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Health-Related Quality of Life among Patients with Inflammatory Bowel Disease in Ethiopia: Evidence from a Tertiary Hospital in Sub-Saharan Africa

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Abstract

Background

Inflammatory bowel disease (IBD) is a chronic, debilitating inflammatory condition affecting the gastrointestinal tract. It is primarily classified into Crohn's disease and ulcerative colitis. Health-related quality of life (HRqoL) is significantly impaired among patients with IBD, according to studies from Western countries. However, there is a lack of data from sub-Saharan Africa, particularly Ethiopia. Therefore, this study aims to bridge this gap by assessing the health-related quality of life and associated factors among patients with inflammatory bowel disease in Ethiopia.

METHODS

Cross-sectional study was conducted from February 2022 to August 2022 on 84 patients with IBD on follow-up at St. Paul Hospital Millennium Medical College. Data was collected from medical records and patient interview using the short IBD questionnaire (SIBDQ). Descriptive statistics were presented as frequencies, medians, and means ± standard deviation (SD). Variables with a P-value < 0.2 in the bivariate analysis were included in the multivariable logistic regression.

RESULTS

Out of the 84 patients included in the final analysis, the majority (69%) were females. The mean age of the participants was 31.06 ± 10.7 years. Crohn's Disease and Ulcerative colitis patients make up 62 (73.8%) and 22 (26.2%) respectively. Health related quality of life was impaired in 68 patients (81%). Active disease (AOR: 9.8; 95% CI: 1.17-82; P = 0.03) and the presence of extra-intestinal manifestations (AOR:8.8; 95% CI:1.05-74; P = 0.04) were significantly associated with impaired HRQoL.

CONCLUSION

the majority of patients with IBD in our Ethiopian study population had impaired health related quality of life. Active disease and the presence of extraintestinal manifestations were the main factors associated with impaired HRQoL. Because health-related quality of life extends beyond bowel symptoms, holistic care is especially important for patients with active disease and extraintestinal manifestations.

Background

Inflammatory bowel disease (IBD) refers to Crohn's disease (CD) and ulcerative colitis (UC), chronic debilitating diseases characterized by varying degrees of intestinal inflammation (1). IBD occurs worldwide at any age, but the highest prevalence is found in North America and Northern Europe, with a

peak incidence in the second to fourth decade of life (2, 3). IBD prevalence in Ethiopia is unknown, with the earliest reported cases dating back to 1989, involving five cases of idiopathic ulcerative colitis (4).

Inflammatory bowel disease (IBD) is associated with impaired health-related quality of life (HRQoL), attributable to its early onset, frequent hospital visits, repeated procedures, and absence of curative therapy (5, 6). Large-scale studies, such as a European survey of 4,670 patients with IBD from 25 countries, have reported that nearly half of respondents experienced a significant impact on their lives. Sixty percent of patients reported feeling anxious about taking sick leave due to IBD. Additionally, 40% had changed their work life, including working from home or switching to part-time works and 22% experienced irritability while at work (7). The few studies conducted in Asian and North African countries have reported consistent findings (8–10).

Patient-related and disease-related characteristics significantly affect HRQoL in IBD, including socio-demographic factors, clinical characteristics, and treatment modalities (8, 11, 12). Young age at diagnosis, poor socioeconomic status, active disease, corticosteroid use, repeated surgeries, and hospitalization history have been associated to impaired HRQoL (8, 13, 14). The presence of extra-intestinal manifestations (EIM), reported in 6–47% of patients, has been identified by some studies as a determinant of impaired HRQoL (15–17).

Optimal patient management should take into account patients' perceptions of the disease process as well as their unmet needs, including factors that compromise quality of life (18). Therefore, the need to address this multidimensional problem has led to increased acceptability of HRQoL assessment in clinical research and patient care (5, 19).

Although several studies have assessed health-related quality of life in patients with IBD in the developed world, data from Sub-Saharan Africa remain limited. This study therefore aims to address this gap by evaluating the impact of IBD on HRQoL and identifying associated factors among Ethiopian patients.

Methods

Study area

The study was conducted at St. Paul's Hospital Millennium Medical College, Gastroenterology referral clinic. It is one of the largest governmental tertiary level teaching hospital located in Addis Ababa, Ethiopia. It serves a catchment area of more than 5 million people. On average, the hospital gives medical service for 1,200 patients per day, in several specialty and subspecialty units.

Study design

A cross-sectional, quantitative study design was used

Study Period

The study was conducted from February 1, 2022 to August 30, 2022

Inclusion and exclusion criteria

Inclusion criteria

All patients aged ≥ 18 years with a diagnosis of inflammatory bowel disease (IBD) who were attending follow-up at the Gastroenterology Referral Clinic of St. Paul's Hospital Millennium Medical College during the study period, were included in the study.

Exclusion Criteria

Exclusion criteria included the presence of comorbidities such as HIV, cirrhosis, congestive heart failure, diabetes mellitus, stroke, epilepsy, cancer, or any psychiatric disorder, patients unable to respond due to dementia or stroke, patients with irritable bowel syndrome and patients with incomplete medical data.

