Breast Cancer Stage and Treatment Among Ohio Medicaid Beneficiaries With and Without Mental Illness

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Abstract

Purpose: There is a dearth of studies on cancer outcomes in individuals with mental illness. We compared breast cancer outcomes in Medicaid beneficiaries with and without mental illness.

Methods: Using records from the 1996 to 2005 Ohio Cancer Incidence Surveillance System (OCISS) and Medicaid files, we identified fee-for-service women age < 65 years diagnosed with incident invasive breast cancer who had enrolled in Medicaid $\geq$ 3 months before cancer diagnosis ($n = 2,177$). We retrieved cancer stage, patient demographics, and county of residence from the OCISS. From Medicaid claims data, we identified breast cancer treatment based on procedure codes and mental illness status based on diagnosis codes, prescription drugs dispensed, and service codes. We developed logistic regression models to examine the association between mental illness, cancer stage,

and treatment for locoregional disease, adjusting for potential confounders.

Results: Women with mental illness represented 60.2% of the study population. Adjusting for potential confounders, women with mental illness were less likely than those without mental illness to have unstaged or unknown-stage cancer (adjusted odds ratio [OR], 0.61; 95% CI, 0.44 to 0.86; $P = .005$) or to be diagnosed with distant-stage cancer (adjusted OR, 0.59; 95% CI, 0.40 to 0.85; $P = .005$). We observed no difference by mental illness status in receipt of definitive treatment (adjusted OR, 1.04; 95% CI, 0.84 to 1.29; $P = .08$).

Conclusion: Among Ohio Medicaid beneficiaries, women with mental illness did not experience disparities in breast cancer stage or treatment of locoregional disease. These findings may reflect the equalizing effects of Medicaid through vulnerable individuals' improved access to both physical and mental health care.

Introduction

Patients with mental illness bear increased risk for comorbid chronic physical conditions such as diabetes, cardiovascular disease, and cancer.¹⁻³ Despite the well-documented excess morbidity and premature mortality among such patients,⁴⁻¹³ delayed diagnoses and suboptimal management of these conditions are common.² Patients with mental illness often present with acute or advanced stages of physical disease. Potential contributors to delayed diagnosis include under-reporting of physical signs and symptoms by the patient and physician misinterpretation of physical complaints as psychosomatic symptoms.² Once diagnosed with medical comorbidities, patients with mental illness are more likely to experience barriers to adequate treatment.^{1,14,15} These barriers may be related to the health care system (eg, lack of access to health care, fragmented health care system, or stigmatization by health care providers) and to the patients themselves, as a result of poor communications skills and poor adherence to recommended treatment.^{1,14,16,17}

Higher breast cancer incidence and mortality have been documented in women with severe mental illness compared with their healthier counterparts.¹⁸ However, less is known about differences in breast cancer stage at which women with or without mental illness are diagnosed. In addition, to our knowledge, only one study has compared breast cancer treatment patterns

between women with and without mental illness.¹⁹ Findings from this study documented a lower likelihood to undergo breast-conserving surgery and radiation therapy in women with mental illness versus those without.

This study aimed to compare breast cancer outcomes between Medicaid beneficiaries with and without mental illness. Given the lower rates of screening mammography,^{20,21} we hypothesized that women with mental illness would be more likely than those without to be diagnosed with advanced-stage cancer. Moreover, because of the barriers to optimum health care, we hypothesized that mental illness would be associated with a decreased likelihood to receive definitive cancer treatment for locoregional disease.

Methods

We conducted a cross-sectional analysis using linked Ohio Cancer Incidence Surveillance System (OCISS) and Medicaid files. This study was approved by the institutional review boards at Case Western Reserve University and the Ohio Departments of Health, as well as by the Ohio Department of Medicaid.

Data Sources

OCISS. By law, except for in situ cervical cancer and nonmelanoma cancers of the skin, all incident cases of cancer must be reported to the OCISS. In addition to patient identifiers, which

were used to link OCISS and Medicaid records, the OCISS carries each patient's county of residence, marital status, anatomic cancer site, date of cancer diagnosis, and cancer stage. Because of high proportions of missing values in the variables documenting tumor size, number of positive lymph nodes, and metastatic status, we used the SEER summary stage instead of the stage classification by the American Joint Commission on Cancer.

