

Trajectories of Depression and Anxiety in Latina Breast Cancer Survivors

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OBJECTIVES: To identify subgroups of Latina breast cancer survivors with unique trajectories of depression and anxiety and examine predictors associated with these subgroups.

SAMPLE & SETTING: Secondary analysis of Latina breast cancer survivors (N = 293) from three psychosocial intervention studies.

METHODS & VARIABLES: Depression and anxiety were assessed at intake and at weeks 8 and 16. Group-based growth mixture modeling was used to identify subgroups who followed distinct trajectories of depression and anxiety. Multinomial logistic regression models were used to identify predictors of trajectory-based subgroup membership.

RESULTS: Three trajectories emerged for depression: low/moderate-stable (78%), high-improving (7%), and high-stable (15%). Three subgroups based on the trajectories of anxiety were low-stable (73%), high-improving (18%), and high-worsening (9%). Chemotherapy, age, and social support discriminated among the three depression trajectory subgroups. All anxiety trajectory subgroups had significantly different initial scores. No demographic or clinical factors were associated with anxiety trajectories.

IMPLICATIONS FOR NURSING: Latina women treated for breast cancer are at an elevated risk for depression and anxiety and follow distinct trajectories of these symptoms. Psychosocial interventions are needed to manage these symptoms, particularly for subgroups in which depression and anxiety persist or worsen.

KEYWORDS symptoms; trajectories; breast cancer; Latina; health disparity; depression; anxiety

Latinos represent the fastest-growing ethnic minority in the United States and are overrepresented among lower socioeconomic and underserved groups (Ennis, Rios-Vargas, & Albert, 2011). Latina women often are diagnosed with breast cancer at younger ages, with more advanced disease, and have lower five-year survival rates than non-Hispanic White (NHW) breast cancer survivors by an estimated 20% (Siegel, Miller, & Jemal, 2017; Yanez, Thompson, & Stanton, 2011). Latina women also have poorer adjustment to a breast cancer diagnosis (Spencer et al., 1999) and greater overall distress (Eversley et al., 2005), with more social disruption as a result of their disease (Petronis, Carver, Antoni, & Weiss, 2003) compared to NHWs, Asians, and African Americans (Ashing-Giwa, Tejero, Kim, Padilla, & Hellemann, 2007). In addition, Latina breast cancer survivors report a greater number of cancer-related symptoms (Badger et al., 2013; Fu et al., 2009) and an overall symptom burden that results in lower quality of life (QOL) (Ashing-Giwa et al., 2007; Yanez et al., 2011) and emotional well-being (Janz et al., 2014).

Prevalence estimates of depression range from 32%–36% among Latina survivors (Holden, Ramirez, & Gallion, 2014) compared to 12%–25% among NHW breast cancer survivors (Krebber et al., 2014). Often comorbid with depression, anxiety is also disproportionately experienced by Latina versus NHW breast cancer survivors (Sammarco & Konecny, 2010) and is positively associated with younger age, greater pain, less education, and higher levels of fatigue (Janz et al., 2011). When untreated, psychological symptoms of depression and anxiety adversely affect QOL (Fann et al., 2008; Jacobsen & Jim, 2008), impair cancer-related immune function (Liu et al., 2012; Spiegel, Giese-Davis, Taylor, & Kraemer, 2006), and, when severe and persistent, may decrease long-term survival (Giese-Davis et al., 2011; Siegel et al., 2017). In Latina women, these consequences are even more

pronounced (Ashing-Giwa, Rosales, Lai, & Weitzel, 2013; Ell et al., 2008; Yanez et al., 2011). They report fewer interactions with a mental healthcare provider or social worker and are less likely to receive medications for a mental health condition as compared to NHWs (Costas-Muñiz, Hunter-Hernández, Garduño-Ortega, Morales-Cruz, & Gany, 2017).

