

A telephonic-based trial to reduce depressive symptoms among Latina breast cancer survivors

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Abstract

Objective: Greater mental health symptomatology of Latina breast cancer (LBC) patients along with the paucity of intervention trials to reduce distress underscores the scientific and practice gaps in comprehensive care. This trial investigated the effect of a paraprofessionally delivered, telephonic-based psycho-educational intervention on depressive symptoms among LBC patients.

Methods: Latina breast cancer patients were recruited from the California Cancer Registry, hospital registries, and support groups. Participants were randomly assigned to the intervention or control condition. The primary outcome was level of depressive symptoms as measured by the Center for Epidemiological Studies Depression scale.

Results: One hundred ninety-nine LBC patients (84 English language preferred and 115 Spanish language preferred) participated. The overall trial outcomes demonstrated a statistically significant decrease in depressive symptoms among LBC patients in the intervention condition compared with LBC patients in the control condition, after controlling for depressive symptoms at T1 and language ($p < 0.05$). At follow-up, 63% of intervention LBC patients reported at least a five-point decrease in symptoms compared with 26% of control LBC patients ($p < 0.05$). English language-preferred and Spanish language-preferred LBC patients in the intervention condition showed approximately an eight-point mean decrease in depressive symptoms from baseline ($M = 23.5$ and $M = 26.6$, respectively) to follow-up ($M = 15.7$ and $M = 18.4$, respectively) ($p < 0.001$), whereas those in the control condition showed no significant change.

Conclusions: Results demonstrate the effectiveness of a culturally responsive, paraprofessionally delivered intervention to reduce depressive symptoms among LBC patients. Therefore, community oncology practices can affiliate with trained paraprofessionals to implement mental health services to address distress among our growing and increasingly ethnically, linguistically, and economically diverse oncology patient population.

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Introduction

The US cancer survivor population has surpassed 13 million [1]. Reports document the deleterious impact of cancer with recommended guidelines to reduce distress [2,3]. Thus, efforts to cost-effectively deliver mental health and psychosocial services to reduce the burden of cancer must be accelerated.

Ethnic minorities, in particular Latinos, represent a rapidly growing proportion of cancer patients who are at increased risk for poor outcomes [4,5], underscoring the urgency for their inclusion in the science and practice of distress management. Research indicates that ethnic minority and lower socioeconomic status [6] are factors associated with advanced stage of disease, greater morbidity, mortality [1], and poorer survivorship outcomes [7]. Studies document that Latina breast cancer (LBC) patients report elevated distress (e.g., depressive symptoms and psychosocial problems) [4,5,7,8] that may provoke physical, emotional, social, work, and family concerns if left untreated [9–11].

Healthcare system factors (i.e., access to care, suboptimal medical and supportive care, and lack of culturally and linguistically appropriate health and social services) are associated with distress among LBC patients [5,8]. Socioecological factors including immigration stress and acculturation [4,12], language [13,14], low socioeconomic status, and cultural-role limitations [5,7] shape physical and mental health outcomes among oncology patients and survivors. Also, language proficiency and preference are linked to poorer outcomes [8,13,14]. The negative impact of cancer underscores the urgency for interventions to ameliorate distress.

Behavioral interventions

Including ethnic minorities and implementing culturally informed mental health interventions, including telephonic interventions, broaden the scientific translation and advance our research and practice to reduce distress. Telephonic-delivered interventions provide less place and time

restrictions, greater flexibility, and cost-effectiveness with documented improvements in coping and functioning [15,16]. Thus, implementing telephonic interventions may be clinically, community, and fiscally responsive.

Lamentably, few interventions targeting depression in oncology patients are tested with adequate numbers of ethnic and linguistic minority survivors [7,17–21]. Most interventions are conducted with predominantly European American and well-educated samples treated primarily at major cancer centers [18,22]. Thus, the appropriateness of interventions for ethnic minority patients cannot be determined unless they are adequately represented [7,17,18].

Furthermore, most mental health interventions are delivered by professional facilitators (e.g., nurses and social workers), and few are implemented by trained paraprofessional behavioral interventionist or lay health workers [23]. Paraprofessionals are often socioculturally competent as they are ethnically, culturally, linguistically, and experientially similar to the target patient or study population [24,25].

