Cancer-Relevant Self-Efficacy Is Related to Better Health-Related Quality of Life and Lower Cancer-Specific Distress and Symptom Burden Among Latina Breast Cancer Survivors

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Abstract

Background—Latina breast cancer survivors (BCS) often report poorer health-related quality of life (HRQOL), higher symptom burden, and greater psychosocial needs compared to non-Latina BCS. However, Latinas are underrepresented in cancer survivorship research and more work is needed to examine the factors contributing to these psychosocial disparities. This study aimed to evaluate potentially modifiable patient characteristics associated with HRQOL, breast cancer concerns, and cancer-specific distress among Latina BCS.

Methods—Baseline data was evaluated in 95 Latina BCS who participated in a smartphone-based psychosocial intervention designed to improve HRQOL. Hierarchical linear regression analyses were conducted to evaluate the associations between modifiable factors that have been shown to favorably impact outcomes in cancer populations (i.e., cancer-relevant self-efficacy, breast cancer knowledge) with overall and domain-specific HRQOL, breast cancer symptom

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burden, and cancer-specific distress, after controlling for sociodemographic and cancer-related characteristics.

Results—Greater cancer-relevant self-efficacy was related to better overall HRQOL as well as better social, emotional, and functional well-being domains. Greater cancer-relevant self-efficacy was also related to less breast cancer symptom burden and less cancer-specific distress. Breast cancer knowledge was not associated with any of the study outcomes.

Conclusions—Results demonstrate that cancer-relevant self-efficacy is a significant correlate of general and domain-specific HRQOL, breast cancer symptom burden, and cancer-specific distress among Latina BCS. Future interventions in this population should target cancer-relevant self-efficacy as a possible mechanism to improve HRQOL outcomes and survivorship experiences for Latina BCS.

Keywords

Health-related quality of life; Self-efficacy; Latina/Hispanic; Breast cancer survivors

Introduction

Among Hispanic/Latina women (referred to as "Latina" henceforth) in the United States (U.S.), breast cancer is the most commonly diagnosed cancer and the leading cause of cancer-related deaths [1]. Latina breast cancer survivors (BCS) experience poorer health-related quality of life (HRQOL), worse post-treatment symptom burden, and greater unmet psychosocial needs [2–10]. However, Latinas are underrepresented in cancer survivorship research [8, 11] and more work is needed to examine the factors contributing to these physical and psychosocial disparities. Expanding our understanding of this population's needs and the factors that influence overall HRQOL and physical functioning in Latina BCS may help inform the development of interventions to improve their survivorship experience.

Research in the general cancer population has identified a number of individual-level determinants of HRQOL among BCS, including less education, lower income, not being married, and medical comorbidities [12, 13]. However, many of these factors are difficult to modify, so more focus has been placed on understanding modifiable determinants of HRQOL, such as self-efficacy, which refers to an individual's confidence in their ability to successfully execute a specific behavior to produce an expected outcome [14]. According to social cognitive theory (SCT) [14, 15], self-efficacy regulates human functioning through affective, cognitive, decisional, and motivational processes and is a key determinant of behavior [15]. Self-efficacy can influence health behaviors directly through one's belief in their ability to overcome barriers to achieve change, as well as indirectly through its impact on goals, outcome expectations, and perceived barriers and facilitators to making behavior changes. In this framework, individuals with high levels of self-efficacy may set higher goals for themselves, put forth more effort to pursue those goals, expect more positive outcomes, and persist longer and remain committed when faced with challenges. Thus, self-efficacy is an important component of coping with the challenges and demands related to cancer [16, 17]. Cancer-relevant self-efficacy focuses on self-efficacy in situations that may be challenging for cancer patients specifically, including managing cancer-and treatment-

related symptoms, emotional reactions to cancer, and interactions with physicians. Research in the general population has shown that greater self-efficacy for cancer symptom management is associated with improved functional, emotional, and social well-being [18], and greater emotional self-efficacy is associated with higher psychological well-being and lower cancer-specific distress [19]. Additionally, enhancing self-efficacy in patient-provider communication is associated with greater involvement in treatment decision-making, compliance with hormonal therapy, symptom resolution, and satisfaction with care [20–22]. Another important SCT construct is health-related knowledge, which is not sufficient to initiate a health behavior alone but is a key precursor to behavior change [14, 15]. Minority women tend to report less breast cancer knowledge compared to white women [10, 23]. In particular, Latina BCS report greater unmet needs [5] and a greater discrepancy between their desired cancer treatment information and the information received [10, 24], as well as demonstrate less breast cancer survivorship knowledge and less patient satisfaction when compared with non-Latinas [25]. This is important because high levels of information and information satisfaction, which are a function of knowledge, are significant predictors of HRQOL [26, 27]. Additionally, general cancer knowledge has been associated with HRQOL among patients with metastatic cancer [28].