Sample size

All patients with inflammatory bowel disease (IBD) who were on follow-up at the Gastroenterology Clinic during the study period were screened. Out of the 87 patients who were screened, 3 were excluded due to an alternative diagnosis of irritable bowel syndrome, and 84 patients included in the study.

The diagnosis of inflammatory bowel disease (IBD) was established by the treating gastroenterologist as either Crohn's disease or ulcerative colitis, based on clinical, radiologic, colonoscopy, and histologic evidence, or a combination of these diagnostic modalities.

Sampling Technique

A consecutive sampling technique was used whereby eligible patients were enrolled as they presented for routine follow-up appointments.

Study Variables

Independent variables

Socio-demographic factors

Age, Gender, Educational level, employment status

Clinical factors

Disease type, Disease duration, Disease activity, Relapse, Anemia, Extra-intestinal manifestations

Treatment Related factors

Steroid use, hospitalization, IBD related surgery

Dependent Variable

Health related quality of life

Data collection tools and procedures

Sociodemographic data (age, gender, education level, employment status) were collected from patients. Clinical data (disease duration, relapse, extra-intestinal manifestations, current corticosteroid use, IBD-related hospitalization, IBD-related surgeries, and presence of anemia) were collected from patients' medical recordings. Disease activity was assessed using the Short Crohn's Disease Activity Index (SCDAI) for Crohn's disease (CD) and the Simple Clinical Colitis Activity Index (SCCAI) for ulcerative colitis (UC). Health related quality of life was assessed using the Short IBD questionnaire (SIBDQ). The data was collected by a trained nurse who was not involved in the patients' clinical care. The data quality was ensured through training of the data collector, close supervision, and feedback. The data were checked for inconsistencies, completeness, accuracy, clarity, coding errors, and missing values, and appropriate corrections were made by the principal investigator.

Disease Activity Assessment

The Short Crohn's Disease Activity Index (SCDAI) was derived from the standard Crohn's Disease Activity Index (CDAI) and is based on three parameters: number of loose stools, abdominal pain, and general well-being ratings. Scores were calculated using the proposed formula to generate values comparable to the full CDAI. Short CDAI = 44 + [2 × (number of liquid or soft stools per day for 7 days)] + [5 × (sum of seven daily abdominal pain ratings)] + [7 × (sum of seven general well-being ratings)]. A total score < 150 indicates remission, whereas a score ≥ 150 indicates active disease.

The Simple Clinical Colitis Activity Index (SCCAI) for ulcerative colitis consists of six parameters: bowel frequency, urgency of defecation, presence of blood in stool, general well-being, and extra-colonic manifestations. A total score ≤ 2 indicates remission, whereas a score ≥ 3 indicates active disease (22, 23).

Health Related Quality of Life (HRQoL) Assessment

HRQoL was assessed through patient interviews using the Short IBD questionnaire (SIBDQ) (20). The tool has been widely used in the literature and has demonstrated validity and reliability through systematic reviews for assessing HRQoL (21). The SIBDQ consists of 10 items across four domains: bowel, systemic, emotional, and social functioning. Each item is scored on a 7-point scale (1 = poor HRQoL; 7 = optimal HRQoL), yielding a total score ranging from 10 to 70. A total score < 60 indicates impaired HRQoL, whereas a score ≥ 60 reflects optimal HRQoL. Reliability and internal consistency were assessed using Cronbach's alpha (α = 0.77). The consistency of the instrument was further evaluated through forward translation from English to the local language (Amharic) and back-translation into English. A pretest was conducted on 10% of the study population prior to the actual data collection period.

Statistical Analysis

Statistical Package for Social Sciences (SPSS) version 26 was used to enter and analyze the data. Frequency and cross-tabulation were used to summarize the descriptive statistics of the data. Bivariate analysis was performed to assess the association between each independent variable and HRQoL. Variables with a P-value < 0.20 in the bivariate analysis, as well as a variable previously reported to be strongly associated with HRQoL in the literature (history of hospitalization), were included in the multivariable logistic regression model. HRQoL was analyzed as a dichotomous dependent variable (impaired vs. normal). The fitness of the model was assessed using the omnibus test of model coefficients and the Hosmer–Lemeshow goodness-of-fit test; both indicated that the model fits the data. For the multivariable logistic regression, a 95% confidence interval for adjusted odds ratio (AOR) was calculated and variables with P-value < 0.05 were considered statistically significant.

Ethical consideration

Ethical approval

was obtained from the Institutional Review Board (IRB) of SPHMMC and department of internal Medicine. Informed written consent was taken from participants. The collected information was kept confidential. To ensure this, names of patients were omitted and code numbers were used.

Results

A total of 84 patients with IBD were included in this study.

Sociodemographic characteristics

Females constituted the majority of the study population, accounting for 69% of the total sample (female-to-male ratio, 2.2:1). The mean age of participants was 31.06 ± 10.7 years, with an age range of 18–69 years. The majority of participants were urban residents (92.9%).

Sociodemographic characteristics of the participants are shown in Table 1.