This intervention study tested the effectiveness of a paraprofessionally delivered telephonic-based psycho-educational intervention (telephone sessions plus survivorship booklet) to reduce depressive symptoms compared with a control condition (survivorship booklet only) among LBC patients. We hypothesized that LBC patients in the intervention condition would report less depressive symptoms compared with LBC patients in the control condition at follow-up. We also explored differences in level of depressive symptoms by language preference.

Methods

Participants

Patients were recruited from the California Cancer Registry, hospital cancer registries, and breast cancer survivor support groups. Patients were disease free, age 18 years and older, identified as Latina, diagnosed within 1–6 years with stage 0–III breast cancer (BCA), and had at least moderate distress and burden levels as measured by the Center for Epidemiological Studies Depression scale (CES-D) [26] and Functional Assessment of Cancer Therapy (FACT)-Breast [27].

Procedure

Recruitment and enrollment procedures followed Cancer Registry guidelines (i.e., mail a letter to physicians to ascertain patients' study eligibility due to cancer status or comorbidities). All potential cases ascertained were mailed a recruitment packet containing relevant study documents, including the consent form and study questionnaire, in English or Spanish.

Participants were compensated with \$20 and \$25 gift cards for completing the baseline and follow-up questionnaires, respectively. Institutional review board approval was obtained, and all participants gave written consent to participate in the

trial. Greater details of the enrollment and retention procedures are published elsewhere [28].

Randomization and masking

A clinically responsive algorithm was utilized to determine eligible participants for intervention enrollment from the pool of LBC patients who completed the baseline assessment ($n=252$; Figure 1). Participant enrollment was based on their level of distress and cancer burden as measured by the CES-D [26] and FACT-General [27]. LBC patients who reported moderate distress (defined as a score ≥ 16 on the CES-D) and endorsed burden on two or more items (defined as negative response to items indicating low well-being) from each FACT-General subscale (e.g., physical and emotional well-being) were eligible for study randomization. A computer-generated randomization sequence was created to allocate participants in a 1:1 ratio to either intervention or control study conditions. Assignment to study conditions was not masked to investigators and participants. However, the data were entered by a separate survey core service to eliminate any potential bias.

Assessments took place at baseline and 4–6 months' follow-up assessment after randomization (about 3–4 months after delivery of the intervention). Consistent with existing research [29], the 2-month window for the follow-up assessment allowed sufficient time mailing, receipt and completion, and return of the completed assessment. The intervention implementation began 2–4 weeks after completion of the baseline assessment. Participants allocated to the intervention condition received eight 40–50-min, biweekly psycho-educational telephone sessions.

Intervention

The intervention is grounded in the contextual model of health-related quality of life [30] and the cognitive-behavioral framework [31] to be responsive to cultural (e.g., ethnicity and language) and socio-ecological (e.g., income, education, and emotional strain) factors and to promote resource utilization and a solution-focused, resilient orientation to coping with BCA. A study manual was created in advance of the study, which contained the following: (i) description of the protocol; (ii) basic BCA information and survivorship issues; (iii) the ethical conduct of research; (iv) cultural sensitivity information; (v) detail session content; and (vi) handouts and notes for the interventionists. The sessions were guided by publications from the National Cancer Institute, the American Cancer Society, Living Beyond Breast Cancer, the principal investigator's (PI) previous work, and the BCA, multicultural and clinical psychology literature. Seven domains were addressed in the telephone sessions: (i) basic BCA information; (ii) managing medical and physical issues, follow-up care, and cancer resources; (iii) coping skills and problem solving training; (iv) balancing emotions and stress management; (v) family

