



(RESEARCH ARTICLE)



## Impact of extra-intestinal manifestations on quality of life and chronic fatigue in patients with inflammatory bowel disease: A Moroccan cross-sectional study

Mona CHEKER \*, Samia BENTABET, Nada LAHMIDANI, Mounia EL YOUSFI, Sidi Adil IBRAHIMI and Mohammed EL ABKARI

*Department of Hepato-Gastroenterology, Hassan II University Hospital, Faculty of Medicine and Pharmacy of Fez, Sidi Mohamed Ben Abdellah University, Fez, Morocco.*

World Journal of Advanced Research and Reviews, 2026, 30(03), 450-456

Publication history: Received on 14 April 2026; revised on 01 June 2026; accepted on 03 June 2026

Article DOI: <https://doi.org/10.30574/wjarr.2026.30.3.1460>

### Abstract

**Background:** Extra-intestinal manifestations (EIMs) and chronic fatigue represent major contributors to disease burden in inflammatory bowel disease (IBD), significantly impairing patients' quality of life and daily functioning.

**Objective:** To evaluate the prevalence and profile of EIMs and to assess their impact on functional status and chronic fatigue in Moroccan patients with IBD.

**Methods:** A descriptive cross-sectional study was conducted in the Department of Hepato-Gastroenterology at Hassan II University Hospital in Fez, Morocco. Patients with confirmed IBD presenting at least one extra-intestinal manifestation were included. Data were collected using a structured bilingual questionnaire assessing demographic characteristics, disease profile, EIMs, fatigue, and functional impact. Statistical analysis was performed using the Chi-square test.

**Results:** A total of 120 patients were included (median age: 37 years), with female predominance (61%). Crohn's disease represented 64% of cases. Articular manifestations were the most frequent EIMs (86%), followed by hepatobiliary (7%), ocular (5%), and dermatological involvement (4%). Functional limitation was reported in 75% of patients, while sleep disturbances affected 44%. Chronic fatigue was present in 90% of patients and had a socio-professional impact in 40%. No significant association was found between fatigue or functional limitation and sex or type of IBD.

**Conclusion:** EIMs and chronic fatigue are major determinants of impaired quality of life in patients with IBD. Their systematic assessment and multidisciplinary management should be integrated into routine clinical practice.

**Keywords:** Inflammatory bowel disease; Extra-intestinal manifestations; Fatigue; Quality of life; Crohn's disease; Ulcerative colitis

### 1. Introduction

Inflammatory bowel diseases (IBD), including Crohn's disease and ulcerative colitis, are chronic relapsing inflammatory disorders characterized by intestinal inflammation and systemic involvement. Increasing evidence supports the concept of IBD as a multisystem disease resulting from complex interactions between genetic susceptibility, immune dysregulation, environmental factors, and intestinal microbiota alterations [1].

\* Corresponding author: Mona CHEKER

Extra-intestinal manifestations (EIMs) are common in IBD and may involve musculoskeletal, dermatological, ocular, hepatobiliary, and vascular systems [2,3]. These manifestations contribute substantially to morbidity and may occur independently of intestinal disease activity.

Fatigue is one of the most frequent and disabling symptoms reported by patients with IBD. It may persist even during clinical remission and significantly affects quality of life, professional activity, sleep quality, and psychological well-being [4,5].

Although EIMs and fatigue have been extensively investigated in Western populations, data from North African and Moroccan cohorts remain limited.

The aim of this study was therefore to evaluate the frequency and profile of extra-intestinal manifestations and to assess their impact on fatigue and functional status in Moroccan patients with inflammatory bowel disease.

---

## **2. Materials and Methods**

### **2.1. Study design**

This was a descriptive cross-sectional study conducted in the Department of Hepato-Gastroenterology at Hassan II University Hospital in Fez, Morocco.

### **2.2. Study population**

Patients with confirmed inflammatory bowel disease (Crohn's disease or ulcerative colitis) presenting at least one extra-intestinal manifestation were consecutively included.