Table 1
Socio-demographic characteristics of patients with Inflammatory Bowel Disease, SPHMMC, February-August 2022, Addis Ababa, Ethiopia

Variables		IBD sub type		
		CD (N = 62)	UC (N = 22)	Total (N = 84)
		Frequency N (Percentage %)		
Age in years	≤ 30	39 (62.9%)	9 (40.9%)	48 (57.1%)
	> 30	23 (37.1%)	13 (59.1%)	36 (42.9%)
Gender	Male	22 (35.5%)	4 (18.2%)	26 (31.0%)
	Female	40 (64.5%)	18 (81.8%)	58 (69.0%)
Place of residence	Urban	58 (93.5%)	20 (90.9%)	78 (92.9%)
	Rural	4 (6.5%)	2 (9.1%)	6 (7.1%)
Marital status	Single	33 (53.2%)	7 (31.8%)	40 (47.6%)
	Married	28 (45.2%)	14 (63.6%)	42 (50.0%)
	Separated	1 (1.6%)	1 (4.5%)	2 (2.4%)
Employment status	Unemployed	37 (59.7%)	8 (36.4%)	45 (53.6%)
	Employed	25 (40.3%)	14 (63.6%)	39 (46.4%)
Educational status	No formal education	3 (4.8%)	1 (4.5%)	4 (4.8%)
	Primary	8 (12.9%)	8 (36.4%)	16 (19%)
	Secondary	27 (43.5%)	3 (13.6%)	30 (35.7%)
	Tertiary	24 (38.7%)	10 (45.5%)	34 (40.5%)
Family History	No	57 (91.9%)	22 (100.0%)	79 (94.0%)
	Yes	5 (8.1%)	0	5 (6.0%)

CD=Crohn's Disease; IBD=Inflammatory Bowel disease; UC=Ulcerative colitis

Clinical Characteristics

Among the study participants, 73.8% had Crohn's disease (CD) and 26.2% had ulcerative colitis (UC). Among patients with CD, the terminal ileum was the most commonly involved disease location, affecting more than half of the cases. The inflammatory phenotype was the predominant disease behavior (53.2%), followed by penetrating (25.8%) and stricturing subtypes (21.0%). Among patients with UC, left-sided (distal) disease was most common (54.5%), followed by pancolitis (31.8%).

More than 80% of patients in the study had a disease duration of less than 5 years, with a mean duration of 2.79 ± 1.57 years. Half of the patients with inflammatory bowel disease were hospitalized at least once, with a higher hospitalization rate observed among patients with Crohn's disease (59.4%). Anemia, defined according to World Health Organization criteria, was present in 21.4% of the study participants. The mean hemoglobin level was 12.93 ± 2.11 g/dL (range: 8–17 g/dL). The clinical characteristics of the study participants are summarized in Table 2.

Table 2
Clinical characteristics of patients with inflammatory bowel disease, SPHMMC, February-August 2022, Addis Ababa, Ethiopia

Variable	CD (N = 62)	UC (N = 22)	Total (N = 84)
Duration of IBD in Years	**Frequency and percentage**		
< 2 years	30 (48.4%)	8 (36.4%)	38 (45.2%)
2–5 years	25 (40.3%)	10 (45.5%)	35 (41.7%)
> 5 years	7 (11.3%)	4 (18.2%)	11 (13.1%)
Extra-intestinal manifestation			
Yes	21 (33.9%)	7 (31.8%)	28 (33.3%)
No	41 (66.1%)	15 (68.2%)	56 (66.7%)
IBD related hospitalization			
Yes	37 (59.7%)	8 (36.4%)	45 (53.6%)
No	25 (40.3%)	14 (63.6%)	39 (46.4%)
Anemia			
Yes	14 (22.6%)	4 (18.2%)	18 (21.4%)
No	48 (77.4%)	18 (81.8%)	66 (78.6%)
UC anatomic location			
E1 = Proctitis	-	3 (13.6%)	
E2 = distal (left sided)	-	12 (54.5%)	
E3 = Extensive (pancolitis)	-	7 (31.8%)	
CD anatomic location			
L1 Terminal Ileum	33 (53.22%)	-	
L2 Colon	7 (11.3%)	-	
L3 ileocolon	22 (35.5%)	-	
CD Disease Behavior			
Inflammatory (B1)	33 (53.2%)	-	
Stricturing (B2)	13 (21.0%)	-	
Penetrating/fistulazing (B3)	16 (25.8%)	-	

CD=Crohn's Disease; IBD=Inflammatory Bowel disease; UC=Ulcerative colitis

Extraintestinal manifestations were reported in about 33.3% of the study participants, with comparable rates between patients with Crohn's disease and ulcerative colitis (33.9% and 31.8%, respectively). Arthropathies were the most frequently reported extraintestinal manifestation. The Distribution of Extraintestinal Manifestations by Type in patients with Inflammatory Bowel Disease is shown in Fig. 1.

Treatment related characteristics

At the time of the study, 39.1% of patients were receiving corticosteroid therapy, either in combination with immunomodulatory azathioprine (32.1%) or 5-aminosalicylic acid (2.4%), or as monotherapy (4.8%). None of the participants had ever been treated with biologic therapies. Approximately 38.7% of patients with Crohn's disease (CD) had undergone IBD-related intra-abdominal surgery. Notably, 24.2% of patients with CD had initially received anti-tuberculosis therapy for a presumptive diagnosis of intestinal tuberculosis prior to confirmation of CD.