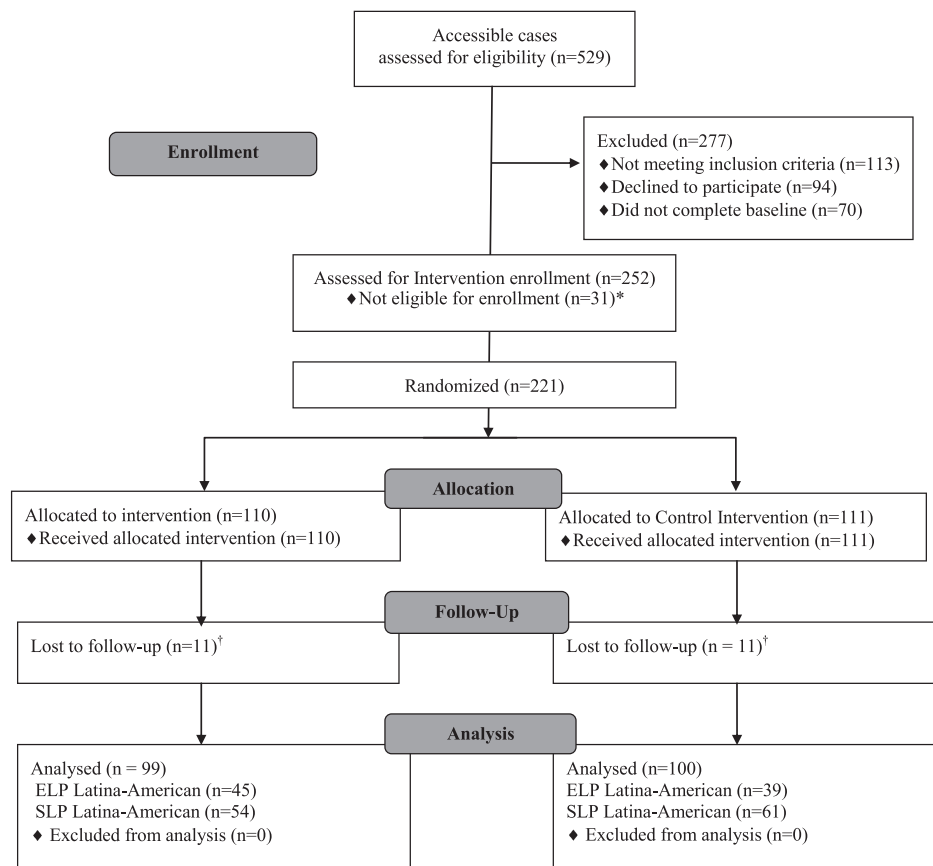


Figure 1. Psycho-educational intervention trial. Consort diagram showing the number of Latina-American breast cancer survivors enrolled into psycho-educational trial, randomized into study conditions (intervention versus control), and number completing the trial. (*) Not eligible for study enrollment based on FACT score. (†) Lost to follow-up reasons: failed to locate or declined. ELP, English language preferred; SLP, Spanish language preferred

and social concerns; (vi) sexual health concerns; and (vii) financial issues and employment concerns. A booster and debriefing session took place 1 month after completion of the telephone sessions, which also served as a retention strategy to enhance completion of the follow-up assessment. All sessions were audio recorded and tailored to each participant by prioritizing the order of the domains.

Two culturally competent and bilingual paraprofessional interventionists with >2-year college education and >3-year experience working with underserved communities were trained to deliver the sessions [32]. Biweekly supervision and training addressed overall study issues, ethical and cultural issues, and staff support. We followed a clinical psychology supervision approach where each interventionist discussed the participants using their notes and audio recordings at each meeting. Also, 30% of the recorded sessions were randomly reviewed by the PI and study coordinator on a bimonthly schedule. We found some minor concerns, usually in the first 1–2 weeks (e.g., not reminding participants of recommended homework); these were remedied via the group supervision or individual training/supervision conducted. The ongoing supervision found the intervention

to be appropriately delivered by the paraprofessionally trained interventionists (e.g., sessions conducted in the preferred language; interventionist offered relevant community resources). All participants received the survivorship booklet containing information on cancer, the psychosocial impact, and culturally sensitive resources on low-cost surveillance and treatment, medical, and psychosocial services.

Measures

Participants completed a comprehensive self-report, baseline questionnaire including standard and new measures developed from and used in the PI's previous research with breast cancer survivors.

Depressive symptoms

The 20-item CES-D [26] was used to assess depressive symptoms. Items are rated on a four-point scale with higher scores indicating more depressive symptoms. The CES-D has been used with multiethnic [26] and BCS samples [33]. In this study, the CES-D had good internal consistency ($\alpha = 0.92$).

Demographic and cancer medical characteristics

We also assessed demographic (e.g., age, income, education level, relationship status [e.g., married and single], and occupation) and clinical characteristics (e.g., stage, detection of breast abnormality [medical versus nonmedical], type of surgery [e.g., lumpectomy], adjuvant therapy [e.g., radiation], experienced depressive symptoms [yes or no], and number of comorbidities).