Despite the previously mentioned evidence from cross-sectional studies, longitudinal studies of depression and anxiety in Latina breast cancer survivors are lacking. Analyses of data from predominantly NHW samples (Avis, Levine, Case, Naftalis, & Van Zee, 2015; Kyranou et al., 2014; Saboonchi, Petersson, Wennman-Larsen, Alexanderson, & Vaez, 2015) have identified several distinct patterns of longitudinal changes in depression and anxiety after a breast cancer diagnosis. These include improving depression and anxiety over time, chronically high depression and anxiety, and a trajectory of worsening depression over time. Avis et al. (2015) found that women who followed the worsening trajectory were more likely to be non-White and of lower socioeconomic status, but low sampling of Latina women with breast cancer precluded a more detailed analysis of this ethnic group.

This secondary analysis is among the first to use a large ($N = 293$) sample of Latina breast cancer survivors to determine if distinct longitudinal trajectories for depression and anxiety exist in this population. Using the symptom experience model (Armstrong, 2003, 2014) as a conceptual framework to guide variable selection for this longitudinal analysis, the authors explored demographic, clinical, and psychosocial characteristics of the survivors to determine if they were predictive of depression and anxiety trajectories during the subsequent 16 weeks.

Methods

Sample and Setting

From 2008–2016, 293 Latina women receiving chemotherapy, hormonal therapy, or targeted therapy for breast cancer with or without radiation therapy and their designated informal cancer caregivers were recruited for participation in three randomized controlled trials (RCTs). Each RCT provided eight-week psychosocial interventions designed to improve QOL: telephone interpersonal counseling intervention versus telephone health education (Badger, Segrin, Dorros, Meek, & Lopez, 2007; Badger et al., 2013; Segrin et al., 2005). Although the two interventions included women with breast cancer and their informal caregivers, only women with breast cancer were included in this analysis. All participants provided

written informed consent prior to participation. The University of Arizona Institutional Review Board approved all research procedures prior to commencement of the studies. The details regarding these trials and their results have been previously published (Badger et al., 2007, 2013; Segrin et al., 2005). There were significant improvements in all intervention arms over time, with few differences among them. This secondary analysis included the adjustment for trial arm in all statistical models.

Variables

Data were collected by telephone at the time of trial enrollment, immediately after the 8-week interventions, and at 16-week follow-up. Participants had a choice of completing the measures in English or Spanish, using previously translated and validated versions.

Depression: The Center for Epidemiologic Studies–Depression (CES-D) scale is a 20-item instrument for the measurement of depressive symptoms (Hann, Winter, & Jacobsen, 1999; Radloff, 1977). For the English and Spanish versions of the scale, the internal consistency reliability exceeded 0.9 at all three time points. The CES-D provides a cutoff of 16 or higher to aid in the identification of individuals at risk for clinical depression, with good sensitivity (Ganz et al., 2002; Hann et al., 1999; Radloff, 1977).

Anxiety: The symptom of anxiety was measured with two different instruments over the course of the three studies. For studies 1 and 2, the Spielberger State-Trait Anxiety Inventory (STAI) was used. STAI is a 20-item instrument wherein a summed score ranging from 20–80 is calculated, with higher scores indicating greater anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983; Spielberger, Gorsuch, & Lushene, 1982). The internal consistency reliability was greater than 0.89 at all three time points for English and Spanish. In study 3, anxiety was measured using the PROMIS (Patient-Reported Outcomes Measurement Information System) eight-item short form. The items evaluate fear, anxious misery, hyperarousal, and somatic symptoms related to arousal. The PROMIS–Anxiety scale has been used in cancer populations and has good internal consistency with a Cronbach alpha of greater than 0.89 in English and Spanish (Cella et al., 2010; PROMIS Health Organization, 2012). The composite scores for these measures were converted to z-scores in each trial and used in the current analysis.