At the time of the study, 61.9% of participants were in remission, with remission more frequently observed in patients with Crohn's disease than in those with ulcerative colitis (69.4% vs. 40.9%). About 41.7% of patients experienced relapse during the course of their disease, with a higher relapse rate observed among patients with ulcerative colitis compared with those with Crohn's disease (50.0% vs. 38.7%).

Details of treatment-related characteristics of the study participants are presented in Table 3.

VARIABLES		IBD Sub-type		
		CD (N = 62)	**UC (N = 22)**	**Total (N = 84)**
		Frequency N (percentage %)		
Diagnostic Modality	Clinical, Radiology and colonoscopy	7 (11.3%)	7 (31.8%)	14 (16.7%)
	clinical, Radiology, colonoscopy and biopsy	51 (82.3%)	15 (68.2%)	66 (78.6%)
	Post-Operative Biopsy Specimen	4 (6.5%)	0	4 (4.8%)
Current Medical Therapy	Not on medication	13 (21%)	0	13 (15.5%)
	Corticosteroid monotherapy	4 (6.5%)	0	4 (4.8%)
	Immunomodulator	26 (41.9%)	10 (45.5%)	36 (42.9%)
	5-ASA	0	2 (9.1%)	2 (2.4%)
	Corticosteroid + Immunomodulator	19 (30.6%)	8 (36.4%)	27 (32.1%)
	Corticosteroid + 5-ASA	0	2 (9.1%)	2 (2.4%)
Previous Anti Tuberculous Medication use	No	47 (75.8%)	21 (95.5%)	68 (81%)
	Yes	15 (24.2%)	1 (4.5%)	16 (19%)
IBD related Surgery	No	38 (61.3%)	22 (100%)	60 (71.4%)
	Yes	24 (38.7%)	0	24 (28.6%)
IBD disease activity	Remission	43 (69.4%)	9 (40.9%)	52 (61.9%)
	Active disease	19 (30.6%)	13 (59.1%)	32 (38.1%)
Crohn's Disease Activity	Remission	43 (69.4%)	-	
	Mild disease Activity	16 (25.8%)	-	

5-ASA=Amino-salisaylate; CD= Crohn's Disease; IBD=Inflammatory bowel disease; UC=Ulcerative colitis

	Moderate Disease Activity	3 (4.8%)	-	
	Severe Disease Activity	0	-	
Ulcerative Colitis disease Activity	Remission	-	9 (40.9%)	
	Mild disease Activity	-	3 (13.6%)	
	Moderate Disease Activity	-	10 (45.5%)	
	Severe Disease Activity	-	0	
Relapse history	Yes	24 (38.7%)	11 (50%)	35 (41.7%)
	No	38 (61.3%)	11 (50%)	49 (58.3%)

5-ASA=Amino-salisaylate; CD= Crohn's Disease; IBD=Inflammatory bowel disease; UC=Ulcerative colitis

Table 3

treatment related characteristics of patients with Inflammatory Bowel Disease, SPHMMC, February-August 2022, Addis Ababa, Ethiopia

Health Related quality of Life

The mean SIBDQ score was 49.39 ± 13.26 (range: 14–70), with mean scores of 48.8 ± 13.62 among patients with Crohn's disease (CD) and 51.0 ± 12.32 among those with ulcerative colitis (UC). Overall, 81% of participants experienced impaired health-related quality of life (HRQoL). **(**Fig. 2**)**. Notably, impaired HRQoL was observed in 96.9% of patients with active disease. According to IBD subtype, impaired HRQoL was observed in 80% of patients with Crohn's disease (CD) and 81% of patients with ulcerative colitis (UC).

Factors Associated with Impaired Health-Related Quality of Life

A total of 81% of study participants experienced impaired health-related quality of life (HRQoL). In the bivariate analysis, factors associated with HRQoL included disease activity, extraintestinal manifestations, anemia, relapse, and current corticosteroid use **(**Table 4**).**

In the multivariable logistic regression analysis, disease activity, extraintestinal manifestations, anaemia, and history of hospitalization were included. Variables that demonstrated multicollinearity with active disease, specifically relapse and current corticosteroid use, were excluded from the multivariable model. History of hospitalization was included in the model based on evidence from prior literatures indicating its significant association with HRQoL.

Accordingly, our study demonstrated that disease activity (active disease) and the presence of extra-intestinal manifestations were significantly associated with impaired health-related quality of life (HRQoL). Patients with active disease were nearly ten times more likely to have impaired HRQoL compared with those in remission (adjusted odds ratio [AOR] = 9.8; 95% confidence interval [CI]: 1.17–82; P = 0.03). Similarly, patients with extra-intestinal manifestations had a significantly higher likelihood of impaired HRQoL than those without such manifestations (AOR = 8.8; 95% CI: 1.05–74; P = 0.04). No other independent variables showed a statistically significant association with HRQoL. (Table 5)

Table 4
Bivariate analysis of factors associated with health-related quality of life among patients with inflammatory bowel disease