#### *2.2.1. Inclusion criteria*

- Age  $\geq$  18 years
- Confirmed diagnosis of IBD
- Presence of at least one extra-intestinal manifestation
- Informed consent obtained

#### *2.2.2. Exclusion criteria*

- Incomplete questionnaires
- Refusal to participate

### **2.3. Data collection**

Data were collected using a structured bilingual questionnaire (French/Darija). The questionnaire included:

- Demographic characteristics
- Type of IBD
- Ongoing treatments
- Type of extra-intestinal manifestations
- Functional impact on daily activities
- Sleep disturbances
- Presence and characteristics of fatigue
- Recovery after rest
- Socio-professional impact

### **2.4. Statistical analysis**

Categorical variables were expressed as percentages. Associations between fatigue, functional limitation, sex, and type of IBD were assessed using the Chi-square test. A p-value  $<$  0.05 was considered statistically significant.

### 3. Results

#### 3.1. Baseline characteristics

A total of 120 patients were included in the study. The median age was 37 years, with female predominance (61%). Crohn's disease accounted for 64% of cases, while ulcerative colitis represented 36%. Biologic therapy had been administered in 83% of patients.

**Table 1** Baseline characteristics of the study population

Variable	Total population (n=120)
Median age (years)	37
Female sex	61 %
Crohn's disease	64 %
Ulcerative colitis	36 %
Biologic therapy	83 %
Functional limitation	75 %
Sleep disturbances	44 %
Chronic fatigue	90 %

#### 3.2. Extra-intestinal manifestations

Articular manifestations were the predominant extra-intestinal manifestations, affecting 86% of patients. Ocular manifestations were observed in 5% of cases and mainly consisted of uveitis. Dermatological manifestations were reported in 4% of patients, predominantly erythema nodosum. Hepatobiliary involvement was identified in 7% of patients and consisted exclusively of primary sclerosing cholangitis.

**Table 2** Distribution of extra-intestinal manifestations in IBD patients

Type of EIM	Frequency (%)	Main presentation
Articular manifestations	86 %	Arthralgia / arthritis
Ocular manifestations	5 %	Uveitis
Dermatological manifestations	4 %	Erythema nodosum
Hepatobiliary manifestations	7 %	Primary sclerosing cholangitis

#### 3.3. Functional impact and fatigue

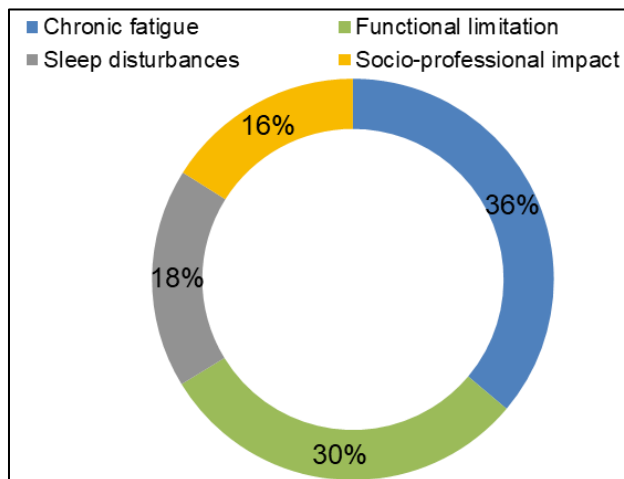
Functional limitation was reported in 75% of patients, while sleep disturbances were present in 44% of cases.

Chronic fatigue was reported by 90% of patients and was frequent in approximately one-third of cases. Fatigue had a socio-professional impact in 40% of patients. Recovery after rest was complete in 76% and partial in 24%.

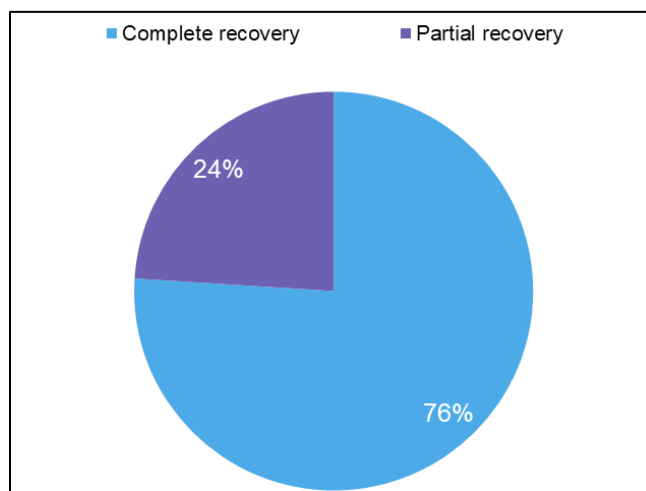
**Table 3** Functional impact and fatigue-related outcomes

