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Patient-Physician Communication in Breast Reconstructive Surgery

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Abstract

Purpose—Breast reconstructive surgery (BRS) can improve mastectomy patients' emotional relationships and social functioning, but it may be underutilized in low-income, medically underserved women. This study assessed the impact of patient-physician communication on rates of BRS in low-income breast cancer (BC) women receiving mastectomy.

Methods—A cross-sectional, California statewide survey was conducted of women with income less than 200% of the Federal Poverty Level and receiving BC treatment through the Medicaid Breast and Cervical Cancer Treatment Program. A subset of 327 women with non-metastatic disease who underwent mastectomy was identified. Logistic regression was used for data analysis. The chief dependent variable was receipt of or planned BRS by patient report at 6 months after diagnosis; chief independent variables were physician interactive information-giving and patient perceived self-efficacy in interacting with physicians.

Results—Greater physician information-giving about BC and its treatment and greater patient perceived self-efficacy positively predicted BRS (OR=1.12, P=0.04; OR=1.03, P=0.01, respectively). The observed negative effects of language barriers and less acculturation among Latinas and lower education at the bivariate level were mitigated in multivariate modeling with the addition of the patient-physician communication and self-efficacy variables.

Conclusion—Empowering aspects of patient-physician communication and self-efficacy may overcome the negative effects of language barriers and less acculturation for Latinas, as well as of lower education generally, on receipt of or planned BRS among low-income women with BC. Intervening with these aspects of communication could result in BRS rates more consistent with the general population and in improved quality of life among this disadvantaged group.

Keywords

breast cancer; breast reconstructive surgery; physician-patient communication; self-efficacy; medically underserved; health disparities

Introduction

In the United States, breast carcinoma is the most common malignancy among women; it is estimated that approximately 182,460 new cases will be diagnosed in 2008.¹ Despite recent research demonstrating that mastectomy patients experience poorer outcomes in physical functioning than patients receiving breast conserving surgery (BCS),² mastectomy is still performed for a significant proportion of affected women for a variety of reasons, including diffuse multifocal disease, tumor size or site, and individual preferences.

Breast reconstructive surgery (BRS) is a follow-on treatment option that can improve mental health and overall quality of life without affecting rates of cancer recurrence or decreasing survival rates.^{3,4,5} Studies show that mastectomy patients who receive BRS experience greater satisfaction with body image and sex life than those who do not^{6,7,8}, and also report improved emotional relationships and social functioning.^{9,10} Further, some researchers suggest that even discussing the option for reconstruction with patients can be therapeutic, as it assures them of their physicians' belief in the probability of their survival.¹¹

Rates of reconstruction vary from study to study, ranging anywhere from 8% to 81%.^{12,13} It is well known that patients' demographic characteristics are predictors for receipt of BRS. Older women, ethnic minority women, poorer women, and women with less education are less likely to undergo BRS.^{7,14,15,16,17} Lack of information and failure to involve women in decision-making have also been identified as significant barriers for patients in choosing BRS.^{18,19,20} A study conducted in France reported that surgeons' counseling was the most important factor influencing patients' BRS preferences.¹⁶ However, physicians' information-giving about reconstruction appeared to be shaped by physicians' characteristics and practice environment, as well as patients' and medical care system characteristics. Physicians typically provide less information to their older BC patients, to ethnic minorities, and patients with lower educational level or socioeconomic status.^{6,21} Despite the potential benefits of BRS, however, to our knowledge, no studies have investigated the effects of patient-physician communication on BRS rates in low-income women.

Patient self-efficacy in their interactions with physicians, that is, self-confidence in being able to obtain medical information and attention regarding their chief medical concerns,²⁰ is also a key component in effective patient-physician communication. It has been suggested that vulnerable patient populations, such as older patients, receive suboptimal care compared to younger patients due to a decreased sense of control over the health care process²² and less confidence in their ability to get their physicians to attend to their health concerns.²³ Therefore, it is possible that interventions to increase patients' self-efficacy and sense of empowerment (authority) during the patient-physician encounter could result in higher BRS rates in special populations.

This study of a defined population of low-income women with BC receiving treatment including mastectomy in California had the chief aim of assessing the impact of patient-physician communication on women's receipt of, or planning for, BRS. A better understanding of the role of patient-physician communication can inform guidelines for communication with vulnerable populations of women to facilitate consideration of BRS as a realistic treatment option that can potentially improve quality of life after the diagnosis and treatment of BC. A related interest was the effect of perceived self-efficacy on this relationship.

