Breast Cancer Treatment among African American Women in North St. Louis, Missouri

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ABSTRACT *Similar to disparities seen at the national and state levels, African American women in St. Louis, Missouri have higher breast cancer mortality rates than their Caucasian counterparts. We examined breast cancer treatment (regimens and timing) in a sample of African American breast cancer patients diagnosed between 2000 and 2008 while residing in a North St. Louis cluster (eight zip codes) of late stage at diagnosis. Data were obtained from medical record extractions of women participating in a mixed-method study of breast cancer treatment experiences. The median time between diagnosis and initiation of treatment was 27 days; 12.2 % of the women had treatment delay over 60 days. These findings suggest that treatment delay and regimens are unlikely contributors to excess mortality rates for African American women diagnosed in early stages. Conflicting research findings on treatment delay may result from the inconsistent definitions of treatment delay and variations among study populations. Breast cancer treatment delay may reduce breast cancer survival; additional research is needed to better understand the points at which delays are most likely to occur and develop policies, programs, and interventions to address disparities in treatment delay. There may also be differences in treatment-related survivorship quality of life; approximately 54 % of the women in this sample treated with mastectomies received breast reconstruction surgery. Despite the high reconstruction rates, most women did not receive definitive completion. African American women have higher reconstruction complication rates than Caucasian women; these data provide additional evidence to suggest a disparity in breast reconstruction outcomes by race.*

KEYWORDS *St. Louis, Breast cancer, African American women, Treatment delay, Breast reconstruction*

INTRODUCTION

Breast cancer is the most commonly diagnosed cancer and the second most common cause of cancer death in African American women. Despite lower incidence rates, African American women have a 41 % higher breast cancer mortality rate than

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Caucasian women.¹ Breast cancer mortality rates have fallen overall for American women since 1992; however, mortality rates have declined more slowly in African American women, resulting in an increased mortality disparity.² Breast cancer mortality rates are highest for African American women in the Midwest and South Central regions of the USA. Although most states experienced a reduction in breast cancer mortality rates between 1998 and 2007, breast cancer mortality rates in Missouri have remained largely unchanged and have surpassed national rates.¹ The metropolitan St. Louis area has mortality rates higher than the state of Missouri and the USA. Similar to national and state level trends, African American women in St. Louis have higher mortality rates than their Caucasian counterparts (see Table 1). A cluster of increased unadjusted risk (RR=2.0) of late-stage (regional or distant) breast cancer among women 50 years and older (1996–1998) was detected in eight zip codes in North St. Louis. The women in this region were also less likely to have received adequate diagnosis follow-up (ADFU) after abnormal breast screening.³

The referral-based St. Louis safety net system serves approximately 26 % of metropolitan St. Louis residents whom are underinsured or uninsured.⁴ Women referred from the safety net system between 2005 and 2007 were more likely to be diagnosed with advanced stage breast tumors and experienced delays in the time between symptom recognition and evaluation for diagnosis when referred to a National Cancer Institute-designated Comprehensive Cancer Center (NCI-CCC) in St. Louis, compared to those referred from the private healthcare system.^{5,6} Determinants of disparities in breast cancer mortality are multiple and complex, including differences in socioeconomic status (SES), access to healthcare, adequate screening, timely treatment, tumor characteristics, and other factors.^{2,7–11} Breast cancer treatment delay has been associated with reduced survival in breast cancer patients.^{12–15} Studies suggest that African American women are more likely to experience extended delays during breast cancer treatment.^{16–22} The likelihood of long-term survival is greatest when breast cancer is diagnosed and treated early;²³ therefore, these treatment delays may contribute to increased breast cancer mortality in African American women.^{20,24}

