



Contents lists available at ScienceDirect

## The American Journal of Surgery

journal homepage: [www.americanjournalofsurgery.com](http://www.americanjournalofsurgery.com)

## Racial disparities in surgical outcomes of patients with Inflammatory Bowel Disease

Samuel R. Montgomery Jr., Paris D. Butler, Chris J. Wirtalla, Karole T. Collier, Rebecca L. Hoffman, Cary B. Aarons, Scott M. Damrauer, Rachel R. Kelz\*

Department of Surgery, Hospital of the University of Pennsylvania, Philadelphia, PA, United States

### ARTICLE INFO

#### Article history:

Received 9 August 2017

Received in revised form

5 April 2018

Accepted 11 May 2018

#### Keywords:

Racial disparities

Inflammatory Bowel Disease

Outcomes

### ABSTRACT

**Background:** Inflammatory Bowel Disease (IBD) has not historically been a focus of racial health disparities research. IBD has been increasing in the black community. We hypothesized that outcomes following surgery would be worse for black patients.

**Methods:** A retrospective cohort study of death and serious morbidity (DSM) of patients undergoing surgery for IBD was performed using data from the American College of Surgeons National Surgical Quality Improvement Program (NSQIP 2011–2014). Multivariable logistic regression modeling was performed to evaluate associations between race and outcomes.

**Results:** Among 14,679 IBD patients, the overall rate of DSM was 20.3% (white: 19.3%, black 27.0%, other 23.8%,  $p < 0.001$ ). After adjustment, black patients remained at increased risk of DSM compared white patients (OR: 1.37; 95% CI 1.14–1.64).

**Conclusions:** Black patients are at increased risk of post-operative DSM following surgery for IBD. The elevated rates of DSM are not explained by traditional risk factors like obesity, ASA class, emergent surgery, or stoma creation.

© 2018 Elsevier Inc. All rights reserved.

### Introduction

Over the past 50 years, the incidence and prevalence of Inflammatory Bowel Disease (IBD), which includes both Crohn's disease (CD) and ulcerative colitis (UC), has increased and now affects over 1.5 million patients in the United States.<sup>1–3</sup> While IBD has not previously been recognized as a disease affecting minority populations, there has been an increased incidence in black and hispanic populations in recent years.<sup>4–8</sup> Specifically; Ogundi et al. reported that African American children with CD or UC were one-fourth greater than other IBD cohorts followed over the past 10 years.<sup>9,10</sup> Despite this increased incidence in black populations, there remains limited and inconsistent information regarding the characteristics, medical utilization, and surgical outcomes for minority IBD patients.

Racial disparities in surgical care outcomes are ubiquitous and contribute to mortality and morbidity in various conditions. Black

patients have been shown to receive fewer diagnostic evaluations and fewer therapeutic interventions.<sup>11,12</sup> An extensive body of research highlights poorer surgical outcomes and higher post-operative morbidity and mortality for black patients when compared to white patients.<sup>13,14</sup>

In an effort to determine if racial disparities exist in patients diagnosed with IBD, we examined death and serious morbidity (DSM) and 30-day postoperative complications in IBD patients who received a surgical procedure. We hypothesized that black patients would have worse outcomes following surgery compared to white patients.

### Materials and methods

We performed a retrospective cohort study using data from the 2011–2014 American College of Surgeons National Surgical Quality Improvement Project Participant Use File (ACS-NSQIP PUF). This database collects from more than 400 participant hospitals across the country and includes approximately 136 variables describing patient characteristics, historical features, process variables, and outcomes. We included all patients age >18 years with IBD, including both CD and UC, using the following International

\* Corresponding author. Department of Surgery, 3400 Spruce Street, 4 Silverstein, Philadelphia, PA, 19104, United States.

E-mail address: [Rachel.Kelz@uphs.upenn.edu](mailto:Rachel.Kelz@uphs.upenn.edu) (R.R. Kelz).

Statistical Classification of Diseases (ICD-9) diagnosis codes: 555, 555.0, 555.1, 555.2, 555.9, 556, 556.8, 556.9, 556.1–556.6.

Our initial inclusion criteria identified 14,877 IBD cases. Patients were excluded if they underwent an anorectal surgery, endoscopic alone, and non-small bowel or non-colon surgery procedures ( $n = 40$ ). Additionally, patients were excluded for either having another surgical procedure within 30 days prior, disseminated cancer, chemotherapy, central nervous system tumor, ventilator dependence, or pregnancy ( $n = 158$ ). After these exclusions, our final analytical cohort included 14,679 patients.

The primary outcome was DSM within 30 days of the surgical procedure. Serious morbidity was defined as the occurrence of one or more complications including: sepsis, organ space infection, acute renal failure requiring dialysis, septic shock, pulmonary embolism, coma, stroke, intubation for greater than 48 h, hemorrhage requiring transfusions of greater than four units, cardiac arrest requiring resuscitation, or myocardial infarction.<sup>15</sup> In order to characterize the observed outcomes, we also looked at the following individual complications: return to OR, septic shock, blood transfusions, urinary tract infection, venous thromboembolism (VTE) and wound infection.