Ohio Medicaid enrollment and claims files. For each Medicaid enrollee, the enrollment file includes a record carrying patient identifiers, demographics, and monthly variables indicating the individual's enrollment in the Medicaid program, as well as the eligibility category. Thus, we summarized beneficiaries' enrollment history in relation to cancer diagnosis and created indicators for eligibility, including those with disabilities and those eligible for dual Medicare-Medicaid and/or spend-down program participation.

The claims files include claims for all services reimbursed by Medicaid. Diagnosis codes—documented according to the International Coding of Diseases (ninth revision), Clinical Modification (ICD-9-CM)—and procedural codes—documented according to the ICD-9-CM, Current Procedural Terminology (ed 4), or Healthcare Common Procedure Coding System—were used to flag the presence of mental illness and/or comorbid conditions and to ascertain receipt of definitive treatment.

Data Linkage

Consistent with prior studies by our group,²²⁻²⁴ we linked the OCISS and Medicaid files on a year-by-year basis, using a multistep deterministic linkage algorithm, as follows:

- Step 1: Social Security number (SSN), first name, last name.
- Step 2: SSN, first name, date of birth (month).
- Step 3: SSN, last name, date of birth (month).
- Step 4: last name, first name, date of birth (month), date of birth (year).

In any given year, 83% to 89% of women in both the OCISS and Medicaid files were identified through step 1, and $\geq 5\%$ were identified through step 4. The remaining individuals were identified through steps 2 and 3.

Study Population

Our study population consisted of Ohio Medicaid beneficiaries age < 65 years diagnosed with invasive incident female breast cancer during the years 1996 to 2005 who had been enrolled in the Medicaid program ≥ 3 months before cancer diagnosis ($n = 2,795$). Because of incomplete claims data, we excluded all patients who were enrolled in managed care within 6 months before and 6 months after cancer diagnosis ($n = 356$). In addition, because of the common co-occurrence of intellectual developmental disabilities (IDDs) with psychiatric conditions, we also excluded individuals identified with IDDs ($n = 262$), leaving our study population at 2,177. Individuals with IDDs were identified by using the relevant ICD-9-CM diagnosis codes (ie,

299, 315.8, 315.9, 317, 318, 319, 343, 742.4, and 758), category of service codes, and provider specialty codes.²⁵

Outcome Variables

Cancer stage at diagnosis. We identified cases in which patients had unstaged or unknown-stage cancer or in which there was not sufficient information to assign a cancer stage. We also examined distant-stage cancer, identifying cases in which distant metastasis was diagnosed at presentation.

Definitive cancer treatment. Limiting our analysis to patients diagnosed with locoregional disease and using procedural codes listed elsewhere,²⁶ we categorized definitive cancer treatment as follows: for local-stage cancer, mastectomy or lumpectomy plus radiation therapy; for regional-stage cancer, mastectomy plus chemotherapy or lumpectomy, plus radiation therapy, plus chemotherapy.

Independent Variables

Mental illness. We relied on a number of indicators to identify the presence of mental illness and or alcohol or substance abuse, consistent with a previously published study.²⁷ The following codes were selected with input from the Ohio Department of Medicaid and from two of our coauthors (C.V.T., S.L.) with extensive content expertise.

First, we identified patients with ICD-9-CM diagnosis codes for organic psychotic conditions and other psychoses (290 to 299); neurotic disorders, personality disorders, and other nonpsychotic mental disorders (300 to 314, 315.0 to 315.5, and 316); and alcohol or drug abuse (265.2, 357.5, 535.3, 571.0-571.3, 980, V11.3, and V65.42). Next, we determined receipt of mental health services, based category of service code for mental inpatient hospital (03), mental health services (41), psychology services (48), and mental health support (59); provider specialty codes for child psychiatry (21), psychiatry (23), and psychiatry neurology (75); and provider-type codes for mental hospital (02), services received through the Ohio Department of Alcohol and Drug Addiction Services (11), psychologist (individual or group; 42 and 67), clinic (mental, drug, or alcohol; 51), services received through the Ohio Department of Mental Health (84), and mental health support services (91). We then identified records for filled prescriptions pertaining to psychiatric conditions (eg, anxiolytic, antipsychotic, mood stabilizer, antidepressant, attention deficit disorder, and narcolepsy drugs). Because the administration of antidepressants may involve indications other than mental illness, we conducted a sensitivity analysis by identifying mental illness with and without antidepressants. The results did not change in any substantive way.