Symptom distress: The General Symptom Distress Scale (GSDS) (Badger, Segrin, & Meek, 2011)

TABLE 1. Distributions of Baseline Cancer Survivor Characteristics for the Entire Sample and by Groups Defined by Depression Trajectories

Characteristic	Entire Sample (N = 293)		Low/Moderate- Stable (N = 229)		High-Improving (N = 21)		High-Stable (N = 43)		p
	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	
Age (years)	48.96	10.69	48.88	10.84	46.24	7.29	50.67	11.16	0.29
Number of children at home	2.06	1.52	2.03	1.44	2.14	1.56	2.14	1.91	0.89
Number of symptoms	4.16	3.06	3.56	2.84	6.38	2.01	6.28	3.23	< 0.01
Symptom distress	5.4	3.23	5.08	3.22	7.29	1.76	6.19	3.46	< 0.01
Social well-being	39.27	12.71	41.05	12.62	36.14	11.98	31.33	10.1	< 0.01
CES-D score	17.23	12.47	12.18	7.99	35.76	5.22	34.98	9.33	< 0.01
Anxiety z-score	0	1	-0.29	0.81	0.99	0.97	1.09	0.84	< 0.01
Characteristic	n	%	n	%	n	%	n	%	p
Population^a									
Urban (500,000 or more)	207	71	165	72	13	62	29	67	0.83
Small city (100,000–499,000)	40	14	32	14	3	14	5	12	
Rural (less than 100,000)	44	15	32	14	3	14	9	21	
Income (\$) ^a									
70,000 or more	14	5	10	4	1	5	3	7	0.91
30,000–70,000	68	23	53	23	4	19	11	26	
Less than 30,000	202	69	158	69	16	76	28	65	
Employment^a									
Unemployed, looking for work	94	32	71	31	11	52	12	28	0.38
Employed	61	21	48	21	4	19	9	21	
Retired	19	6	16	7	–	–	3	7	
Disabled	66	23	48	21	4	19	14	33	
Other	50	17	43	19	2	10	5	12	
Marital status									
Married	188	64	153	67	15	71	20	47	< 0.01
Divorced	46	16	31	14	1	5	14	33	
Widowed	12	4	12	5	–	–	–	–	
Other	47	16	33	14	5	24	9	21	
Comorbid conditions									
None	161	55	124	54	12	57	25	58	0.87
One or more	132	45	105	46	9	43	18	42	
Education level									
Less than high school	111	38	88	38	10	48	13	30	0.41
High school	77	26	57	25	4	19	16	37	
Post-high school	105	36	84	37	7	33	14	33	
Treatment^b									
Chemotherapy	238	81	181	79	18	86	39	91	0.17
Radiation therapy	79	27	60	26	3	14	16	37	0.13
Hormonal therapy	35	12	31	14	–	–	4	9	0.16
Surgery	169	58	128	56	11	52	30	70	0.21

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TABLE 1. Distributions of Baseline Cancer Survivor Characteristics for the Entire Sample and by Groups Defined by Depression Trajectories (Continued)

Characteristic	Entire Sample (N = 293)		Low/Moderate- Stable (N = 229)		High-Improving (N = 21)		High-Stable (N = 43)		p
	n	%	n	%	n	%	n	%	
Family history									
Had family history of cancer	164	56	128	56	13	62	23	53	0.82
CES-D score									
16 or greater	138	47	75	33	21	100	42	98	< 0.01

^a Some data are missing.

^b Participants could choose more than one response.

CES-D—Center for Epidemiologic Studies–Depression

Note. Because of rounding, percentages may not total 100.

Note. Symptom distress scores range from 1–10, with higher scores indicating greater levels of symptom distress. Social well-being scores range from 8–80, with higher scores indicating greater well-being. CES-D scores range from 0–60, with higher scores indicating greater depressive symptoms, and a score of 16 or greater indicating risk of clinical depression. An anxiety z-score of less than 0.5 is within the normal range; 0.5–1 indicates mild anxiety, 1–2 moderate anxiety, and 2–3 severe anxiety.

queries for the presence of 12 symptoms (depression, anxiety, fatigue, shortness of breath, nausea, vomiting, pain, sleep difficulties, bowel problems, difficulty concentrating, loss of appetite, and cough) and the global distress associated with the 12 symptoms on a scale ranging from 1 (not at all distressing) to 10 (extremely distressing). The GSDS has demonstrated good test–retest and internal consistency reliability with a Cronbach alpha of 0.66 or greater (Badger et al., 2011). The total number of symptoms and global distress at baseline were used in these analyses.