Two recent studies of Latina BCS within 1–5 years of diagnosis evaluated various individual (e.g., disease characteristics), socio-cultural (e.g., cultural values), and institutional (e.g., health care system) influences on HRQOL [29, 30]. In regard to HRQOL subdomains (i.e., emotional, functional, physical, and social well-being), there were significant associations between social factors and social and functional well-being, and between health care system factors and physical and emotional well-being [29]. While these studies have brought needed attention to determinants of HRQOL among Latinas, they have important limitations. Both studies focused on individual and contextual factors of HRQOL that are difficult to modify (e.g., health status, medical mistrust) and they exclusively evaluated HRQOL as the outcome of interest. More nuanced information could be gained by evaluating other aspects of the survivorship experience, such as breast cancer related symptom burden and distress. Further, one of the prior studies combined African American BCS with Latina BCS, limiting the generalizability of findings to any one subgroup of BCS [30].

This study addressed these noted limitations and expanded on previous work in multiple ways. First, we examined the unique roles of potentially modifiable patient factors (i.e., cancer-relevant self-efficacy and breast cancer knowledge) as they relate to HRQOL, breast cancer symptom burden, and cancer-specific distress among Latina BCS. Cancer-relevant self-efficacy and breast cancer knowledge were selected as patient-level factors based on models of stress and coping [31–33], past research related to psychosocial adjustment to cancer [34, 35], and preliminary results suggesting that self-efficacy in patient-provider communication, cancer-related knowledge, stress management, and social support can improve symptom burden and HRQOL outcomes among BCS [2, 13, 29, 34, 36, 37]. In addition, this study included two survivorship outcomes beyond HRQOL (i.e., breast cancer related symptom burden and cancer-specific distress) given documented disparities in these outcomes among Latina BCS [2–4, 8–10]. While similar and negatively associated with HRQOL, these outcomes are also distinct in that cancer-specific distress assesses post-traumatic stress symptoms versus emotional well-being, which includes more symptoms of

sadness and anxiety, and breast cancer symptom burden, which is a summative indicator of not only the frequency but severity of symptoms versus physical well-being. This study also focused on recent Latina BCS, defined as having completed active breast cancer treatment within 2–24 months. It was hypothesized that among Latina BCS, greater cancer-relevant self-efficacy and greater breast cancer knowledge would each be associated with better HRQOL, less symptom burden, and less cancer-specific distress, demonstrating similar relationships found in prior research with non-Latina BCS. It was also hypothesized that cancer-relevant self-efficacy would have stronger associations with study outcomes compared to breast cancer knowledge.

Methods

Study Design and Participants

In total, 95 Latina BCS enrolled in a non-randomized pilot study ($n = 25$) [38] or a randomized controlled trial ($n = 70$) [39] of a smartphone-based psychosocial intervention designed to improve HRQOL and reduce cancer-specific distress after breast cancer treatment. Participants were recruited through advertisements and physician referrals from University of Illinois Health System, Northwestern Medicine, and ALAS-WINGS, a community-based organization that serves Latina women with breast cancer in Chicago. All participants were enrolled between 2017 and 2019. Only data collected pre-intervention was examined for this analysis. Eligible Latinas were at least 21 years old, could read and speak in English or Spanish, were diagnosed with nonmetastatic breast cancer, had completed active treatment with the exception of endocrine therapy, and were within 2–24 months post-treatment completion. A detailed report of the primary study design and protocol is published elsewhere [39]. Participants were screened, provided informed consent, and completed a battery of self-report questionnaires in her preferred language (English or Spanish) prior to intervention participation. The Institutional Review Board at Northwestern University approved all study procedures and assessments.

