Stratford Campus Research Day

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Ethnic and Demographic Differences in Colectomy Rates and Timing for Ulcerative Colitis: 2007-2014

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Ethnic and Demographic Differences in Colectomy Rates and Timing for Ulcerative Colitis: 2007-2014

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Introduction

❖ Ulcerative Colitis (UC) is a chronic inflammatory disease of the bowel, with one third of patients requiring a colectomy for fulminant disease and tissue dysplasia. In 2007, infliximab was approved for induction and maintenance of remission in UC, with some evidence to suggest a potential reduction in colectomies. The aim of this study is to examine relative colectomy rates for UC among different ethnicities from 2007 to 2014 in order to evaluate for development of new trends or disparities.

Methods

❖ The data source was the NIS database, from 2007 to 2014. Patients aged 5 years and older with a primary diagnosis of UC were used. Additional variables included race, age, gender, insurance coverage, region, hospital teaching status, hospital size, elective admission status, and zip code income quartile. Odds ratios for colectomy were calculated via logistic regression. Negative binomial regression modeling was used to observe associations between variables and time to colectomy.

Results

❖ Compared to Whites, the odds ratios of colectomy for Blacks (0.63, 95% C.I. 0.53-0.749, p<0.01), Hispanics (0.729, 95% C.I. 0.630-0.844, p< 0.01), and Asians (0.332, 95% C.I. 0.219-0.504, p< 0.01) were all significantly lower. However, Black (2.024, 95% C.I. 1.614-2.537, p< 0.01), Hispanic (1.295, 95% C.I. 1.078- 1.557, p< 0.01), and Asian ethnicity (4.293, 95% C.I. 2.632-7.002, p< 0.01) were associated with increasing time until receipt of colectomy. Private insurance was associated with higher colectomy rates (1.545, 95% C.I. 1.325-1.802, p< 0.01), as was increasing hospital zip code income quartile (1.085, 95% C.I. 1.048-1.124, p< 0.01).

Discussion

❖ Discrepancies in colectomy rates and timing are seen in our models which mirror closely findings in a prior study from 1999-2003[1]. The consistency between our findings suggests that the availability of infliximab has not altered the relative differences in surgical management of inpatients of different ethnicities with UC flares. Closer study of utilization and response to UC therapy across ethnic and demographic lines is needed to better elucidate whether such practices are based on true phenotypic differences in disease or bias, as it appears white, wealthier patients continue to more readily and rapidly receive colectomies.
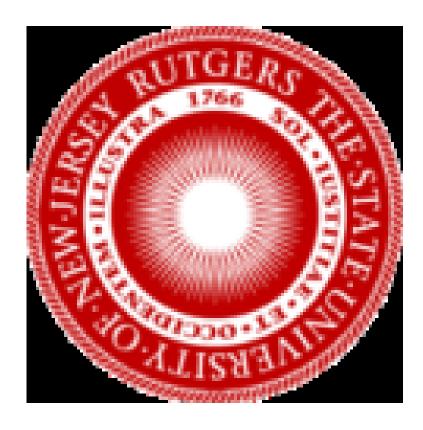
Reference

1. Nguyen GC, et al. Racial and Geographic Variations in Colectomy Rates Among Hospitalized Ulcerative Colitis Patients. *Clinical Gastroenterology and Hepatology* 2006; 4: 1507–1513.e1.

Table 1. Number of Colectomies by Variable.

Variable	Colectomy (Weighted Count)	No Colectomy (Weighted Count)
Race		
White	2864	180769
Black	151	28700
Hispanic	228	26858
Asian/Pacific Islander	23	4571
Native American	14	1110
Female	2035	150428
Male	2789	133623
Age		
5 -17 years old	299	20433
18 - 35 years old	1360	86375
36 - 50 years old	1218	64141
51 - 64 years old	1151	53224
65 - 79 years old	684	40923
80 years and older	126	19418
Health Insurance		
Medicare	822	683369
Medicaid	265	36140
Private Insurance	3324	143312
Self-Pay	132	20577
No Charge	22	2494
Region		
Northeast	963	64338
Midwest	1153	63525
South	1579	101028
West	1143	55623
Zip Code Income Quartile		
1st (Lowest)	734	63210
2nd	1106	69104
3rd	1252	71375
4th	1622	74287
Teaching Hospital	3747	88783
Non-teaching Hospital	1091	83432
Hospital Bed Size		
Small	351	34414
Medium	735	70791
Large	3752	178041
Elective Admission	3219	47385
Non-elective Admission	1614	236425

Table 2. Colectomy Odds Ratios.