Variable	Percentage
Functional limitation	75 %
Sleep disturbances	44 %
Presence of chronic fatigue	90 %
Frequent fatigue episodes	33 %

Socio-professional impact	40 %
Complete recovery after rest	76 %
Partial recovery after rest	24 %



**Figure 1** Functional burden and fatigue among IBD patients



**Figure 2** Recovery after rest in patients reporting fatigue

### 3.4. Statistical analysis

No statistically significant association was found between fatigue or functional limitation and sex ( $p = 0.32$ ) or type of IBD ( $p = 0.42$ ).

**Table 4** Association between fatigue/functional limitation and patient characteristics

Variable	Outcome assessed	p-value	Interpretation
Sex	Fatigue	0.32	Not significant
Type of IBD	Fatigue	0.42	Not significant
Sex	Functional limitation	0.32	Not significant
Type of IBD	Functional limitation	0.42	Not significant

#### 4. Discussion

In the present cross-sectional study, we evaluated the burden of extra-intestinal manifestations (EIMs) and chronic fatigue in Moroccan patients with inflammatory bowel disease (IBD). Our findings demonstrated a high prevalence of musculoskeletal involvement and a major impact of fatigue on daily functioning and quality of life.

Articular manifestations represented the predominant EIMs in our cohort, affecting 86% of patients. Musculoskeletal involvement is recognized as the most common extra-intestinal manifestation in IBD and has been extensively described in the literature [2,7]. However, the prevalence observed in our study was markedly higher than that reported in international cohorts. In the population-based study by Lakatos et al. [3], articular manifestations were reported in approximately 30% of patients, while Vavricka et al. [7] described prevalences ranging from 20% to 40%. Similarly, Bernstein et al. [8] found musculoskeletal manifestations in nearly one-third of IBD patients.

Several explanations may account for this discrepancy. First, our study specifically included patients presenting at least one EIM, which likely increased the observed prevalence. Second, differences in genetic background, environmental exposure, healthcare access, and disease perception may contribute to variability between populations.

Ocular manifestations were identified in 5% of our cohort, mainly consisting of uveitis. This prevalence is comparable to that reported in previous international studies, where ocular involvement ranges between 2% and 10% [2,6,7]. Although less frequent, ocular manifestations may significantly impair quality of life because of pain, photophobia, and risk of visual complications.

Dermatological manifestations were observed in 4% of patients, predominantly erythema nodosum. Previous studies have reported similar prevalence rates, generally ranging from 2% to 15% [2,7]. Hepatobiliary manifestations, represented exclusively by primary sclerosing cholangitis in our cohort, affected 7% of patients. This finding is consistent with the literature describing PSC prevalence between 2% and 8% in IBD populations [6,7].

Fatigue emerged as one of the major findings of our study, affecting 90% of patients. This prevalence exceeds those reported in most international studies. Van Langenberg and Gibson [9], in a systematic review, reported fatigue prevalence ranging between 40% and 50% during remission and up to 80% during active disease. Similarly, Borren et al. [1] described fatigue as one of the most disabling symptoms in IBD, affecting a substantial proportion of patients regardless of inflammatory activity.

The high prevalence observed in our cohort may reflect sociocultural factors, differences in symptom perception, cumulative disease burden related to EIMs, and possible under-recognition of psychological comorbidities.

