



Disparities in Comorbid Conditions among Black and White HIV/AIDS Patients in the United States National Hospital Discharge Survey (NHDS)

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Abstract

Background: Hepatitis C Virus (HCV), substance abuse, and opportunistic infections (OI) are associated with poor health outcomes among HIV/AIDS patients. Some ethnic minorities, including blacks, are believed to have higher rates of these comorbid conditions and therefore; it is unclear if patient race is an independent predictor of hospital mortality or length of stay (LOS) when these comorbidities are considered.

Methods: We extracted data from the 1996-2005 NHDS. ICD-9-CM codes were used to identify HIV/AIDS, HCV, substance abuse, and OI. Patients <18 years of age and those who left against medical advice were excluded. Data included patient age, gender, race, insurance status, source of admission, LOS, and discharge status. Chi-square and Wilcoxon Rank Sum tests were used to compare characteristics between races. Multivariable regression models were used to ascertain the impact of race on health outcomes. Patient discharge weights were incorporated into the dataset to provide national estimates across the US.

Results: 14,153 cases (representing 1.3 million national discharges) met inclusion criteria; 51% were black and 27% were white. Both groups were similar with respect to median age (41 years) but whites were more likely to be male (82% vs. 62%; $p < 0.0001$). Blacks were more likely to have substance abuse (25% vs. 20%; $p < 0.0001$) and OI (39% vs. 37%; $p = 0.0463$); but blacks were less likely to have HIV/HCV coinfection (8% vs. 10%; $p = 0.0022$). More black patients used cocaine (43% vs. 20%; $p = 0.0001$) and less used alcohol (28% vs. 33%; $p = 0.0326$) or tobacco (18% vs. 24%; $p < 0.0001$). Black race was an independent predictor of mortality ($p = 0.0391$) and LOS ($p = 0.0496$) in multivariable models that controlled for patient age, HCV coinfection, cocaine use, and OI.

Conclusions: Black HIV/AIDS patients admitted to U.S. hospitals have higher rates of opportunistic infection, cocaine use, stay longer and are more likely to die during hospitalization as compared to whites. However, blacks have lower rates of HIV/HCV coinfection and alcohol use.

Background

Hepatitis C Virus (HCV), substance abuse, and opportunistic infections (OI) are all comorbidities associated with poor health outcomes among HIV patients.¹⁻³ Minorities, specifically blacks and Hispanics, tend to bare disproportionate burdens of said comorbidities compared to whites.⁴ Therefore these patients are at an increased risk for morbidity and mortality. This study sought to compare rates for these comorbidities among different ethnic groups and to evaluate if black race was an independent predictor for poorer health outcomes.

Methods

Data Source:

-Data were extracted from the 1996-2005 National Hospital Discharge Survey (NHDS)

Inclusion criteria:

-Hospital discharges with ICD-9 codes for HIV/AIDS

Exclusion criteria:

-Age < 18 years and those who left against medical advice

Data included:

-Patient age, gender, race, insurance status, source of admission, length of hospital stay, and discharge status

Statistics:

- χ^2 , Fisher's Exact, Wilcoxon Rank Sum tests, and multivariable regression models were used

Nominal Logistic Regression Model:

-Dependent variable – mortality
-Independent variable – race (Whites vs. Blacks)
-Confounders – cocaine use, HIV/HCV coinfection, OI, age ≥ 50 years

Cox Proportional Hazards Regression Model:

-Dependent variable – length of hospital stay
-Independent variable – race (Whites vs. Blacks)
-Confounders – cocaine use, HIV/HCV coinfection, OI, age ≥ 50 years

Results

Characteristic	HIV/AIDS Discharges (n = 14,153)
Median age (yrs), (25 th -75 th percentile)	41 (35-47)
Males – No. (%)	9,847 (70)
Black – No. (%)	7,270 (51)
Emergency room admission – No. (%)	4,229 (77)
Substance abuse – No. (%)	3,320 (23)
Opportunistic infection – No. (%)	5,494 (39)
HCV coinfection – No. (%)	1,258 (9)

Results (Continued)

Table 2. Selected Hospital Discharge Demographics (Blacks vs. Whites)

