Economic Stress Among Low-Income Women With Cancer

Effects on Quality of Life

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BACKGROUND. Attention to the economic consequences of cancer has grown as the number of cancer survivors is increasing. Although prevalent among low-income minority survivors, the impact of economic stress on quality of life (QOL) remains largely unexplored.

METHODS. Data are reported for 487 predominantly Hispanic low-income women with a primary diagnosis of breast or gynecological cancer and undergoing active treatment or follow-up. Cross-sectional and longitudinal analyses examined the effects of economic concerns on QOL, depression, and anxiety.

RESULTS. Rates of unemployment, medical cost and wage concerns, and financial stress were high in this study population, at baseline, respectively, 70%, 68%, 47%, and 49%. The proportions reporting unemployed status and medical cost concerns stayed flat from baseline to 6 months, followed by a pronounced drop at 12 months. Patient reported rates of lost wage worries increased from baseline to 6 months, followed by a moderate decrease. Functional, emotional, physical, and social-family well-being and depression and anxiety scores exhibited consistent linear improvement from baseline to 12 months. Over 12 months, patients reporting economic concerns had significantly poorer functional, emotional, and affective well-being.

CONCLUSIONS. Economic stress is negatively associated with QOL, highlighting the importance of addressing economic stress in low-income women with cancer.


KEYWORDS: breast and gynecologic cancer, low-income, Hispanic, economic stress, quality of life.
Economic stress is also associated with depression, with higher prevalence among low-income populations,\textsuperscript{16–21} with evidence that financial strain and employment are causally related to depression.\textsuperscript{22}

Using baseline and longitudinal data from a clinical trial of 487 low-income, predominantly Hispanic women with breast or gynecologic cancer receiving care in an urban public medical center, we examined both cross-sectional and longitudinal relations between self-reported economic stress and employment status and quality of life, depressive symptoms, and anxiety. In addition, selected data related to economic stress are reported from a supplementary qualitative study with a subset of 29 women.

MATERIALS AND METHODS

Study Site

Patients were enrolled in outpatient oncology clinics. Informed written consent obtained from all study patients was approved by the University of Southern California-Health Sciences Institutional Review Board (IRB). Patient baseline and follow-up interviews were conducted in person or via telephone in either Spanish or English based on patient preference by trained bilingual interviewers. Separate IRB approval was obtained for the supplementary qualitative study.

Study Participants

Data on 487, predominantly low-income Hispanic women were drawn from the randomized clinical trial, Improving Patient Access and Adherence to Cancer Treatment (IMPAACT) designed to test the efficacy of health education, counseling, and patient navigation on patient adherence to breast and gynecological adjuvant cancer treatment and posttreatment follow-up.\textsuperscript{23} Participants were enrolled in breast and gynecology clinics and randomized to either intervention or usual care if they were 1) 18 years or older; 2) had a primary diagnosis of breast (stage 0-III) or gynecological cancer (FIGO 0-4B); and 3) were undergoing active treatment or in active follow-up. Patients were excluded if they were receiving only palliative care or were cognitively impaired to the extent of being unable to participate. Of 596 eligible IMPAACT patients, 487 (82\%) women were enrolled in the clinical trial (Fig. 1). There were no statistically significant differences between enrolled and nonenrolled by age, ethnicity, or cancer stage. Of the 487 study participants, 237 (49\%) were diagnosed with breast cancer and 250 (51\%) were diagnosed with a gynecological cancer. Of the 250 gynecological patients, 130 (52\%) women had cervical cancer, 61 (24\%) uterine cancer, 53 (21\%) ovarian cancer and 6 (2\%) other gynecological cancer.