Breast reconstruction after mastectomy has become an essential part of comprehensive breast cancer treatment.^{25–27} Studies suggest that breast reconstruction has positive psychosocial impacts and improves quality of life in breast cancer patients who have undergone mastectomy.^{28–32} The high cost and elective nature of breast reconstruction make it susceptible to healthcare disparities.³³ African American women have significantly lower breast reconstruction rates than Caucasian women.^{25,34–39} Studies at a St. Louis NCI-CCC reported lower rates for breast reconstruction in African American compared to Caucasian women.^{40,41} The purpose of this study was to examine the treatment process in a sample of African American women diagnosed with breast cancer while residing in the North

TABLE 1 Age-adjusted breast cancer mortality rates 2006–2009 (per 100,000)

Location	All races	African Americans	Caucasians
USA	22.6	30.8	22.1
Missouri	24.2	32.4	23.5
St. Louis City County	27.2	29.4	25.9
St. Louis County	25.6	35.7	23.9

Taken from State Cancer Profiles (<http://statecancerprofiles.cancer.gov>, accessed 2013 August 2)

St. Louis cluster of late stage at diagnosis. To gain a more comprehensive look at breast cancer treatment in these women, we assessed the timing of standard treatment by examining treatment intervals and the utilization of elective breast cancer treatment by examining breast reconstruction after mastectomy.

METHODS

Sample Population and Setting

A Community-Based Participatory Approach to Improving Breast Cancer Services for Women Living in St. Louis is a community-based participatory research (CBPR) project developed to assess disruptions and discontinuation of breast cancer treatment as an explanation for the excessive breast cancer mortality in African American women in North St. Louis. The project took a mixed-methods approach including (a) semi-structured interviews conducted with 96 African American breast cancer survivors diagnosed in North St. Louis; (b) focus groups with area residents and healthcare providers; and (c) medical record extractions of 85 (89 %) of the women interviewed. Here, we report on the descriptive analysis of the medical record extraction portion of the project.

The sample for the present study was identified from a larger sample of African American breast cancer survivors residing in the late-diagnosis cluster identified in North St. Louis.²⁰ This cluster is comprised of seven St. Louis City zip codes (63106, 63107, 63112, 63113, 63115, 63120, and 63147) and one St. Louis County zip code (63136). These eight zip codes are predominately urban, African American, high poverty, and have the worst cancer mortality rates in the St. Louis metropolitan area.²¹ According to the Missouri Cancer Registry, 885 women from 8 North St. Louis zip codes were diagnosed with breast cancer from 2000 to 2008; 615 (69.5 %) of those women were treated at a large academic medical center in St. Louis, which includes two hospitals and an affiliated NCI-CCC. At the time of data collection (2012–2013), 432 (70.2 %) of these women were alive and 183 (29.8 %) were deceased. The sample for this study was taken from the 432 breast cancer survivors alive in 2012. The academic medical system and the Missouri Cancer Registry identified eligible women and made the initial contact. Flyers were distributed by community partners throughout the neighborhoods of the eight identified zip codes; advertisements were placed in local newspapers and on local radio stations. This study was approved by the Human Research Protections Office at Washington University in St. Louis.

Data Collection

African American female staff members were trained to conduct semi-structured qualitative interviews using a narrative approach; interviewers were gender and race matched to participants to increase comfort discussing breast cancer treatment. Each woman participated in a 60–90-min interview that took place at her home and allowed her to develop a narrative and voice her story about her treatment experience including barriers encountered during the treatment process that might have delayed treatment. Demographic information for each participant was collected during the interview. Women participating in the interviews also consented to have information on their treatment process extracted from their medical records. This data would allow for triangulation between the qualitative and quantitative data collected on breast cancer treatment process for these women. Most

participants were treated at two of the hospitals in a large academic medical system that serves the greater St. Louis region. Participant data were extracted from electronic medical record (EMR) programs used at the academic medical system: Allscripts, used by outpatient clinics, and ClinDesk, used by inpatient clinics. The EMRs were searched for individual characteristics (age, weight, height at diagnosis), clinical characteristics (tumor histology, stage, grade, hormone receptor status), curative breast cancer treatment characteristics (modalities, start dates, end dates, explanations of treatment decisions and/or delays), and breast reconstruction characteristics (modalities, explanations of breast reconstruction decisions, complications, completion of procedures). The types of EMR documents analyzed included pathology reports, treatment consultations, physician/nurse notes, operative summaries, and treatment summaries.