Our primary demographic classification was patient race (white, black, or other). “Other” race consisted of Pacific Islanders, Asians, and American Indians/Alaskan Natives. The following patient characteristics were included in the study: age category (18–35; 36–55; 56–75; 76+), gender, condition (CD or UC), year of operation, and emergency status (emergent or elective). ASA Physical Status Classification level was included in an effort to adjust for severity of illness. Additional comorbidities such as obesity, smoking, steroid use, weight loss, acute renal failure, dialysis, ascites, history of cardiac issues, bleeding disorders, blood transfusions, and diabetes were included for risk adjustment. Pre-operative albumin, creatine, and white blood cell and platelet counts were also included for risk adjustment. We classified the

types of IBD procedures by the approach (laparoscopic versus open), intestine type (small, appendix, large, rectum) and procedure type (stoma, resection, repair, other, etc) (See Table 1 for codes used). Patients were also classified by the creation of any ostomy for risk adjustment separately from the procedure type classification.

#### Analytic strategy

Descriptive statistics were performed. Univariate analysis for each covariate upon race was examined using the chi-square test for categorical variables. Variables shown to be significant in univariate analysis ( $P \leq 0.1$ ) were selected for inclusion in a multivariable logistic regression model to evaluate the adjusted association between DSM and race. The same procedure was performed for the secondary outcomes analysis as well. The study was submitted to the Institutional Review Board of the University of Pennsylvania for exemption from continuing review. All analyses were performed with STATA 13.1 (Stata Corp, College Station, TX).<sup>16</sup>

#### Results

Of the 14,679 patients in our analytic cohort, the majority of patients were white (83.1%), with a median age of 41 (IQR 29–51). Black patients represented 7.1% of the cohort while other race patients constituted 9.9%. A majority of the study cohort were diagnosed with CD (57.6%) while UC comprised the remaining 42.4%.

As seen in Table 2, black patients were younger, more likely to be female and more likely to present emergently when compared to white patients. Black patients also had a greater percentage of CD when compared to both white and patients of other races (74% versus 57% white and 50.9% other;  $p < 0.001$ ). Black patients were more likely to go to surgery after 6 days in the hospital than white patients. The majority of the comorbidities were evenly distributed between races with black patients having a higher rate of smoking

**Table 1**  
Current Procedural Terminology (CPT) codes used to identify procedure approach and type.

| Procedure Approach | Intestine Type    | Procedure Type    | CPT Codes   |   |
|--------------------|-------------------|-------------------|---|---|
| Laparoscopic       | Small             | Ostomy            | 44186,44187   |   |
|                    |                   | Resection         | 44202,44203   |   |
|                    |                   | Repair            | 44227   |   |
|                    |                   | Other             | 44180, 44238  |   |
|                    | Appendix Large    |                   | 44970, 44979  |   |
|                    |                   | Ostomy            | 44188   |   |
|                    | Rectum            | Resection         | 44212, 44204, 44205, 44206, 44207, 44208, 44210,44211, 44212, 44213                                       |   |
|                    |                   | Resection         | 45397, 45395  |   |
|                    |                   | Repair            | 45400, 45402, 45499   |   |
|                    |                   | Other             | 44239   |   |
| Open               | Small             | Enterolysis       | 44005   |   |
|                    |                   | Ostomy            | 44015, 44300, 44310,44312, 44314, 44316,44620,44625, 44626  |   |
|                    |                   | Resection         | 44120, 44121, 44126,44127, 44128, 44125, 45136  |   |
|                    |                   | Volvulus          | 44050   |   |
|                    |                   | Ladd procedure    | 44055   |   |
|                    |                   | Enterointerostomy | 44130   |   |
|                    |                   | Strictureplasty   | 44615   |   |
|                    |                   | Fistula Takedown  | 44640,44660, 44661  |   |
|                    |                   | Other             | 44010, 44020, 44021, 44110, 44111, 44135, 44137, 44602,44603, 44680, 44700, 44800,44820,44850,44899,49000 |   |
|                    |                   | Appendix Large    | Ostomy  | 44900,44901,44950, 44955,44960  |
|                    | Partial Colectomy |                   | 44320,44322,44340,44345, 44346  |   |
|                    | Partial Colectomy |                   | 44139, 44140,44141,44143,44144,44145,44146,44147, 44160,  |   |
|                    | Total Colectomy   |                   | 44150, 44151, 44152, 44153, 44155,44156,44157,44158   |   |
|                    | Fistula Takedown  |                   | 44650   |   |
|                    | Other             |                   | 44025, 44604,44605, 44701   |   |
|                    | Rectum            |                   | Proctectomy   | 45110,45116,45119,45121,45123   |
|                    |                   |                   | Strictureplasty   | 45150   |
|                    |                   |                   | Fistula Takedown  | 45800, 45805,45820, 45825,  |
|                    |                   |                   | Other   | 45126, 45130, 45135, 45160, 45171, 45172, 45500, 45505,45520, 45540,45541, 45550,45560,45562,45563, 45170,45190,44799 |

Download English Version:

<https://daneshyari.com/en/article/8830592>

Download Persian Version:

<https://daneshyari.com/article/8830592>

[Daneshyari.com](https://daneshyari.com)