Original Article

Opportunities to Improve Detection and Treatment of Depression Among Patients With Breast Cancer Treated in an Integrated Delivery System

Devon K. Check, PhD, Marilyn L. Kwan, PhD, Neetu Chawla, PhD, Stacie B. Dusetzina, PhD, Emily Valice, MPH, Isaac J. Ergas, MPH, Janise M. Roh, MSW, MPH, Tatjana Kolevska, MD, Donald L. Rosenstein, MD, and Lawrence H. Kushi, ScD

Department of Population Health Sciences (D.K.C.), Duke University School of Medicine, Durham, North Carolina; Division of Research (M.L.K., E.V., I.J.E., J.M.R., L.H.K.), Kaiser Permanente Northern California, Oakland, California; Veterans Affairs Greater Los Angeles Healthcare System (N.C.), Los Angeles, California; Department of Health Policy (S.B.D.), Vanderbilt University Medical Center, Nashville, Tennessee; Kaiser Permanente Northern California Vallejo Medical Center (T.K.), Vallejo, California; and Department of Psychiatry (D.L.R.), University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA

Abstract

Context. Patients with cancer commonly experience depression. If not addressed, depression can lead to reduced quality of life and survival.

Objective. Given the introduction of national initiatives to improve management of psychiatric symptoms among patients with cancer, we examined patterns of depression detection and treatment over time, and with respect to patient characteristics.

Methods. This cross-sectional study linked data from the Pathways Study, a prospective cohort study of women diagnosed with breast cancer at Kaiser Permanente Northern California between 2005 and 2013, with data from Kaiser Permanente Northern California's electronic medical record. Pathways participants eligible for this analysis had no known prior depression but reported depressive symptoms at baseline. We used modified Poisson regression to assess the association of cancer diagnosis year and other patient characteristics with receipt of a documented clinician response to depressive symptoms (depression diagnosis, mental health referral, or antidepressant prescription).

Results. Of the 725 women in our sample, 34% received a clinician response to depression. We observed no statistically significant association of breast cancer diagnosis year with clinician response. Characteristics associated with clinician response included Asian race (adjusted risk ratio, Asian vs. white: 0.44, 95% CI: 0.29−0.68) and depression severity (adjusted risk ratio, mild-moderate vs. severe depression: 1.45, 95% CI: 1.11−1.88).

Conclusion. Most patients in our sample did not receive a clinician response to their study-reported depression, and rates of response do not appear to have improved over time. Asian women, and those with less severe depression, appeared to be at increased risk of having unmet mental health care needs. J Pain Symptom Manage 2019;57:587−595.

Key Words

Breast neoplasms, depression, delivery of health care, practice guideline, health services research

Introduction

Approximately 25% of all patients with cancer experience symptoms of depression after diagnosis.[1,2] For some, depressive symptoms may be minimal or temporary. For others, depression may persist throughout or long after cancer treatment.[3−6] If not adequately managed, depression can lead to treatment nonadherence,[7,8] reduced quality of

Address correspondence to: Devon K. Check, PhD, 215 Morris Street, 2nd Floor, Durham, NC 27701, USA. E-mail: devon.check@duke.edu

Accepted for publication: November 26, 2018.

0885-3924/$ - see front matter
https://doi.org/10.1016/j.jpainsymman.2018.11.024

life,[9] and reduced survival.[5,10] The results of prior studies—largely conducted in the late 1990s and early 2000s—suggest that oncology providers may underrecognize symptoms of depression in their patients with cancer.[11–15] While existing research is limited, two prior studies on this topic—both conducted outside of the U.S.—noted that fewer than 25% of patients with cancer and co-occurring depression reported receiving treatment for depression.[16,17]

In recognition of the potential consequences of unmanaged depression, medical professional societies in the U.S.—including the National Academy of Medicine—have increasingly emphasized psychiatric symptom management as an integral part of high-quality cancer care over the last decade.[18] For example, in 2008, the American Society of Clinical Oncology introduced evidence-based recommendations for depression screening for patients newly diagnosed with cancer, and the formulation of a plan for treatment with antidepressants and/or psychotherapy for patients found to have depression.[19] Most recently, in 2012, the American College of Surgeons Commission on Cancer (CoC) issued a psychosocial distress screening standard to which CoC-accredited cancer centers must adhere.[20] It is unclear whether detection and treatment of depressive symptoms among patients with cancer and co-occurring depression have improved following these initiatives. Furthermore, understanding whether clinical or demographic characteristics are associated with receiving needed mental health care is critical for identifying and addressing gaps in care and developing targeted interventions.

