Modifiable factors explaining disparities in urologist visits among prostate cancer patients in SEER-Medicare

E Onukwugha PhD[1], P Osteen PhD[2], J Jayasekera MA[1], CD Mullins PhD[1]

[1]University of Maryland School of Pharmacy, Baltimore, Maryland

[2]University of Maryland School of Social Work, Baltimore, Maryland

Background

- African American (AA) men with early stage prostate cancer (PCa) are less likely to visit a urologist following diagnosis, compared to White patients.
- Little is known regarding either the role of modifiable person-specific factors or community-level factors in explaining the AA/White disparity.

Objectives

To identify potentially modifiable person-level factors and to identify community-level factors that modify AA/W disparities in urologist visits among early stage PCa patients.

Methods

- **Study inclusion criteria:**
- Men diagnosed with AJCC stage I-III PCa between 2000 and 2007
- Age 66+ at the time of diagnosis
- End of follow-up:12/31/2009 or death

- **Variables of interest:**
- Urologist visit $\equiv \begin{cases} 0 & No\ urologist\ visits\ during\ follow-up \\ 1 & urologist\ visit\ during\ follow-up \end{cases}$
- Non-Hispanic African-American men and non-Hispanic White men.
- Crime, facilities, and services: indicator for whether the county-level measure exceeded the 90th percentile of that measure
- Poverty, educational attainment, transport mobility, access to telephone: indicator for whether the county-level measure exceeded the 75th percentile value for that measure.

- **Statistical analysis:**
- *County-level data:* Factor analysis was used to generate factor scores for crime, services, and facilities using measures. Higher values corresponded to an increasing level of the factor.
- Logistic regression was used to estimate odds ratios for urologist visits. Modified Poisson regression was used to estimate rate ratios for urologist visits.

Results

- Application of the inclusion criteria resulted in 68,781 patients.
- Average age in the sample was 74 y, 86% were W and 10% were AA.
- **12% of men diagnosed with stage I-III PCa did not visit a urologist at any time following diagnosis**: 19% among AA and 11% among White men.

Results

Table 1: Descriptive statistics for full sample, stratified by non-Hispanic African-American and non-Hispanic White groups

Variable		Mean (N or SD)	
Full Sample* (N=68,781)			
At least one urologist visit post diagnosis		***87.79%***	***(60381)***
No health care claims in 12 months prior to diagnosis		***4.41%***	***(3035)***
Age as of first cancer diagnosis		74.29	(5.84)
Hospitalization or walking aid or SNF or oxygen use or wheelchair use in 12 months pre period		17.42%	(11984)
Visit to primary care physician 12 months before diagnosis		***75.12%***	***(51668)***
Urban residence at diagnosis		***5.63%***	***(3871)***
Crime against persons_factor		0.0017	(0.939)
Crime against property_factor		-0.0029	(0.938)
Generalized crime against persons_factor		-0.0037	(0.991)
Facilities_factor		-0.0053	(0.841)
Services_factor		-0.0074	(0.867)
Percent Population below poverty level 1999 (>75th percentile)		26.20%	(18020)
Educational attainment - persons 25 years and over completing less than 9th grade 2000 (>75th percentile)		22.94%	(15775)
Occupied housing units with no vehicles available 2000 (sample) (>75th percentile)		24.90%	(17128)
Occupied housing units with no telephone service available for 2000 (sample) (>75th percentile)		25.02%	(17207)
African American (N=6,582)			
At least one urologist visit post diagnosis		***81.43%***	***(5360)***
No health care claims in 12 months prior to diagnosis		***9.25%***	***(609)***
Hospitalization or walking aid or SNF or oxygen use or wheelchair use in 12 months pre period		21.06%	(1386)
Visit to primary care physician 12 months before diagnosis		***70.22%***	***(4622)***
Urban residence at diagnosis		***93.57%***	***(6159)***
Crime against persons_factor	↑	0.82	(1.53)
Crime against property_factor	↑	0.14	(1.19)
Generalized crime against persons_factor	↑	0.30	(1.48)
Facilities_factor	↑	0.05	(0.91)
Services_factor	↓	-0.17	(0.62)
Percent Population below poverty level 1999 (>75th percentile)	↑	45.79%	(3014)
Educational attainment - persons 25 years and over completing less than 9th grade 2000 (>75th percentile)		20.08%	(1322)
Occupied housing units with no vehicles available 2000 (sample) (>75th percentile)	↑	54.24%	(3570)
Occupied housing units with no telephone service available for 2000 (sample) (>75th percentile)	↑	48.33%	(3181)
White (N=59,540)			
At least one urologist visit post diagnosis		***88.55%***	***52724***
No health care claims in 12 months prior to diagnosis		***3.85%***	***(2293)***
Hospitalization or walking aid or SNF or oxygen use or wheelchair use in 12 months pre period		17.17%	(10222)
Visit to primary care physician 12 months before diagnosis		***75.54%***	***(44980)***
Urban residence at diagnosis		***89.74%***	***(53482)***
Crime against persons_factor	↓	-0.085	(0.81)
Crime against property_factor	↑	-0.023	(0.89)
Generalized crime against persons_factor	↑	-0.034	(0.92)
Facilities_factor	↑	0.002	(0.84)
Services_factor	↑	0.013	(0.89)
Percent Population below poverty level 1999 (>75th percentile)	↓	4.15%	(14379)
Educational attainment - persons 25 years and over completing less than 9th grade 2000 (>75th percentile)	↓	23.16%	(13787)
Occupied housing units with no vehicles available 2000 (sample) (>75th percentile)	↓	20.54%	(12230)
Occupied housing units with no telephone service available for 2000 (sample) (>75th percentile)	↓	23.18%	(13800)