Social well-being: Participants’ social and role functioning in home, family, and work settings was measured by the eight-item social well-being subscale of the QOL Instrument–Breast Cancer (Ferrell, Grant, Funk, Otis-Green, & Garcia, 1997). Higher scores reflect greater social well-being, and Cronbach alpha was 0.65 or greater.

Demographic information collected in the baseline interview included age, ethnic origin, level of education, marital status, number of children living at home, income, employment, and family history of cancer. Participants were asked about the presence or absence of seven comorbid conditions (cardiovascular disease, hypertension, diabetes, stroke, arthritis, respiratory problems, other), and a summary count of comorbid conditions was derived. Breast cancer treatment information (yes or no) included surgery and administration of radiation therapy, chemotherapy, and hormonal therapy up until the time of intake into the trials.

Statistical Analysis

The sample characteristics were summarized with the descriptive statistics and summaries of frequency distributions. Group-based growth mixture modeling (GMM) was employed to identify distinct groups of women who followed similar trajectories over time in their scores of depression and anxiety. The trial arm was adjusted for as a covariate in the GMM, and models for depression and anxiety scores were fit separately. Models that contained two to four trajectory groups were tested. To select the number of trajectory groups, Bayesian information criterion (BIC) was used, with the lowest BIC score indicating the best model fit.

Once trajectory-based groups were identified, the distributions of survivor characteristics across these groups were compared using the analysis of variance or chi-squared tests. To determine factors that may be predictive of depression and anxiety trajectories, multinomial logistic regression models with generalized logit link function were fit. Depression or anxiety trajectories were the response variables in these models (one at a time), and selected baseline survivor characteristics were included as explanatory variables. Their selection was based on the Armstrong symptom experience model and literature that identified the associations of these variables with depression and anxiety in breast cancer survivors (Aguado Loi et al., 2013; Armstrong, 2003, 2014; Sammarco & Konecny, 2010). The analyses were performed using SAS, version 9.4, and the latent class mixture model package in R software.

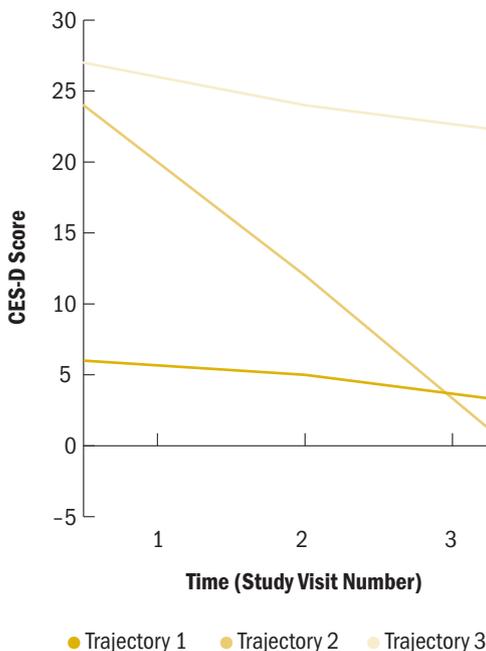
Results

Participants

The mean age of the Latina breast cancer survivors was 49 years (SD = 10.7 years); 188 (64%) were married or partnered. Sixty-four percent (n = 188) of the women had less than or a high school education, and 202 (69%) reported a household income of less than \$30,000 per year. More than half of the sample was unemployed or disabled because of being too sick to work (see Table 1). At baseline, the mean CES-D score was 17.2 (SD = 12.5), and 47% (n = 138) of the sample scored in the clinically relevant range for elevated risk of depression (CES-D score of 16 or greater). Most women received surgery and chemotherapy and reported an average of four symptoms.