Qualitative study patients were recruited from a list of 164 women who had completed the 6-month outcome interview. Of these, 65 were initially contacted by research staff; 29 provided written consent. These included 1 European American, 1 African American, 2 Asian American, 1 Indian American, 18 Spanish-speaking Hispanic, and 6 English-speaking Hispanic women between the ages of 23 and 65 years (M = 47.0, SD = 13.0). Fourteen of these women were married, 15 were separated, widowed, or never married. Birthplace included Mexico (n = 14), Guatemala (n = 3), El Salvador (n = 3), US (n = 6), India (n = 1), and the Philippines (n = 2). The majority of women had some high school (n = 8) or less than an 8th-grade education (n = 14); 7 had attended some college. Whereas 78\% had worked within the last 5 years, the majority (79\%) were unemployed at the time of the interview. Previous work included caregiver, housekeeper, factory, clerical or administrative work, teacher’s aide, seamstress, and/or sales.

Measures

Demographic and clinical

Age, marital status, education, birthplace, primary language, employment, and health insurance status were assessed. Cancer site, stage, and oncology treatment status at study enrollment were abstracted from medical records. Functional status was assessed by self-report at baseline using the Karnofsky Performance Status Scale (KPSS), an 11-point rating scale that ranges from the best possible overall health (10) to death (0).\textsuperscript{24} The presence of comorbid conditions (ie, hypertension, heart disease, diabetes, stroke, arthritis, and kidney disease) was obtained from patient self-report.

Pain

Among women reporting pain, further assessment was made using the Brief Pain Inventory (BPI) Short Form\textsuperscript{25,26} at baseline, 6, and 12 months. A clinically significant cutoff score of 7 or greater indicates severe pain.

Quality of life

The Functional Assessment of Cancer Therapy Scale – General (FACT-G)\textsuperscript{27,28} a valid and reliable 27-item questionnaire, assessed physical, functional, social/family, and emotional well-being was assessed at each timepoint. The Spanish version (FACT-S)\textsuperscript{27} was used with monolingual patients. The alpha reliability coefficients for the subscales in this study were 0.85
for physical well-being, 0.81 for functional wellbeing, 0.79 for social/family well-being, and 0.78 for emotional well being.

**Economic stress**

Nine items with a Yes/No response ascertained patient's employment status, medical cost concerns, and worries of wages lost due to illness measured at baseline, 6, and 12 months. These 9 items were further recoded into 3 different variables at each measurement timepoint. Patient's employment status was classified as being currently part-/full-time employed, not employed, or never employed. At each timepoint cost concern was assessed and defined if a patient reported having cost concerns about hospitalization, chemotherapy, radiation therapy, medications, or inability to pay for all prescribed medication; wage concern was defined as worry about wages lost for sick time or attending a medical appointment. In addition, at only the 12-month outcome interview patients were asked to respond to 3 additional questions: “Would you say your past economic situation is getting better, staying the same or getting worse?” “Are you very, somewhat or not at all satisfied with your current economic situation?” “Are you hopeful, more or less hopeful, not hopeful at all that your economic situation will get better soon?” A dichotomized variable of financial stress was created: 1 = if subject reported “getting worse,” “not at all satisfied” or “not hopeful at all” to any of the 3 questions; 0 = subject provided any other response.

**Depression**

The PHQ-9 is a subset of questions from the Patient Health Questionnaire (PHQ), which was assessed at all timepoints for the presence of major depression using modified Diagnostic and Statistical Manual, Fourth Edition (DSM-IV) criteria that is reflected in a
threshold score. The PHQ-9 was used because a score of 10 or more on the PHQ-9 has been shown to have high kappa rates with a diagnosis of major depression on the SCID, provides both a dichotomous diagnosis of major depression as well as a continuous severity score, and measures a common concept of depression across racial and ethnic groups. For major depression, the threshold score for the PHQ-9 is 10 or greater.

Anxiety
Anxiety was assessed at each timepoint using a 6-item anxiety module from the Brief Symptom Inventory (BSI), a shortened version of the SCL-90-R, a self-report inventory of psychiatric symptomatology. A secondary analysis of its Spanish translation use with Spanish-speaking psychiatric outpatients found the BSI to be a reliable measure.