Our study leveraged unique patient-reported and electronic medical record (EMR) data from women enrolled in Kaiser Permanente Northern California (KPNC) and diagnosed with breast cancer between 2005 and 2013. Among women reporting symptoms of clinically significant depression soon after diagnosis, we examined patterns of depression diagnosis and treatment. Specifically, we sought to understand whether rates of clinician-recorded depression diagnosis and clinician-ordered depression treatment increased over time, in the context of national initiatives to improve recognition and treatment of depression among patients with cancer. To better understand potential barriers to receipt of needed supportive care, we also assessed patient-level factors associated with diagnosis and treatment of depression.

Methods

Study Setting

Kaiser Permanente is a nonprofit integrated health care system that provides care to more than 10 million members nationwide, including over four million in its Northern California region (KPNC). KPNC members are representative of the region's general population in racial/ethnic diversity and tend to have higher educational levels and employment rates.[21] This integrated system has more than 100 oncologists organized into 15 practice groups, each of which includes one or two of 21 medical centers. During our study period, with cancer diagnoses through mid-2013, there was no standardized approach to distress or depression screening across KPNC's oncology groups, although individual groups may have adopted their own screening protocols. Region-wide adoption of psychosocial distress screening, consistent with the CoC requirement, began in 2015; however, specific protocols and their implementation continue to vary across groups.

Study Population

The Pathways Study is a prospective cohort study that enrolled 4505 women with recently diagnosed breast cancer from KPNC between 2005 and 2013.[22] Cancer diagnoses were ascertained by automatic scanning of electronic pathology reports and confirmed by medical record review. Eligible women were KPNC members and at least 21 years of age at the time of their diagnosis with primary invasive breast cancer (any stage). They had no prior history of cancer other than nonmelanoma skin cancer; spoke English, Spanish, Cantonese, or Mandarin; and lived within 65 miles of a study interviewer. After passive physician consent, eligible women were invited to participate via mail. Procedures for identifying and recruiting women eligible for Pathways have been described in detail previously.[22]

Pathways participants included in the present analysis completed the baseline interview for Pathways within six months of diagnosis, and they were continuously enrolled in the KPNC health plan for the six months before and 12 months after diagnosis with breast cancer ($N = 4271$). As part of the baseline interview, participants completed the Centers for Epidemiologic Studies Depression (CES-D) scale ($N = 4034$), a validated and widely used depression measure,[23] and their score was ≥16 (cutoff for clinically significant depression) ($N = 1045$). In addition, eligible women had no evidence of depression (ICD-9 diagnosis code, antidepressant fill, or a Mental Health department encounter) in the six months before breast cancer diagnosis ($N = 725$). All participants provided written informed consent before study enrollment. The study was approved by the Institutional Review Board of KPNC.

Data Collection

The present analysis is based on data collected during the baseline interview for Pathways, which included interviewer- and self-administered questionnaires.

Baseline interviews typically occurred within two months after cancer diagnosis, were three hours in length, and took place in participants' homes. Depressive symptoms were assessed with the self-administered CES-D. The baseline interview also collected information on patients' demographic characteristics (age, race/ethnicity, nativity, preferred language, marital status, educational attainment, and household income). Data on cancer characteristics (diagnosis year, stage, grade, nodal and hormone receptor status), cancer treatment received (surgery, radiation therapy, chemotherapy, endocrine therapy), medical comorbidities (Charlson Comorbidity Index), depression diagnosis, and prescription of or referral for depression treatment were obtained from KPNC's Virtual Data Warehouse, which includes structured data from the KPNC Cancer Registry and EMR. Detailed data collection procedures for Pathways are described elsewhere.[22]

Measures

Our primary outcome was any EMR-recorded clinician response to depression, including diagnosis or treatment. Diagnosis was defined as having an ICD-9 diagnosis code for depression, and treatment was defined as receipt of an antidepressant prescription or a mental health–related referral. We also considered each outcome (diagnosis and treatment) separately. Outcomes were ascertained between the date of diagnosis with breast cancer through six months after completion of the baseline questionnaire. ICD-9 diagnosis codes for depression and generic drug names for antidepressants were drawn from a recently published study of depression diagnosis and treatment in the primary care setting.[24] Mental health–related referrals included any referrals to Behavioral Health or Psychiatry.

Our main independent variable was year of breast cancer diagnosis (2005–2013). Because of the relatively small number of women diagnosed in each individual year, we combined individual years into three-year segments (2005 to 2007, 2008 to 2010, and 2011 to 2013). Other patient-level variables evaluated for their association with clinician response to depression included demographic characteristics, tumor characteristics, cancer treatment received, comorbidity burden, and depression severity (mild to moderate vs. severe).