Characteristic	Blacks (n=7,270)	Whites (n=3,840)	p-Value
Median age (yrs), (25 th -75 th percentile)	41 (35-47)	41 (35-47)	0.2
Males – No. (%)	4,531 (62%)	3,142 (82%)	<0.0001
Substance abuse – No. (%)	1,835 (25%)	755 (20%)	<0.0001
Opportunistic infection – No. (%)	2,843 (39%)	1,433 (37%)	0.0463
HCV coinfection – No. (%)	630 (8%)	376 (10%)	0.0022

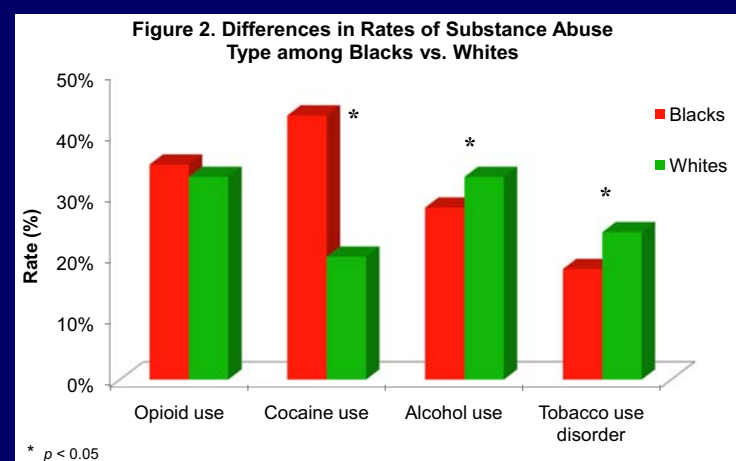
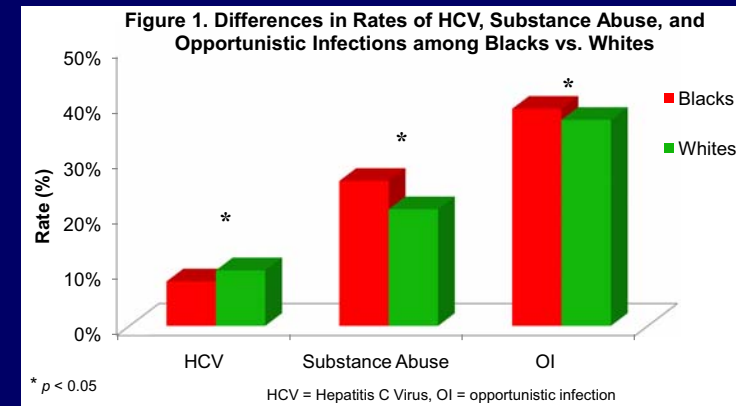


Table 3. Mortality Multivariable Regression Model Results

Characteristic	Likelihood χ^2 Ratio test	P-value
Cocaine use	45.27	<0.0001
Age ≥ 50 years	19.54	<0.0001
Opportunistic infection	13.92	0.0002
Black race (vs. Whites)	4.25	0.0391
HIV/HCV coinfection	2.49	0.1

Table 4. Length of Hospital Stay Multivariable Regression Model Results

Characteristic	Likelihood χ^2 Ratio test	P-value
Opportunistic infection	345.24	<0.0001
Age ≥ 50 years	29.35	<0.0001
Black race (vs. White)	3.86	0.0496
Cocaine use	3.47	0.06
HIV/HCV coinfection	0.61	0.4

Conclusions

Rates of substance abuse and opportunistic infection were higher for blacks. Rates of HIV/HCV coinfection were lower for blacks. Independent predictors of mortality included black race, opportunistic infection, cocaine use and age ≥ 50 years. Independent predictors of length of hospital stay included: black race, opportunistic infection, and age ≥ 50 years.

References

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2. Monga HK, et al. *Clin Infect Dis* 2001;33:240-7.
3. Schwarcz S, et al. *J Acquir Immune Defic Syndr* 2006;43:491-4.
4. Estrada AL. *AIDS* 2005;19 Suppl 3:S47-52.