Importantly, fatigue had a significant socio-professional impact in 40% of patients. This finding is consistent with previous studies demonstrating the major influence of fatigue on health-related quality of life. Jelsness-Jørgensen et al. [10] showed that chronic fatigue was strongly associated with impaired quality of life and reduced daily functioning in patients with IBD. Similarly, Knowles et al. [11], in a systematic review and meta-analysis, identified fatigue as one of the principal determinants of poor quality of life in IBD populations. Casellas et al. [15] additionally demonstrated that quality of life impairment in IBD extends beyond digestive symptoms and includes psychosocial and functional dimensions.

The persistence of fatigue despite rest in nearly one-quarter of our patients supports its multifactorial nature. Several mechanisms have been proposed, including chronic systemic inflammation, anemia, nutritional deficiencies, sleep disturbances, anxiety, depression, and dysregulation of the gut-brain axis [1,4,9]. Koutroubakis et al. [17] highlighted the frequent association between anemia and symptom burden in IBD, while Graff et al. [16] emphasized the important relationship between psychological distress and disease-related disability.

Interestingly, no statistically significant association was found between fatigue or functional limitation and sex or type of IBD. Similar observations were reported in previous studies suggesting that fatigue may represent a non-specific and global burden affecting patients independently of clinical phenotype [1,9].

Our results emphasize the importance of a multidisciplinary approach in the management of IBD. Current ECCO recommendations highlight the need for collaboration between gastroenterologists, rheumatologists, dermatologists, ophthalmologists, psychologists, and nutrition specialists in order to optimize patient outcomes [6,12,13].

From a therapeutic perspective, biologic therapies and modern therapeutic strategies have considerably improved the control of intestinal inflammation and certain EIMs [14,18,19]. Nevertheless, persistent fatigue remains insufficiently addressed in routine clinical practice. Integrating patient-reported outcomes and fatigue assessment tools into standard care pathways may therefore improve comprehensive disease management.

This study has several limitations. First, its cross-sectional design does not allow causal inference. Second, the use of self-reported questionnaires may have introduced recall bias. Third, the inclusion of patients with EIMs may have overestimated their prevalence compared with unselected IBD populations.

Despite these limitations, this study provides valuable insight into the burden of EIMs and fatigue in Moroccan patients with IBD, a population that remains underrepresented in international literature. To our knowledge, few North African studies have specifically explored the relationship between EIMs, chronic fatigue, and quality of life in IBD patients [5,11,15].

---

## 5. Conclusion

Extra-intestinal manifestations and chronic fatigue are highly prevalent in patients with inflammatory bowel disease and represent major determinants of impaired quality of life.

Fatigue, in particular, appears to be a key symptom with major functional and socio-professional consequences, regardless of disease type.

These findings highlight the importance of systematic screening for EIMs and fatigue in routine clinical practice and support the implementation of multidisciplinary and patient-centered management strategies.

Further prospective studies are needed to better understand the mechanisms underlying fatigue and to develop targeted therapeutic interventions.

---

## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of ethical approval*

The present study was conducted in accordance with the ethical standards of the institution and the Declaration of Helsinki. Ethical committee approval was not required due to the observational and questionnaire-based design of the study.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

---

## References

- [1] Borren NZ, van der Woude CJ, Ananthakrishnan AN. Fatigue in inflammatory bowel disease: epidemiology, pathophysiology and management. *Nat Rev Gastroenterol Hepatol*. 2019;16(4):247–259. doi:10.1038/s41575-018-0089-4.
- [2] Rogler G, Singh A, Kavanaugh A, Rubin DT. Extraintestinal manifestations of inflammatory bowel disease: Current concepts, treatment, and implications for disease management. *Gastroenterology*. 2021;161(4):1118–1132. doi:10.1053/j.gastro.2021.07.042.
- [3] Lakatos PL, Pandur T, David G, Balogh M, Kuronya P, Tollas A, et al. Association of extraintestinal manifestations of inflammatory bowel disease in a population-based cohort. *World J Gastroenterol*. 2003;9(10):2300–2307. doi:10.3748/wjg.v9.i10.2300.
- [4] Czuber-Dochan W, Ream E, Norton C. Description and management of fatigue in inflammatory bowel disease. *Aliment Pharmacol Ther*. 2013;37(5):505–516. doi:10.1111/apt.12205.