Statistical analysis

Descriptive analyses

Baseline demographic and clinical characteristics were compared between study condition (intervention and control) and language group (English language preferred [ELP] and Spanish language preferred [SLP]) by chi-squares and independent samples *t*-tests. *Preliminary and exploratory analyses:* Paired-sample *t*-tests examined differences in depressive symptoms across time (baseline and follow-up) within study condition and language group. Independent sample *t*-tests examined differences in depressive symptoms across study condition within language group. *Main outcome analysis:* To evaluate the effect of the intervention on depressive symptoms, an analysis of covariance was conducted. Interaction effects between study condition and depressive symptoms at baseline and language were examined. Also, a logistic regression was conducted to compare odds of achieving ≥ 5 -point reduction between intervention and control groups. A ≥ 5 -point reduction in depressive symptoms was considered a clinically significant improvement in depressive symptoms [21]. Analyses were adjusted for depressive symptoms at baseline and language. All analyses were conducted using SPSS 21.0 (IBM SPSS Statistics for Windows, IBM Corp, Armonk, NY) with a $p < 0.05$ criterion of significance for a two-sided test.

Results

Between 2006 and 2009, a total of 529 LBC patients were accessible and assessed for study eligibility, of which 277 were excluded and 252 were assessed for study enrollment (Figure 1). Overall, 221 were eligible and enrolled in the trial, with 111 LBC patients randomized to the intervention condition and 110 to the control condition. In total, 199 LBC patients completed the trial: 84 ELP (39 in control condition and 45 in intervention condition) and 115 SLP (61 in control condition and 54 in intervention condition). The study participation rate for accessible cases was 48% (252/529), and the trial completion rate of eligible and enrolled LBC patients was 90% (199/221).

Sample characteristics

Most LBC patients had a high school education and reported a low household income (Table 1). The characteristics of

participants were equivalent across study conditions. SLP Latina Americans were more likely to report being born outside the USA ($p < 0.001$), had lower educational attainment ($p < 0.001$) and lower household income ($p < 0.01$), and were less likely to work outside the home ($p < 0.001$) compared with ELP LBC patients. Sixty percent of LBC patients reported that their breast abnormality was detected through a breast self-exam versus 40% through a medical exam (Table 2). Compared with those in the control condition, LBC patients in the intervention condition were more likely to report depressive symptoms ($p < 0.001$). SLP LBC patients were more likely to report receiving a mastectomy ($p < 0.05$) yet least likely to report breast reconstruction ($p < 0.05$) than ELP LBC patients. SLP LBC patients were also more likely to report depressive symptoms than ELP LBC patients ($p < 0.01$).

Preliminary findings by study condition

We assessed differences in depressive symptoms across time within study condition. Participants in the intervention condition showed a significant decrease in depressive symptoms from baseline ($M = 25.4$, $SD = 10.2$) to follow-up ($M = 17.2$, $SD = 10.5$) ($p < 0.001$), whereas for participants in the control condition, symptoms remained unchanged from baseline ($M = 14.8$, $SD = 10.8$) to follow-up ($M = 14.1$, $SD = 10.6$) ($p > 0.05$).

Exploratory findings by language

We explored differences in depressive symptoms across time within language group. ELP LBC patients showed a significant decrease in depressive symptoms from baseline ($M = 17.1$, $SD = 10.8$) to follow-up ($M = 13.4$, $SD = 8.9$) ($p < 0.001$). SLP LBC patients also showed a significant decrease in depressive symptoms from baseline ($M = 22.1$, $SD = 12$) to follow-up ($M = 17.3$, $SD = 11.5$) ($p < 0.001$). We also explored differences across language group within study condition. In the control condition, ELP LBC patients reported significantly less symptoms than SLP LBC patients at both baseline ($M = 9.5$, $SD = 6.4$ vs. $M = 18.2$, $SD = 11.8$) and follow-up ($M = 10.7$, $SD = 6.9$ vs. $M = 16.3$, $SD = 12$) ($p < 0.01$), respectively. However, in the intervention condition, there were no significant differences in depressive symptoms across language group.