*Includes W non-Hispanic, AA non-Hispanic, and other race/ethnicity groups

↓: this value is lower than the value for the full sample

↑: this value is higher than the value for the full sample

SNF: Skilled Nursing Facility

Figure 1: Logistic Regression with AA-specific interactions

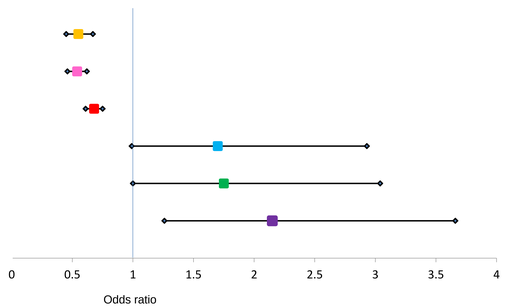
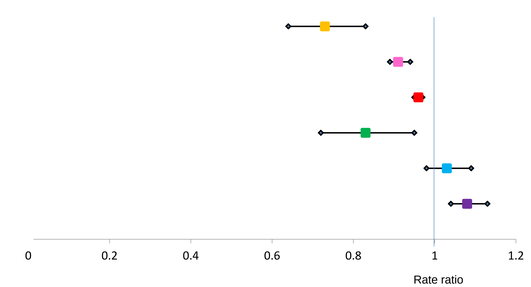


Figure 2: Modified Poisson Regression with AA-specific interactions



Key

- Odds or rate ratio (AA vs. White for no pre-period reimbursed health services, rural)
- Odds or rate ratio (AA vs. White OR for no PCP, pre-period reimbursed health services, rural)
- Odds or rate ratio (AA vs. White OR for PCP, pre-period reimbursed health services, rural)
- Odds or rate ratio (AA vs. White OR for no PCP, pre-period reimbursed health services, urban)
- Odds or rate ratio (AA vs. White OR for no pre-period reimbursed health services, urban)
- Odds or rate ratio (AA vs. White OR for PCP, pre-period reimbursed health services, urban)

Contact Information:
Eberechukwu Onukwugha, PhD
Department of Pharmaceutical Health Services Research
University of Maryland School of Pharmacy
220 Arch Street, Baltimore, MD 21201
Phone (410) 706-8981 / Fax (410) 706-5394
eonukwug@rx.umaryland.edu

Results

Table 2: Covariate-adjusted regression models for urologist visit, stratified by non-Hispanic AA and non-Hispanic White race/ethnicity

Parameter	Logistic		Modified Poisson	
	Odds ratio (AA sample)	Odds ratio (White sample)	Rate ratio (AA sample)	Rate ratio (White sample)
County level fixed effects				
Top-ranked for 'crime against persons'	1.00	1.03	1.00	1.00
Top-ranked for 'crime against property'	0.98	1.04*	1.00	1.00*
Top-ranked for 'generalized crime against persons'	0.96	0.98	0.99	1.00
Top-ranked for presence of facilities	1.10	1.03	1.01	1.00
Top-ranked for presence of services	0.99	1.04*	1.00	1.01*
Top-ranked for 'Percent Population below poverty level in 1999'	1.55**	0.86**	1.07**	0.98**
Top-ranked for 'Persons 25 years and over completing less than 9th grade in 2000'	0.90	0.99	0.98	1.00
Top-ranked for 'Occupied housing units with no vehicles available in 2000'	0.94	0.93	0.99	1.00
Top-ranked for 'Occupied housing units with no telephone service available in 2000'	0.66**	0.82**	0.96*	0.98**

* p<0.05 **p<0.01

Discussion

- Among individuals diagnosed with stage I-III prostate cancer, we find that:
  - AA are statistically significantly less likely than Whites to visit a urologist.
  - The AA/W disparity is heightened in rural areas and among individuals with no health care utilization in the 12 months prior to diagnosis. The AA/W disparity is reduced among individuals with a PCP visit prior to diagnosis and for those living in an urban setting.
  - We also find differences in the environmental characteristics of counties in which AA live, compared to the characteristics of counties in which Whites live.
- Additional investigation into the role of the patient's community in explaining post-diagnosis urologist visits is needed.

Conclusions

- Receipt of health services, including contact with a primary care physician, prior to diagnosis may help to address the AA/White disparity in urologist visits post-diagnosis.
- Community characteristics explain differences in the likelihood of visiting a urologist during follow-up and a better understanding of their role is needed.