if the constipation rates and diarrhea rates were > 25%, the patients were classified as mixed-type IBS (13).

### Psychiatric evaluation (Quality of Life SF-36)

Then, the patients were referred to the Somatoform Disorders Unit of the Psychiatry Polyclinic of our hospital. Here, following the psychiatric interview and examination that were conducted by the psychiatrist, the patients were asked to fill out the SF-36 Questionnaire given by psychologists (14). The same processes were repeated in the subjects in the control group. With the SF-36 Questionnaire, eight parameters were evaluated one-by-one, which were; physical functioning, physical role, pain, general health perception, vitality, social functioning, emotional function, and mental health. Each subgroup was given with points between 0 and 100. Having a high score indicated that the QOL was better.

### Ethics statement

All the participating patients gave written consents for the study. Ethical approval was received from the Ethical Committee of the Hospital for the research. All procedures were in line with the ethical standards of the committee on human experimentation of our institution and with Helsinki Declaration.

### Data Analysis

The NCSS (Number Cruncher Statistical System, LLC Kaysville, Utah, USA) program was used for the analyses. Descriptive statistical methods (mean, standard deviation, median, frequency, and ratio) were employed in evaluating the data. Student's t-test was used to compare the parameters that were distributed normally, and the Mann-Whitney U test was applied to examine

the variables that were not distributed normally. Person Analysis was employed in evaluating the correlation between the variables. Pearson's Chi-squared test, Yates Continuity Correction test, Fishers Exact test, and Fisher Freeman Halton tests were used to compare the categorical variables. A p-value < 0.05 or within 95% confidence interval was taken to be significant.

## RESULTS

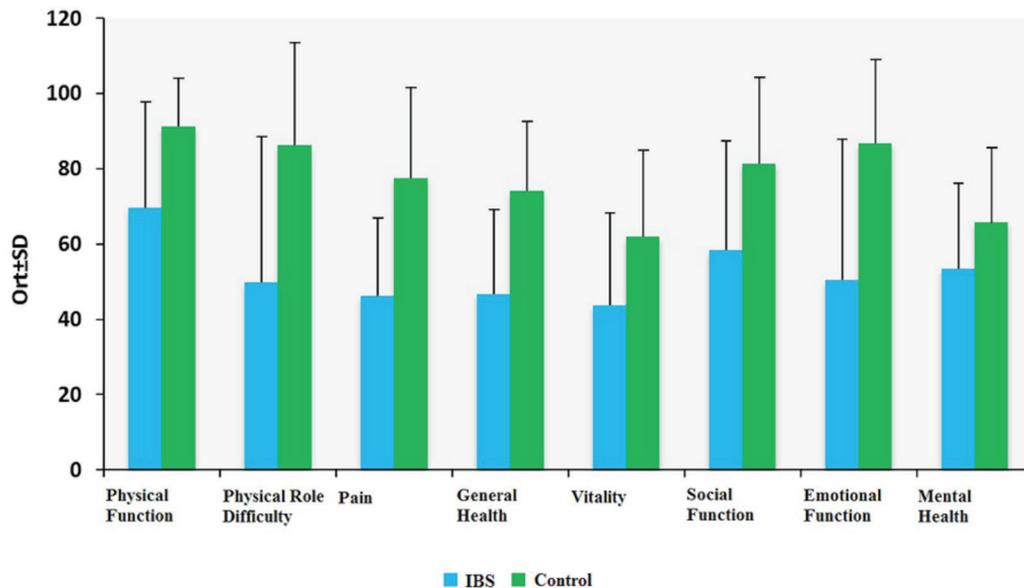
The study was conducted with 200 patients (41% (n=92) males; 59% (n=118) females); 50 (50%) females were in

the control group, and 68 (68%) women were in the IBS group. The ages of the participants were between 18 and 65, and the mean age was 35.2±9.2. The average age was 35.6±6.3 (18-55) in the control group and 34.9±11.43 (18-65) in the IBS group. In the evaluation that was made between the groups in terms of QOL, the physical function scores, physical role difficulty scores, pain scores, general health scores, energy/fatigue/vitality scores, social function scores, emotional function scale, and mental health scores were significantly lower in the IBS group (p=0.001; p<0.01) (Table 1, Figure 1).