Methods

This study used data compiled from a cross-sectional survey of low-income women living in California, aged 18 years and older, newly diagnosed with BC and enrolled in the California

Breast and Cervical Cancer Treatment Program (BCCTP). The study was approved by the UCLA Human Subjects Protection Committee.

Study sample

A consecutive sample of all women with a diagnosis of BC enrolled in the BCCTP between February 2003, and September 2005 was recruited for this study. BCCTP is a Medicaid coverage option, legislated by the federal government as part of the Breast and Cervical Cancer Prevention and Treatment Act of 2000, to fund the treatment of breast and cervical cancer for uninsured, underinsured, and low-income women (less than or equal to 200% of the Federal Poverty Level). BRS is a covered benefit under this program.

Eligible women were interviewed by phone at 6 months after their enrollment in BCCTP. Women who did not speak English or Spanish, had a previous history of BC, or were receiving treatment for another cancer, were excluded from the study. A total of 921 women aged 18 years and older who had been diagnosed with BC were initially recruited through the California BCCPT, with a 61% overall response rate. Compared with survey responders, non-responders were older (52 vs. 50 years, $p < 0.05$), more likely to be Asian, African-American and less likely to be Latina (9%, 8%, 46% vs 4%, 6%, 56%, respectively, $p < 0.05$). The study sample is a subset of 327 subjects who underwent a mastectomy. Women with either locoregional or systemic metastatic BC (systemic spread of cancer) by self-report were excluded from these analyses. Further details of the parent study can be found in a previously published article.²⁴

Measures

The chief dependent variable was completed or planned BRS by patient report. Because patients were interviewed 6 months after diagnosis and might encounter treatment delays, they were asked whether they had received or planned to receive BRS as a proxy measure for actual rates of BRS. The principal independent variables were measures of patient-physician communication: 1) interactive information-giving by physicians by patient self-report, and 2) patient-perceived self-efficacy in patient-physician communication. Information-giving was measured by a previously published index²¹, which asked patients how many of 15 BC-related topics that any of their physicians had discussed with them; however the breast cancer surgeon was the most frequently mentioned as the physician discussed in 13 out of 15 of the topics.

Self-efficacy was measured using the validated Perceived Efficacy in Patient-Physician Interactions (PEPPI) questionnaire.²⁵ PEPPI measures patients' perceived ability to obtain needed medical information and attention to their chief medical concerns from physicians. The PEPPI sum scale has a range from 0 to 50; Cronbach's alpha for this scale in this sample was 0.96.

Other independent and potentially confounding variables included health care systems, patient characteristics, and receipt of post-mastectomy radiation treatment and/or chemotherapy. The system variable was treatment received in a cancer center, specifically an NCI designated cancer center or an approved cancer center listed by the American College of Surgeons. Patient variables included age at diagnosis, race/ethnicity, and education (high school graduate or more versus less than high school graduate). Major comorbidity was measured using the Katz et al. adaptation of the Charlson Comorbidity Index for patient self-report,²⁶ and was dichotomized into any comorbidity versus none.

Language can serve as a significant barrier to optimal communication, therefore among Latinas, language use and preference was determined by the five-item Marin Acculturation Scale.²⁷ The internal consistency reliability was 0.99 for this scale in the studied sample.

“More acculturated” Latinas were defined as being equally or more comfortable or conversant with English than Spanish; the “less acculturated” Latinas were defined as being less comfortable or conversant with English than Spanish.

Data Analysis

Summary statistics, including means and percentages, were calculated to describe participants’ demographic and clinical characteristics and scores on communication and other independent variables. Unadjusted logistic regression analyses were first performed to investigate the relationship between the independent variables and BRS. Income was not included as an independent variable as range was restricted because of the defined low income of the sample under study.

Staged logistic regression models were then fit to evaluate the impact of patient-physician communication and patient self-efficacy on BRS after controlling for potential confounders. Multi-collinearity was examined for all independent variables and was found not to be a problem. The Hosmer-Lemeshow test indicated adequate fit of the multiple logistic regression model. Although tumor stage information was not available for all patients, when the model was rerun on a subset of 211 women with complete data, stage was not an important predictor of BRS and did not appreciably affect the coefficients of the other covariates.

All statistical analyses were conducted using SAS, version 9.1; two-sided alpha levels with p values less than 0.05 were considered statistically significant.