Statistical Analysis

We first conducted bivariate analyses with chi-squared tests to assess differences in patient characteristics, including diagnosis year, by clinician response status. Our multivariable analyses used modified Poisson regression with robust error variance, a reliable alternative to binomial regression when relative risk is the parameter of interest.[25] In these models, we examined the adjusted associations of breast cancer diagnosis year, demographic and tumor characteristics, cancer treatment received, comorbidity burden, and depression severity with clinician response to depression. We present 95% CIs and adjusted risk ratios (aRRs). All analyses used SAS 9.3 (Cary, NC).

In a secondary analysis, we used data from the six-month follow-up questionnaire, which asked questions about women's use of psychotherapy. Among women who completed that assessment ($N = 411$), we calculated the proportion with self-reported psychotherapy use since diagnosis who did not appear to have a clinician response to their depressive symptoms based on EMR data alone. Our goal was to estimate the extent to which women may have received depression care outside of KPNC.

Results

Demographic and Health Characteristics of the Cohort

Our analytic cohort included 725 women who reported clinically significant depressive symptoms on the baseline CES-D assessment. About half of women in the cohort reported symptoms consistent with severe (vs. mild to moderate) depression (CES-D score ≥ 22) (Table 1). Most were diagnosed with breast cancer at age 50 years or older (68%) and with Stage I or II disease (83%). Relatively few (9%) had medical comorbidities. The majority were white (56%), born in the U.S. (72%), English-speaking (92%), and reported a household income of at least $50,000 (60%). About half (51%) did not have a college degree.

Distribution of Patient Characteristics by Any Clinician Response to Depression

Overall, 244 (34%) women in our cohort had a documented clinician response to their depressive symptoms. With respect to specific response, 86 (12%) received a depression diagnosis, and 218 (30%) were provided treatment in the form of an antidepressant prescription or mental health–related referral. Among the 218 women provided treatment, 157 (72%) received an antidepressant prescription only; 29 women (13%) received a mental health–related referral only; and 32 (15%) received both.

The characteristics of patients who did and who did not receive a clinician response to their depression are shown in Table 1. Compared to women who received no response, those with a response were more likely to be born in the U.S. (80% vs. 68%, $P = 0.002$) and less likely to be Asian (9% vs. 23%, $P < 0.0001$). In addition, they were less likely to have low educational attainment (11% vs. 20% with high school education or less, $P = 0.01$) and more likely to live in a

Table 1

Characteristics of Pathways Participants With Self-Reported Depression, Who Did and Did Not Experience a Clinician Response[a] to Their Depression

Patient Characteristics	Overall ($N = 725$)	Any Clinician Response ($N = 244$) *n* (%)	No Clinician Response ($N = 481$) *n* (%)	*P*-value
Diagnosis year				
2005–2007	267 (36.8)	102 (41.8)	165 (34.3)	0.11
2008–2010	309 (42.6)	99 (40.6)	210 (43.7)	
2011–2013	149 (20.6)	43 (17.6)	106 (22.0)	
Demographic characteristics				
Age at diagnosis, yrs				
<50	227 (31.3)	83 (34.0)	144 (29.9)	0.07
50–59	249 (34.3)	85 (34.8)	164 (34.1)	
60–69	164 (22.6)	58 (23.8)	106 (22.0)	
≥70	85 (11.7)	18 (7.4)	67 (13.9)	
Race/ethnicity				
Non-Hispanic white	405 (55.9)	146 (59.8)	259 (53.9)	<0.0001
Black	66 (9.1)	28 (11.5)	38 (7.9)	
Hispanic	103 (14.2)	36 (14.8)	67 (13.9)	
Asian	131 (18.1)	22 (9.0)	109 (22.7)	
Other	20 (2.8)	12 (4.9)	8 (1.7)	
Preferred language				
English	669 (92.3)	228 (93.4)	441 (91.7)	0.4
Other	56 (7.7)	16 (6.6)	40 (8.3)	
Nativity				
U.S. born	523 (72.1)	194 (79.5)	329 (68.4)	0.002
Foreign born	202 (27.9)	50 (20.5)	152 (31.6)	
Education				
High school or less	122 (16.8)	28 (11.5)	94 (19.5)	0.02
Some college	247 (34.1)	97 (39.3)	150 (31.2)	
College graduate	203 (28.0)	65 (26.6)	138 (28.7)	
Postgraduate	153 (21.0)	54 (22.1)	99 (20.6)	
Household income				
<$25K	75 (10.3)	19 (7.8)	56 (11.6)	0.01
$25K–$49K	136 (18.8)	42 (17.2)	94 (19.51)	
$50K–$89K	214 (29.5)	92 (37.7)	122 (25.4)	
≥$90K	217 (29.9)	69 (28.3)	148 (30.8)	
Unknown	83 (11.5)	22 (9.0)	61 (12.7)	
Marital status				
Married/partnered	445 (61.4)	140 (57.4)	305 (63.4)	0.27
Single	278 (38.3)	103 (42.2)	175 (36.4)	
Unknown	2 (0.3)	1 (0.4)	1 (0.2)	
Cancer characteristics				
Stage				
I	328 (45.2)	113 (46.3)	215 (44.7)	0.86
II	27 (37.4)	87 (35.7)	184 (38.3)	
III	114 (15.7)	39 (16.0)	75 (15.6)	
IV	12 (1.7)	5 (2.0)	7 (1.5)	
Tumor grade				
Well differentiated	155 (21.4)	48 (19.7)	107 (22.3)	0.82
Moderately differentiated	300 (41.4)	105 (43.0)	195 (40.5)	
Poorly differentiated	209 (28.8)	69 (28.3)	140 (29.1)	
Undifferentiated	6 (0.8)	3 (1.2)	3 (0.6)	
Unknown	55 (7.6)	19 (7.8)	36 (7.5)	
Nodal status				
Positive	280 (38.6)	84 (34.4)	196 (40.8)	0.24
Negative	438 (60.4)	157 (64.3)	281 (58.4)	
Unknown	7 (1.0)	3 (1.2)	9 (0.8)	
Hormone receptor status				
ER+/PR+	441 (60.8)	149 (61.1)	292 (60.7)	0.91
ER+/PR−	138 (19.0)	47 (19.3)	91 (18.9)	
ER−/PR+	145 (20.0)	48 (19.7)	97 (20.2)	
ER−/PR−	1 (0.1)	0 (0.0)	1 (0.2)	
Unknown				
Cancer treatment received				
Surgery	718 (99.0)	241 (98.8)	477 (99.2)	0.60
Radiation therapy	284 (39.2)	89 (36.5)	195 (40.5)	0.29
Chemotherapy	439 (60.6)	148 (60.7)	291 (60.5)	0.60
Hormonal therapy	529 (73.0)	180 (73.8)	349 (72.6)	0.62