**Table 1. Evaluation of Groups in Terms of SF-36 Life Quality Scale**

SF-36 Life Quality Scale		Groups		p value	Odds	CI %95	
		IBS(n=100)	Control(n=100)			Lower	Upper
Physical Function	Ave±SD	69.68±28.03	91.10±12.88	<sup>e</sup> 0.001**	0.946	0.927	0.965
	Min-Max (Median)	2-100 (75)	50-100 (95)				
Physical Role Difficulty	Ave±SD	49.79±38.64	86.20±27.32	<sup>e</sup> 0.001**	0.970	0.961	0.980
	Min-Max (Median)	0-100 (50)	0-100 (100)				
Pain	Ave±SD	46.16±20.82	77.53±23.98	<sup>e</sup> 0.001**	0.944	0.929	0.960
	Min-Max (Median)	0-100 (51)	10-100 (84)				
General Health	Ave±SD	46.66±22.49	74.01±18.52	<sup>a</sup> 0.001**	0.942	0.926	0.958
	Min-Max (Median)	5-100 (45)	32-100 (73.5)				
Vitality	Ave±SD	43.72±24.58	61.85±23.11	<sup>a</sup> 0.001**	0.969	0.957	0.982
	Min-Max (Median)	0-100 (42.5)	10-100 (65)				
Social Function	Ave±SD	58.26±29.07	81.20±23.02	<sup>e</sup> 0.001**	0.968	0.957	0.980
	Min-Max (Median)	0-100 (60)	25-100 (87.5)				
Emotional Function	Ave±SD	50.40±37.34	86.71±22.20	<sup>e</sup> 0.001**	0.963	0.952	0.975
	Min-Max (Median)	0-100 (60)	0-100 (100)				
Mental Health	Ave±SD	53.42±22.74	65.66±19.82	<sup>a</sup> 0.001**	0.974	0.960	0.987
	Min-Max (Median)	0-100 (56)	20-100 (72)				

<sup>a</sup>Student T Test <sup>e</sup>Mann-Whitney U Test \*\*p<0,01



**Figure 1. Distribution of SF-36 Life Quality Scale Sub-Dimensions According to Groups**

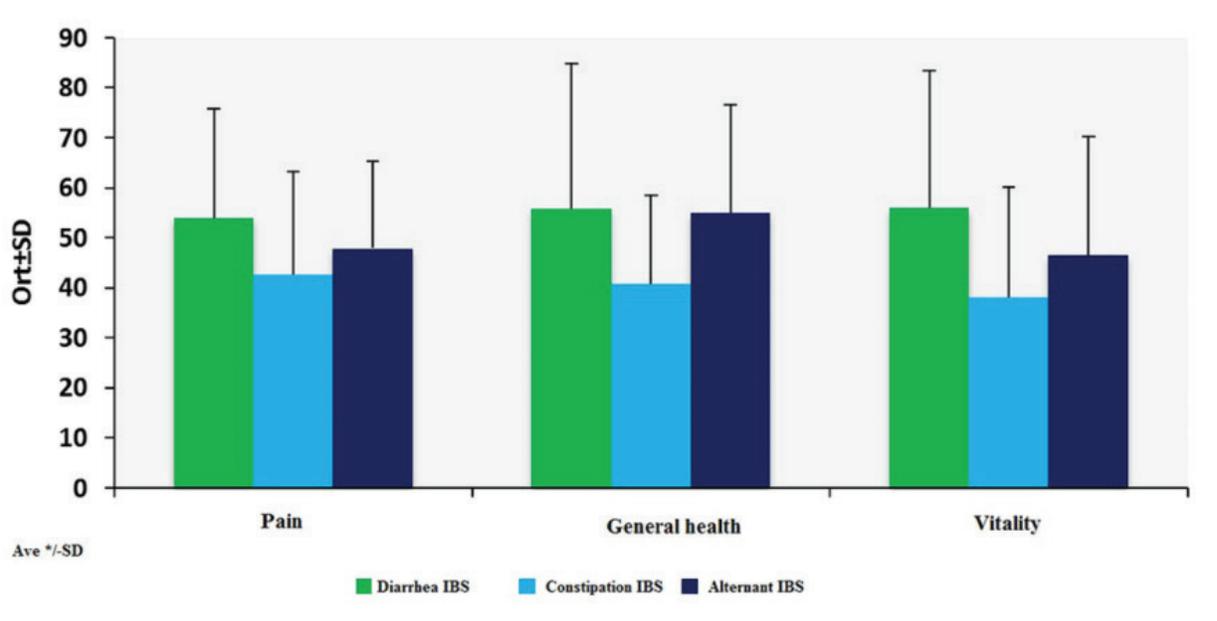
When the relation between the subtype of the disease and QOL of the IBS patients was examined, it was determined that there were no statistically significant differences between the subtypes of physical function, physical role difficulty, pain, social function, emotional function, mental health scores, and the subtype groups at a significant level according to IBS subtypes ( $p>0.05$ ). A statistically significant difference was detected between the general health scores according to IBS subtypes ( $p=0.005$ ;  $p<0.01$ ). The overall health scores were lower at a substantial level in the patients who had IBS subtype as predominant-