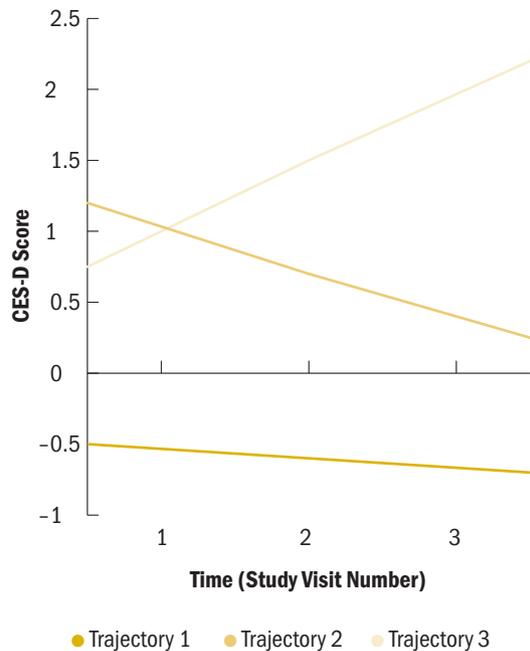
In the GMM analysis, three distinct depression trajectories emerged (see Figures 1 and 2). The majority of women (78%, n = 229) belonged to trajectory 1, which is described by relatively low to moderate depression scores at all three time points. The authors labeled this trajectory “low/moderate-stable.” Of note, about one-third of women in this trajectory had CES-D scores of 16 or higher (see Table 2); therefore, the descriptor low/moderate-stable is only relative to the other two trajectories. About 7% (n = 21) of women

FIGURE 1. Trajectories of Depression in Latina Women With Breast Cancer (N = 293)



CES-D—Center for Epidemiologic Studies–Depression

FIGURE 2. Trajectories of Anxiety in Latina Women With Breast Cancer (N = 293)



CES-D—Center for Epidemiologic Studies–Depression

belonged to trajectory 2, which is described by the initial high scores that improve at later time points (high-improving). About 15% (n = 43) followed trajectory 3, which is described by high depression scores at all three time points (high-stable). Predictors of depression trajectory group membership included age, social well-being, treatment with chemotherapy, and baseline depression scores (see Table 3).

Three distinct trajectories also emerged in the GMM analysis of anxiety. Seventy-three percent (n = 215) of women belonged to trajectory 1, with low-stable anxiety scores over time. This subgroup had average z-scores below 0. Eighteen percent (n = 53) of women followed anxiety trajectory 2, and 9% (n = 25) followed anxiety trajectory 3. Trajectories 2 and 3 began at roughly the same level of one standard deviation above the mean; however, in trajectory 2 anxiety declined (high-improving) and in trajectory 3 anxiety increased (high-worsening). The baseline z-score for anxiety was the only variable significantly associated with anxiety trajectory membership.

Finally, memberships in subgroups according to depression and anxiety trajectories were strongly associated (phi coefficient = 0.62, $p < 0.01$), with 200 women or 93% of the low-stable anxiety trajectory

TABLE 2. Distributions of Baseline Cancer Survivor Characteristics by Groups Defined by Anxiety Trajectories