Results

Descriptive statistics

Table 1 shows the descriptive statistics of the sample. Among the 327 women who underwent mastectomy, 120 (36.7%) had completed or planned to undergo BRS. Their age averaged about 51 years and they were primarily Latina (55%) and white (29%). Slightly more than half graduated from high school, and approximately 30% reported having at least one significant comorbidity. In the case of discussion of BRS, patients reported that 60.2% of the time the breast cancer surgeon discussed the option of breast reconstructive surgery with them, while the medical oncologist was mentioned 5.5% of the time, the radiation oncologist 0.61% of the time, and a plastic surgeon 5.2% of the time.

Factors associated with BRS

Table 2 presents the unadjusted logistic regression model for selected factors and BRS. Both interactive information-giving and perceived patient self-efficacy were strongly and positively associated with BRS. Women who had graduated from high school were more likely than those who had not graduated to report receipt/planning of BRS, while older women were less likely to undergo or plan BRS than younger women. Compared to whites, less-aculturated Latinas and Asian/Pacific Islander women had lower rates of BRS. Receipt of radiation and/or chemotherapy after surgery, and care in a cancer center were not significantly associated with BRS.

Table 3 presents the results of two multiple logistic regression models: Model 1 does not include either the communication or self-efficacy measures; Model 2 includes these variables. The racial/ethnic differences in BRS persisted in the multivariate analysis in the model (Model 1) controlling only for sociodemographic characteristics, comorbidity, and treatment in the form of radiation and/or chemotherapy after surgery, and care in a cancer center. However, the less-aculturated Latina-white disparity in BRS was attenuated when

physician-patient communication and self-efficacy was added to the model (Model 2). In the latter model, greater interactive information-giving and greater patient-perceived self-efficacy predicted BRS, controlling for age, race/ethnicity, education, comorbidity, radiation/chemotherapy after surgery, and receipt of care in a cancer center. In contrast, older age and Asian/Pacific Islander race/ethnicity were inversely associated with BRS. Educational level, comorbidity, radiation/chemotherapy after surgery and care in a cancer center were not significant predictors in this logistic regression model.

Discussion

To our knowledge, this study is the first to quantify both physician and patient aspects of the patient-physician interaction and examined their independent impact on BRS rates within a multivariate context. Further, the study is unusual in that a large population of low-income, medically underserved patients with substantial racial/ethnic minority representation, at risk for undertreatment with its attendant quality of life and survivorship implications, was assessed in-depth. Both the dimensions of physician communication of BC information-giving and patient empowerment in interacting with physicians were found to be significant determinants of BRS, controlling for possible confounders. In particular, these two communication factors ameliorated the negative influence of education barriers and acculturation. These findings suggest potentially mutable targets for intervention to reduce treatment disparities by socioeconomic and minority status. Of note is that in nearly 1/3 of the cases, no healthcare provider discussed the option of BRS with the patient, suggesting that this population may be at particular risk for suboptimal education about BRS as an option.

Our study likely overestimates the actual rate of BRS, as receipt of BRS was defined as either having completed, or planned for, the procedure, as delays in care are typical in low-income populations. However, required insurance coverage for BRS by group health plans and individual health insurance under the Women's Health and Cancer Rights Act of 1998,²⁸ as well as improved techniques for BRS may have recently boosted rates. Despite the possibility of overestimation, the BRS rate (36.7 %) found in this study was lower than those in other recent studies, which range from 42% to 81%.^{14, 16}

The decision to have BRS is a complicated process, influenced by clinical factors, the health care system and patients' preferences, as well as providers' biases. Adequate BC knowledge is necessary for affected patients to participate in effective treatment decision-making.²⁹ The primary way for patients to obtain information is through their interactions with physicians. Though the process of treatment decision-making should be an informed interaction between the patient and her physician, previous studies have shown that BC patients are often underinformed,³⁰ and that lack of information has been an obstacle for women in receiving BRS.⁶ Our finding that information-giving positively affects BRS supports the notion that providing appropriate information to patients is essential to the BRS decision-making process.

However, merely giving information might not be enough for effective patient-physician communication to assist in the decision-making process. In the Charavel et al. study, though every patient was informed of the BRS option by the surgeon, patients in the non-reconstruction group still perceived and reported they had not been informed about this option.⁶ Findings from the current study indicate that patients with higher perceived self-efficacy in interacting with physicians had greater odds of undergoing BRS. Women with greater self-efficacy may be able to incorporate information that is personalized to their particular informational needs in their decision-making process, thereby facilitating decisions reflective of their own treatment preferences.

Women with a higher educational level were significantly more likely to undergo BRS in the unadjusted model. Although higher SES has typically been found to be a significant predictor of BRS, this study was conducted in a uniformly low income population, which precluded analysis of this variable. However, the significant educational influence finding suggests that education may be a more salient factor than income in predicting BRS. Moreover, our findings revealed that the initial BRS disparity for women with lower educational level could be attenuated through empowered communication with their surgeon.