Measures

Treatment interval¹⁶ was examined to assess the timing of standard breast cancer treatment. Treatment interval has also been called treatment delay^{19,21,24,42} or delay interval.²⁰ These three terms reflect the time from breast cancer diagnosis to initiation of adjuvant or neoadjuvant treatment. We defined treatment interval as the time period (in days) from biopsy date (as a proxy to biopsy-confirmed diagnosis) to definitive surgery or the initiation of neoadjuvant chemotherapy or hormonal therapy.¹⁶ Definitive surgery was defined as the most invasive surgical procedure at the primary site including re-excision of the biopsy site, excisional biopsy, lumpectomy, or mastectomy.⁴³ When only the month and year were given for treatment dates, we substituted that value with the 15th day of the month.¹⁹ Treatment interval was categorized into four groups: ≤ 30 , 31–59, 60–90, and >90 days. Treatment delay was defined as a treatment interval over 60 days.^{43,44}

Statistical Analysis

Univariate statistics were used to summarize each variable with frequencies and percentages. Wilcoxon rank-sum tests were used to compare the treatment interval stratified by point of entry into breast cancer care (safety net vs. private healthcare) and by type of insurance (public insurance vs. private insurance). Chi-squared tests were used to compare demographic factors (education, employment, insurance status), clinical factors, and receipt of mastectomy alone or reconstruction surgery between women with and without treatment delay of over 90 days; Fisher exact tests (nonparametric counterpart of the chi-squared test) were used when data did not meet assumptions for chi-squared test (small cell sample sizes). Data were analyzed using Stata SE 12.1 (College Station, TX); statistical significance was assessed as $p < 0.05$.

RESULTS

Demographic and Clinical Factors

EMR extractions were attempted for all ($n=96$) semi-structured interview participants treated within the academic medical system; 85 women (89 %) were included in the analysis sample after excluding women with no record of breast cancer treatment at the academic medical center ($n=8$) or inadequate information for analysis ($n=3$). This analysis was limited to the first modality of each treatment type. Demographic and clinical characteristics of the analytic sample ($n=85$) are presented in Table 2. The mean and median ages of the participants at diagnosis were both

TABLE 2 Demographic and clinical characteristics of breast cancer patients in North St. Louis

Variable	Frequency	Percent
Demographic characteristics, <i>n</i> =85		
Age at diagnosis: mean (SD), <i>n</i> =83	54.4 (9.8)	
Age at diagnosis category		
≤50	25	29.4
50–59	35	41.2
60–69	18	21.2
≥70	4	4.7
Unknown	2	2.4
Education ^a		
Less than high school	12	14.1
At least high school	27	31.8
Post-high school	46	54.1
Marital status ^a		
Single	61	71.8
Married/living as married	24	28.2
Employment ^a		
Working full time	50	58.8
Working part time	14	16.5
Not working for pay	21	24.7
Income ^a		
<\$19,999	35	41.2
\$20,000–39,999	27	31.8
≥\$40,000	1	17.6
Unknown	8	9.4
Type of insurance ^b		
Public insurance	51	60.0
Private insurance	23	27.1
Self-pay	4	4.7
Unknown	7	8.2
Entry into system ^a		
Private healthcare	65	76.5
Safety net healthcare	14	16.5
Unknown	6	7.1
Clinical characteristics, <i>n</i> =85		
Tumor type		
Invasive ductal carcinoma	47	55.3
Ductal carcinoma in situ (DCIS)	16	18.8
Tumor (NOS)	5	5.9
Invasive lobular carcinoma	3	3.5
Invasive mammary carcinoma	2	2.4
Invasive mammary carcinoma with lobular and ductal features	2	2.5
Ductal adenocarcinoma	1	1.2
Inflammatory breast cancer	1	1.2
Metaplastic carcinoma	1	1.2
Metastatic adenocarcinoma	1	1.2
Papillary carcinoma	1	1.2
Poorly differentiated carcinoma	1	1.2
Tubular carcinoma	1	1.2
Unknown	5	3.5
TS staging group		
Stage 0	8	9.4