(*Continued*)

Table 1
Continued

Patient Characteristics	Overall ($N = 725$)	Any Clinician Response ($N = 244$) n (%)	No Clinician Response ($N = 481$) n (%)	P-value
Other health-related characteristics				
Charlson comorbidity score				
0	663 (91.5)	224 (91.8)	439 (66.2)	0.81
1+	62 (8.5)	20 (8.2)	42 (67.7)	
Depression severity				
Mild to moderate (CES-D[b] score 16–21)	363 (50.1)	100 (41.0)	263 (54.7)	0.0005
Severe (CES-D ≥ 22)	362 (49.9)	144 (59.0)	218 (45.3)	

[a]Clinician response defined as depression diagnosis, prescription of an antidepressant, or referral for mental health services.
[b]Center for Epidemiologic Studies–Depression Scale.

household with an annual income between $50,000 and $89,000 (38% vs. 25%, $P = 0.01$). Finally, they were more likely to have severe versus mild-to-moderate depression (59% vs. 41%, $P = 0.0005$). We did not observe any differences in clinician response status by tumor characteristics, cancer treatment received, or comorbidity burden.

When considering the individual outcome of depression diagnosis (data not shown), we observed similar differences by race, nativity, and depression severity; however, income and education were not statistically significantly associated with depression diagnosis. In addition, patients with a depression diagnosis were more likely than patients without a diagnosis to have Stage IV disease (6% vs. 1%, $P = 0.008$) and to be single (52% vs. 37%, $P = 0.004$). For the individual outcome of depression treatment (data not shown), differences between treated and untreated patients were very similar to those observed when comparing patients with and without any clinician response.

Unadjusted Proportions of Women With Any Depression Response Over Time

Descriptively, the unadjusted proportion of patients with any clinician response appeared to decrease over time. Specifically, among women diagnosed with breast cancer from 2005 to 2007, 38% received some response, compared to 32% of women diagnosed in 2008–2010, and 29% of women diagnosed in 2011–2013 (see Fig. 1). Patterns were similar for diagnosis and treatment as individual outcomes.

Adjusted Associations of Patient Characteristics and Cancer Diagnosis Year With Response

In multivariable analysis, race and depression severity remained statistically significantly associated with receipt of any clinician response to depression. Specifically, Asian women were 56% less likely than white women to have a documented clinician response (aRR: 0.44, 95% CI: 0.29–0.68), and women with severe depression were 45% more likely than women with mild-to-moderate depression to have a documented clinician response (aRR: 1.45, 95% CI: 1.11–1.88). Estimates from the depression diagnosis and treatment models were similar (see Table 2).

After adjustment, estimates were consistent with a decrease in likelihood of clinician response to depression over time; however, the associations of cancer diagnosis year with each outcome remained statistically nonsignificant (see Table 2).