Variable		HRQoL		COR (95% CI)	P-value
		Impaired	Normal		
Age	=< 30 Years	38(79.2%)	10 (20.8%)	0.76 (0.24,2.32)	0.63
	> 30 Years	30(83.3%)	6 (16.7%)	Ref	
Gender	Female	47 (81.0%)	11 (19.0%)	1.01 (0.31,3.29)	0.97
	Male	21 (80.8%)	5 (19.2%)	Ref	
Education	Primary and below	15 (75%)	5 (25%)	0.62 (0.18,2)	0.44
	Secondary and above	53(82.8%)	11 (17.2%)	Ref	
Employment	Unemployed	38 (84.4%)	7 (15.6%)	1.62 (0.54, 4.8)	0.38
	Employed	30 (76.9%)	9 (23.1%)	Ref	
IBD Sub-type	CD	50 (80.6%)	12 (19.4%)	0.92 (0.26, 3.2)	0.9
	UC	18 (81.8%)	4 (18.2%)	Ref	
IBD Disease Activity	Active disease	31 (96.9%)	1 (3.1%)	12.56 (1.57,100)	**0.01**
	Remission	37 (71.2%)	15 (28.8%)	Ref	
Extra intestinal manifestation	Yes	27 (96.4%)	1 (3.6%)	9.87 (1.23,79)	**0.03**
	No	41 (73.2%)	15 (26.8%)	Ref	
Duration of IBD in Years	< 2	33 (86.8%)	5 (13.2%)	2.47 (0.48,12)	0.27
	2–5	27 (77.1%)	8 (22.9%)	1.26 (0.27,5)	0.76
	> 5	8 (72.7%)	3	Ref	

			(27.3%)		
Hospitalization history	Yes	37 (82.2%)	8 (17.8%)	1.1 (0.4, 3.5)	0.75
	No	31 (79.5%)	8 (20.5%)	Ref	
Relapse in the course of the disease	Yes	31 (88.6%)	4 (11.4%)	2.5 (0.73, 8.5)	**0.14**
	No	37 (75.5%)	12 (24.5%)	Ref	
Anemia	Yes	17 (94.4%)	1 (5.6%)	5 (0.61,40)	**0.13**
	No	51 (77.3%)	15 (22.7%)	Ref	
Current corticosteroid Use	Yes	33 (94.3%)	2 (5.7%)	6 (1.39,31)	**0.01**
	No	35 (71.4%)	14 (28.6%)	Ref	
IBD related Surgery	No	49 (81.7%)	11 (18.3%)	1.17 (0.35, 3.82)	0.79
	Yes	19 (79.2%)	5 (20.8%)	Ref	

Table 5

Multivariable logistic regression analysis between predictor variables and health related quality of life among patients with inflammatory bowel disease

Variable		HRQOL		AOR (95% CI)	P value
		Impaired	Normal		
IBD Disease Activity	Active disease	31 (96.9%)	1 (3.1%)	**9.8 (1.17, 82)**	**0.03**
	Remission	37 (71.2%)	15 (28.8%)		
Extra intestinal manifestation	Yes	27 (96.4%)	1 (3.6%)	**8.8 (1.05, 74)**	**0.04**
	No	41 (73.2%)	15 (26.8%)		
Anemia	Yes	17 (94.4%)	1 (5.6%)	3.9 (0.44, 36)	0.21
	No	51 (77.3%)	15 (22.7%)		
Hospitalization	Yes	37 (82.2%)	8 (17.8%)	0.89 (0.25, 3)	0.85
	No	31(79.5%)	8 (20.5%)		

AOR; Adjusted odds ratio

Discussion

Inflammatory bowel disease (IBD) is a chronic inflammatory condition that requires long-term management. Evidence from developed countries indicates that IBD significantly impairs patients' health-related quality of life (HRQoL). However, in most sub-Saharan African countries, the prevalence of IBD remains unstudied, and data on its impact on HRQoL are scarce. Assessment of HRQoL is now considered an essential component of treatment outcomes in patients with chronic diseases, as it provides information not only physical symptoms but also psychological and social dimensions of health. In this context, our study aimed to address this knowledge gap by assessing HRQoL and its associated factors among patients with IBD on follow-up at a tertiary hospital in Ethiopia.

According to the results of our study, 81% of patients with inflammatory bowel disease had impaired health-related quality of life (HRQoL), with a mean Short Inflammatory Bowel Disease Questionnaire (SIBDQ) score of 49 ± 13. This finding is consistent with the majority of studies conducted in both developing (8, 9) and developed countries (5, 6, 10, 16). Furthermore, in a systematic review of 30 studies, Knowles et al. reported impaired quality of life among patients with IBD in 19 of the included studies (6). Similarly, a study from Germany by Keller et al., involving 578 patients with IBD, showed

impaired HRQoL in 87.34% of patients with ulcerative colitis and 91.08% of those with Crohn's disease (24). The high degree of HRQoL impairment observed across these studies highlights the need for a comprehensive understanding of the factors associated with poor HRQoL, which may help to plan targeted interventions. Accordingly, our study assessed the association between predictor variables and impaired HRQoL among patients with IBD.

Our study found no significant difference in HRQoL between patients with Crohn's disease (CD) and ulcerative colitis (UC), indicating that impairment in HRQoL in our study population was independent of IBD subtype. Similar findings have been reported in studies from Spain, Singapore, and Greece (16, 25, 26). In contrast, a study conducted in Italy by Marinelli et al. reported lower mean HRQoL scores among patients with CD compared with those with UC (17).

