

COLON CANCER: AFRICAN AMERICANS HAVE HIGHER INPATIENT MORTALITY AT A YOUNGER AGE: A NATIONWIDE INPATIENT SAMPLE DATABASE ANALYSIS

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Introduction

- Colorectal cancer (CRC) is the 3rd most common cause of cancer-related death in women and 2nd in men in the US.
- CRC incidence and mortality have been trending down with better screening strategies.
- Significant disparities are still reported to remain among certain races/ethnicities and age groups.²
- In this study, we analyzed inpatient CRC-related outcomes in African Americans (AA) as compared to Caucasians to assess racial and age disparities.

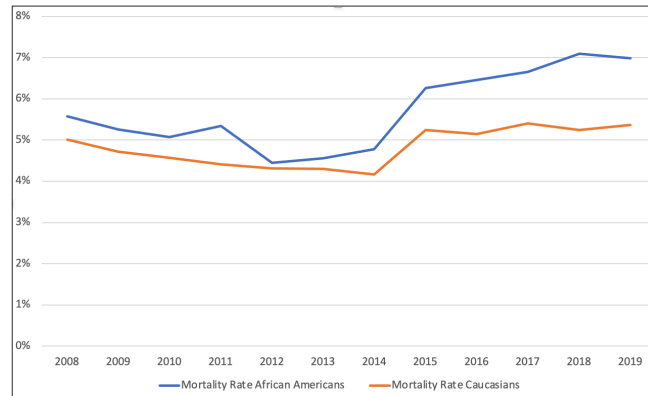


Figure 1: Trends of Inpatient mortality due to CRC comparing African Americans (AA) and Caucasians between the years 2008-2019

Methods and materials

- We used the Nationwide Inpatient Sample (NIS) database from 2008 and 2019.
- Previously validated ICD-10-CM codes identified CRC. CRC patients were divided into two groups Caucasians and AA.
- Univariate logistic regression for categorical variables and linear regression for continuous variables was carried out to identify independent associations at $p < 0.05$.
- Statistical Analysis was performed using R studio.
- Age of hospitalization and racial distribution was studied along with the other comorbidities.

Variable	Caucasians N = 398,155	African American N = 399,255	p-value
Age	65 (56, 76)	63 (54, 72)	<0.001
Gender			
Male	198,179 (50%)	186,001 (47%)	<0.001
Female	199,906 (50%)	213,089 (53%)	
Hospital Bedsize			<0.001
Small	68,599 (17%)	52,489 (13%)	
Medium	98,608 (25%)	107,553 (27%)	
Large	229,803 (58%)	237,442 (60%)	
Hospital Teaching Status			<0.001
Rural	62,665 (16%)	21,349 (5.4%)	
Urban, NonTeaching	103,042 (26%)	87,957 (22%)	
Urban, Teaching	231,303 (58%)	288,179 (73%)	
Hospital Region			<0.001
Northeast	166,544 (42%)	76,224 (19%)	
Midwest	97,313 (24%)	75,038 (19%)	
South	77,706 (20%)	214,811 (54%)	
West	56,592 (14%)	33,182 (8.3%)	
Insurance			>0.9
Medicare	195,143 (49%)	195,704 (49%)	
Medicaid	70,178 (18%)	70,307 (18%)	
Private	104,320 (26%)	104,586 (26%)	
Self Pay	15,884 (4.0%)	15,873 (4.0%)	
No charge	1,614 (0.4%)	1,699 (0.4%)	
Other	11,016 (2.8%)	11,086 (2.8%)	
Income Range			>0.9
\$1- 24999	201,380 (51%)	201,931 (51%)	
\$25000-34999	84,477 (21%)	84,485 (21%)	
\$35000-44999	65,633 (16%)	65,923 (17%)	
\$45000+	46,664 (12%)	46,917 (12%)	

Table 1. Demographics of Colorectal cancer hospitalizations in Caucasians and African Americans
Table 2: Outcome of Colorectal cancer hospitalizations in Caucasians and African Americans.

Variable	Caucasians N = 398,155	African American N = 399,255	p-value
Age Group			<0.001
18-27	2,062 (0.5%)	2,341 (0.6%)	
28-37	8,869 (2.2%)	10,880 (2.7%)	
38-47	27,742 (7.0%)	32,729 (8.2%)	
48-57	78,453 (20%)	88,540 (22%)	
58-67	104,911 (26%)	116,384 (29%)	
68-77	86,955 (22%)	88,262 (22%)	
78-87	67,204 (17%)	47,896 (12%)	
88 and above	21,981 (5.5%)	12,222 (3.1%)	
Obesity	40,123 (10%)	40,360 (10%)	0.8
Smoking	28,752 (7.2%)	23,974 (6.0%)	<0.001
DM	71,577 (18%)	90,272 (23%)	<0.001
HLD	110,153 (28%)	91,889 (23%)	<0.001
HTN	131,822 (33%)	171,513 (43%)	<0.001
Alcohol	4,660 (1.2%)	3,070 (0.8%)	<0.001
UC	2,945 (0.7%)	1,851 (0.5%)	<0.001
CD	2,382 (0.6%)	1,378 (0.3%)	<0.001
TABLE 2:			
Outcomes (Univariate Analysis)			
Inpatient Mortality	20,156 (5.1%)	23,368 (5.9%)	<0.001
Length of stay (Days,IQR)	5.0 (3.0, 8.0)	5.0 (3.0, 9.0)	<0.001
Total charges (Dollars,IQR)	40,404 (21,281, 73,388)	42,473 (23,046, 89,483)	<0.001
Outcomes (Multivariate Analysis, Reference: Caucasians)			
Inpatient Mortality	aOR 1.23	Range 1.17-1.28	p-value <0.01
Length of stay (Days, IQR)	1.01	1.01-1.01	
Total charges (Dollars, IQR)	1	1	

Results

- A total of 2,569,516 inpatient admissions were included. 410,139 were AA and 2,159,377 were Caucasians (Table.1).
- AA's have a younger age at admission with a mean age of 63 years compared to 68 years in Caucasians ($p < 0.001$).
- AA's have a higher percentage of inpatient admissions in the younger population between the ages of 28 to 67.
- Caucasians have a higher percentage of inpatient admission due to CRC after 68 years of age.
- Despite their relatively younger age, AA's have significantly higher inpatient mortality (5.9%) compared to Caucasians (4.9%) ($p < 0.001$).
- More AA's (51%) had low median household income of \$1-24999 in contrast to Caucasians (23%). AA's have a higher percentage of use of Medicaid (18% vs. 6.7%) and Caucasians have a higher percentage of Medicare (59% vs 49%).

- The disparity in mortality remained significantly higher in the AA population compared to Caucasians even after controlling household income and type of insurance.

Discussion

- Despite advances in CRC screening and treatment, racial disparities in outcomes continue to exist.
- This study found that AA's with colorectal cancer have consistently higher inpatient mortality rates compared to Caucasians with a widening gap from 2015 to 2019 (Figure 1).
- AA's with colorectal cancer are also being hospitalized at younger ages compared to their Caucasian counterparts.
- These disparities are most likely due to numerous social determinants of health.
- Future screening and treatment guidelines need to recognize these factors in order to improve equity in colorectal cancer outcomes.

References

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