Once these indicators were created, mental illness was identified by applying the following algorithm: diagnosis for mental illness plus receipt of mental health services or prescription drugs for psychiatric conditions.

To further minimize the possibility of identifying false-positive cases, we included an additional criterion: if a patient had

received services from a psychologist, we required that there had been at least one visit to a psychiatrist or at least one filled prescription for a psychiatric condition.

Demographics and county of residence. We grouped patients into the following age categories: 18 to 39, 40 to 49, 50 to 59, and 60 to 64 years. Because of small racial and ethnic minority representation in the state of Ohio, we identified women as either African American or other. Marital status was categorized as married, nonmarried, or unknown. County of residence at the time of diagnosis was identified as Appalachian, metro, rural, or suburban.²⁸

Comorbidities. We identified nonpsychiatric comorbid conditions according to the method by Elixhauser et al²⁹ and created a dichotomous variable (yes *v* no) to indicate the presence of any comorbid condition.

Nursing home. Because of the strong association between nursing home residence and unstaged or unknown-stage cancer documented in previous studies,³⁰ albeit in the elderly population, we also accounted for nursing home stay in the 6 months before or after cancer diagnosis.

Eligibility categories. We flagged eligibility for the disabled, those eligible for dual Medicare-Medicaid coverage and spend-down program participation, and nursing home stay in the 6 months before or 6 months after cancer diagnosis. These two timeframes were used in the analyses of cancer stage and cancer treatment, respectively.

Statistical Analysis

In addition to a descriptive analysis, we used multivariable regression models to analyze the association between mental illness and the outcomes of interest, after adjusting for patient covariates. For the analysis of stage, we first developed a regression model for unstaged or unknown-stage cancer versus all others. Next, we excluded cases of unstaged or unknown-stage cancer and developed a model for distant-stage cancer versus locoregional disease. Our analysis of receipt of definitive treatment was limited to patients with locoregional cancer. We used SAS software (version 9.2; SAS Institute, Cary, NC).

Results

Table 1 summarizes the distribution of the study population by demographic and other attributes. Of the 2,177 Medicaid beneficiaries with incident invasive female breast cancer, we identified 1,310 women with mental illness (60.2%). Their mean age was 52.2 years, compared with 50.8 years for women without mental illness. Women with mental illness were more likely to be non-African American, unmarried, and enrolled in the disabled program within Medicaid. They were also more likely to be diagnosed with medical comorbidities (83.8% *v* 64.6%; $P < .001$).

Table 2 lists the results of our bivariate analysis of stage and receipt of definitive cancer treatment. The proportion of women with unstaged or unknown-stage cancer was significantly lower among those with than those without mental ill-

ness (6.5% and 9.9%, respectively; $P = .004$). Conversely, unstaged or unknown-stage cancer was significantly higher among women receiving nursing home care in the 6 months preceding cancer diagnosis, compared with their community-dwelling counterparts (23.5% *v* 7.4%).

With regard to distant-stage cancer at diagnosis, a significantly lower proportion of women with mental illness than those without were diagnosed with metastatic cancer (5.4% *v* 10.2%). The proportion of distant-stage cancers at diagnosis was also significantly lower among women with comorbidities compared with those without (5.6% *v* 12.6%), among those with dual Medicare-Medicaid eligibility compared with those not eligible for dual participation (4.7% *v* 8.1%), and among those with known marital status (married, 7.2%; unmarried, 6.7%; and unknown, 13.1%); however, it was higher among those receiving nursing home care in the 6 months before cancer diagnosis compared with their community-dwelling counterparts (19.2% *v* 7.0%).

Receipt of definitive treatment by women diagnosed with locoregional cancer did not differ by presence of mental illness (58.9% *v* 54.8% in women with and without mental illness, respectively; $P = .08$). We observed a lower proportion of definitive treatment among married women (49.7% *v* 59.2% in unmarried women or 60.2% in women with unknown marital status). Conversely, women with medical comorbidities and those enrolled in the disabled program were more likely to receive definitive treatment (60.8% *v* 45.3% and 61.6% *v* 45.9%, respectively; both $P < .001$).