Statistical Analysis
Mean, SD (standard deviation), and percentage were used to describe the general characteristics of the study sample. Baseline cross-sectional analyses with multivariate General Linear Models and Logistic Regressions were conducted to compare scores of quality of life, PHQ-9, and BSI-A, and odds of major depression diagnosis (ie, PHQ-9 ≥10) across patients with different employment status, medical cost concerns, and wage worries measured at baseline. This analysis was also conducted for association of financial stress with QOL, depression, and anxiety measured at 12-month follow-up. Linear mixed effect models implemented in SAS (Cary, NC) Proc Mixed procedure were used to investigate the individual growth curve of quality of life outcomes changing over time. This analysis approach allows the main response being modeled as a combination of population characteristics that are assumed to be shared by all individuals, and subject-specific effects that are unique to a particular individual. The analysis approach consists of models specified at 2 levels. The Level-1 model (within-individual model) describes how QOL outcomes change over time with growth parameters defined as initial status and growth rate. The Level-2 model (between-individual model) describes variations in these growth parameters across individuals and factors account for their variations. In both cross-sectional and longitudinal data analyses, continuous measures of QOL included functional, emotional, physical, and social-family well-being, and BSI-A and PHQ-9 scores. Variables of interest included unemployment status (0 = currently employed, 1 = currently unemployed, and 2 = never worked), having any type of medical cost concerns (0 = not reported and 1 = reported), worries of wages lost due to illness or medical appointment (0 = not reported and 1 = reported), and financial stress (0 = no and 1 = yes). Baseline data covariates considered in the model included age, ethnicity, birthplace, language, length of time in the US, education level, marital status, having comorbid medical conditions, and cancer site and stage. In preliminary analyses we tested models with IMPAACT study arms and its interactions with time and other main predictors, and did not observe any significance. Therefore, the study group was not included in subsequent analyses. A generalized estimation equation (GEE) model implemented in SAS Proc GENMOD procedure was adopted to estimate longitudinal population average effects of unemployment status, medical cost concerns, wages worries, and financial stress separately on the likelihood of having major depression. The robust estimation of parameter estimates was used because the robust estimation produces consistent point estimates and standard errors even if the working correlation matrix was miss-specified. Statistical significance was considered at the level of $P < .05$.

Qualitative Study Analysis
A secondary analysis was conducted of an IMPAACT qualitative study aimed at enhancing understanding about the ways in which sociocultural factors may affect access to care, treatment adherence and coping with cancer in which semistructured, open-ended interviews were conducted using a guide that covered 5 areas: 1) self-definition of cancer, 2) help-seeking behaviors, 3) treatment expectations and adherence behaviors, 4) personal and system barriers to cancer care, and 5) culturally mediated coping behaviors. The interview guide was used to assure uniformity of domains addressed along with probes to prompt participants to encourage more detailed responses. Transcript data were coded and analyzed using a methodology of “Coding Consensus, Co-occurrence, and Comparison” outlined by Willms et al. and rooted in grounded theory. An initial coding schema was developed based on a priori hypotheses arising from 3 theoretical models: 1) predisposing, need-related, and enabling factors incorporated in Aday and Andersen’s medical utilization model; 2) Pescosolido et al.’s model of an illness career; and 3) Kleinman’s theories of familial explanatory models regarding the cause, course, and cure of cancer. Project investigators read all transcripts in an iterative fashion to identify themes. Interviews were then independently coded using Atlas.ti. The secondary analysis solely explored the
area of personal and system barriers to cancer care and identified segments of text based on patients’ discussion of the impact of cancer diagnosis and treatment on work, income, family finances, and practical needs and the resulting impact on the patient’s emotional well-being.