In our study, disease activity and the presence of extraintestinal manifestations were identified as significant independent predictors of impaired HRQoL. Patients with active disease had a markedly higher likelihood of impaired HRQoL (adjusted odds ratio [AOR] = 9.8; 95% confidence interval [CI]: 1.17–82; P = 0.03), as did those with extraintestinal manifestations (AOR = 8.8; 95% CI: 1.05–74; P = 0.04). The wide confidence intervals observed may be attributed to the relatively small sample size.

Disease activity was the most significant factor contributing to impaired HRQoL in our study population. Patients with active disease were nearly ten times more likely to have impaired HRQoL compared with those in remission. This finding is consistent with the majority of published studies and systematic reviews reporting a strong association between active disease and impaired HRQoL. Notably, in a systematic review of 23 studies, 10 studies demonstrated a statistically significant association between disease activity and impaired HRQoL(13).

The worsening of gastrointestinal and systemic symptoms during periods of active disease has multiple effects on patients. On the one hand, active disease often necessitates frequent use of medications such as corticosteroids, which are associated with significant side effects and may also indicate the need for hospitalization. On the other hand, the burden of physical symptoms contributes to fatigue, anxiety, and depression, thereby negatively affecting patients' psychological well-being. Moreover, reduced work capacity and loss of productivity during periods of active disease or flares further contribute to impairment of HRQoL(13, 16, 26). According to a study by Mikocka-Walus et al., anxiety and depressive symptoms may also contribute to disease relapse over the long term (27).

The occurrence of extra-intestinal manifestations (EIMs), which were present in 33% of our study participants, is consistent with previous reports in the literature (15). The presence of EIMs was significantly associated with impaired HRQoL. Patients with EIMs had a significantly higher likelihood of impaired HRQoL than those without such manifestations. This finding is in line with findings from studies conducted in Italy and Singapore by Marinelli et al. and Ho et al., respectively (16, 17). Extra-intestinal manifestations may develop before or concurrently with intestinal symptoms. While some EIM subtypes resolve with treatment indicated for intestinal symptoms, others require additional, specific

therapies. Therefore, an effective screening and management may help to optimize the quality of life patients (15).

Previous studies have reported conflicting evidence regarding the association between patient age and health-related quality of life (HRQoL). A study from Italy by Saibeni et al. found that younger patients experienced greater impairment in HRQoL, attributed to difficulties in emotional adaptation to the disease (11). In contrast, a study from Spain by Iglesias et al. reported that older age was associated with poorer HRQoL, likely due to the higher burden of comorbidities compared with younger patients (28). In the present study, we also examined the relationship between age and HRQoL; however, no significant differences in HRQoL were observed across age groups. This finding is consistent with the results reported by Kalafateli et al. (26).

Several studies have reported an association between female gender and impaired HRQoL. Proposed explanations include higher levels of disease-related worry among women, concerns about disease complications, potential effects on fertility, and negative impacts on body image (25, 28). However, in the present study, no significant association was observed between gender and HRQoL. This finding is consistent with the results reported by Kalafateli et al. (26).

Conflict

ing findings have been reported regarding the association between HRQoL and educational level. A study from Spain reported that higher educational level was associated with better HRQoL(29), whereas a study from Greece found that patients with higher educational status had lower HRQoL scores (26). In contrast to these reports, the present study did not identify a significant association between educational level and HRQoL.

Similarly, employment status was not significantly correlated with HRQoL in our study, a finding consistent with the study from Greece (26), but contrary to the Danish study by Christiansen et al., which demonstrated poorer HRQoL among unemployed patients (30). The absence of an association between sociodemographic characteristics and HRQoL in our study population may be partly explained by the strong family support commonly received by patients in many developing countries.

Large-scale systematic reviews and meta-analyses have demonstrated that biologic therapies used to control disease activity significantly improve HRQoL (13, 31, 32). However, access to these therapies remains limited in many developing countries. In the present study, none of the participants had received biologic treatment; therefore, the impact of biologic therapy on HRQoL could not be evaluated.

Anemia was associated with impaired HRQoL in the bivariate analysis. This finding is consistent with earlier studies that reported a significant association between anemia and impaired HRQoL (9, 17). However, in the multivariable analysis, anemia did not remain a statistically significant predictor of impaired HRQoL, suggesting that anemia may reflect underlying disease activity rather than independently influencing HRQoL. The relatively young age of the study population, in whom anemia-

related symptoms may be better tolerated and the absence of anemia in the majority of participants (78.6%) may have reduced the overall impact of anemia on HRQoL.

Previous studies have reported that IBD-related hospitalization is a predictor of impaired HRQoL (8, 9), likely because it reflects disease severity or complications and disrupts daily life, work, and social functioning. However, in our study, history of hospitalization was not significantly associated with HRQoL. This may be partly explained by the fact that the impact of past hospitalizations can diminish over time as patients adapt, and strong family support during hospitalization may also mitigate its effect on HRQoL.

Our study is not without limitations. As it was conducted in a single center, the findings may not be fully generalizable to the broader IBD population. In addition, the cross-sectional study design precludes establishing causality between the studied variables.

