Racial Disparities in Breast Cancer Diagnosis-to-Treatment Waiting Times in South Carolina

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Background

- Although incidence of breast cancer is higher among white females, mortality rates remain higher among black women.
- This disparity has widened despite improved breast cancer survival rates over time.
- The widening gap in black-white mortality for breast cancer may be related to differences in tumor biology, treatments received and access to care.
- The objective of this study was to assess racial disparities in breast cancer diagnosis-to-treatment waiting times in South Carolina (SC).

Methods

- **Data source**
  - Data for this analysis includes all female breast cancer cases in SC from 2002 to 2009 from the SC Central Cancer Registry.
- **Variables**
  - The main exposure variable was race (black & white).
  - The main outcome variable was time from diagnosis to receipt of first course of treatment and receipt of various treatments (surgery, radiation and chemotherapy [Table 1]).
  - Time to receipt of surgery was dichotomized into early receipt (≤30 days) and late receipt (>30 days) [Table 2].
  - Other variables assessed were age, marital status, county, year of diagnosis, hormone receptor status, stage and grade.
- **Statistical analyses**
  - Student's t test was utilized to test the difference in means between the time from diagnosis to various forms of treatment among blacks and whites [Table 1].
  - Logistic regression analysis was used to determine the odds of late receipt of surgery among blacks compared to whites.

Results

Table 1 Time from diagnosis to various treatments for breast cancer by race in SC

		Sample size	Minimum	Maximum	Mean days±SD	Median±IQR	[a]p-value
[b]Diagnosis to receipt of 1st course treatment	Total	1611	0	319	19.5±21.8	15±19	
	White	1205	0	224	18.4±18.1	15+17	
	Black	406	0	319	22.7±30.1	18+24	**<0.01**
[b]Diagnosis to receipt of surgery	Total	1585	0	286	24.1±34.2	15±21	
	White	1188	0	252	23.1±32.3	15±19	
	Black	397	0	286	27.2±39.3	18+25	0.06
[b]Diagnosis to receipt of radiation	Total	777	10	1149	127.6±82.0	104±126	
	White	585	10	1149	122.8±84.1	91±122	
	Black	192	30	356	142.2±73.6	140±123	**<0.01**
[b]Diagnosis to receipt of chemotherapy	Total	666	3	1121	63.2±66.0	53±33	
	White	480	3	1121	62.3±70.5	52±32	
	Black	186	4	504	65.5±52.9	56+31	0.53

Table 2: Descriptive characteristics of breast cancer patients and the odds of late receipt* of surgery

Characteristic	Early receipt (≤30 days)	Late receipt (>30 days)	Crude OR
Race			
White	968(80.33)	237(19.67)	Reference
Black	307(75.62)	99(24.38)	**1.32(1.01-1.72)**
Age at diagnosis, years (mean±SD)	52.32(6.92)	52.67(6.28)	1.01(0.99-1.03)
Age categories at diagnosis			
Under 45 years old	162(82.65)	34(17.35)	Reference
45-54 years old	579(79.42)	150(20.58)	1.23(0.82-1.86)
55-64 years old	534(77.84)	152(22.19)	1.36(0.90-2.05)
Marital status at diagnosis			
Not married	466(77.41)	136(22.59)	Reference
Married	809(80.18)	200(19.82)	0.85(0.66-1.08)
County at diagnosis			
Rural	300(78.74)	81(24.11)	Reference
Metropolitan/urban	975(79.27)	255(20.73)	0.97(0.73-1.28)
Year of diagnosis			
2002-2004	419(84.31)	78(15.69)	Reference
2005-2007	423(78.92)	113(21.08)	**1.44(1.04-1.97)**
2008-2010	433(74.91)	145(25.09)	**1.80(1.32-2.44)**
Hormone receptor status			
Negative	170(80.57)	41(19.43)	Reference
Any positive (ER+/PR+,ER+/PR-,ER-/PR+)	575(79.53)	148(20.47)	1.07(0.73-1.57)
Stage at diagnosis			
In-situ	247(73.29)	90(26.71)	Reference
Local	673(83.09)	137(16.91)	**0.56(0.41-0.76)**
Regional	351(76.47)	108(23.53)	0.84(0.61-1.17)
Grade at diagnosis			
I	252(80.77)	60(19.23)	Reference
II	455(78.72)	123(21.28)	1.14(0.80-1.60)
III/IV	457(77.85)	130(22.15)	1.96(0.85-1.68)

Table 2

- The odds of receiving late surgery (>30 days) among blacks was 1.32 (95% confidence interval [CI]:1.01-1.72) compared to whites.
- The odds of receiving late surgery (>30 days) among patients diagnosed in 2005-2007 and 2008-2010 were 1.44 and 1.80 (95% CI: 1.04-1.97 and 1.32-2.44), respectively, compared to patients diagnosed in 2002-2004.
- The odds of receiving late surgery (>30 days) among patients with local stage breast cancer was 0.56 (95% CI: 0.41-0.76) compared to patients with in-situ cancer.

Conclusion

- Black females experience consistently longer waiting times from diagnosis to treatment (overall and by all subtypes of treatments) than their white counterparts.
- The odds of late receipt of surgery among blacks is higher compared to whites.
- Further exploration is needed to know the reasons that black females have persistent increases in diagnosis-to-treatment wait times, and particular attention should be placed on reduction of diagnosis-to-treatment wait times in an attempt to reduce already existing racial disparities in breast cancer outcomes among blacks and whites.

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