



Disparities in Treatment of Peripheral Artery Disease and Critical Limb Ischemia: A National Perspective

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Background

Previous literature briefly highlighted the current racial and ethnic disparities in peripheral artery disease (PAD) and critical limb ischemia (CLI) treatment. Herein, we analyze the trend over a 14-year time period to investigate whether the disparities gap in treatment is closing.

Materials and Methods

The National Inpatient Sample was queried between 2005 and 2018 for patients with PAD or CLI. Procedures including amputations (minor or major) and revascularization (surgical, endovascular, or hybrid) were selected. All diagnoses and procedures were identified using International Classification of Disease codes. Cochran-Armitage test was conducted to assess trends in the utilization of these procedures between races. Multivariable regression was done to assess patient profile for any revascularization and for major amputations. All estimates were nationalized.

Demographics

There was a total of 12,442,005 admissions involving PAD. Of these, 9,536,224 were of the white race, 1,631,198 were of the Black race, 826,297 were of the Hispanic ethnicity, and 447,160 were of the Other race

There was a total of 6,904,057 admissions involving CLI. Of these, 4,649,481 were of the white race, 1,249,535 were of the Black race, 695,238 were of the Hispanic ethnicity, and 309,803 were of the Other race.

Results

Trend Analysis – PAD

Among those who received any revascularization, the trend in proportion of admissions involving White patients decreased by 0.47% per year ($p<0.001$), while Black patients increased by 0.35% ($p<0.001$). There was no change in proportion of Hispanic or of the Other race ($p=0.262$, and $p=0.198$, respectively) patients. Among those who received major amputation, there was no change in proportion of admissions involving White ($p=0.561$), Black ($p=0.236$), Hispanic ($p=0.587$), and Other race ($p=0.277$) patients.

Trend Analysis - CLI

Among those who received any revascularization, the trend in proportion of admissions involving White patients decreased by 0.51% ($p<0.001$), while Black patients increased by 0.30% ($p=0.001$). Meanwhile, there was an increase in the proportion of Hispanic patients by 0.16% per year ($p=0.020$). There was no change in proportion of those of the Other race ($p=0.277$). Among those who received major amputation, there was no change in proportion of admissions involving White ($p=0.232$), Black ($p=0.170$), Hispanic ($p=0.708$), and Other race ($p=0.140$) patients.

Conclusion

Our analysis highlighted major disparities in PAD and CLI treatments for non-White populations in our nationally-representative database. Non-White patients are more likely to receive amputations, and less likely to receive revascularization compared to White patients.

The gap is slowly closing, however, which may demonstrate that guidelines have been effective in mitigating disparities.

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Regression Analysis - PAD

Race	Non-Routine Discharge		
	Odds Ratio	95% CI	p-value
White	1.00		
Black	1.18	1.16 - 1.20	<0.001
Hispanic	0.90	0.87 - 0.92	<0.001
Other	0.90	0.88 - 0.93	<0.001
Any Revascularization			
White	1.00		
Black	0.91	0.88 - 0.94	<0.001
Hispanic	0.93	0.87 - 1.00	0.051
Other	1.02	0.96 - 1.10	0.497
Major Amputation			
White	1.00		
Black	1.80	1.73 - 1.88	<0.001
Hispanic	1.49	1.41 - 1.58	<0.001
Other	1.19	1.10 - 1.29	<0.001

Regression Analysis - CLI

Race	Non-Routine Discharge		
	Odds Ratio	95% CI	p-value
White	1.00		
Black	1.10	1.08 - 1.12	<0.001
Hispanic	0.86	0.83 - 0.88	<0.001
Other	0.84	0.81 - 0.86	<0.001
Any Revascularization			
White	1.00		
Black	1.04	1.01 - 1.07	0.004
Hispanic	1.17	1.13 - 1.22	<0.001
Other	1.25	1.17 - 1.34	<0.001
Major Amputation			
White	1.00		
Black	1.63	1.58 - 1.67	<0.001
Hispanic	1.29	1.24 - 1.33	<0.001
Other	1.21	1.16 - 1.26	<0.001