Measures

All Cronbach's alpha values were above 0.70 (range 0.72–0.92) in the current sample, with the exception of additional breast cancer concerns, which had an alpha of 0.63.

Sociodemographic and Cancer-Related Characteristics—Participant characteristics were collected from a baseline self-report questionnaire, which included single-items that assessed participants' age, country of origin, Latina ancestry, language preference (English or Spanish), highest education, annual household income, employment status, and marital status. Participants also self-reported cancer-related information including their stage of disease and type of treatment(s) received (i.e., surgery, chemotherapy, radiation therapy, hormone therapy), which were confirmed via medical chart review.

Modifiable Factors

Cancer-Relevant Self-Efficacy—The 12-item Communication and Attitudinal Self-Efficacy scale for Cancer (CASE-Cancer) assesses a cancer patient's perceived ability to seek and obtain information, understand and participate in care, and maintain a positive

attitude [40]. Respondents rate their level of confidence for each item/skill on a 4-point scale, and higher scores indicate greater self-efficacy. This measure has been previously used in studies of Latina BCS [40, 41].

Breast Cancer Knowledge—The 16-item Knowledge about Breast Cancer Questionnaire contains true or false questions related to the diagnosis and treatment of breast cancer. Six additional items related to hormone therapy were added to a 10-item knowledge measure, which has been evaluated and tested in a large sample of Spanish-speaking Latina BCS [42]. Correct responses are summed with higher scores indicating greater breast cancer knowledge.

Patient Outcomes

Health-Related Quality of Life—The 36-item Functional Assessment of Cancer Therapy-Breast (FACT-B) has a total score reflecting overall HRQOL comprised of five subscales: physical well-being, social well-being, emotional well-being, functional well-being, and additional breast cancer concerns [43]. Respondents rate the pertinence of statements over the past 7 days on a 5-point scale, with higher scores indicating better HRQOL. The FACT-B has been used extensively among breast cancer patients [44, 45], and it has been validated in Spanish [45].

Breast Cancer Symptom Burden—The 25-item Breast Cancer Prevention Trial (BCPT) symptom questionnaire assesses discomfort associated with breast cancer symptoms during the past month [46]. Higher scores indicate greater breast cancer symptom burden.

Cancer-Specific Distress—The 15-item Impact of Event Scale (IES) has two subscales assessing the frequency of intrusive thoughts and avoidance following a stressful event (i.e., cancer) [47, 48]. Respondents rate the frequency of each item over the past week, with higher scores indicating greater distress. The IES has been translated into Spanish [48].

Statistical Analysis

Data were analyzed with SPSS version 22 [49]. We assessed bivariate associations of the sociodemographic and cancer-related characteristics with the patient outcomes using Pearson, point biserial, and Spearman's rank-order correlations, as appropriate. Variables significantly associated ($p < 0.05$) with multiple patient outcomes were included as covariates in subsequent analyses. We used hierarchical regression models to evaluate the unique associations of cancer-relevant self-efficacy and breast cancer knowledge with patient outcomes (i.e., HRQOL, breast cancer symptom burden, and cancer-specific distress). For each outcome, covariates were entered in block 1 of the model followed by a modifiable patient factor in block 2 (model 1, cancer-relevant self-efficacy; model 2, breast cancer knowledge). We report standardized betas (β) to evaluate the relationships of predictor variables with outcomes.

Results

Sample Characteristics and Bivariate Correlations

See Table 1 for descriptive characteristics and bivariate relationships of sociodemographic and cancer-related factors with patient outcomes. The following sociodemographic variables were retained as covariates in the hierarchical regression analyses, as they were related to multiple study outcomes: language preference, marital status, and ancestry. Education and total household income were excluded given their strong correlations with language preference ($rs > 0.50$) [50, 51]. The only cancer-related characteristic that was retained as a covariate was time since primary treatment completion, as the other factors were not significantly related to multiple outcomes.

Predictors of Patient Outcomes

See Table 2 for results of the hierarchical regression models, including associations between each modifiable patient factor and patient outcome, controlling for sociodemographic and cancer-related variables. Assumptions of linear regressions, including linearity, normality, and homoscedasticity, were met for the analyses. Breast cancer knowledge was not significantly associated with any of the study outcomes and is not reported below.

