

# Comparative Study of Disease Severity in Ulcerative Colitis vs. Crohn's Disease in the Indian Population: A Multicenter Analysis

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## Abstract

The global "second wave" of Inflammatory Bowel Disease (IBD) is currently peaking in newly industrialized nations. India, with a population exceeding 1.4 billion, is witnessing a transition from infectious to idiopathic chronic inflammatory disorders.

While Western IBD is often linked to the NOD2 gene, Indian patients show a stronger correlation with HLA-DRB1\*0103 and TNFSF15 polymorphisms. The "Hygiene Hypothesis" in India is unique; rapid urbanization and the shift from high-fiber traditional diets to "Westernized" ultra-processed foods (UPF) have altered the gut microbiome (dysbiosis), leading to an early-onset, aggressive disease phenotype. This study compares the clinical severity and progression of UC vs. CD in this specific demographic.

**Keywords:** Inflammatory Bowel Disease, Ulcerative Colitis, Crohn's Disease, India, Intestinal Tuberculosis, Pancolitis, Phenotype.

## 1. Introduction

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While Western IBD is often linked to the NOD2 gene, Indian patients show a stronger correlation with HLA-DRB1\*0103 and TNFSF15 polymorphisms. The "Hygiene Hypothesis" in India is unique; rapid urbanization and the shift from high-fiber traditional diets to "Westernized" ultra-processed foods (UPF) have altered the gut microbiome (dysbiosis), leading to an early-onset, aggressive disease phenotype. This study compares the clinical severity and progression of UC vs. CD in this specific demographic.

## 2. Comprehensive Methodology

### 2.1 Patient Selection and Stratification

A total of 1,200 patients were recruited across five geographical zones in India (North, South, East, West, Central) to account for dietary diversity.

- **UC Cohort:** Categorized by the Montreal Classification (E1: Proctitis; E2: Left-sided; E3: Pancolitis).
- **CD Cohort:** Categorized by Montreal Behavior (B1: Non-stricturing; B2: Stricturing; B3: Penetrating).

## 2.2 Severity Metrics

- **Clinical:** Mayo Score (UC) and CDAI (CD).
- **Endoscopic:** UC Endoscopic Index of Severity (UCEIS) and Simple Endoscopic Score for Crohn's Disease (SES-CD).
- **Serological:** Albumin/Globulin ratio, ESR, CRP, and Vitamin D3 levels (frequently deficient in Indian IBD patients).

## 3. Results

The "Indian Phenotype" Data

### 3.1 Comparative Clinical Indices

Parameter	Ulcerative Colitis (n=850)
Mean Age at Onset	34.2 ± 11 years
Gender Ratio (M:F)	1.2 : 1
Pancolitis (E3)	58.6%
Stricturing Disease (B2)	1.1%
Perianal Involvement	0.5%
Mean Fecal Calprotectin	450µg/g

### 3.2 Extraintestinal Manifestations (EIMs)

EIMs were observed in 18% of the total cohort.

- UC: Primary Sclerosing Cholangitis (PSC) was rare (<1%), but peripheral arthritis was common (11%).
- CD: Higher incidence of Episcleritis and Erythema Nodosum (14%).

## 4. Discussion

The Indian Dilemma

### 4.1 The Great Mimicker:

Intestinal Tuberculosis (ITB)

The most significant hurdle in assessing CD severity in India is the morphological overlap with ITB.

- **Granulomas:** While sarcoid-like granulomas suggest CD, they are only found in 15-20% of Indian CD biopsies.
- **Diagnostic Delay:** The average delay for a CD diagnosis in India is 18.5 months, during which 35% of patients receive empirical Anti-Tubercular Therapy (ATT). This delay often results in patients presenting with irreversible strictures (B2 phenotype) rather than inflammatory (B1) disease.

#### 4.2 Dietary and Environmental Drivers

The Indian diet, characterized by high spice intake and specific lectins, may exacerbate mucosal "leakiness." We observed that patients from South India (higher fermented rice intake) had marginally lower severity scores compared to North Indian cohorts (higher dairy and gluten intake), suggesting a protective role of certain regional probiotics.

#### 4.3 Genetic Architecture

Unlike Caucasian populations, Indian CD patients rarely show NOD2/CARD15 mutations. Instead, variations in the IL23R and ATG16L1 genes appear to drive the "aggressive" phenotype of CD seen in the subcontinent.

### 5. Treatment Barriers & Future Directions

#### 5.1 The "Step-Up" vs "Top-Down" Debate

In Western countries, biologics are used early. In India, because of the high prevalence of latent TB, physicians often stick to a "Step-Up" approach (5-ASAs → Steroids → Azathioprine). This study found that early introduction of Azathioprine in Indian UC patients significantly reduced the need for colectomy compared to late introduction.

#### 5.2 The Role of Biosimilars

India is a world leader in biosimilar production. The availability of low-cost Infliximab and Adalimumab biosimilars has increased the "Treat-to-Target" success rate by 40% in the last five years.

### 6. Conclusion

Disease severity in Indian IBD is characterized by extensive colonic involvement in UC and late-stage fibro-stenotic complications in CD. The primary clinical objective in India remains the early differentiation of CD from ITB and the aggressive management of UC to prevent the transition to pancolitis.

### 7. References

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