TABLE 2 *Continued*

Variable	Frequency	Percent
Stage I	22	25.9
Stage II	28	32.9
Stage III	7	8.2
Stage IV	0	0.0
Unknown	20	23.5
Histology grade		
I	16	18.8
II	23	27.1
III	25	29.4
Unknown	21	24.7
Hormone receptor expression		
ER+PR+	35	41.2
ER+PR−	10	11.8
ER−PR+	2	2.4
ER−PR−	10	11.8
ER−PR−HER2− (triple negative)	12	14.4
Unknown	16	18.8

NOS not otherwise specified, *ER* estrogen receptor, *PR* progesterone receptor, *HER2* human epidermal growth factor receptor 2

^aDemographic characteristic taken at time of interview

^bDemographic characteristic taken from the electronic medical record (EMR)

54 years. The majority of women reported that they were single ($n=61$, 72 %), had education beyond high school ($n=46$; 54 %), household incomes below \$40,000 ($n=62$; 73 %), and had at least part time employment at the time of diagnosis ($n=64$; 75 %). Sixty percent of the women ($n=51$) had public insurance including Medicaid, Medicare, or Show Me Healthy Women, Missouri's National Breast and Cervical Cancer Early Detection Program (NBCCEDP), and 16.5 % ($n=14$) entered breast cancer treatment through the St. Louis safety net system.

The most common diagnosis was invasive or infiltrating ductal carcinoma ($n=47$; 55 %), followed by ductal carcinoma in situ (DCIS) ($n=16$, 19 %). Most of the women were diagnosed with stage I ($n=22$; 26 %) or stage II ($n=28$; 33 %) disease; no women in this sample were diagnosed with stage IV disease. Although most women were diagnosed with lower stages of disease, 57 % ($n=48$) of the women were diagnosed with histology grades II and III. Approximately 40 % ($n=35$) of the women were diagnosed with tumors that expressed both estrogen and progesterone receptors. Twelve women (14 %) were diagnosed with triple negative tumors.

Breast Cancer Treatment

Study participants were treated with common breast cancer treatment modalities (see Table 3 for treatment characteristics). The majority of women ($n=45$, 53 %) underwent breast conserving surgery including lumpectomy, excisional biopsy, cancer excision, wide local excision, or partial/segmental mastectomy. A significant proportion of the women ($n=35$; 41 %) underwent mastectomies. Most women received radiation therapy ($n=50$, 59 %) and/or chemotherapy ($n=38$, 45 %). A small percentage of women received targeted therapy ($n=4$; 5 %) and ovarian ablation ($n=3$; 4 %). Over 50 % ($n=44$) of the sample received adjuvant hormone therapy.

TABLE 3 Treatment characteristics of breast cancer patients in North St. Louis

Variable	Frequency	Percent
Treatment characteristics, <i>n</i> =85		
Surgery		
Breast conserving surgery ^a	45	52.9
Mastectomy ^b	35	41.2
Unknown	5	5.9
Chemotherapy		
Yes	38	44.7
No	29	34.1
Not recommended	10	11.8
Unknown	8	9.4
Radiation		
Yes	50	58.8
No	29	34.1
Not recommended	4	4.7
Unknown	2	2.4
Targeted therapy		
Yes	4	4.7
No	74	87.1
Not recommended	3	3.5
Unknown	4	4.7
Ovarian ablation		
Yes	3	3.5
No	69	81.2
Not recommended	3	3.5
Unknown	10	11.8
Adjuvant hormone therapy		
Yes	44	51.8
No	25	29.4
Not recommended	8	9.4
Unknown	8	9.4
Reconstructive surgery, <i>n</i> =85		
Yes	21	43.5
No	64	56.5

