Prevalence of Fatigue among Crohn's Disease and Ulcerative Colitis Patients: Analyses from SPARC IBD

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BACKGROUND

- Crohn's disease (CD) and Ulcerative Colitis (UC) are chronic inflammatory diseases of the gastrointestinal tract of unknown etiology.[1]
- Fatigue has been reported to be a problem among patients with Inflammatory Bowel Disease (IBD).[2]
- According to a recent systematic literature review, 86% of IBD patients with active disease reported some degree of fatigue.[3]
- It has also been reported that 46% of patients in clinical remission complain of fatigue.[4]
- In addition, recent studies have shown that fatigue significantly impairs quality of life (QoL) of affected patients with UC and CD.[5-6]

OBJECTIVE

- The aim of this study was to assess the prevalence of fatigue among CD and UC patients and to identify clinical and disease activity measures associated with fatigue.

Table 3a. Factors Associated with Fatigue among Patients with Crohn's Disease in SPARC IBD

		Odds Ratio (95% CI)	P-value	Overall P-value
Final Logistic Regression Model: n=858				
Stool consistency, vs. formed	Soft or semi-formed	1.29 (0.88, 1.88)	0.1917	0.0706
	Mostly or all liquid	1.80 (1.09, 2.96)	0.0215	
Abdominal pain, vs. no pain	Mild	2.61 (1.80, 3.79)	<0.0001	<0.0001
	Moderate or severe	2.88 (1.75, 4.76)	<0.0001	
General well-being, vs. generally well	Slightly under par	2.47 (1.69, 3.62)	<0.0001	<0.0001
	Poor to terrible	5.17 (2.71, 9.88)	<0.0001	
Bowel Incontinence, vs. no	Yes	2.01 (1.17, 3.46)	0.0112	0.0112
Night-Time Bowel Movement, vs. no	Yes	2.12 (1.41, 3.17)	0.0003	0.0003

Abbreviations: CI= Confidence Interval; n = number of patients with non-missing observations; SD = standard deviation; min = minimum; max = maximum

- Factors associated with fatigue in CD patients included liquid stools, abdominal pain, reduced general well-being, bowel incontinence, and night-time bowel movement.

Table 3b. Factors Associated with Fatigue among Patients with Ulcerative Colitis in SPARC IBD

		Odds Ratio (95% CI)	P-value	Overall P-value
Final Logistic Regression Model: n=330				
Abdominal pain, vs. no pain	Mild	2.12 (1.11, 4.08)	0.0235	0.0246
	Moderate or severe	3.21 (1.08, 9.53)	0.0354	
General well-being, vs. generally well	Slightly under par	2.99 (1.57, 5.70)	0.0008	0.0010
	Poor to terrible	4.54 (1.42, 14.52)	0.0108	
PGA, vs. quiescent	Mild	1.08 (0.54, 2.13)	0.8349	0.0004
	Moderate or severe	11.19 (3.32, 37.75)	<0.0001	
Night-Time Bowel Movement, vs. no	Yes	2.41 (1.13, 5.13)	0.0233	0.0233

Abbreviations: CI= Confidence Interval; n = number of patients with non-missing observations; PGA= Physician Global Assessment; SD = standard deviation; min = minimum; max = maximum

- Factors associated with fatigue in UC patients included: abdominal pain, reduced general well-being, moderate/severe PGA, and night-time bowel movement.

CONCLUSIONS

- Fatigue is a common symptom among CD and UC patients.
- Fatigue is associated with higher levels of disease activity and reduced well-being among CD and UC patients.

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METHODS

- Data from the Study of a Prospective Adult Research Cohort with Inflammatory Bowel Disease (SPARC IBD) were analyzed.
- All analyses were conducted for CD and UC patients separately.
- Patients indicated if they experienced fatigue within the last week and were categorized as either having fatigue or not having fatigue.
- Descriptive and contingency table analyses were conducted to determine the overall prevalence of fatigue.
- Demographics, clinical characteristics, disease activity, symptoms, and patient-reported outcomes were compared independently between patients with fatigue and patients without fatigue using the appropriate parametric tests and non-parametric tests.
- Logistic regression models were used to evaluate the association between fatigue with stool frequency relative to normal, bowel movement count, stool consistency, abdominal pain, rectal bleeding, urgency, general well-being, night-time bowel movement, absenteeism, Physician Global Assessment, UCDAI (UC patients only), sCDAI (CD patients only), and medication use while adjusting for age and gender in each model. Separate models were constructed for the CD and UC patient cohorts.
- Backwards variable selection using Akaike's Information Criteria was used to select key variables for the final multivariate regression model.

Table 1. Demographics and Medication Use of Crohn's Disease and Ulcerative Colitis Patients with and without Fatigue