We also examined differences in depressive symptoms across study condition within language group (Table 3). Overall, despite randomization, participants were not equivalent across conditions. At baseline, ELP LBC patients in the control condition reported significantly less symptoms ($M = 9.5$, $SD = 6.4$) than ELP LBC patients in the intervention condition ($M = 23.5$, $SD = 9.5$) ($p < 0.001$). At follow-up, despite significant reduction in depressive scores for LBC patients in the intervention condition, ELP LBC patients in the control condition maintained their advantage and reported significantly less symptoms

Table 1. Demographic characteristics by study condition and language group

	Total sample	Study condition		Language group	
	N = 199	Control (n = 100)	Intervention (n = 99)	ELP Latina-American (n = 84)	SLP Latina-American (n = 115)
Birth country					
USA	52 (26%)	26 (26%)	26 (27%)	50 (60%)	2 (2%)
Other	145 (74%)	74 (74%)	71 (73%)	33 (40%)	112 (98%)
χ^2			0.016		84.5*
Education					
<High school	88 (45%)	43 (44%)	45 (46%)	9 (11)	79 (70%)
>High school	109 (55%)	56 (56%)	53 (54%)	75 (89%)	34 (30%)
χ^2			0.123		68.3*
Income					
<\$25K	109 (55%)	54 (54%)	55 (56%)	26 (31%)	83 (72%)
\$25–45K	39 (20%)	17 (17%)	22 (23%)	14 (17%)	25 (22%)
>\$45–75K	22 (11%)	11 (11%)	11 (11%)	17 (21%)	5 (4%)
>\$75K	28 (14%)	18 (18%)	10 (10%)	26 (31%)	2 (2%)
χ^2			2.91		56.3**
Occupation					
Homemaker	84 (42%)	46 (46%)	38 (39%)	12 (14%)	72 (62%)
Managerial	37 (19%)	19 (19%)	18 (18%)	34 (41%)	3 (3%)
Technical	33 (17%)	16 (16%)	17 (17%)	26 (31%)	7 (6%)
Service	29 (15%)	14 (14%)	15 (15%)	6 (7%)	23 (20%)
Operator	8 (4%)	3 (3%)	5 (5%)	1 (1%)	7 (6%)
Other	8 (8%)	2 (2%)	6 (6%)	5 (6%)	3 (3%)
χ^2			3.34		92.1*
Relationship					
Partnered	116 (59%)	64 (65%)	52 (53%)	48 (57%)	68 (60%)
Unpartnered	82 (41%)	35 (35%)	47 (46%)	36 (43%)	46 (40%)
χ^2			2.99		0.125
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Age	52.9 (10.5)	53.9 (10.4)	51.9 (10.6)	51.8 (11.0)	53.7 (10.0)
t-value			1.32		–1.74

ELP, English language preferred; SLP, Spanish language preferred; SD, standard deviation.

* $p < 0.001$.** $p < 0.01$.

($M = 10.7$, $SD = 6.9$) compared with ELP LBC patients in the intervention condition ($M = 15.7$, $SD = 9.9$) ($p < 0.05$).

At baseline, SLP LBC patients in the control condition reported significantly less symptoms ($M = 18.2$, $SD = 11.8$) than SLP LBC patients in the intervention condition ($M = 26.6$, $SD = 10.5$) ($p < 0.001$). At follow-up, the depressive symptoms among the intervention condition were reduced and matched the lower scores documented in the control condition. Thus, the intervention group showed significant improvements such that the follow-up assessment documented similar scores across conditions (ELP $M = 15.7$ compared with SLP $M = 18.4$).

Lastly, we examined differences in depressive symptoms across time within study condition and language group. ELP LBC patients in the intervention condition showed a significant decrease in depressive symptoms from baseline ($M = 23.5$, $SD = 9.5$) to follow-up ($M = 15.7$, $SD = 9.9$) ($p < 0.001$). ELP LBC patients in the control condition showed no significant change in depressive symptoms from

baseline ($M = 9.5$, $SD = 6.4$) to follow-up ($M = 10.7$, $SD = 6.9$) ($p > 0.05$). SLP LBC patients in the intervention condition also showed a significant decrease in depressive symptoms from baseline ($M = 26.6$, $SD = 10.5$) to follow-up ($M = 18.4$, $SD = 10.9$) ($p < 0.001$). SLP LBC patients in the control condition showed no significant change in depressive symptoms from baseline ($M = 18.1$, $SD = 11.8$) to follow-up ($M = 16.3$, $SD = 12.7$) ($p > 0.05$).