^aBreast conserving surgery included lumpectomy, excisional biopsy, cancer excision, wide local excision, and partial/segmental mastectomy

^bMastectomy included total (simple) mastectomy, modified radical mastectomy, bilateral mastectomy, and mastectomy

Treatment Interval

The mean and median treatment intervals were 44 and 27 days, respectively (Table 4). Forty-eight percent (*n*=41) of the women initiated treatment within 30 days of diagnosis. Approximately 7 % (*n*=6) of the participants had treatment delays between 60 and 90 days. Five participants (6 %) had treatment delays over 90 days. In order to determine if these five women differed from their counterparts, we conducted Fisher exact tests to examine any differences in demographic or clinical factors between women with and without treatment delay of over 90 days. We found no significant differences in demographic or clinical factors between the two groups of women (data not shown). Interestingly, four (80 %) of the five women with treatment delay over 90 days received reconstruction; three (60 %) of

TABLE 4 Treatment intervals and delay in breast cancer patients from North St. Louis

Variable	Frequency	Percent	Median	<i>p</i> value
Treatment interval (days)				
Mean (SD), <i>n</i> = 70	44.1 (54.31)		26.5	
Treatment interval by category				
≤30 days	41	48.2		
31–59 days	16	18.8		
60–90 days	6	7.1		
>90 days	5	5.9		
Unknown	17	20.0		
Treatment interval by point of entry (days)				
Private healthcare: mean (SD), <i>n</i> = 53	46.1 (55.6)		28	<i>p</i> = 0.99
Safety net healthcare: mean (SD), <i>n</i> = 11	45.8 (62.6)		26	
Treatment interval by type of insurance (days)				
Public insurance: mean (SD), <i>n</i> = 40	47.7 (59.7)		27.5	<i>p</i> = 0.27
Private insurance: mean (SD), <i>n</i> = 21	32.8 (20.8)		23	

p values were obtained from Wilcoxon rank-sum tests

these women received immediate reconstruction that was not completed. We conducted treatment interval analysis stratified by entry into the breast cancer treatment system (safety net system vs. private health system) and insurance status (public vs. private). Wilcoxon rank-sum tests found no significant differences between treatment intervals by entry into treatment or type of insurance (Table 4).

Breast Reconstruction

Overall, 44 % (21/85) of the sample received some type of breast reconstruction; the majority of these surgeries were immediate (*n* = 13; 62 %) and involved the placement of implants (*n* = 11, 52 %). Among women who received mastectomies (*n* = 35), 54 % received breast reconstruction. Approximately 38 % (*n* = 8) of reconstructive surgeries initiated were not completed as intended. The primary reason reported for incomplete reconstruction was infection at the wound site (*n* = 6; 66.7 %). A smaller percentage of immediate reconstructions were completed (*n* = 4/13; 31 %) compared to delayed reconstructions completed (*n* = 4/6; 67 %); however, this difference was not statistically significant (Table 5).

DISCUSSION

Treatment Interval

Studies report that African American women are more likely to experience breast cancer treatment delays than Caucasian women.^{16–22,42,43,45–47} Additionally, woman with public insurance, such as Medicaid and Medicare, are also more likely to experience breast cancer treatment delays.^{43,48} Delays in treatment may occur at multiple points: symptom recognition, delays in seeking treatment, delays in gaining initial access to treatment, referral delays, and delays from initial presentation to a breast cancer specialist to definitive treatment. In this analysis, we assessed the last step in this process in a sample of African American female breast cancer patients, most (60 %) of whom had public insurance. The median treatment interval (time from diagnosis to initiation of treatment) was 27 days; median treatment intervals of

TABLE 5 Breast reconstruction characteristics of breast cancer patients in St. Louis