	Crohn's Disease			Ulcerative Colitis		
	Fatigue N=431	No Fatigue N=472	p-value	Fatigue N=184	No Fatigue N=265	p-value
Age at enrollment (years), mean (SD)	41.6 (14.27)	38.9 (13.62)	<0.01	42.1 (14.56)	42.6 (14.61)	0.70
Gender, n (%)			<0.01			0.10
Female	276 (64.0%)	228 (48.3%)		95 (52.5%)	117 (44.7%)	
Male	155 (36.0%)	244 (51.7%)		86 (47.5%)	145 (55.3%)	
Disease duration at enrollment (years), mean (SD)	15.4 (11.13)	13.8 (9.64)	0.03	11.6 (10.27)	11.6 (9.94)	0.99
Number of days of work/school missed, mean (SD) in the past 12 months	6.1 (26.69)	0.4 (2.11)	<0.01	6.1 (33.21)	0.2 (1.32)	0.05
Medication, n(%)						
5-ASAs	28 (11.0%)	43 (13.7%)	0.35	56 (46.7%)	96 (48.2%)	0.78
Antibiotics	14 (5.5%)	10 (3.2%)	0.17	5 (4.2%)	2 (1.0%)	0.11
Immunomodulators	72 (28.3%)	112 (35.6%)	0.07	32 (26.7%)	63 (31.7%)	0.35
Steroids	22 (8.7%)	25 (7.9%)	0.75	32 (26.7%)	21 (10.6%)	<0.01
Biologics	183 (72.0%)	234 (74.3%)	0.55	51 (42.5%)	100 (50.3%)	0.18
TNFi	119 (46.9%)	178 (56.5%)	0.02	39 (32.5%)	69 (34.7%)	0.69
Non-TNFi	64 (25.2%)	56 (17.8%)	0.03	12 (10.0%)	31 (15.6%)	0.16

SD=standard deviation; TNFi=tumor necrosis factor inhibitor

- CD patients with fatigue were more likely to be female, older, have a longer disease duration, miss more work/school and have a higher mean sCDAI score compared to CD patients without fatigue.

Table 2. Clinical Outcome Assessments of Crohn's Disease and Ulcerative Colitis Patients with and without Fatigue

	Crohn's Disease			Ulcerative Colitis		
	Fatigue N=431	No Fatigue N=472	p-value	Fatigue N=184	No Fatigue N=265	p-value
sCDAI total score, mean (SD)	167.7 (97.57)	83.8 (55.26)	<0.01	-	-	
UCDAI 6-point score, mean (SD)	-	-		2.1 (1.86)	0.7 (1.21)	<0.01
UCDAI 9-point score, mean (SD)	-	-		3.2 (2.64)	0.9 (1.38)	<0.01
Average number of daily bowel movements, mean (SD)	5.0 (4.28)	3.0 (2.17)	<0.01	5.2 (4.04)	2.9 (2.01)	<0.01
Daily stool frequency, n (%)			<0.01			<0.01
Normal	203 (47.9%)	341 (73.2%)		74 (41.8%)	181 (69.9%)	
1-2 stools per day more than normal	94 (22.2%)	69 (14.8%)		35 (19.8%)	41 (15.8%)	
3-4 stools per day more than normal	58 (13.7%)	32 (6.9%)		25 (14.1%)	26 (10.0%)	
5 or more stools per day more than normal	69 (16.3%)	24 (5.2%)		43 (24.3%)	11 (4.2%)	
Stool description, n (%)			<0.01			<0.01
Formed	86 (20.7%)	213 (46.5%)		44 (24.9%)	145 (57.5%)	
Soft or semi-formed	188 (45.3%)	190 (41.5%)		82 (46.3%)	94 (37.3%)	
Mostly or all liquid	141 (34.0%)	55 (12.0%)		51 (28.8%)	13 (5.2%)	
Blood in stool, n (%)			<0.01			<0.01
No blood seen	322 (74.9%)	413 (87.5%)		91 (50.8%)	212 (80.9%)	
Blood less than 50% of the time	79 (18.4%)	45 (9.5%)		46 (25.7%)	41 (15.6%)	
Blood passed 50% or more or blood passed alone	29 (6.7%)	14 (3.0%)		42 (23.5%)	9 (3.4%)	
Abdominal pain, n(%)			<0.01			<0.01
None	121 (28.1%)	327 (69.6%)		65 (36.1%)	197 (75.2%)	
Mild	163 (37.8%)	104 (22.1%)		71 (39.4%)	56 (21.4%)	
Moderate or Severe	147 (34.1%)	39 (8.3%)		44 (24.4%)	9 (3.4%)	
Fecal urgency, n (%)			<0.01			<0.01
None	112 (26.9%)	245 (53.7%)		48 (27.0%)	151 (58.8%)	
Mild	137 (32.9%)	139 (30.5%)		49 (27.5%)	68 (26.5%)	
Moderate to severe	167 (40.1%)	72 (15.8%)		81 (45.5%)	38 (14.8%)	
General well-being, n (%)			<0.01			<0.01
Generally well	160 (37.1%)	374 (79.4%)		69 (38.3%)	208 (80.0%)	
Slightly under par	159 (36.9%)	82 (17.4%)		76 (42.2%)	45 (17.3%)	
Poor to terrible	112 (26.0%)	15 (3.2%)		35 (19.4%)	7 (2.7%)	
Physician Global Assessment, n (%)			<0.01			<0.01
Quiescent	155 (45.1%)	302 (77.2%)		50 (38.2%)	162 (75.7%)	
Mild	99 (28.8%)	63 (16.1%)		31 (23.7%)	46 (21.5%)	
Moderate or severe	90 (26.2%)	26 (6.6%)		50 (38.2%)	6 (2.8%)	
Bowel Incontinence, n (%)	97 (23.4%)	26 (5.7%)	<0.01	34 (19.1%)	20 (7.9%)	<0.01
Night-time bowel movement, n (%)	176 (42.4%)	64 (13.9%)	<0.01	82 (46.1%)	28 (11.0%)	<0.01
Leakage of Stool during sleep, n (%)	58 (14.0%)	20 (4.3%)	<0.01	13 (7.3%)	7 (2.7%)	0.03

SD=standard deviation; sCDAI= Short Crohn's Disease Activity Index; UCDAI= Ulcerative Colitis Disease Activity Index

- UC patients with fatigue were more likely to have a higher UCDAI and miss more work/school compared to UC patients without fatigue.

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Disclosures

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