Table 3 lists the results of the multivariable analysis. Results from the regression analysis indicated that after adjusting for potential confounders, women with mental illness were less likely than those without to have unstaged or unknown-stage cancer (adjusted odds ratio [OR], 0.61; 95% CI, 0.44 to 0.86; $P < .001$) and less likely to present with distant-stage cancer (adjusted OR, 0.59; 95% CI, 0.40 to 0.85; $P < .001$). The likelihood to receive definitive treatment for breast cancer did not differ by the presence of mental illness (adjusted OR, 1.04; 95% CI, 0.84 to 1.29).

Discussion

In this study, we examined potential differences in breast cancer outcomes between women with and without mental illness. The findings indicated that among Ohio Medicaid beneficiaries, women with mental illness were less likely than those without to have unstaged or unknown-stage cancer and less likely to be diagnosed with metastatic disease, but they were equally likely to receive definitive treatment for locoregional cancer. As such, findings from this study suggest that the higher breast cancer mortality previously reported among women with mental illness¹⁸ may not be the result of later stage at diagnosis, especially if the excess cancer mortality in individuals with mental illness, as documented previously in the population at large, also holds true in the Medicaid population. Additional studies need to focus on other causes of higher mortality, such as differences in factors that influence long-term survivorship. These findings also suggest that patients with mental illness possibly

Table 1. Demographic and Clinical Characteristics of Study Population

Characteristic	Mental Illness				Total (N = 2,177)	
	Yes (n = 1,310)		No (n = 867)			
	No.	%	No.	%	No.	%
Age, years*						
18-39	85	6.5	149	17.2	234	10.8
40-49	398	30.4	175	20.2	573	26.3
50-59	549	41.9	307	35.4	856	39.3
60-64	278	21.2	236	27.2	514	23.6
Race*						
African American	298	22.8	258	29.8	556	25.5
Other	1,012	77.3	609	70.2	1,621	74.5
Marital status*						
Married	223	17.0	223	25.7	446	20.5
Not married	866	66.1	514	59.3	1,380	63.4
Unknown	221	16.9	130	15.0	351	16.1
Region						
Appalachian	265	20.2	171	19.7	436	20.0
Metro	785	59.9	496	57.2	1,281	58.8
Rural	111	8.5	91	10.5	202	9.3
Suburban	149	11.4	109	12.6	258	11.9
Comorbidities*						
Yes	1,098	83.8	560	64.6	1,658	76.2
No	212	16.2	307	35.4	519	23.8
Nursing home†						
Yes	49‡	3.7	19‡	2.2	68‡	3.1
No	1,261‡	96.3	848‡	97.8	2,109‡	96.9
Medicare						
Yes	336‡	25.7	195‡	22.5	531‡	24.4
No	974‡	74.4	672‡	77.5	1,646‡	75.6
Disability*						
Yes	1,001‡	76.4	480‡	55.4	1,481‡	68.0
No	309‡	23.6	387‡	44.6	696‡	32.0
Spend-down program						
Yes	210‡	16.0	128‡	14.8	338‡	15.5
No	1,100‡	84.0	739‡	85.2	1,839‡	84.5

* $P < .001$.† $P < .05$. All other comparisons not significant at $P < .05$.

‡ Entered 6 months before cancer diagnosis.

undergo physical assessment at a higher frequency than previously thought. Indeed, findings from a qualitative study of 129 patients who were seen for a mental health intake visit indicated that physical health was discussed in 87% of such visits.³¹

Two important factors need to be borne in mind when interpreting these unexpected findings. First, the findings reflect the equalizing effect³² of the Medicaid program and its ability to reduce financial barriers, at least partially, thus improving vulnerable individuals' access to care. In addition, although the comparison group consisted of women without mental illness, it included Medicaid-insured women who also face important challenges, such as mobility impairments, which have been shown to be associated with numerous barriers to care.^{33,34}

Second, by limiting our study population to Medicaid beneficiaries who had been enrolled in Medicaid at least 3 months before cancer diagnosis, this study excluded a vulnerable subgroup of individuals who are new Medicaid beneficiaries, including women who may lack the self-help skills and/or the informal and formal support networks needed to identify programs for which they may be eligible and in which they can enroll and women whose incomes slightly exceed the Medicaid eligibility threshold, rendering them uninsured or underinsured. In turn, this limited our study population to women who have learned how to navigate the Medicaid program and excluded those with incomes exceeding the Medicaid threshold who are likely to use Medicaid as a safety net program and enroll