Variable	Frequency	Percent
Reconstruction by definitive surgical treatment, <i>n</i> =21		
Mastectomy	19	90.5
Wide local excision	2	9.5
Reconstructive surgery after mastectomies, <i>n</i> =35		
Received reconstruction	19	54.3
Received no reconstruction	16	45.7
Timing of reconstructive surgery, <i>n</i> =21		
Immediate	13	61.9
Delayed	6	28.6
Unknown	2	9.5
Completion of reconstructive surgery		
Immediate reconstruction, <i>n</i> =13	4	30.8
Delayed reconstruction, <i>n</i> =6	4	66.7
Total reconstructions, <i>n</i> =21	8	38.1
Type of reconstructive surgery, <i>n</i> =21		
Implants	11	52.4
TRAM (transverse rectus abdominis muscle) flap	3	14.3
Latissimus dorsi flap	2	9.5
Latissimus myocutaneous flap and implant	2	9.5
Deep inferior epigastric artery perforator (DIEP) flap	1	4.8
Local advancement flap skin grafting	1	4.8
Mastopexy	1	4.8
Reason for termination of reconstruction (<i>n</i> =9)		
Infection	6	66.7
Patient changed her mind	1	11.1
Patient lost to follow-up	1	11.1
Patient weight gain	1	11.1

15–20 days have been reported for African American breast cancer patients.^{16,42} However, in multiethnic populations, the median breast cancer treatment intervals range from 7 to 27 days.^{16,17,21,24,45} The NBCCEDP benchmark states no more than 20 % of women should have treatment delay (time from diagnosis to initiation of treatment) of over 60 days;⁴⁴ 12.2 % of women in this sample had treatment delay over 60 days.

Treatment delays of more than 90 days may result in poorer treatment outcomes^{12,14,49,50} and have been associated with reduction in breast cancer-specific survival.^{13,15} Five women (6 %) had treatment delay over 90 days. Four of these five women received immediate breast reconstruction, and immediate reconstruction was not completed in three of those women. This may be significant because breast reconstruction is associated with increased treatment delay in breast cancer patients,⁴⁸ and immediate breast reconstruction surgeries are more likely to have surgical complications that may delay subsequent adjuvant therapies.^{51,52} Even though we did not have a large enough sample size for adequate power to detect associations between demographic and clinical factors between women with and without treatment delay over 90 days, we hypothesize that the high percentage of immediate breast reconstruction may have contributed to the treatment delays over 90 days in those women and is an important area for future research.

Our results are contrary to most of the treatment delay literature and concur with several studies that report African American women do not experience more treatment delay.^{24,53–55} Most of these studies were focused on low income and medically underserved women enrolled in the NBCCEDP, Medicaid, Medicare, or other public insurance programs, indicating that treatment delays may be reduced when controlling for SES and insurance status.²¹ Under these conditions, clinical factors may play a more important role in treatment delay than demographic factors.²⁴ Overall, conflicting research findings on treatment delay may result from the inconsistent definitions of treatment delay and variations among study populations.^{15,21,23} Delays may occur at all phases of follow-up, and this study only addresses one type of delay. Breast cancer treatment delay may reduce breast cancer survival; additional breast cancer treatment research is needed to better understand the points at which delays are most likely to occur and develop policies, programs, and interventions to address disparities in treatment delay.²⁰

Breast Reconstruction

Studies report that African American women are less likely to receive breast reconstruction than Caucasian women^{25,27,35,37,39,56–68} Breast reconstruction improves well-being and promotes recovery in breast cancer survivors^{28,30,32} making it a critical area of survivorship research.²⁵ We found that 54.3 % of women in our study who received mastectomy had reconstruction, compared to the 18 to 34 % previously reported for African American women.^{28,30,32} Our results are consistent with the reconstruction rate of 49 % in African American women previously reported for this academic medical center in St. Louis.⁴⁰ Most of the women in our sample were middle-aged, had relatively early stage breast tumors, and were treated at an academic medical center with an affiliated NCI-CCC. All of these factors are associated with increased odds of receiving reconstruction^{27,56,57,69} and may contribute to the high reconstruction rates in the sample. Immediate reconstruction procedures result in more post-surgical complications.^{51,52} Therefore, it is not surprising that in this sample, women who received immediate reconstruction had a smaller proportion of procedures completed than those who received delayed reconstruction. Despite the high reconstruction rates in this sample, 62 % of the women did not receive definitive completion of their breast reconstruction as a result of primarily wound infections. These rates are higher than those reported in a population-based study in which 8.4 % of women had surgical complications inclusive of implant or flap loss, deep wound infection, surgical site infections, and unplanned return to the operating room.⁷⁰ Additionally, patients with breast reconstruction surgical complications were more often African American; African American women have higher complication rates than Caucasian women.^{70,71} These data provide additional evidence to suggest a disparity in reconstruction outcomes by race.