constipation than those who had IBS subtypes as predominant-diarrhea and mixed type ( $p=0.013$ ;  $p=0.045$ ;  $p<0.05$ , respectively). A difference was detected at a statistically significant level between the vitality scores according to the IBS subtypes ( $p=0.008$ ;  $p<0.01$ ). The vitality scores were higher at a substantial degree in patients whose IBS subtypes were predominant-diarrhea than those who had the IBS subtype as predominant-constipation ( $p=0.007$ ;  $p<0.01$ ). No significant differences were detected between others (Table 2, Figure 2).

**Table 2. Evaluation of IBS Types According to SF-36 Life Quality Scale Table 1. Evaluation of Groups in Terms of SF-36 Life Quality Scale**

SF-36 Life Quality Scale		IBS Types			P Value
		Diarrhea IBS (n=24)	Constipation IBS (n=60)	Alternan IBS (n=16)	
Physical Function	Ave±SD	71.92±25.97	68.58±28.24	70.44±31.67	<sup>aa</sup> 0.882
	Min-Max (Median)	10-100 (75)	5-100 (75)	2-100 (80)	
Physical Role Difficulty	Ave±SD	63.54±32.78	43.57±39.73	52.50±39.15	<sup>bb</sup> 0.155
	Min-Max (Median)	0-100 (75)	0-100 (32.5)	0-100 (57.5)	
Pain	Ave±SD	54.04±21.76	42.55±20.66	47.87±17.37	<sup>aa</sup> 0.068
	Min-Max (Median)	0-90 (52)	0-100 (42)	21-75 (51)	
General Health	Ave±SD	55.83±29.10	40.78±17.64	54.94±21.67	<sup>aa</sup> 0.005**
	Min-Max (Median)	5-100 (53.5)	5-92 (40)	21-85 (47)	
Vitality	Ave±SD	55.92±27.54	38.08±21.94	46.56±23.64	<sup>aa</sup> 0.008**
	Min-Max (Median)	0-100 (61)	0-95 (37.5)	5-75 (52.5)	
Social Function	Ave±SD	64.50±33.90	55.72±28.83	58.41±21.43	<sup>bb</sup> 0.339
	Min-Max (Median)	0-100 (62.5)	0-100 (50)	22-88 (62.2)	
Emotional Function	Ave±SD	61.74±37.62	43.93±36.60	57.61±36.57	<sup>bb</sup> 0.124
	Min-Max (Median)	0-100 (66.3)	0-100 (33.3)	0-100 (66.7)	
Mental Health	Ave±SD	61.25±22.76	50.22±21.62	53.69±25.28	<sup>aa</sup> 0.133
	Min-Max (Median)	8-100 (64)	0-98 (50)	12-100 (57)	

<sup>aa</sup>One-Way ANOVA Test    <sup>bb</sup>Kruskal-Wallis Test    \*\* $p<0,01$