RESULTS
Baseline Sample Characteristics
A total of 487 patients, 48.7% diagnosed with breast cancer and 51.3% with gynecologic cancers, were enrolled in the study. Baseline patient characteristics are summarized in Table 1. Patients were predominantly Latino foreign-born, Spanish-speaking, and had been in the US 10 years or longer. About 53% of patients were 50 years or older, with 55% having less than high school education, and 57% had comorbid medical conditions.

Multivariate Cross-Sectional Analysis
Cross-sectional analyses comparing QOL, depression and anxiety across employment status, medical cost concerns, and wage worries measured at baseline and financial stress measured at 12 months are summarized in Table 2. Patients who were currently employed at baseline reported significantly higher levels of functional (15.89 vs 14.14, \( P < .03 \)) and physical well-being (22.60 vs 19.84, \( P < .01 \)) than those who were currently unemployed. Patients without medical cost concerns or wage worries at baseline had significantly lower PHQ-9 symptom scores (5.46 vs 6.86, \( P < .01 \)) and BSI-A scores (4.18 vs 5.08, \( P < .04 \)). Patients with wage worries were more likely to meet criteria for major depression (odds ratio \( [OR] = 2.12 \), 95% confidence interval \( [CI], 1.19–3.76 \)). At 12 month, financial stress was negatively associated with all outcome variables, except social-family well-being.

Characteristics of Predicting and Outcome Variables Across Timepoints
At the end of 6 and 12 months, 372 (76.4%) and 329 (67.6%) patients completed an outcome interview (Fig. 2). Baseline characteristics were compared between patients who had completed outcome interviews at both follow-up assessments (61%) versus noncompleters at any follow-up assessment (39%). Significant differences between completers and non-completers were observed in the distributions of birthplace (16.3% vs 8.9% of patients born in the US, \( P = .019 \)), length of living in the US (80.6% vs 68.7% of patients living 10 years or longer in the US, \( P = .003 \)), cancer site (42% vs 65.6% of patients diagnosed with gynecologic cancer, \( P < .001 \)), and anxiety score (5.20 ± 0.26 vs 4.25 ± 0.33, \( P = .02 \)).

Analyses of unemployment status, medical cost concerns, worry about lost wages, and financial stress on QOL across each timepoint are summarized in Table 3. Unemployment, medical cost, and wage concerns and financial stress were high in this study population, at baseline, respectively, 70%, 68%, 47%, and 49%. The proportions of women reporting unemployed status and medical cost concerns stayed flat from baseline to the 6-month follow-up followed by a pronounced drop at 12 months. The rate of patient reported worries about lost wages moderately increased from baseline to the 6-month follow-up, with a moderate decrease at 12 months. FACT-G QOL functional, emotional, physical, and social-family well-being scores exhibited consistent linear improvement from baseline to the 12 month follow-up, whereas an improvement trend was also observed in PHQ-9 scores reflecting a reduction in
depressive symptoms over time. The proportion of women reporting major depression (PHQ-9 score ≥10) was 23.2% at baseline, decreased to 21.6% at 6 months, and 16.1% at 12 months. The BSI anxiety score decreased 32.5% between baseline and 6 months and 10.4% between the 6- and 12-month follow-ups.

### Longitudinal Models of Quality of Life Outcomes

Results of multivariate models on the QOL are presented in Table 4. Overall, functional, emotional, and physical well-being improved significantly over time except for models of cost concern and wages worries on physical well-being. BSI-A and PHQ-9 depression symptom scores significantly decreased over time. Compared with currently employed patients, currently unemployed or never employed patients had significantly lower levels of functional and physical well-being and significantly better BSI-A and PHQ-9 scores. Patients reporting any type of medical cost concern or worries of wages lost had significantly poorer functional and emotional well-being and significantly higher BSI-A and PHQ-9 scores than those without these concerns. Similar effects were also observed on physical well-being for patients with medical concerns and on social-family well-being for patients with wage worries. The change patterns of functional, emotional, and physical well-being and PHQ-9 scores were significantly different between patients with and without financial stress, as suggested by the significant interaction of time and financial stress. Specifically, patients without financial stress had significantly faster improvement rate over time in functional, emotional, and physical well-being and PHQ-9 score than those with financial stress.