Characteristic	Low-Stable (N = 215)		High-Improving (N = 53)		High-Worsening (N = 25)		p
	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	
Age (years)	49.17	10.75	48.55	10.72	47.96	10.53	0.83
Number of children at home	2.06	1.48	2.21	1.84	1.72	1.06	0.42
Number of symptoms	3.55	2.86	5.66	2.94	6.28	3.06	< 0.01
Symptom distress	5.01	3.26	6.49	2.88	6.44	3.11	< 0.01
Social well-being	41.2	12.74	33.51	10.45	34.92	12.39	< 0.01
CES-D score	12.68	9.36	29.85	10.25	29.44	13.73	< 0.01
Anxiety z-score	-0.45	0.62	1.41	0.57	0.9	0.94	< 0.01
Characteristic	n	%	n	%	n	%	p
Population^a							0.63
Urban (500,000 or more)	154	72	36	68	17	68	
Small city (100,000–499,000)	31	14	7	13	2	8	
Rural (less than 100,000)	29	13	9	17	6	24	
Income (\$)^a							0.99
70,000 or more	10	5	3	6	1	4	
30,000–70,000	51	24	11	21	6	24	
Less than 30,000	147	68	37	70	18	72	
Employment^a							0.73
Unemployed, looking for work	65	30	20	38	9	36	
Employed	46	21	10	19	5	20	
Retired	15	7	4	8	-	-	
Disabled	46	21	12	23	8	32	
Other	40	19	7	13	3	12	
Marital status							0.41
Married	144	67	30	57	14	56	
Divorced	30	14	9	17	7	28	
Widowed	9	4	3	6	-	-	
Other	32	15	11	21	4	16	
Comorbid conditions							0.29
None	123	57	24	45	14	56	
One or more	92	43	29	55	11	44	
Education level^a							0.71
Less than high school	81	38	21	40	8	32	
High school	57	27	11	21	9	36	
Post-high school	76	35	21	40	8	32	
Treatment^b							
Chemotherapy	172	80	46	87	20	80	0.52
Radiation therapy	57	27	17	32	5	20	0.51
Hormonal therapy	29	13	5	9	1	4	0.32
Surgery	123	57	32	60	14	56	0.9

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TABLE 2. Distributions of Baseline Cancer Survivor Characteristics by Groups Defined by Anxiety Trajectories (Continued)

Characteristic	Low-Stable (N = 215)		High-Improving (N = 53)		High-Worsening (N = 25)		p
	n	%	n	%	n	%	
Family history							
Had family history of cancer	121	56	29	55	14	56	0.99
CES-D score							
16 or greater	69	32	48	91	21	84	< 0.01
Depression trajectory							
Low/moderate-stable	200	93	21	40	8	32	< 0.01
High-improving	9	4	9	17	3	12	
High-stable	6	3	23	43	14	56	

^a Some data are missing.

^b Participants could choose more than one response.

CES-D—Center for Epidemiologic Studies–Depression

Note. Because of rounding, percentages may not total 100.

Note. Symptom distress scores range from 1–10, with higher scores indicating greater levels of symptom distress. Social well-being scores range from 8–80, with higher scores indicating greater well-being. CES-D scores range from 0–60, with higher scores indicating greater depressive symptoms, and a score of 16 or greater indicating risk of clinical depression. An anxiety z-score of less than 0.5 is within the normal range; 0.5–1 indicates mild anxiety, 1–2 moderate anxiety, and 2–3 severe anxiety.

also following the low/moderate-stable depression trajectory; however, for those in the high-improving anxiety trajectory, 23 women (43% of those in this trajectory) also belonged to the high-stable depression trajectory that showed no improvement over time. Fourteen women (56%) of the high-worsening anxiety trajectory belonged to the high-stable depression trajectory as well.

Discussion

To the authors' knowledge, this is the first large longitudinal study of depression and anxiety in Latina women treated for breast cancer. These findings suggest that depression and anxiety are more common in the current sample of Latina breast cancer survivors than in previously studied samples of NHWs (Krebbler et al., 2014). The authors identified three unique trajectories of depression among Latina women with breast cancer.

The majority of Latina women in this study followed a low/moderate-stable depression trajectory, where baseline depression levels were lower compared to the other two trajectories and remained stable over time. These findings are generally consistent with findings from studies of other ethnicities (Donovan, Gonzalez, Small, Andrykowski, & Jacobsen, 2014;

Dunn et al., 2011; Kyranou et al., 2014; Stanton et al., 2015). For example, Donovan et al. (2014) found three groups of women with distinct trajectories over the course of 12 months of treatment. One group reported clinically significant symptoms of depression prior to treatment that improved slightly. A second group of women reported subclinical depressive symptoms at the start of treatment that significantly declined over 12 months. The third group of women reported minimal symptoms of depression prior to treatment with a significant decline to an even lower level. By comparison, in the current study, the baseline CES-D score could predict the first depression trajectory, whereas the other two trajectories started with the higher and not statistically different initial score.