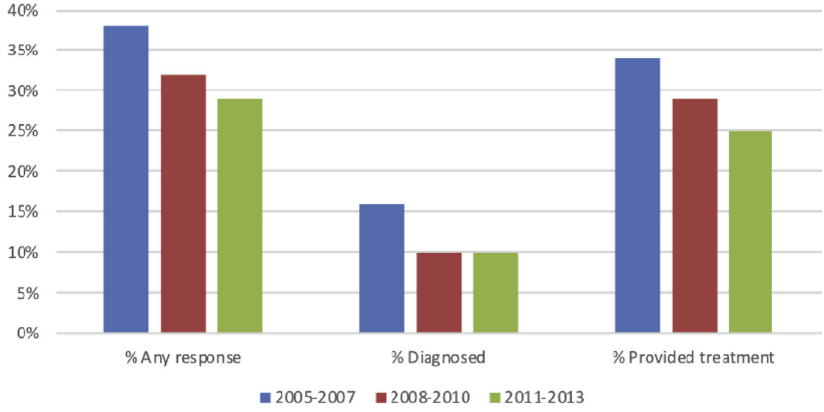

Fig. 1. Proportion of women with any clinician response, depression diagnosis, and depression treatment over time.

Table 2
Adjusted Associations[a] of Patient Characteristics With Any Clinician Response,[b] Depression Diagnosis, and Depression Treatment

Patient Characteristics	Adjusted Risk Ratio and 95% CIs		
	Any Clinician Response	Depression Diagnosis	Depression Treatment
Diagnosis year			
2005–2007	REF	REF	REF
2008–2010	0.84 (0.64–1.13)	0.61 (0.36–1.13)	0.88 (0.64–1.20)
2011–2013	0.76 (0.53–1.09)	0.59 (0.31–1.01)	0.76 (0.51–1.13)
Demographic characteristics			
Age at diagnosis, yrs			
<50	REF	REF	REF
50–59	1.11 (0.88–1.38)	0.93 (0.63–1.39)	1.16 (0.91–1.48)
60–69	1.15 (0.89–1.48)	1.32 (0.87–2.01)	1.09 (0.83–1.43)
≥70	0.70 (0.47–1.05)	0.64 (0.33–1.25)	0.66 (0.42–1.01)
Race/ethnicity			
Non-Hispanic white	REF	REF	REF
Black	1.28 (0.89–1.86)	1.34 (0.70–2.59)	1.25 (0.84–1.86)
Hispanic	1.00 (0.71–1.42)	0.96 (0.52–1.79)	1.03 (0.70–1.50)
Asian	**0.44 (0.29–0.68)[d]**	**0.30 (0.13–0.70)[d]**	**0.50 (0.31–0.79)[d]**
Other		1.99 (0.88–4.53)	1.40 (0.78–2.46)
Preferred language			
English	REF	REF	REF
Other	1.27 (0.68–2.34)	2.34 (0.88–6.23)	1.19 (0.61–2.32)
Nativity			
U.S. born	REF	REF	REF
Foreign born	1.05 (0.68–1.63)	1.04 (0.48–2.29)	1.01 (0.63–1.62)
Education			
High school or less	REF	REF	REF
Some college	1.51 (0.97–2.33)	1.03 (0.49–2.18)	**1.68 (1.04–2.72)[d]**
College graduate	1.43 (0.90–2.32)	1.35 (0.62–2.94)	1.48 (0.89–2.48)
Postgraduate	1.43 (0.88–2.34)	1.52 (0.68–3.35)	1.52 (0.90–2.59)
Household income			
<$25K	REF	REF	REF
$25K–$49K	1.26 (0.70–2.25)	1.48 (0.58–3.74)	1.36 (0.73–2.56)
$50K–$89K	1.51 (0.87–2.56)	1.45 (0.59–3.50)	1.63 (0.90–2.92)
≥$90K	1.25 (0.70–2.20)	1.20 (0.46–3.13)	1.38 (0.74–2.56)
Marital status			
Married/partnered	REF	REF	REF
Single	1.17 (0.89–1.55)	1.58 (0.97–2.59)	1.20 (0.88–1.62)
Cancer characteristics			
Cancer stage			
I	REF	REF	REF
II	1.09 (0.76–1.60)	0.99 (0.53–1.84)	0.98 (0.65–1.48)
III	1.32 (0.75–2.34)	1.02 (0.36–2.83)	1.27 (0.69–2.34)
IV	1.21 (0.43–3.42)	2.86 (0.85–9.58)	0.61 (0.16–2.32)
Tumor grade			
Well differentiated	REF	REF	REF
Moderately differentiated	1.17 (0.81–1.70)	1.72 (0.86–3.42)	1.13 (0.76–1.67)
Poorly differentiated	1.02 (0.65–1.60)	1.75 (0.79–3.86)	1.00 (0.63–1.60)
Undifferentiated	1.31 (0.38–4.53)	1.32 (0.14–12.60)	1.42 (0.41–4.95)
Nodal status			
Positive	REF	REF	REF
Negative	1.45 (0.95–2.23)	1.88 (0.90–3.90)	1.27 (0.79–2.03)
Hormone receptor status			
ER+/PR+	REF	REF	REF
ER+/PR−	1.06 (0.76–1.49)	1.01 (0.54–1.88)	1.16 (0.81–1.65)
ER−/PR−	1.00 (0.59–1.72)	0.92 (0.38–2.29)	0.95 (0.54–1.67)
Cancer treatment received			
Radiation therapy	0.79 (0.58–1.06)	0.68 (0.40–1.14)	0.77 (0.56–1.65)
Chemotherapy	0.94 (0.66–1.36)	0.84 (0.46–1.55)	0.84 (0.57–1.23)
Hormonal therapy	1.12 (0.71–1.75)	1.15 (0.54–2.44)	0.99 (0.63–1.57)
Other health-related characteristics			
Charlson comorbidity score			
0	REF	REF	REF
1+	1.02 (0.73–1.42)	1.12 (0.62–1.99)	1.06 (0.61–1.82)
Depression severity			
Mild to moderate (CES-D[c] score 16–21)	REF	REF	REF
Severe (CES-D ≥ 22)	**1.45 (1.11–1.88)[d]**	**2.20 (1.35–3.60)[d]**	**1.45 (1.09–1.92)[d]**