In addition, we conducted a longitudinal GEE model analysis using a dichotomized outcome variable of major depression diagnosis (yes/no) if the PHQ-9 score reached 10 or above (Table 4). The proportion of patients reporting major depression symptoms significantly decreased over time. Unemployed women and women reporting medical cost concerns or wage worry were more likely to meet criteria for major depression than currently employed women (OR = 1.92, 95% CI, 1.29–2.85) or women with no medical cost concerns (OR = 1.58, 95% CI, 1.14–2.2) or wages lost worry (OR = 1.97, 95% CI, 1.24–3.12).

### Qualitative Study Results

Of the women interviewed, 72% described negative economic changes precipitated by their cancer diagnosis, including income decline, having to stop working, and increasing economic stress on both patients and family members. Selected illustrative quotes from 5 women illustrate these issues: “When I was diagnosed with cancer, I stopped working, so I could go to all my appointments and the operation”;

### Table 2

Multivariate Cross-Sectional Analysis Models for Quality of Life, Depression, and Anxiety

<table>
<thead>
<tr>
<th>Employment status</th>
<th>Functional well-being</th>
<th>Emotional well-being</th>
<th>Physical well-being</th>
<th>Social-family well-being</th>
<th>PHQ-9 score</th>
<th>BSI-A score</th>
<th>Major depression (PHQ-9 ≥10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SE</td>
<td>P</td>
<td>Mean</td>
<td>SE</td>
<td>P</td>
<td>Mean</td>
</tr>
<tr>
<td>Currently employed</td>
<td>15.89</td>
<td>0.59</td>
<td>.03</td>
<td>15.35</td>
<td>0.53</td>
<td>.56</td>
<td>22.60</td>
</tr>
<tr>
<td>Currently unemployed</td>
<td>14.14</td>
<td>0.30</td>
<td>.56</td>
<td>15.96</td>
<td>0.27</td>
<td>.01</td>
<td>19.84</td>
</tr>
<tr>
<td>Never worked</td>
<td>14.44</td>
<td>0.78</td>
<td>.71</td>
<td>16.16</td>
<td>0.71</td>
<td>.83</td>
<td>21.56</td>
</tr>
<tr>
<td>Medical cost concern</td>
<td>No</td>
<td>14.93</td>
<td>0.45</td>
<td>.26</td>
<td>16.79</td>
<td>0.40</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>14.32</td>
<td>0.31</td>
<td>.56</td>
<td>15.46</td>
<td>0.28</td>
<td>.01</td>
</tr>
<tr>
<td>Wages worries</td>
<td>No</td>
<td>14.26</td>
<td>0.50</td>
<td>.85</td>
<td>15.82</td>
<td>0.44</td>
<td>.25</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>14.11</td>
<td>0.52</td>
<td>.56</td>
<td>15.06</td>
<td>0.46</td>
<td>.01</td>
</tr>
<tr>
<td>Financial stress</td>
<td>No</td>
<td>17.59</td>
<td>0.44</td>
<td>&lt;.01</td>
<td>18.69</td>
<td>0.36</td>
<td>&lt;.01</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>15.44</td>
<td>0.46</td>
<td>.01</td>
<td>17.11</td>
<td>0.37</td>
<td>.01</td>
</tr>
</tbody>
</table>

SE indicates standard error; OR, odds ratio; 95% CI, 95% confidence interval.