In the current study, younger age and higher social well-being were significant predictors in distinguishing subgroups that started high but then improved versus remaining high. These findings are congruent with the current literature documenting that younger women with breast cancer are at higher risk for depression and anxiety (Avis, Levine, Marshall, & Ip, 2017; Janz et al., 2011); however, in the case of depression, social support appears to attenuate the risk for persisting elevated depression levels (Brunault et al., 2016; Luutonen, Vahlberg, Eloranta,

Hyväri, & Salminen, 2011). Other studies found that receipt of chemotherapy was associated with greater symptom burden in the post-treatment survivorship period (Ganz, Kwan, Stanton, Bower, & Belin, 2011); in the current sample, receipt of chemotherapy also was predictive of membership in the trajectories with higher levels of depressive symptoms.

Even in trajectory 1, with the lowest mean CES-D over time, about one third of women scored 16 or higher, which is above the established cutoff for clinical relevance. The prevalence of elevated depressive symptoms in the entire sample was 47%, which is substantially higher than the 19% (Avis et al., 2015) previously reported in the breast cancer literature for a predominantly NHW population. This suggests the need for continued research to characterize these symptoms in Latina women, a group that could be considered at higher risk for depression after a breast cancer diagnosis.

In contrast to depression trajectories, the anxiety trajectories could only be predicted by the baseline score, and the differences between pairs of trajectories were not only statistically significant, but also

sizable, exceeding half of the standard deviation. Three trajectories for anxiety emerged, with the majority (73%, n = 215) of women falling into the low-stable trajectory. The remaining 27% (n = 78) started at higher levels of anxiety. These results are similar to those reported by Saboonchi et al. (2015), in which the following four specific trajectories of anxiety were identified: high stable, high decrease, mild decrease, and low decrease. One potential explanation for this is that women in the high stable group may have had a difficult time transitioning from active care to surveillance, a time that can be troubling for some women, particularly for those who enter the diagnosis with moderate to high levels of anxiety. The current findings, along with those by Saboonchi et al. (2015), suggest that a substantial proportion of the breast cancer survivor population is in need of interventions to manage anxiety.

The strong associations between depression and anxiety trajectory group membership is consistent with findings of Kyranou et al. (2014), who found higher levels of anxiety to be correlated with elevated depressive symptoms, uncertainty about the future,

TABLE 3. Factors Associated With Depression and Anxiety Group Memberships

Variable	Depression Trajectory						Anxiety Trajectory					
	Low/Moderate-Stable Versus High-Stable			High-Improving Versus High-Stable			Low-Stable Versus High-Worsening			High-Improving Versus High-Worsening		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Age	0.92	[0.86, 0.98]	0.01*	0.94	[0.88, 0.99]	0.04*	0.99	[0.93, 1.05]	0.66	1.02	[0.96, 1.07]	0.57
One or more comorbidity versus none	1.53	[0.41, 5.74]	0.53	1.8	[0.53, 6.12]	0.35	0.91	[0.3, 2.8]	0.88	1.88	[0.64, 5.51]	0.25
Number of symptoms	0.85	[0.67, 1.08]	0.18	1.03	[0.82, 1.28]	0.81	0.88	[0.73, 1.06]	0.19	0.86	[0.72, 1.04]	0.13
Social well-being	1.02	[0.96, 1.08]	0.54	1.06	[1.01, 1.12]	0.05*	0.98	[0.93, 1.04]	0.52	1	[0.95, 1.05]	0.86
Chemotherapy versus none	0.14	[0.02, 0.85]	0.03*	0.53	[0.09, 3.05]	0.48	0.92	[0.22, 3.74]	0.9	2.17	[0.49, 9.61]	0.31
Baseline depression and anxiety score	0.7	[0.63, 0.79]	<0.01*	1.03	[0.95, 1.11]	0.47	0.04	[0.01, 0.13]	<0.01*	4.28	[1.63, 11.2]	<0.01*