- [5] Giri S, Harindranath S, et al. Fatigue in inflammatory bowel disease: prevalence, risk factors, assessment, outcomes, and management. *World J Gastrointest Pathophysiol.* 2025;16(1):1–15.
- [6] Harbord M, Annese V, Vavricka SR, Allez M, Barreiro-de Acosta M, Boberg KM, et al. The first European evidence-based consensus on extra-intestinal manifestations in inflammatory bowel disease. *J Crohns Colitis.* 2016;10(3):239–254. doi:10.1093/ecco-jcc/jjv213.
- [7] Vavricka SR, Schoepfer A, Scharl M, Lakatos PL, Navarini A, Rogler G. Extraintestinal manifestations of inflammatory bowel disease. *Inflamm Bowel Dis.* 2015;21(8):1982–1992. doi:10.1097/MIB.0000000000000392.
- [8] Bernstein CN, Blanchard JF, Rawsthorne P, Yu N. The prevalence of extraintestinal diseases in inflammatory bowel disease: A population-based study. *Am J Gastroenterol.* 2001;96(4):1116–1122. doi:10.1111/j.1572-0241.2001.03756.x.
- [9] van Langenberg DR, Gibson PR. Systematic review: fatigue in inflammatory bowel disease. *Aliment Pharmacol Ther.* 2010;32(2):131–143. doi:10.1111/j.1365-2036.2010.04347.x.
- [10] Jelsness-Jørgensen LP, Bernklev T, Henriksen M, Torp R, Moum B. Chronic fatigue is associated with impaired health-related quality of life in inflammatory bowel disease. *Aliment Pharmacol Ther.* 2011;33(1):106–114. doi:10.1111/j.1365-2036.2010.04509.x.
- [11] Knowles SR, Graff LA, Wilding H, Hewitt C, Keefer L, Mikocka-Walus A. Quality of life in inflammatory bowel disease: a systematic review and meta-analyses. Part I. *Inflamm Bowel Dis.* 2018;24(4):742–751. doi:10.1093/ibd/izx100.
- [12] Torres J, Bonovas S, Doherty G, Kucharzik T, Gisbert JP, Raine T, et al. ECCO Guidelines on therapeutics in Crohn's disease: medical treatment. *J Crohns Colitis.* 2020;14(1):4–22. doi:10.1093/ecco-jcc/jjz180.
- [13] Raine T, Bonovas S, Burisch J, Kucharzik T, Adamina M, Annese V, et al. ECCO Guidelines on therapeutics in ulcerative colitis: medical treatment. *J Crohns Colitis.* 2022;16(1):2–17. doi:10.1093/ecco-jcc/jjab178.
- [14] Danese S, Fiorino G, Peyrin-Biroulet L. Positioning therapies in ulcerative colitis. *Clin Gastroenterol Hepatol.* 2020;18(6):1280–1290. doi:10.1016/j.cgh.2020.01.047.
- [15] Casellas F, López-Vivancos J, Vergara M, Malagelada JR. Impact of inflammatory bowel disease on health-related quality of life. *Dig Dis.* 1999;17(4):208–218.
- [16] Graff LA, Walker JR, Bernstein CN. Depression and anxiety in inflammatory bowel disease: a review of comorbidity and management. *Inflamm Bowel Dis.* 2009;15(7):1105–1118. doi:10.1002/ibd.20873.
- [17] Koutroubakis IE, Ramos-Rivers C, Regueiro M, Hashash JG, Barrie A, Schwartz M, et al. Five-year period prevalence and characteristics of anemia in a large US inflammatory bowel disease cohort. *J Clin Gastroenterol.* 2016;50(8):638–643.
- [18] Lichtenstein GR, Loftus EV, Isaacs KL, Regueiro MD, Gerson LB, Sands BE. ACG Clinical Guideline: management of Crohn's disease in adults. *Am J Gastroenterol.* 2018;113(4):481–517. doi:10.1038/ajg.2018.27.
- [19] Rubin DT, Ananthakrishnan AN, Siegel CA, Sauer BG, Long MD. ACG Clinical Guideline: ulcerative colitis in adults. *Am J Gastroenterol.* 2019;114(3):384–413. doi:10.14309/ajg.0000000000000152.