Conclusion

In conclusion, the majority of patients with IBD in our Ethiopian study population had impaired health related quality of life (HRQoL). Active disease and the presence of extraintestinal manifestations were the main factors associated with impaired HRQoL. Because health-related quality of life includes social and psychological well-being beyond bowel symptoms, patient care should take a holistic approach, with particular attention to those with active disease and extraintestinal manifestations.

Abbreviations

ASA: Aminosalicylic acid

AZA: Azathioprine

AOR: Adjusted odds ratio

CD: Crohn’s Disease

CDAI: Crohn’s Disease Activity Index

COR: Crude Odds Ratio

EIM: Extra Intestinal Manifestations

GI: Gastrointestinal

HRQoL: Health Related Quality of life

IBD: Inflammatory Bowel Disease

6-MP: 6-Mercapto purine

MTX: Methotrexate

OR: Odds Ratio

SCCAI: Simple Clinical Colitis Activity Index

SCDAI: Short Crohn Disease Activity Index

SIBDQ: Short Inflammatory Bowel Disease Questionnaire

SPHMMC: St. Paul Hospital Millennium Medical College

SPSS: Statistical Package for Social Science

TNF: Tumor Necrosis Factor

QoL: Quality of Life

UC: Ulcerative Colitis

Declarations

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Ethical consideration

Ethical approval was obtained from the internal review board of research directorate of Saint Paul Hospital millennium medical college. Informed written consent was taken from study participants. The collected information was kept confidential omitting the names of patients. The study was conducted in accordance with the Declaration of Helsinki.

Competing Interests

The authors declare no competing interests

Consent to publish

All authors consented for the publication.

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Data availability

Data are available from the corresponding author based on a reasonable request

Authors' contribution

Abraham Sisay Abie developed the research proposal, coordinated the data collection and conducted data analysis, and prepared the final report and manuscript.

Bezatu Mengiste and Hailemichael Desalegn served as advisors, providing supervision during proposal development, commenting and editing the final report, and approving the final manuscript.

Henok Solomon contributed to data entry and data analysis and participated in reviewing and editing the manuscript.

Eden Belay Tilahun contributed to proposal development, data entry and participated in the review and editing of the manuscript.

Nahom Desalegn Mekonnen participated in data entry and contributed to reviewing and editing the manuscript.

Tamirat Petros Elias participated in reviewing and editing the manuscript.

Yemisrach Chanie contributed to the review and editing of the research proposal and the final report.

Tariku Terefe Ayele participated in reviewing and editing the manuscript.