* p ≤ 0.05
CI—confidence interval; OR—odds ratio

and lower levels of life satisfaction and life control. In the study by Kyranou et al. (2014), of 396 women with breast cancer, higher preoperative anxiety scores, poorer physical health, decreased sense of control, and more feelings of isolation predicted higher anxiety scores over time (six months postoperatively). In contrast, for the current study, physical health, as reflected by other symptoms and comorbidity, and social well-being were not predictive of the evolution of anxiety over time above the baseline score; however, this difference in findings may be related to the shorter study time period (four versus six months) and the fact that women in the current study were recruited to participate with an informal caregiver, potentially reducing feelings of isolation.

The Latina women in the current sample were significantly younger than the median age for diagnosis of breast cancer in the United States (49 years compared to 61 years) (Siegel et al., 2017), and a large percentage reported children living at home. The majority reported household incomes of less than \$30,000 per year and a high school education or less. These are all independent risk factors for depression and anxiety in breast cancer survivors. Given these risk factors and the distinct trajectories identified in this analysis, Latina women should be screened for depression and anxiety throughout cancer treatment. Those with elevated depression and anxiety and who are younger and have lower social support should have repeated screening throughout the continuum of care for cancer.

Limitations

Limitations to this study include a relatively narrow timespan of 16 weeks in which follow-up measures were collected. In addition, data for this secondary analysis were compiled from primary intervention studies conducted during a period of eight years and were merged to obtain a database that would support analyses of subgroups. Health insurance could be an important predictor of trajectories but was not available in the database (Costas-Muñiz et al., 2017). The current results may not be generalizable to other Latina breast cancer survivors who would not agree to take part in counseling or educational interventions with an identified cancer support person. Although intervention assignment was controlled for in the trajectory analysis, both interventions received by women could have improved their depression or anxiety and resulted in a higher proportion belonging to the low/moderate-stable and low-stable trajectories for each of these symptoms, respectively. The instrument for

KNOWLEDGE TRANSLATION

- Latina breast cancer survivors are at elevated risk for depression and anxiety after a diagnosis and during treatment.
 - High levels of depression and anxiety at presentation, as well as receipt of chemotherapy, being of younger age, and lack of social support, put Latina breast cancer survivors at risk for longer-term psychological distress.
 - Identifying Latina women in the high-risk subgroups early in the cancer care continuum and referring them to psychosocial services are important for improving long-term outcomes in this particularly vulnerable population of cancer survivors.
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anxiety changed in study 3, thereby requiring the computation of a z-score to create a common dataset from studies, which may have limited the interpretation of the results. Finally, clinical characteristics, including disease stage and treatment, were self-reported and not verified in the medical health record.

Implications for Practice

The findings of this study support the American Society of Clinical Oncology's guidelines for continued screening of psychosocial distress (Andersen, Rowland, & Somerfield, 2015). Higher rates of anxiety and clinically relevant depressive symptomatology (CES-D score of 16 or greater) in this sample suggest the high need for the management of these symptoms among Latina women with breast cancer. Factors such as levels of depression and anxiety at the initial presentation, receipt of chemotherapy treatment, age, and social support may be important targets to use in identifying women at risk for following trajectories that do not improve or worsen over time. Given their roles in assessment and delivery of cancer treatment and supportive care, nurses are ideally situated within the healthcare system to identify women most at risk for developing depression or anxiety and to refer them to psychosocial services. The allocation of available resources then can become more efficient and effective by offering interventions to those most at risk for poor longitudinal trajectories.

Conclusion

Future research needs to be conducted with Latina survivors who screen positively for high depression and anxiety to provide interventions early in the cancer journey. Studies that evaluate timing, dose, and efficacy of interventions are needed to determine the best intervention to meet individual needs.

Moving beyond a one-size-fits-all approach, precision intervention approaches for Latina women with cancer need to be developed to provide individualized person-centered supportive care.

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