Variable	P Value	Odds Ratio	95% Confidence Interval Lower	95% Confidence Interval Upper
Race				
White		Reference		
Black	< 0.01	0.630	0.530	0.749
Hispanic	< 0.01	0.729	0.630	0.844
Asian/Pacific Islander	< 0.01	0.332	0.219	0.504
Native American	0.512	0.832	0.480	1.442
Female	< 0.01	0.704	0.655	0.757
Age				
5 -17 years old		Reference		
18 - 35 years old	< 0.01	1.317	1.131	1.534
36 - 50 years old	< 0.01	1.495	1.279	1.747
51 - 64 years old	< 0.01	1.643	1.403	1.924
65 - 79 years old	< 0.01	2.102	1.706	2.589
80 years and older	0.01	1.461	1.095	1.951
Health Insurance				
Medicare		Reference		
Medicaid	0.216	1.141	0.926	1.406
Private Insurance	< 0.01	1.545	1.325	1.802
Self-Pay	0.068	0.772	0.585	1.020
No Charge	0.999	1.000	0.535	1.867
Region				
Northeast		Reference		
Midwest	< 0.01	0.734	0.653	0.825
South	< 0.01	0.799	0.724	0.882
West	< 0.01	1.680	1.523	1.853
Zip Code Income Quartile	< 0.01	1.085	1.048	1.124
Teaching Hospital	< 0.01	2.086	1.916	2.272
Hospital Bed Size				
Small		Reference		
Medium	< 0.01	0.770	0.665	0.891
Large	0.014	1.168	1.032	1.322
Elective Admission	< 0.01	8.144	7.532	8.806

Table 3. Negative Binomial Regression Analysis for Time to Colectomy.

Variable	P Value	Incidence Rate Ratio	95% Confidence Interval Lower	95% Confidence Interval Upper
Race				
White	< 0.01	2.024	1.614	2.537
Black	< 0.01	2.024	1.614	2.537
Hispanic	< 0.01	1.295	1.078	1.557
Asian/Pacific Islander	< 0.01	4.293	2.632	7.002
Native American	0.256	0.545	0.192	1.551
Female	0.000	1.141	1.036	1.257
Age				
5 -17 years old		Reference		
18 - 35 years old	< 0.01	0.525	0.429	0.644
36 - 50 years old	< 0.01	0.520	0.422	0.641
51 - 64 years old	< 0.01	0.359	0.290	0.445
65 - 79 years old	< 0.01	0.682	0.517	0.900
80 years and older	< 0.01	0.400	0.276	0.581
Health Insurance				
Medicare		Reference		
Medicaid	< 0.01	1.690	1.285	2.223
Private Insurance	0.117	0.847	0.688	1.042
Self-Pay	< 0.01	1.897	1.343	2.678
No Charge	0.109	1.843	0.872	3.896
Region				
Northeast		Reference		
Midwest	0.368	1.078	0.915	1.270
South	< 0.01	1.384	1.213	1.578
West	< 0.01	0.702	0.613	0.804
Zip Code Income Quartile				
1st (Lowest)		Reference		
2nd	< 0.01	0.564	0.481	0.662
3rd	< 0.01	0.456	0.389	0.535
4th	< 0.01	0.571	0.492	0.663
Teaching Hospital	< 0.01	0.760	0.679	0.850
Hospital Bed Size				
Small		Reference		
Medium	< 0.01	0.589	0.482	0.719
Large	< 0.01	0.392	0.330	0.466
Elective Admission	< 0.01	0.081	0.073	0.089