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Figures

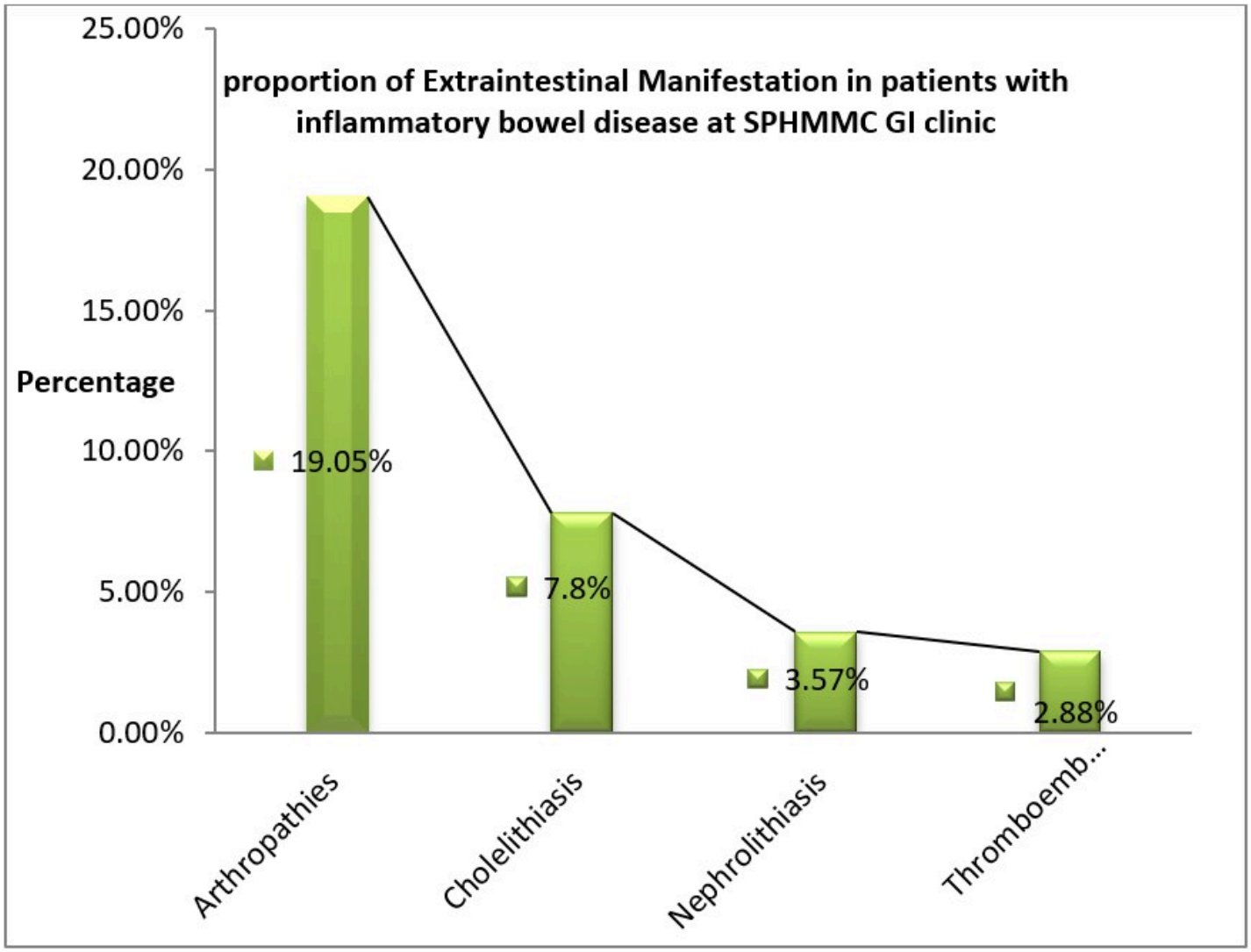


Figure 1

Proportion of extra-intestinal manifestations in patients with inflammatory bowel disease, SPHMMC, February-August 2022, Addis Ababa, Ethiopia

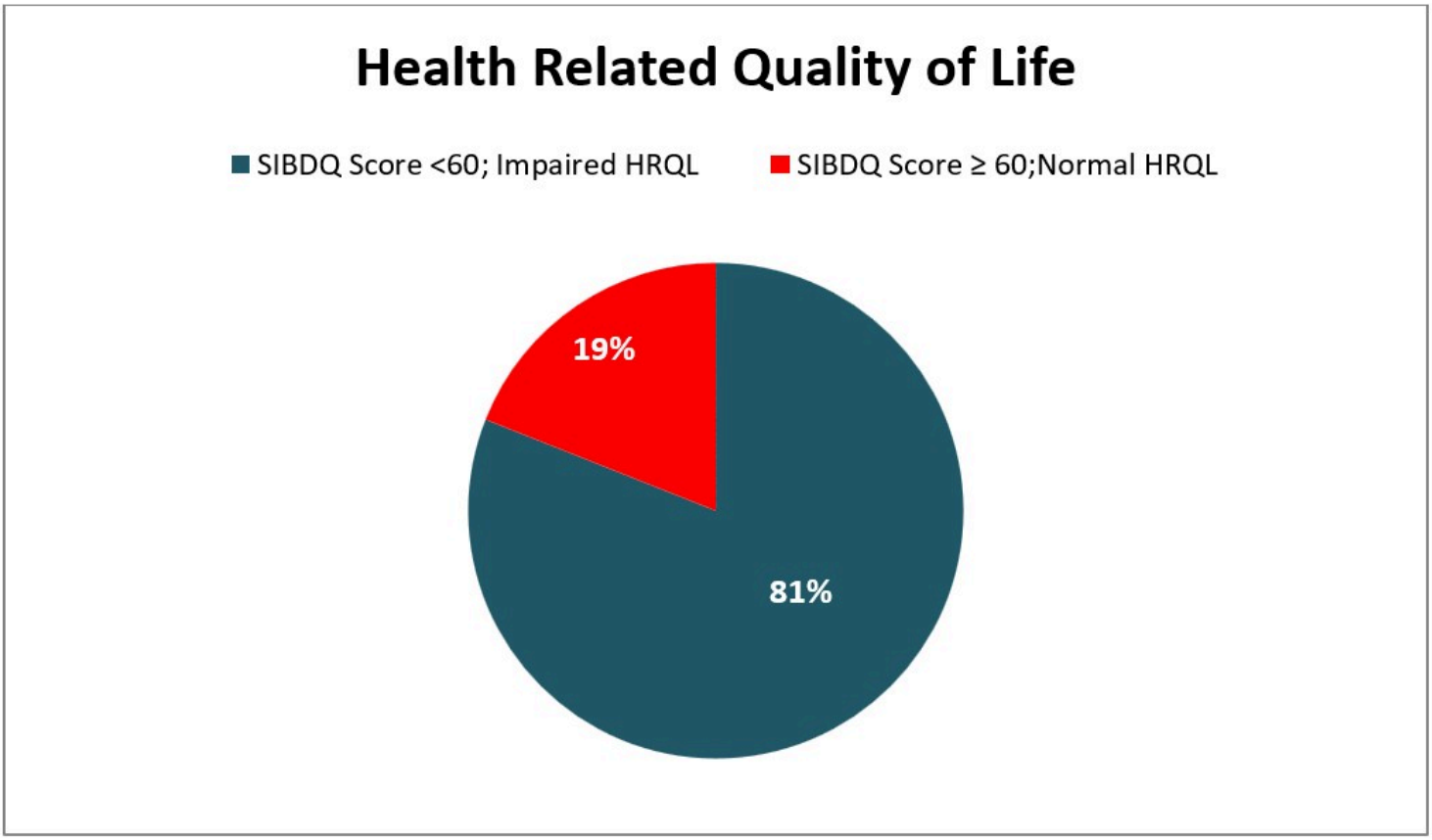


Figure 2

Assessment of Health-Related Quality of Life among patients with Inflammatory Bowel Disease Using the short IBD questionnaire (SIBDQ)