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## Disparities in Overall Survival for Male Breast Cancer Patients in the State of Florida (1996-2007)

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## Abstract

Little is known regarding population-based disparities in male breast cancer (MBC). Data between 1996 and 2007 from the Florida Cancer Data System, the Agency for Health Care Administration, and the US Census were linked for MBC patients (n = 1589). Survival disparities among socioeconomic status groups were most apparent in our study. Improved access to screening and health care utilization might attenuate these differences.

Background: Little is known regarding population-based disparities in male breast cancer (MBC). We analyzed this for Florida using data from 1996 to 2007. Materials and Methods: Data from the Florida Cancer Data System, the Agency for Health Care Administration, and the US Census were linked for MBC patients (n = 1589). Survival time was our primary end point, with adjustments for sociodemographic status, neighborhood-based poverty measures, clinical and hospital characteristics, and comorbidity measures based on linkage with in- and outpatient treatment records. Survival time was modeled using univariate and multivariate Cox regression models. Results: Five-year overall survival was 65.7%. Overall mean survival time in years was 7.7, but shorter in black (5.9) than white (7.8) individuals, in non-Hispanic (7.7) than Hispanic (8.5) individuals, and in the lowest socioeconomic status (SES) group (5.9) than in the highest (8.2) SES group. Patients with low SES also presented at a more advanced stage with only 75/175 [42.9%] of low SES patients who presented with localized disease compared with 311/621 [50.1%] for middle-high SES and 162/334 [48.5%] for the highest SES. Univariate hazard regressions found only the highest (hazard ratio [HR], 0.63; 95% confidence interval [CI], 0.46-0.85) and middle-high (HR, 0.71; 95% CI, 0.54-0.94) SES were at improved survival compared with lowest SES but this advantage did not remain significant in the fully adjusted model. Marital status, age, smoking status, stage, treatments, and comorbidities were also predictors of survival. Conclusion: Survival disparities among SES groups were most apparent in our study. Improved access to screening and health care utilization might attenuate these differences. Understanding other survival disparities can aid in public health and clinical care choices.

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## Introduction

Male breast cancer (MBC) is a rare condition, accounting for approximately 1% or 2360 of all breast cancers from men and women in 2014.<sup>1</sup> There are multiple risk factors for MBC reported in the literature, and like female breast cancer, some of these have a

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strong estrogen connection; these risk factors include genetics, endocrine abnormalities, Klinefelter syndrome, gynecomastia, obesity, and certain occupational exposures.<sup>2-5</sup>

The estimated number of deaths that will be attributed to MBC in 2014 is 430 or approximately 18% of the estimated incidence.<sup>1</sup>

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Characteristic	All		Race, n			Hispanic, n		Neighborhood Poverty Status, n			
	n	%	White	Black	Other	No	Yes	Lowest	Middle-Low	Middle-High	Highest
Total Patients	1589	100.0	1437	134	18	1448	141	175	459	621	334
Age, Years											
Mean	66.7		67.3	60.5	57.9	67.0	63.6	66.4	66.3	67.2	66.3
SD	13.8		13.5	14.4	17.5	13.6	15.5	13.0	14.6	67.2	66.3
Race											
White	1437	90.4	100.0	_	-	90.0	95.0	64.0	89.8	96.0	94.9
Black	134	8.4	-	100.0	-	8.8	4.3	33.7	9.6	3.1	3.6
Other	18	1.1	-	_	100.0	1.2	0.7	2.3	0.7	1.0	1.5
Hispanic Origin											
No	1448	91.1	90.7	95.5	94.4	100.0	_	81.7	89.5	92.6	95.5
Yes	141	8.9	9.3	4.5	5.6	-	100.0	18.3	10.5	7.4	4.5
Neighborhood Poverty Status											
Lowest	175	11.0	7.8	44.0	22.2	9.9	22.7	100.0	-	-	-
Middle-low	459	28.9	28.7	32.8	16.7	28.4	34.0	_	100.0	-	-
Middle-high	621	39.1	41.5	14.2	33.3	39.7	32.6	-	-	100.0	-
Highest	334	21.0	22.1	9.0	27.8	22.0	10.6	-	-	-	100.0
Marital Status											
Unknown	48	3.0	3.0	3.0	5.6	3.2	1.4	2.9	2.4	3.7	2.7
Never married	193	12.1	11.9	16.4	-	11.5	19.1	16.0	15.0	12.1	6.3
Married	1042	65.6	66.5	53.7	77.8	65.8	63.1	56.0	59.5	66.8	76.6
Divorced/separated/widowed	306	19.3	18.6	26.9	16.7	19.5	16.3	25.1	23.1	17.4	14.4
Insurance Status											
Unknown	67	4.2	4.2	4.5	5.6	4.4	2.1	2.3	5.2	4.0	4.2
Uninsured	68	4.3	3.6	11.2	5.6	3.9	8.5	8.6	4.6	3.5	3.0
Private insurance	459	28.9	28.3	35.1	33.3	27.5	43.3	30.3	26.1	29.1	31.4
Medicaid	32	2.0	1.6	5.2	11.1	2.0	2.1	5.7	2.2	1.3	1.2
Medicare	809	50.9	53.3	29.1	22.2	51.9	41.1	41.7	51.0	52.0	53.6
Defense/military/veteran	28	1.8	1.5	3.7	5.6	1.9	0.7	3.4	2.0	1.1	1.8
Indian/Public	1	0.1	0.1	-	-	0.1	_	_	-	0.2	-
Insurance, NOS	125	7.9	7.4	11.2	16.7	8.4	2.1	8.0	8.9	8.7	4.8
FCDS Tobacco Use											
Never	640	40.3	39.6	44.8	61.1	38.8	55.3	42.3	39.2	40.6	40.1
History	391	24.6	25.7	14.9	5.6	25.8	12.1	18.9	23.5	26.4	25.7

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