Covariates controlled in the multivariate models: age, ethnicity, birth place, English use, length of staying in the US, education, marital status, comorbidity medical conditions, cancer site, and stage. Currently employed was chosen as the reference group for models on employment status. In models of employment status, medical cost concern and wages worries, both predicting and outcome variables were measured at baseline. In models of financial stress, both predicting and outcome variables were assessed at 12-month follow-up.
I have 2 children who are depending on me. We try to make both ends meet, with that SSI; "You go through some harsh traumas. And more so when you're not financially prepared, which is what MOST affects you"; "Sometimes you get very stressed because...you think...who's going to pay for it? It costs a lot of money...from 1 day to the next the bills arrive...and you think, 'Oh my God, well, how am I going to pay this? What am I going to do as sick as I am? And what if they take away the help and Medi-Cal doesn't arrive?' You're stressed about that."

The combination of economic stress and family commitments are complicated by emotional factors such as anxiety, fear, and depression. For example: "I got scared...going through a very bad depression...I didn't have a job, no money, with 2 children...I'm alone (crying)...it was very difficult for me." Another participant describes the hardship of paying for transportation to appointment and believes that...
some people may find this too difficult to manage. “Since I lost everything...you need someone to help you. Not so much...morally, but financially...I take 3 buses to get here...It was very expensive...I had to do whatever it took to get money, to come to the hospital, to the tests, the therapies.”

**DISCUSSION**

To our knowledge this is the first longitudinal study that specifically examines the ways in which the economic consequences of cancer contribute to distress among low-income cancer survivors. Cross-sectional, longitudinal, and qualitative study results provide compelling evidence of the economic stress experienced by these women as they cope with the economic burdens associated with cancer. Study findings indicate that economic stress is not only highly prevalent in this population of low-income minority women, but that financial strain or worry is associated with their quality of life. Given the descriptive nature of the study, however, caution must be exercised in generalizing these findings and future research is needed to verify the observed findings within other populations.
For many study women economic stressors are significantly associated with clinical depression and anxiety. Unfortunately, we have previously reported on study baseline data indicating a low rate of receipt of antidepressant medication in patients with major depression as well as their limited participation in cancer support groups.45 Other studies also report that the majority of depressed patients with cancer, who meet diagnostic criteria, have not been prescribed antidepressants or are not receiving adequate dosage.46–47 There is also evidence that low-income patients with cancer are less likely to receive mental health services,48 evidence that is consistent with primary care studies where low-income, underinsured, and ethnic minority primary care patients are found to have relatively high rates of depression, but to be less likely to receive care for depression or to be prescribed antidepressants.49 We currently have under way a randomized clinical trial of depression care management adapted for oncology care systems and for low-income minority patients that is specifically aimed at improving the detection and treatment of depression in patients with cancer.50,51

It is important to note that the California Breast and Cervical Treatment Program went into effect in January, 2002, at the beginning of the IMPAACT study, and the study site provided patient navigation services to assist women in obtaining this resource. Without this program economic stress might have been even greater, as previously reported for low-income women with breast cancer.52 This source of funding, however, does not support follow-up cancer care or care for comorbid medical conditions. The limitations of the present study include that specific diagnostic evaluation of patients’ depression and anxiety was unavailable and the data do not provide conclusive evidence about the causal relation between identified correlates, although change over time in both predictor and outcome variables studied strongly supports the negative effects of economic stress on cancer survivors. However, study attrition may introduce bias and thus caution is advised in generalizing study findings. Attrition analyses comparing completers and noncompleters suggest that those patients retained for analysis may reflect a population with a higher proportion of subjects born or living 10 years or longer in the US, with relatively higher levels of anxiety and diagnosed with breast cancer versus gynecologic cancer, whereas data on noncompleters indicates that some were dying.

Despite limitations, the study contributes to the existing literature on a psychosocial stressor that is by definition prevalent in low-income populations and that may contribute to disparities in cancer QOL outcomes. Even though women were receiving cancer treatment, lost wages and out-of-pocket costs (and possibly patients’ child or elder caregiving responsibilities) contributed to poorer QOL for many women. In addition, data provide further evidence of the need to routinely assess and treat depression in this population and to facilitate the participation of low-income, monolingual populations in cancer support groups and to provide other supportive care.

REFERENCES