Table 2. Bivariable Association Between Patient Covariables, Stage at Diagnosis, and Receipt of Definitive Treatment

Variable	Unstaged or Unknown-Stage Cancer		Distant-Stage Cancer		Definitive Treatment for Locoregional Cancer	
	No.	%	No.	%	No.	%
Mental illness						
Yes	85*	6.5	66†	5.4	683	58.9
No	86	9.9	80	10.2	384	54.8
Age, years						
18-39	16	6.8	27‡	12.4	100	52.4
40-49	43	7.5	33	6.2	272	54.7
50-59	58	6.8	52	6.5	441	59.1
60-64	54	10.5	34	7.4	254	59.6
Race						
African American	49	8.8	44	8.7	245‡	52.9
Other	122	7.5	102	6.8	822	58.8
Marital status						
Married	32†	7.2	28	6.8	192*	49.7
Not married	93	6.7	97	7.5	704	59.2
Unknown	46	13.1	21	6.9	171	60.2
Region						
Appalachian	39	8.9	22	5.5	233‡	62.1
Metro	105	8.2	85	7.2	595	54.5
Rural	11	5.5	19	10.0	109	63.4
Suburban	16	6.2	20	8.3	130	58.6
Comorbidities						
Yes	127	7.7	86†	5.6	879†	60.8
No	44	8.5	60	12.6	188	45.3
Nursing home						
Yes	16†§	23.5	10†§	19.2	38	59.4
No	155§	7.4	136§	7.0	1,029	57.3
Medicare						
Yes	38§	7.2	23‡	4.7	305	57.4
No	133§	8.1	123§	8.1	762	57.3
Disability						
Yes	122§	8.2	94§	6.9	837†	61.6
No	49§	7.0	52§	8.0	230	45.9
Spend down						
Yes	34§	10.1	18§	5.9	198	61.5
No	137§	7.5	128§	7.5	869	56.5

* $P < .01$.

† $P < .001$.

‡ $P < .05$. All other comparisons not significant at $P < .05$.

§ Entered 6 months before cancer diagnosis.

|| Entered 6 months before or after cancer diagnosis.

after being diagnosed with cancer. As shown previously, these women are significantly more likely to present with advanced-stage cancer than those who had been enrolled in Medicaid before being diagnosed with cancer.^{22,35-37}

Although limiting our study population to those enrolled in Medicaid at least 3 months before cancer diagnosis poses a challenge for the generalizability of the findings to those with mental illness at large, we note that this criterion was required to give us a look-back period of adequate length to identify women with mental illness and/or physical comor-

bid conditions. As such, the use of administrative claims data to identify and study outcomes in individuals with mental illness and/or medical comorbidities poses an important methodologic challenge that may be overcome by linking these data to an external source of data that flags mental illness independently of claims data.

Our definition of mental illness deserves some additional discussion. By including relevant diagnosis codes, codes for mental health services, and codes for prescription drugs, our goal was to be more rather than less encompassing. Our reliance