HRQOL—The overall HRQOL mean was 97.31 (SD = 23.55). After controlling for sociodemographic and cancer-related variables, greater cancer-relevant self-efficacy was significantly related to better overall HRQOL ($p = 0.008$). The physical well-being mean was 17.36 (SD = 8.46). Across both models, no modifiable patient factors were related to physical well-being. The social well-being mean was 21.04 (SD = 5.81). Better cancer-relevant self-efficacy was related to better social well-being ($p = 0.004$). The emotional well-being mean was 16.12 (SD = 6.46). Greater cancer-relevant self-efficacy was related to better emotional well-being ($p = 0.030$). The functional well-being mean was 21.00 (SD = 4.98). Better cancer-relevant self-efficacy was related to better functional well-being ($p = 0.003$). The additional breast cancer concerns mean was 21.79 (SD = 6.96). Better cancer-relevant self-efficacy was related to fewer additional breast cancer concerns ($p = 0.016$).

Breast Cancer Symptom Burden—The breast cancer symptom burden mean was 26.84 (SD = 16.15). Greater cancer-relevant self-efficacy was related to less symptom burden ($p = 0.013$).

Cancer-Specific Distress—The overall cancer-specific distress mean was 23.83 (SD = 17.15). Greater cancer-relevant self-efficacy was related to less overall cancer-specific distress ($p = 0.001$). The intrusive thoughts mean was 11.09 (SD = 9.21). Greater cancer-relevant self-efficacy was related to less intrusive thoughts ($p = 0.001$). The avoidance mean was 12.74 (SD = 9.92). Greater cancer-relevant self-efficacy was related to less avoidance ($p = 0.007$).

Discussion

This study examined two individual-level and potentially modifiable factors (i.e., cancer-relevant self-efficacy and breast cancer knowledge) as they relate to HRQOL, breast cancer

related symptom burden, and cancer-specific distress among Latina BCS who had recently completed active breast cancer treatment using hierarchical multiple linear regressions. Consistent with our hypothesis, cancer-relevant self-efficacy was significantly associated with overall and domain-specific HRQOL, breast cancer related symptom burden, and cancer-specific distress. However, contrary to our hypothesis, breast cancer knowledge was not significantly related to any study outcomes. Of note, the current sample of Latina BCS reported lower overall HRQOL (FACT-B) with a mean of 97.31 (SD = 23.55) compared with other breast cancer patients in the measure's validation study ($M = 112.80$; SD = 23.55) [44] as well as other samples of Latina BCS ($M = 105$; SD = 19.40) [29]. Lower scores in our sample may be due in part to the recent completion of active treatment (within 2–24 months) compared to other samples (e.g., within 5 years of diagnosis).

Our findings related to cancer-relevant self-efficacy are in line with previous research that has identified self-efficacy as an important correlate of HRQOL among cancer survivors [52, 53]. Similar to a study by Shelby and colleagues (2014) of BCS prescribed adjuvant hormone therapy [18], we found that greater cancer-relevant self-efficacy was associated with better functional, emotional, and social well-being, but not physical well-being. The importance of patient self-efficacy in Latina BCS is further supported by a recent study that found significant positive associations between satisfaction with care, self-efficacy, and HRQOL among a large sample of Latino breast, prostate, and colorectal cancer survivors [54]. This study expands on previous studies with Latina BCS [29, 30] and identifies a modifiable patient factor (i.e., cancer-relevant self-efficacy) as a significant correlate of HRQOL, breast cancer related symptom burden, and cancer-specific distress. Consequently, psychosocial interventions designed to improve HRQOL and other survivorship outcomes among Latina BCS should consider cancer-relevant self-efficacy as a potential intervention target.

Past studies show that minority patients tend to ask fewer questions and participate less actively in their care compared to non-minority White patients [55]. Furthermore, emerging evidence suggests that Latinx culture may influence health and aspects of the cancer experience. For example, while *allocentrism* and *familism* (e.g., a collective view of family interdependence in which the needs of the family are placed over the needs of an individual) may provide a strong social support network for Latinx patients throughout their cancer experience [2, 56], they can also hinder patients' willingness to adopt positive healthy behaviors if they are not thought to benefit the family. Additionally, *marianismo* (i.e., a gender role that suggests a pattern of female submissiveness) and *simpatia* (i.e., a drive toward maintaining harmonious, nonconfrontational social interactions) can inhibit assertive communication and proactive health behaviors [57]. As Latina BCS report poorer physician communication and lower satisfaction with care compared to non-Latinas [25, 58–60], enhancing cancer-relevant self-efficacy in this population may be particularly beneficial to improving HRQOL and survivor-ship outcomes.