[a]Multivariate modified Poisson regression.
[b]Clinician response defined as depression diagnosis, prescription of an antidepressant, or referral for mental health services.
[c]Center for Epidemiologic Studies–Depression Scale.
[d]Estimates in bold are statistically significant.

Secondary Analysis of Self-Reported Psychotherapy Receipt at Six-Month Follow-Up

Of the 411 women in our analytic cohort who answered questions about psychotherapy use at six-month follow-up, 31 (7.5%) reported receiving psychotherapy at least once in the time since breast cancer diagnosis. Seventeen of these women (4%) did not have EMR documentation of a clinician response during the same period, suggesting they may have received psychotherapy outside of KPNC.

Discussion

Within a cohort of women recently diagnosed with breast cancer and self-reporting clinically significant depressive symptoms, we assessed the extent of and factors associated with women's receipt of a clinician response to their depressive symptoms. Our data suggest that only 34% of women received such a response. We did not observe a statistically significant relationship between year of breast cancer diagnosis and receipt of a clinician response to depression, although, descriptively, estimates were consistent with declining rates of response over time. We identified two subgroups of women who may have an increased risk of experiencing a potential unmet need for depression-related care, namely, women of Asian descent, and women with symptoms of mild-to-moderate (vs. severe) depression.

Oncologists' ability to recognize depressive symptoms among their patients with cancer is known to be variable, but most studies have not attempted to estimate the impact of underrecognition of depression in terms of patients' unmet need for mental health care. To address this gap in knowledge, we leveraged unique patient-reported data on depressive symptoms, using a validated depression scale, and detailed EMR data on pharmacologic and nonpharmacologic treatment orders. Our approach yielded a slightly higher proportion of patients receiving needed mental health care than previously described in studies relying on patient-reported receipt of mental health services.[16,17] Still, 66% of patients in our cohort with self-reported clinically significant depression had no EMR evidence of being prescribed or referred for treatment in the six months after their assessments, suggesting considerable room for improvement.

Another unique contribution of our study is the assessment of patient-level factors associated with receipt of needed mental health care. We identified two groups of patients potentially at higher risk of experiencing an unmet need for services. First, Asian women were substantially less likely than their white counterparts to have a documented clinician response to depression. Few studies have examined Asian-white differences in cancer-related symptom management, but available data suggest that Asian patients may be more likely to experience an unmet need for supportive services, including psychiatric services.[26] The factors underlying this difference are unclear but are likely to relate in part to cultural factors[27] and the quality of patient-provider interactions.[15,28]

The second group we identified as potentially at risk of experiencing an unmet need for psychological care is patients with mild-to-moderate (vs. severe) depression. Prior research has demonstrated that patients with less severe depression exhibit similar impairment to those with major depression. They also experience similar implications for functional status, health services use, and quality of life, suggesting that, regardless of its severity, depression requires careful assessment and management to optimize outcomes.[9]

Furthermore, we found that overall rates of clinician response to depression have remained low over time, despite the introduction of guidelines encouraging screening for and management of psychiatric symptoms, including depression. The potential of these guidelines to improve the care and outcomes of patients with cancer depends on the extent to which they are effectively implemented in practice. Although not studied extensively, available data suggest that implementation of psychosocial distress screening guidelines has been suboptimal.[29–32] Recent federal funding initiatives to improve implementation of psychiatric symptom assessment and management—through, for example, developing and studying IT-enabled strategies to improve depression screening[33]—will hopefully yield evidence-based strategies that are scalable across cancer care settings. Ideally, projects funded under these and related initiatives will adopt hybrid implementation-effectiveness designs, to generate needed evidence on the effectiveness of screening in terms of improving patients' outcomes, in addition to informing implementation. Although screening is mandated in many cancer care settings, evidence that screening improves cancer or mental health outcomes is lacking.[34] The dearth of evidence may serve as one barrier to oncology practice's implementation of screening protocols.