Intervention outcomes

Comparisons of symptoms between study conditions supported the hypothesis by indicating a decrease in depressive symptoms in the intervention condition (baseline $M = 25.2$; follow-up $M = 17.2$) whereas symptoms remained unchanged for the control condition (baseline $M = 14.8$; follow-up $M = 14.1$) (Table 4). Change in mean depressive symptoms across time between groups was significant (95% CI: -5.75 to -0.282 ; $p < 0.05$). Additionally, a significantly greater proportion of LBC patients in the

Table 2. Clinical characteristics by study condition and language group

	Total	Study condition		Language group	
	N = 199	Control (n = 100)	Intervention (n = 99)	ELP Latina-American (n = 84)	SLP Latina-American (n = 115)
Stage					
0	9 (5%)	7 (7%)	2 (2%)	5 (6%)	4 (4%)
I	75 (38%)	36 (36%)	39 (40%)	31 (37%)	44 (39%)
II	83 (42%)	42 (42%)	41 (43%)	37 (44%)	46 (41%)
III	29 (15%)	14 (14%)	15 (16%)	11 (13%)	18 (16%)
χ^2			2.92		1.05
Abnormality detected					
Medical exam	80 (40%)	45 (45%)	35 (36%)	33 (40%)	47 (41%)
Breast self-exam	118 (60%)	55 (55%)	63 (64%)	50 (60%)	68 (59%)
χ^2			1.77		0.025
Type of surgery					
Lumpectomy					
No	91 (46%)	46 (46%)	45 (46%)	33 (39%)	58 (50%)
Yes	108 (54%)	54 (54%)	54 (54%)	51 (61%)	57 (50%)
χ^2			0.006		2.43
Mastectomy					
No	118 (59%)	56 (56%)	62 (63%)	57 (68%)	61 (53%)
Yes	81 (41%)	44 (44%)	37 (37%)	27 (32%)	54 (47%)
χ^2			0.905		4.41*
Mastectomy + Recons					
No	177 (89%)	87 (87%)	90 (91%)	70 (83%)	107 (93%)
Yes	22 (11%)	13 (13%)	9 (9%)	14 (17%)	8 (7%)
χ^2			0.773		4.65*
Chemotherapy					
No	60 (30%)	25 (25%)	33 (33%)	26 (31%)	34 (30%)
Yes	139 (70%)	75 (75%)	66 (67%)	58 (69%)	81 (70%)
χ^2			1.67		0.044
Radiation					
No	58 (29%)	32 (32%)	28 (28%)	27 (32%)	31 (27%)
Yes	141 (71%)	68 (68%)	71 (72%)	57 (68%)	84 (73%)
			0.326		0.632
Hormone therapy					
No	63 (32%)	32 (32%)	31 (31%)	25 (30%)	38 (33%)
Yes	136 (68%)	68 (68%)	68 (69%)	59 (70%)	77 (67%)
χ^2			0.011		0.242
Depressive symptoms					
No	123 (62%)	78 (78%)	45 (45%)	63 (75%)	60 (52%)
Yes	76 (38%)	22 (22%)	54 (55%)	21 (25%)	55 (48%)
χ^2			22.3***		10.7**
Comorbidities	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
t-value	1.9 (1.5)	1.7 (1.7)	2.0 (1.6)	1.7 (1.5)	2.0 (1.5)
			-0.109		0.943

ELP, English language preferred; SLP, Spanish language preferred; SD, standard deviation.

* $p < 0.05$.** $p < 0.01$.*** $p < 0.001$.

intervention condition (63%) than that in the control condition (26%) achieved at least a five-point decrease in depressive symptoms at follow-up (adjusted odds ratio = 2.3; 95% CI: 1.1–4.6; $p < 0.05$).

Discussion

Psychosocial interventions with cancer survivors report primarily on European Americans; however, these findings

may not be applicable to ethnic minority BCS. Studies should include effective strategies for enrolling those at highest risk for poor outcomes and with the greatest need for psychosocial interventions [32,34]. Thus, this study grew out of the need to implement targeted interventions for ethnic and linguistic minority populations.

The findings revealed that SLP LBC patients are faring less favorably than their ELP counterparts. SLP LBC patients in the control condition reported more depressive

Table 3. Depressive symptoms across study condition within language group

	Language group					
	ELP			SLP		
	Control (n = 39)	Intervention (n = 45)	t-test	Control (n = 61)	Intervention (n = 54)	t-test
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
T1						
Depressive symptoms	9.5 (6.4)	23.5 (9.5)	−7.73*	18.2 (11.8)	26.6 (10.5)	−4.02*
T2						
Depressive symptoms	10.7 (6.9)	15.7 (9.9)	−2.65**	16.3 (12.0)	18.4 (10.9)	−0.999

ELP, English language preferred; SLP, Spanish language preferred; SD, standard deviation.