Similar to previous studies,^{31, 32} less acculturated Latinas were significantly less likely to undergo BRS than whites in the unadjusted model. Limited access to quality BC care has been well documented for Latinas in many studies.^{33, 34, 35} Latinas with BC are more likely to have treatment delay,³⁶ and present with later-stage cancer,³⁷ which may limit their choices of BRS. Also, Latinas are more concerned than whites about staying healthy.³⁸ Thus, they may be more focused on the cure of the cancer itself than on the cosmetic option of BRS. The decision regarding BRS may also be influenced by cultural factors related to the Hispanic community, as less acculturated Latinas may be more likely to rely on their family than on themselves to make treatment decisions.³⁹ In addition, limited communication skills due to language and literacy barriers may also be a powerful obstacle to involving less acculturated Latinas in the BRS decision-making process.⁴⁰ However, this study's findings suggest that patient empowering aspects of the patient-physician interaction are at least as, and perhaps more, important than language barriers in affecting BRS as a treatment choice. Indeed, the significant bivariate association between less language-based acculturation among Latinas and BRS as supported by previous literature became non-significant once information-giving and patient self-efficacy were taken into account.

In contrast to Latinas, Asian/Pacific Islanders remained significantly less likely to undergo BRS than whites even after controlling for all other covariates. General population studies have found that Asian Americans usually receive in most circumstances the same level of medical care as whites.^{41, 42, 45} But in the case of BC, cultural differences may be an underlying factor. Asian cultures appear to place less value on the significance of the breast in terms of femininity and beauty than western cultures.^{43, 44} Similarly, and consistent with previous studies,^{12, 15, 17} older women are less likely to undergo BRS controlling for possible confounders. This finding may indicate a lesser emphasis on body image on the part of older women⁴⁵ or their reluctance to undergo additional surgical procedures given the potential for complications.⁴⁶

Though previous work has indicated that receiving care in a cancer center is associated with receipt of BRS,¹² this was not a significant factor in this sample, even though the direction of the relationship was positive. Sample size might have been too small to allow these results to reach statistical significance or other factors, such as the patient-physician interaction, might have had more impact in affecting treatment decisions for this sample compared with more general populations.

Several limitations to this study should be noted. Because the sample was comprised of low-income, medically underserved women in a specific Medicaid BC treatment program in California, generalizability of the findings to other low-income populations may be limited. Second, although we achieved a 61% response rate, the differences between responders and non-responders in terms of age and race/ethnicity might potentially bias the observed results. The study is also limited by potential unmeasured confounders that were not available for statistical control, such as smoking status, distrust of health care environments or personnel, nor the relative influence of providers on patient's decision-making by specialty. In addition, the cross-sectional study design prevents an assumption of causality between predictor and

dependent variables. Finally, the quality of our data depended on the accuracy of patient self-report on physician communication, thus recall bias may be an issue. However, it has been noted that people who have undergone a sudden and life-threatening health crisis manifest very clear recall of the details surrounding the event;⁴⁷ BC patients, for example, can recall the precise time when they first noticed their symptoms.⁴⁸ Further, it is likely that what is heard, remembered, and reported by patients is most likely to have affected the patient's decision regarding BRS.

Taken together, the study results suggest that race/ethnic disparities in reconstruction rates for low-income BC patients can be moderated at the patient-physician communication level. In particular, educational and cultural barriers to BC care in underserved patient populations may be lessened by targeting empowering aspects of the patient-physician interaction. A question prompt sheet to both cancer patients and physicians has been found to provide structure and thus enhance information exchange by promoting patients' self-efficacy in the form of question asking and physicians' information giving.⁴⁹ Physicians should ensure that adequate time is allocated to discuss treatment options and provide additional information to patients through different sources such as booklets, video tape, nurse instruction, and phone call follow up. In addition, communication skills training programs should be designed to be skill-focused, patient-oriented, and culturally sensitive for physician and related staff to improve communication skills; this would be particularly true for breast surgeons who appear to be the primary information givers in this population. Future research among disadvantaged women with BC should be directed at developing interventions designed to specifically increase both physician information-giving and patients' self efficacy in communicating with health care personnel.