When implemented effectively, universal screening for psychiatric symptoms such as depression may have the potential to address the gaps in care that we observed, namely by facilitating patient-provider communication about symptoms and helping providers to identify patients in need of treatment or further evaluation.[13] However, strategies that aim to improve the overall implementation of distress screening and depression treatment guidelines may not fully address the potential racial disparities in receipt of needed psychiatric care that

we observed. Rather, overcoming disparities may require tailored approaches to screening that account for varying patient preferences for care and approaches to psychological symptom screening and management.

Our study has several strengths, notably, our use of a validated depression measure, and our ability to capture psychotherapy and medications ordered versus only prescriptions filled, as with claims-based studies. Our analysis also has some limitations. Specifically, although the CES-D is a validated measure, we cannot definitively know whether women in our sample, if evaluated with rigorous psychiatric interview, would receive a depression diagnosis and recommendation for depression treatment. In addition, it is possible we underestimated clinician response to depression due to our inability to evaluate provider notes for evidence of mental health–related discussions with patients. We also could not capture data on services received outside of KPNC. However, the results of our secondary analysis suggest only 4% of women used non-KPNC services. With respect to generalizability, all patients in our study had breast cancer, and received care in the same integrated health system. Given the consistency of our findings with literature documenting underscreening for psychiatric symptoms in U.S. cancer care settings,[29,30,32] we do not expect the broad patterns of depression-related care we observed to be unique to our system, or to breast cancer care. For non-U.S. settings, although undertreatment of psychiatric symptoms in cancer care has been demonstrated in U.K.-based studies,[16,17] uptake and effectiveness of screening outside of the U.S. remains largely unexplored and may represent an area for future research.

Overall, our findings highlight large, persistent gaps in the delivery of mental health care for patients with cancer and co-occurring depression. They also emphasize the need for studies that develop and evaluate strategies to improve the implementation of guideline recommendations for psychiatric symptom screening in cancer care settings, in addition to evaluating the effectiveness of screening for improving patients' outcomes. The racial differences uncovered in our study warrant further investigation and, potentially, the development of targeted strategies to improve the equity of symptom assessment and treatment among diverse patients with cancer.

Disclosures and Acknowledgments

The authors have no conflicts to disclose.

This study was funded by National Cancer Institute (R01CA105274 and U01CA195565); Kaiser Permanente Northern California Delivery Science Fellowship.

References

1. Massie MJ, Holland JC. The cancer patient with pain: psychiatric complications and their management. Med Clin North Am 1987;71:243–258.

2. Lynch ME. The assessment and prevalence of affective disorders in advanced cancer. J Palliat Care 1995;11:10–18.

3. Lu D, Valdimarsdottir U, Fang F. Clinical diagnosis of mental disorders before cancer diagnosis-reply. JAMA Oncol 2017;3:566.

4. Zhao G, Okoro CA, Li J, White A, Dhingra S, Li C. Current depression among adult cancer survivors: findings from the 2010 Behavioral Risk Factor Surveillance System. Cancer Epidemiol 2014;38:757–764.

5. Sullivan DR, Forsberg CW, Ganzini L, et al. Longitudinal changes in depression symptoms and survival among patients with lung cancer: a national cohort assessment. J Clin Oncol 2016;34:3984–3991.

6. Mitchell AJ, Ferguson DW, Gill J, Paul J, Symonds P. Depression and anxiety in long-term cancer survivors compared with spouses and healthy controls: a systematic review and meta-analysis. Lancet Oncol 2013;14:721–732.

7. Andersen BL, Anderson B, deProsse C. Controlled prospective longitudinal study of women with cancer: II. Psychological outcomes. J Consult Clin Psychol 1989;57:692–697.

8. Spiegel D, Giese-Davis J. Depression and cancer: mechanisms and disease progression. Biol Psychiatry 2003;54:269–282.

9. Wagner HR, Burns BJ, Broadhead WE, Yarnall KS, Sigmon A, Gaynes BN. Minor depression in family practice: functional morbidity, co-morbidity, service utilization and outcomes. Psychol Med 2000;30:1377–1390.