**Figure 2.** Distribution of SF-36 Life Quality Scale Sub-Dimension Scores According to IBS Types

## DISCUSSION

In our study, we determined the QOL in patients who had IBS and compared the results with the healthy control group. Also, we also made IBS subtype analyses and made comparisons among the groups regarding QOL. Our study is significant since it evaluated the QOL in IBS patients who were diagnosed by employing the Rome IV diagnostic criteria. Because there are no studies that analyze the QOL of IBS patients by comparing the healthy control group who are diagnosed by using the Rome-IV diagnostic criteria in Turkey. We showed that in the examination was made to evaluate the QOL in IBS patients and healthy population in Turkey; physical function scores, physical role difficulty scores, pain scores, general health scores, vitality scores, social function scores, emotional function scale scores, and mental health scores were significantly lower in the patients in IBS group. Besides, we also showed that the general health scores and vitality scores were lower at a significant level in the group that had the IBS subtype as predominant-constipation than in the other groups.

Employing a generic health-related quality of life (HRQOL) measure like SF-36 Health Survey enables to form a basis to compare patients with other patients who have other chronic diseases or with general population data to evaluate the effects of the disease (15). Although IBS is not related to mortality, it is a disease affecting the emotional and social functioning of individuals and their physical symptoms as well. As it is the case in other chronic diseases, the purpose of the treatment is to alleviate symptoms and improve functionality in IBS patients. Therefore, the severity scores of the IBS symptoms are evaluated in patients with IBS with improvements in complaints like diarrhea, constipation symptoms, abdominal irritability, and abdominal swelling. In this context, the HRQOL measurements are important complements for the treatment and are still valid in IBS. However, there are very few data that evaluate the HRQOLs of the individuals who have IBS (7,16). Whitehead et al. conducted a study and compared IBS patients with the general American population. They reported that the SF-36 scores were lower at a significant level in IBS patient than general American people (16). Similarly, in a comparison that was made with a healthy community in Europe and in another comparison that was made with healthy university students and IBS patients in the USA, it was reported that the SF-36 scores were lower at a significant level in IBS patients than in healthy population (17,18). In our study, physical function scores, physical role difficulty scores, pain scores, general health scores, energy/fatigue/vitality scores, social function scores, emotional function scale scores, and mental health scores were lower at a significant level in IBS patients, which is consistent with other data.

In most studies that were conducted previous to examine the effects of IBS subtypes on QOL, it was reported that there were no differences between IBS and subtypes (19-

24). Most of these studies were taken from tertiary health care institutions and had comparable sampling size, which is the case in our study. However, most of these studies used the general QOL questionnaires like SF-36 and WHO-QOL to minimize the effects of gastrointestinal symptoms on general QOL (19-24). In our study, the SF-36 Questionnaire, which investigated the specific concerns of patients who had IBS. In some studies that analyzed the relationship between IBS subtypes and QOL, the SF-36 scores were reported to be lower at a significant level in diarrhea-predominant IBS than in other groups; however, in some other studies, it was reported that QOL was lower at a considerable degree in patients who had diarrhea-dominant and mixed-type IBS compared to patients who had constipation-dominant IBS (7,11). In our study, in QOL evaluations in general, the IBS-diarrhea, and IBS-mixt were similar according to all eight individual subscale scores; however, public health scores and energy/fatigue/vitality scores were lower in the IBS-constipation group.

Our study has some limitations and strengths. We did not examine other factors like somatic comorbidities, psychiatric comorbidities, and disease severity, which are known to affect QOL in IBS. This might have influenced our results. Although we cared for obtaining similar demographic data, which might change the SF-36 Questionnaire, the female gender rate was higher in the IBS group. In our study, the inclusion of the patients who were diagnosed with IBS by employing the Rome-IV diagnostic criteria, the composition of a healthy control group to compare the QOL; and the fact that the demographic data were similar at a significant level between the two groups are the strengths of our study.

## CONCLUSION

As a result, it was shown that QOL was lower at a significant level in IBS patients compared to the healthy population. For this reason, individual sociodemographic and psychiatric evaluation must be made for patients, and the treatment must be personal. Clinicians must spend efforts to eliminate the factors exacerbating present complaints of individuals. Since the pathogenesis of the disease is multifactorial, the procedure in which more than one branches (family doctors, internal disorders, gastroenterologist, psychologist, psychiatrist, etc.) are included must be preferred. HRQOL measurements will provide that the patient-centered data will be understood better as a part of future therapeutic trials in IBD and potentially facilitate the improved quality of care provided for these patients.

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