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Table 1

Sample Descriptive Statistics (N=327)

| | Value |
|---------------------------------|--------------|
| Age (years) | |
| Mean (SD) | 50.8 (9.4) |
| Range | 26.0–85.0 |
| Ethnicity, N (%) | |
| White | 95 (28.7) |
| Latina | 181 (54.7) |
| African-American | 17 (5.14) |
| Asian/Pacific Islander | 36 (10.9) |
| Education, N (%) | |
| < High School | 145 (44.3) |
| ≥ High School | 182 (55.7) |
| Married/Partnered, N (%) | |
| No | 157 (48.0) |
| Yes | 170 (52.0) |
| Comorbidity (N, %) | |
| None | 233 (70.4) |
| Any | 98 (29.6) |
| Cancer Center (N, %) | |
| No | 171 (52.3) |
| Yes | 156 (47.7) |
| Information-Giving | |
| Mean (SD) (range=0–15) | 10.1 (2.9) |
| PEPPI* | |
| Mean (SD) (range=0–50) | 38.6 (11.5) |
| Received or Planned BRS | |
| No | 207 (63.3) |
| Yes | 120 (36.7) |

* PEPPI, Perceived efficacy in patient-physician interactions.

SD indicates standard deviation

Table 2

Unadjusted Logistic Regression Model - Factors Associated with Breast Reconstructive Surgery

| | Unadjusted OR (95% C.I.) [*] | P-Value |
|--|---------------------------------------|---------|
| Information-Giving | 1.21 (1.10–1.32) | <0.001 |
| PEPPI[†] | 1.05 (1.02–1.07) | <0.001 |
| Age | 0.93(0.91–0.96) | <0.001 |
| Education | | |
| ≥ High School | 1.65(1.04–2.61) | 0.03 |
| Race/Ethnicity (white as reference group) | | |
| African-American | 0.53 (0.18–1.56) | 0.25 |
| Less-acculturated Latina | 0.50 (0.30–0.83) | 0.008 |
| More-acculturated Latina | 0.49 (0.16–1.54) | 0.22 |
| Asian/Pacific Islander | 0.17 (0.06–0.47) | <0.001 |
| Comorbidity | | |
| Any | 0.95(0.58–1.56) | 0.83 |
| Post-surgery Radiation Treatment | | |
| Yes | 1.06(0.52–2.14) | 0.88 |
| Post-surgery Chemotherapy | | |
| Yes | 0.99(0.61–1.60) | 0.96 |
| Cancer Center | | |
| Yes | 1.16(0.74–1.81) | 0.53 |

* OR=Odds Ratio; C.I.=Confidence Interval

[†] PEPPI, Perceived efficacy in patient-physician interactions.

Table 3

Adjusted Logistic Regression Models for Reconstructive Surgery with and without Patient-Physician Communication Variables (N=327)

| | Model 1 | | Model 2 | |
|---|-------------------------|---------|-------------------------|---------|
| | Adjusted OR (95% C.I.)* | P-Value | Adjusted OR (95% C.I.)* | P-Value |
| Information-Giving | | | 1.12 (1.005–1.24) | 0.04 |
| PEPPI[†] | | | 1.03 (1.01–1.06) | 0.01 |
| Age | 0.91 (0.89–0.94) | <0.001 | 0.92 (0.89–0.95) | <0.001 |
| Race/Ethnicity | | | | |
| African-American | 0.41 (0.13–1.31) | 0.13 | 0.49 (0.15–1.62) | 0.24 |
| Less-acculturated Latina | 0.42 (0.21–0.82) | 0.01 | 0.52 (0.26–1.01) | 0.07 |
| More-acculturated Latina | 0.29 (0.08–1.03) | 0.06 | 0.33 (0.09–1.25) | 0.10 |
| Asian/Pacific Islander | 0.11 (0.04–0.33) | <0.001 | 0.13 (0.04–0.41) | 0.0004 |
| Education | | | | |
| ≥ High School | 1.58 (0.83–3.03) | 0.17 | 1.23 (0.62–2.42) | 0.56 |
| Comorbidity | | | | |
| Any | 1.10 (0.62–1.93) | 0.75 | 1.10 (0.62–1.98) | 0.74 |
| Post-surgery Radiation Treatment | | | | |
| Yes | 1.01 (0.46–2.22) | 0.99 | 0.96 (0.43–2.17) | 0.93 |
| Post-surgery Chemotherapy | | | | |
| Yes | 0.99 (0.52–1.56) | 0.70 | 0.85 (0.48–1.50) | 0.58 |
| Cancer Center | | | | |
| Yes | 1.32(0.80–2.17) | 0.28 | 1.37 (0.82–2.30) | 0.29 |

* OR=Odds Ratio; C.I.=Confidence Interval

[†] PEPPI, Perceived efficacy in patient-physician interactions.