Contrary to expectations, no significant associations were found between breast cancer knowledge with study outcomes. Prior research has demonstrated associations between breast cancer knowledge and involvement in the decision-making process [61], in which greater patient participation in turn has been related to a higher level of HRQOL (i.e.,

physical, functional, and emotional well-being) [61] and greater treatment satisfaction [62] among BCS. It is possible that the positive impact of cancer knowledge on greater patient satisfaction and engagement in treatment decision-making [28, 61] may be different among survivors who have completed active cancer treatment and have fewer cancer care needs compared to patients still undergoing active treatment. In addition, among cancer survivors, information on effective symptom management may be more relevant to improving quality of life than general cancer knowledge [63]. Future longitudinal studies are needed to confirm these findings and investigate the potential indirect effects of knowledge on outcomes among Latina BCS.

Study results should be evaluated in the context of several limitations. First, though this study focused on multiple individual-level factors as they relate to HRQOL and other survivorship outcomes, not all possible correlates were considered. Future work should consider additional factors such as acculturation, medical comorbidities, patient satisfaction with care, and medical mistrust. Second, the majority of this sample was comprised of Spanish-speaking, foreign-born Latina BCS. Therefore, these results may not generalize to all Latina BCS in the U.S. This study focused on women who had completed active treatment for breast cancer within 2 years, and their needs and correlates to HRQOL may differ from other Latina BCS further into survivorship. Furthermore, results should be interpreted cautiously as multiple comparisons were made, which increases the possibility of type 1 error (i.e., obtaining a false-positive finding) [64]. Lastly, given the cross-sectional design of the study, we cannot make assumptions about causality of associations. Future research should use longitudinal designs to evaluate multi-level contextual factors related to HRQOL.

This study contributes to the limited literature among Latina BCS and demonstrates potential determinants of patient-reported survivorship outcomes. Specifically, significant associations with study outcomes suggest that increasing patient cancer-relevant self-efficacy, regardless of language preference, marital status, and ancestry, may improve overall HRQOL, well-being, symptom burden, and cancer-specific distress among Latina BCS. Therefore, cancer-relevant self-efficacy may be an important intervention target for further consideration in intervention research. Although knowledge about breast cancer may not be directly related to patient-reported outcomes during cancer survivorship, it should be investigated as a potential indirect predictor of outcomes during treatment in future studies of Latina BCS.

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Table 1

Sample characteristics and bivariate correlations with study outcomes

	Descriptives	Bivariate correlations									
		FACT-B	PWB	SWB	EWB	FWB	BCC	BCPT	IES-T	IES-I	IES-A
Sociodemographic factors											
Age, years; M(SD)	52.61 (11.28)	−0.07	0.05	−0.19†	−0.02	−0.20†	0.03	−0.08	−0.08	−0.10	−0.05
English language; n(%)	35 (36.8)	0.04	−0.03	0.24*	0.02	0.07	−0.08	0.27**	−0.04	−0.01	−0.05
Mexican ancestry; n(%)	62 (65.3)	−0.13	−0.16	−0.05	−0.23*	−0.06	0.05	−0.02	0.19†	0.23*	0.11
U.S. born; n(%)	30 (31.6)	−0.01	−0.05	0.11	−0.02	0.02	−0.05	0.23*	0.08	0.01	0.13
Education > high school; n(%)	42 (44.2)	0.20†	0.11	0.21*	0.20†	0.23*	0.02	−0.07	−0.15	−0.11	−0.16
Annual household income $25,000; n(%)	49 (51.6)	0.12	−0.05	0.24*	0.04	0.24*	0.03	0.08	−0.22*	−0.14	−0.26*
Employed; n(%)	43 (45.3)	0.11	0.08	−0.02	0.04	0.21*	0.11	−0.09	−0.17	−0.10	−0.20†
Married; n(%)	59 (62.1)	0.24*	0.11	0.30**	0.14	0.19†	0.17	0.05	0.05	0.10	−0.01
Cancer-related factors											
Stage of disease; n(%)		−0.04	0.11	−0.22*	0.06	−0.20†	−0.03	−0.03	0.04	0.04	0.06
0	2 (2.1)										
I	26 (27.4)										
II	36 (37.9)										
III	15 (15.8)										
Had surgery; n(%)	95 (100)	--	--	--	--	--	--	--	--	--	--
Received chemotherapy; n(%)	55 (57.9)	−0.14	−0.15	0.03	−0.07	−0.08	−0.21*	0.09	0.07	0.06	0.07
Received radiation; n(%)	69 (72.6)	−0.16	−0.10	−0.13	−0.12	−0.18†	−0.08	0.11	0.03	0.11	−0.04
Hormone therapy; n(%)	72 (75.8)	0.08	0.15	−0.06	−0.00	0.09	0.09	−0.17	−0.13	−0.15	−0.09
Time (number of days) since treatment completion; M(SD)	355.45 (242.02)	−0.31**	−0.32**	−0.04	−0.44**	−0.03	−0.20†	0.14	−0.10	−0.06	−0.12