Table 3. Results From Multivariable Logistic Regression Analysis

Factor	Unstaged or Unknown-Stage Cancer		Distant-Stage Cancer		Definitive Treatment for Locoregional Cancer*	
	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Mental illness						
Yes	0.61†	0.44 to 0.86	0.59†	0.40 to 0.85	1.04	0.84 to 1.29
No‡	1.0		1.0		1.0	
Age, years						
18-39‡	1.0		1.0		1.0	
40-49	1.22	0.64 to 2.34	0.76	0.42 to 1.37	0.63§	0.43 to 0.93
50-59	0.98	0.50 to 1.91	0.84	0.46 to 1.54	0.67	0.45 to 0.99
60-64	1.57	0.80 to 3.09	1.01	0.53 to 1.92	0.68	0.44 to 1.03
Race						
African American	1.13	0.76 to 1.68	1.29	0.84 to 1.98	0.92	0.71 to 1.17
Other‡	1.0		1.0		1.0	
Marital status						
Married‡	1.0		1.0		1.0	
Not married	1.00	0.65 to 1.57	1.34	0.84 to 2.13	1.39§	1.08 to 1.79
Unknown	2.06†	1.26 to 3.38	1.15	0.63 to 2.12	1.20	0.86 to 1.67
Region						
Appalachian	1.42	0.77 to 2.63	0.76	0.40 to 1.45	1.13	0.78 to 1.62
Metro	1.32	0.74 to 2.32	0.84	0.49 to 1.45	0.80	0.58 to 1.11
Rural	0.80	0.36 to 1.79	1.27	0.65 to 2.50	1.26	0.82 to 1.95
Suburban‡	1.0		1.0		1.0	
Comorbidities						
Yes	0.86	0.55 to 1.35	0.44	0.28 to 0.69	1.60†	1.21 to 2.12
No‡	1.0		1.0		1.0	
Nursing home						
Yes	4.17	2.25 to 7.71	3.91	1.84 to 8.30	0.95	0.55 to 1.63
No‡	1.0		1.0		1.0	
Medicare						
Yes	0.75	0.48 to 1.19	0.60	0.35 to 1.03	0.74§	0.58 to 0.96
No†	1.0		1.0		1.0	
Disability						
Yes	1.38	0.91 to 2.08	1.61§	1.02 to 2.54	1.79	1.38 to 2.31
No‡	1.0		1.0		1.0	
Spend-down program						
Yes	1.35	0.83 to 2.20	0.97	0.53 to 1.79	1.29	0.95 to 1.76
No†	1.0		1.0		1.0	
Length of enrollment in Medicaid before cancer diagnosis, years	0.92§	0.86 to 0.98	0.93§	0.86 to 0.99	1.00	0.96 to 1.04
Cancer stage						
Local	—		—		3.06	2.50 to 3.73
Regional‡					1.0	

Abbreviation: OR, odds ratio.

* Analysis of receipt of definitive treatment was limited to patients with local- or regional-stage cancer.

† $P < .01$.

‡ Referent.

§ $P < .05$.|| $P < .001$. All other statistics not significant at $P < .05$.

on such a multipronged approach is supported by findings from previously published studies,^{38,39} as well as from our own analysis, indicating that not all individuals with a psychiatric condition through diagnosis codes are seen by a mental health

professional, have visits with mental health providers, or are prescribed medications for their psychiatric condition. A 2010 study by the Substance Abuse and Mental Health Services Administration indicated that the highest use of psychotropic

medications was observed among patients with schizophrenia,³⁹ implying that algorithms relying on relevant prescription drugs alone would yield a study population over-represented by those with the most severe mental illnesses and under-represented by those with milder illnesses. Nonetheless, we required mental illness diagnosis codes to be documented simultaneously with receipt of mental health services or prescription drugs for psychiatric conditions. We believe that this strategy, designed to reduce the number of false-positive cases (ie, individuals with mild or no mental illness), provided a balance to a more restrictive approach based solely on concomitant psychiatric diagnosis and psychoactive medication use.

We note that given our algorithm to identify mental illness, our study population was limited to those who actually received treatment for their mental condition. Thus, our findings cannot be generalized to Ohio Medicaid beneficiaries who might have mild, undiagnosed, and/or untreated mental illness or to women with mental illness who are not enrolled in Medicaid, whether in Ohio or elsewhere. Although this remains to be shown in empirical studies, we hypothesize that individuals treated for their mental illness may be more likely than those who are untreated to receive integrated medical and psychiatric care. If true, our results likely project a more favorable picture of cancer outcomes in this vulnerable population than what occurs in the population of persons with mental illness at large, many of whom are untreated. Finally, we note that our sensitivity analysis identifying women in the categories of severe (schizophrenia and bipolar disorders), mild (all other mental disorders), or no mental illness indicated the lack of disparity in outcomes among women with severe mental illness as compared with those with mild or no mental illness.

The principal strength of our study lies in our use of linked data from the OCIS and Medicaid. We also note that in addition to applying stringent criteria to define mental illness, we excluded persons with intellectual and developmental disabilities from our study population, given the high prevalence of psychiatric conditions in this patient population and the likelihood that they will experience uniquely different cancer-related outcomes.

In conclusion, in our population of women who had enrolled in Ohio Medicaid at least 3 months before breast cancer

diagnosis, we observed no disparities associated with mental illness. Additional verification of mental illness, by type and severity of psychiatric diagnosis, through state mental health agencies or other external sources of data, would more fully characterize the study population, allowing more precise interpretation of study findings.

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Authors' Disclosures of Potential Conflicts of Interest

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST**Breast Cancer Stage and Treatment Among Ohio Medicaid Beneficiaries With and Without Mental Illness**

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