Two women (10 %) in this sample who received wide local excision as definitive surgery opted for breast reconstruction have two major implications. Primarily, it calls attention to reconstructive procedures outside of those with autologous tissue and/or implants, which also need to be considered in reconstruction studies.³⁹ It also suggests that researchers may be underestimating the rate of breast reconstructions if analysis is limited only to postmastectomy procedures. While some studies suggest that breast reconstruction impacts quality of life in breast cancer survivors,^{28–32} others report little if any difference between quality of life in women with and without breast reconstruction^{38,72,73} African American women have been under-

represented in breast reconstruction decision-making studies,⁷⁴ and to our knowledge, little research has focused on differences in breast reconstruction outcomes in diverse samples of women. More studies, particularly those prospective in nature, are needed to fully understand the rates, determinants, and outcomes of breast reconstruction in racially/ethnically diverse breast cancer patients.

Strengths and Limitations

This study is not without limitations. The small sample size ($n=85$) limited the power of our bivariate analysis and prohibited us from examining associations with regression analysis. The sample analyzed may not reflect the characteristics of the other breast cancer survivors alive at the beginning of this study. Selection bias may have been introduced as (a) women who agreed to participate in this study may have had different sociodemographic and clinical factors and/or may have been more actively engaged in their breast cancer treatment than those who declined participation and (b) no women diagnosed with stage IV cancer are included in the sample. Based on the inclusion criteria for the study women were to be diagnosed between 2000 and 2008, women who presented with metastatic disease during this period are likely to have died before this study was conducted in 2012 or be too ill to participate. This greatly limits the generalizability of study findings to women presenting at later stages of disease. The lack of a comparison group somewhat hindered our ability to compare our results with previous literature. The use of EMR for record extractions was also challenging; there was often missing data due to the differential uptake of the electronic system by medical specialties at the healthcare institutions where the women were treated. Despite these challenges, the EMR extraction did allow for the examination of factors that contributed to the timing and completion of breast cancer treatment than a population-based dataset. The local focus of this project limits the generalizability of these results beyond the North St. Louis region. On the other hand, this community-based study gave us a unique opportunity to examine breast cancer treatment in a sample of African American women diagnosed in North St. Louis. Developing evidence-based treatment practices and effective culturally competent region-specific interventions for treatment delay require studies targeted at specific populations.²¹ Therefore, this study is a vital component to the work being done to eliminate breast cancer treatment disparities in African American women in St. Louis.

CONCLUSION

Breast cancer treatment delays have implications for breast cancer survival, while breast reconstruction has implications for quality of life outcomes among breast cancer survivors. The medical center, where the participants were treated, is involved in the National Cancer Institute Community Networks Program and has enacted improvements in screening mammography, referrals from the safety net system, and expansion of the breast cancer navigation program, as a means to reduce breast cancer disparities among women in St. Louis;⁵ as a result, treatment intervals did not significantly differ by entry into cancer treatment by type of referring institution or by type of insurance, and 54 % women in this sample received breast reconstruction. Given the complexity of breast cancer treatment, transdisciplinary approaches are needed to fully understand the many factors that contribute to treatment in breast cancer patients, particularly for African American women who suffer the worse outcomes from this disease.

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