10. Pinquart M, Duberstein PR. Depression and cancer mortality: a meta-analysis. Psychol Med 2010;40:1797–1810.

11. McDonald MV, Passik SD, Dugan W, Rosenfeld B, Theobald DE, Edgerton S. Nurses' recognition of depression in their patients with cancer. Oncol Nurs Forum 1999;26:593–599.

12. Newell S, Sanson-Fisher RW, Girgis A, Bonaventura A. How well do medical oncologists' perceptions reflect their patients' reported physical and psychosocial problems? Data from a survey of five oncologists. Cancer 1998;83:1640–1651.

13. Passik SD, Dugan W, McDonald MV, Rosenfeld B, Theobald DE, Edgerton S. Oncologists' recognition of depression in their patients with cancer. J Clin Oncol 1998;16:1594–1600.

14. Fallowfield L, Ratcliffe D, Jenkins V, Saul J. Psychiatric morbidity and its recognition by doctors in patients with cancer. Br J Cancer 2001;84:1011–1015.

15. Gouveia L, Lelorain S, Bredart A, et al. Oncologists' perception of depressive symptoms in patients with advanced cancer: accuracy and relational correlates. BMC Psychol 2015;3:6.

16. Sharpe M, Strong V, Allen K, et al. Major depression in outpatients attending a regional cancer centre: screening and unmet treatment needs. Br J Cancer 2004;90:314–320.

17. Walker J, Hansen CH, Martin P, et al. Prevalence, associations, and adequacy of treatment of major depression in

patients with cancer: a cross-sectional analysis of routinely collected clinical data. Lancet Psychiatry 2014;1:343–350.

18. Institute of Medicine (IOM). Cancer care for the whole patient: Meeting psychosocial health needs. In: Adler NE, Page AEK, eds. Washington, DC: The National Academies Press, 2008.

19. Dy SM, Lorenz KA, Naeim A, Sanati H, Walling A, Asch SM. Evidence-based recommendations for cancer fatigue, anorexia, depression, and dyspnea. J Clin Oncol 2008;26:3886–3895.

20. American College of Surgeons Commission on Cancer. Cancer Program (2016 Edition). Available at: https://www.facs.org/quality-programs/cancer/coc/standards. Accessed December 20, 2018.

21. Gordon N. How does the adult Kaiser Permanente membership in Northern California compare with the larger community? 2006.

22. Kwan ML, Ambrosone CB, Lee MM, et al. The Pathways Study: a prospective study of breast cancer survivorship within Kaiser Permanente Northern California. Cancer Causes Control 2008;19:1065–1076.

23. Lewinsohn PM, Seeley JR, Roberts RE, Allen NB. Center for Epidemiologic Studies Depression Scale (CES-D) as a screening instrument for depression among community-residing older adults. Psychol Aging 1997;12:277–287.

24. Waitzfelder B, Stewart C, Coleman KJ, et al. Treatment initiation for new episodes of depression in primary care settings. J Gen Intern Med 2018;33:1283–1291.

25. Zou G. A modified Poisson regression approach to prospective studies with binary data. Am J Epidemiol 2004;159:702–706.

26. John DA, Kawachi I, Lathan CS, Ayanian JZ. Disparities in perceived unmet need for supportive services among patients with lung cancer in the Cancer Care Outcomes Research and Surveillance Consortium. Cancer 2014;120:3178–3191.

27. Tsai W, Lu Q. Acculturation matters in the relation between ambivalence over emotional expressions and well-being among Chinese American breast cancer survivors. Qual Life Res 2017;26:2755–2762.

28. Check DK, Chawla N, Kwan ML, et al. Understanding racial/ethnic differences in breast cancer-related physical well-being: the role of patient-provider interactions. Breast Cancer Res Treat 2018;170:593–603.

29. Donovan KA, Jacobsen PB. Progress in the implementation of NCCN guidelines for distress management by member institutions. J Natl Compr Canc Netw 2013;11:223–226.

30. Jacobsen PB, Ransom S. Implementation of NCCN distress management guidelines by member institutions. J Natl Compr Canc Netw 2007;5:99–103.

31. Lazenby M, Ercolano E, Grant M, Holland JC, Jacobsen PB, McCorkle R. Supporting commission on cancer-mandated psychosocial distress screening with implementation strategies. J Oncol Pract 2015;11:e413–e420.

32. Zebrack B, Kayser K, Sundstrom L, et al. Psychosocial distress screening implementation in cancer care: an analysis of adherence, responsiveness, and acceptability. J Clin Oncol 2015;33:1165–1170.

33. Institute NC. Funding Opportunity Announcement: Using Information Technology to Support Systematic Screening and Treatment of Depression in Oncology Practices (R21Clinical Trial Optional) December 11 2017.

34. Meijer A, Roseman M, Delisle VC, et al. Effects of screening for psychological distress on patient outcomes in cancer: a systematic review. J Psychosom Res 2013;75:1–17.