Total sample size: $N = 95$. Bivariate correlations were Pearson, point biserial, or Spearman's rank-order correlations, as appropriate. n frequency, M mean, SD standard deviation, FACT-B Functional Assessment of Cancer Therapy-Breast, PWB physical well-being, SWB social well-being, EWB emotional well-being, FWB functional well-being, BCC breast cancer concerns, BCPT Breast Cancer Prevention Trial, IES-T Impact of Events Scale (IES) total score, IES-I IES Intrusion, IES-A IES Avoidance.

*
$p < 0.05$;

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$**$ $p < 0.01$;

$***$ $p < 0.001$;

$†$ $p < 0.10$

Table 2

Standardized beta coefficients for hierarchical linear regression analyses

	FACT-B	PWB	SWB	EWB	FWB	BCC	BCPT	IES-T	IES-I	IES-A
Model 1										
Sociodemographic characteristics										
English language preference	− 0.02	− 0.11	0.23*	− 0.07	0.02	− 0.09	0.33**	− 0.02	0.06	− 0.09
Married/partnered	0.17	0.01	0.40**	0.03	0.18	0.09	0.05	0.05	0.10	− 0.00
Mexican ancestry	− 0.12	− 0.14	− 0.12	− 0.18†	− 0.05	0.07	0.00	0.16	0.16	0.14
Time since treatment completion	− 0.27*	− 0.36**	0.10	− 0.47**	0.04	− 0.16	0.14	− 0.13	− 0.07	− 0.16
Cancer-relevant self-efficacy	0.27*	− 0.01	0.29**	0.21*	0.27*	0.29**	− 0.31**	− 0.35**	− 0.37**	− 0.28*
Model 2										
Sociodemographic characteristics										
English language preference	− 0.05	− 0.20	0.27*	− 0.14	0.03	− 0.05	0.25*	− 0.12	− 0.04	− 0.18
Married/partnered	0.23*	0.07	0.40**	0.12	0.18	0.12	0.06	0.04	0.09	− 0.00
Mexican ancestry	− 0.15	− 0.16	− 0.13	− 0.22*	− 0.04	0.03	0.03	0.20†	0.21†	0.17
Time since treatment completion	− 0.25*	− 0.29**	0.07	− 0.41**	0.03	− 0.20	0.20†	− 0.07	− 0.01	− 0.11
Breast cancer knowledge	0.13	0.15	0.06	0.15	0.15	− 0.04	0.08	0.17	0.17	0.14

FACT-B Functional Assessment of Cancer Therapy-Breast, *PWB* physical well-being, *SWB* social well-being, *EWB* emotional well-being, *FWB* functional well-being, *BCC* breast cancer concerns, *BCPT* Breast Cancer Prevention Trial, *IES-T* Impact of Events Scale (IES) total score, *IES-I* IES Intrusion, *IES-A* IES Avoidance.

*
$p < 0.05$;

**
$p < 0.01$;

†
$p < 0.10$