* $p < 0.001$.

** $p < 0.05$.

Table 4. Effects of intervention on depressive symptoms

	SS	df	MS	F	η^2
Covariates					
Depressive symptoms T1	6914.56	1	6914.56	94.06*	0.327
Language	23.066	1	23.066	0.314	0.002
Main effects					
Study condition	347.89	1	347.89	4.73**	0.024
Error	14,261.1	194	73.51		
Total	71,076.0	198			

T1, time 1; SS, sums of squares; MS, mean square.

* $p < 0.001$.

** $p < 0.05$.

symptoms over time. However, no significant differences in symptoms were observed across language in the intervention condition. Further, ELP and SLP LBC patients in the intervention condition showed an eight-point mean decrease in depressive symptoms from baseline to follow-up, whereas those in the control condition showed no significant change. These findings suggest that not intervening may actually result in poorer outcomes, especially among those already showing unfavorable outcomes.

Overall, LBC patients in the intervention condition reported significant decreases in depressive symptoms over time, whereas symptoms remained unchanged for LBC patients in the control condition. Thus, this psycho-educational telephonic intervention delivered by trained paraprofessionals was successful in significantly reducing depressive symptoms among LBC patients. The intervention outcomes document an eight-point reduction in distress reaching both statistical and clinical significance. These findings are in line with interventions delivered by health professionals (e.g., social workers) who report improved quality of life and distress outcomes for LBC patients [19–21].

The improvement observed in depressive symptoms over time corresponds to the domains covered in the telephone sessions. Specifically, the sessions on balancing emotions and stress management, and coping skills and problem solving directly correspond with depressive symptom

management. Additionally, the topics covered were linked to the purpose of the intervention and the outcomes.

However, limitations exist. Despite randomization, the control condition reported less depressive symptoms at baseline compared with the intervention condition. Yet a closer look at SLP LBC patients shows a less dramatic, eight-point difference between the baseline means for the control and intervention conditions such that this eight-point difference falls within the SD of the mean scores for both conditions. Therefore, the observed score in the intervention condition for SLP LBC patients helps to more meaningfully reveal the effectiveness of the intervention and restores the utility of the intervention that may have been compromised by the floor-effect threat in the control group. Additionally, the sample is not representative of all LBC patients because most reported being of Mexican descent (73%), and participation was limited to LBC patients with stages 0–III. Despite these limitations, there are several strengths that are worth noting including the moderate recruitment success of an underrepresented and underserved population, and this study represents a novel psycho-educational trial implemented by paraprofessionals.

This study contributes to the literature by highlighting the findings from a telephone intervention delivered by paraprofessionals. The findings document that, regardless of language, this psycho-educational telephonic intervention was successful in significantly reducing depressive symptoms

among LBC patients. Diverse intervention approaches that include paraprofessional models of survivorship care present novel and probably cost-effective strategies for addressing distress among highly burden, underserved cancer survivor populations in community hospitals and practice settings. Paraprofessionals offer an opportunity for community hospitals and practitioners to work in partnership with community support groups and advocacy organizations (e.g., Sisters Breast Cancer Survivors Network, Cancer Hope Network, Cancer Support Community, and local grassroots support groups and organizations) to provide the much needed navigational and psychosocial care for our increasingly diverse and underserved oncology patient population.

The study's enrollment success and observed intervention effectiveness support the utility of paraprofessionally delivered interventions to reduce depressive symptoms. Paraprofessionals are usually based on the target populations' community and possess cultural and linguistic competencies. Paraprofessionals, with careful selection, appropriate training, and supervision, can

participate in the care team and deliver effective and cost-saving survivorship care. In cancer survivorship research and practice, paraprofessionally delivered interventions may be underutilized. Thus, there is an urgent need to examine the effectiveness and utility of diverse models of mental health and psychosocial care to gain understanding of their strengths, application, and limitations. Future research should assess the effectiveness and cost-effectiveness of paraprofessionally delivered interventions.

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Conflict of interest

The authors have no conflict of interest to disclose.

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