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Intentions for Bilateral Mastectomy Among Newly Diagnosed Breast Cancer Patients

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Abstract

Background—Recent trends suggest that bilateral mastectomy (BM) is on the rise among women diagnosed with unilateral breast cancer. Few studies have investigated the factors associated with the decision to have more aggressive surgery among young, high risk patients.

Methods—As part of a larger study, 284 women aged 50 and under completed an initial survey within six weeks of a breast cancer diagnosis. We assessed sociodemographics, medical and family history variables, treatment recommendations, preferences and concerns, distress, perceived risk, knowledge and neuroticism. We used multiple regression with backward entry to assess the relationship between these variables and our outcomes of decisional conflict and intentions for BM.

Results—Higher decisional conflict was associated with being less educated, unmarried, more anxious and less likely to have received a surgical recommendation. Preference for BM was associated with higher neuroticism, perceived risk for contralateral breast cancer, pre-testing risk of carrying a *BRCA1/2* mutation, having received either a surgical recommendation (vs. no recommendation), and lower preference for lumpectomy.

Conclusions—For younger women, a surgical recommendation is associated with lower decisional conflict and stronger intention for BM. Results highlight the importance of effective risk communication and decision support between a woman and her surgeon.

Women diagnosed with early-stage breast cancer must decide whether to undergo breast conservation or mastectomy as part of their treatment. Recent trends suggest that bilateral mastectomy (BM) is on the rise among women diagnosed with unilateral breast cancer,^{1–3} with up to 29% of newly-diagnosed breast cancer patients opting for BM.¹ For women at extremely high risk due to the presence of a *BRCA1/2* mutation, immediate BM is quite common⁴ and may provide increased life expectancy.⁵

While some of the observed increase in the uptake of BM likely is due to the increasing use of pre-surgical *BRCA1/2* testing, this alone does not fully explain the increase.⁶ In addition

to mutation status and other clinical risk factors, younger age and family history appear to be important predictors of receipt of BM.^{1,3,7-9} Surgical decision-making may be particularly difficult for the subset of newly diagnosed breast cancer patients who are age 50 and under. These women have a higher risk of developing a contralateral breast cancer compared to women diagnosed at an older age.^{10, 11} Patient cognitive or emotional factors may be responsible as well, as women who overestimate their risk⁶ or perceive no advantage of lumpectomy over BM¹² are more likely to opt for BM. As a result, BM may be considered by this group, as it greatly reduces this risk^{13, 14} without adversely impacting quality of life.¹⁵⁻¹⁸

Despite trends towards increased use of BM, few studies have investigated the factors associated with BM among young, high risk patients or what factors are associated with decisional conflict surrounding this decision. Previous small studies suggest that the decision to choose BM is associated with an interest in reducing cancer worry and to achieve cosmesis.¹⁹ The broader literature on preference for unilateral mastectomy over breast conservation suggests several variables that could be associated with uptake of BM in this population. These include patient cognitive and emotional factors, such as overestimation of the risk for contralateral breast cancer,²⁰ as well as preferences for care,²¹ including removing the entire breast to gain peace of mind and avoidance of radiation.^{22, 23} Higher rates of mastectomy also are associated with greater patient involvement and surgeons' recommendation.^{1,4,24-27}

To our knowledge, no studies have prospectively examined factors influencing younger, high-risk women's surgical preferences and associated decisional conflict. In this study, we examined variables associated with decisional conflict related to surgical treatment for unilateral breast cancer and preferences for BM in younger women (aged 50 or less) with a new diagnosis of breast cancer.

Methods

Patients

Data were collected as part of a larger randomized controlled trial evaluating a rapid genetic counseling and testing intervention among women ages 18–75 who were within six weeks of a new breast cancer diagnosis. Participants were recruited from the breast surgery clinics at Georgetown University (Washington, DC), Mount Sinai School of Medicine (New York, NY), and Hackensack University Medical Center (Hackensack, NJ). All women seen at the clinics were asked to complete a family history form and provide consent for contact for participation in future studies. Research assistants regularly reviewed appointment and pathology records to identify newly diagnosed patients. If a patient had not completed the family history form, the patient's surgeon was contacted for permission to recruit. All eligible newly-diagnosed patients were sent a letter from their surgeon explaining the study. Research assistants contacted eligible patients by telephone within a few days to verify eligibility and explain the purpose of the study. Eligible participants were diagnosed at 50 years of age or >50 years of age with a family history of a first or second degree relative diagnosed with breast cancer at less than age 50, ovarian cancer at any age or male breast cancer at any age. Women who had bilateral, inflammatory, or stage IV breast cancer, who were previously diagnosed with metastatic cancer of any type, who had already initiated definitive treatment (i.e., surgery or chemotherapy), or who had previously received *BRCA1/2* counseling or testing were ineligible. Eligible patients completed a verbal consent and baseline interview. Following the baseline interview, participants were randomized to either rapid genetic counseling (received within several days of baseline completion) or usual care in a 2:1 ratio. The data in the current report are drawn from the baseline interview and limited to those aged 50 and under.

As part of our larger trial, we identified 576 eligible patients who were age 50 or younger. Of these 576 patients, 306 (53.1%) completed the baseline telephone interview. However, for the current analysis, we excluded 22 participants due to missing data on preferences or decisional conflict data. Thus, our final sample for this report consisted of 284 women.

Measures

Sociodemographic and medical and family history variables—We assessed age, race, ethnicity, religion, marital status, education, employment, and family cancer history. We also calculated an overall risk score based on family history using Cancer Gene v.5.0 to estimate each patient's risk for carrying a *BRCA1/2* mutation (BRCAPro score).²⁸ We assessed previous cancer diagnoses, surgical histories, and treatments for cancer via patient self-report.

Surgical Recommendation—We asked each participant whether, according to her surgeon, she was a candidate for lumpectomy. We also asked each participant whether her surgeon had made a specific surgical recommendation at the time of the interview and if this recommendation was for lumpectomy, unilateral mastectomy, or bilateral mastectomy. We reclassified this recommendation from four levels (lumpectomy/unilateral mastectomy/bilateral mastectomy/none) to two levels (any surgical recommendation vs. no recommendation).

Perceived risk of developing cancer—We assessed perceived risk for developing a new breast cancer in the unaffected breast by asking participants to rate their risk from 0 (definitely will not develop a new breast cancer) to 100 (definitely will develop a new breast cancer). We have used this item extensively in previous research.^{17,29}

Distress—We measured cancer-specific distress with the 15-item Impact of Events Scale.³⁰ We measured general distress with the 12-item Brief Symptom Inventory.³¹ Reliability for both measures was excellent ($\alpha=.87$).

Knowledge—We assessed knowledge using a measure created for this study. The scale was comprised of 12 true/false statements related to breast cancer and *BRCA1/2* mutations.

Neuroticism—We assessed trait neuroticism using the 12-item neuroticism scale of the NEO-FFI personality inventory.³² The scale attained excellent reliability ($\alpha=.86$).

Treatment-Related Concerns—We assessed participants' level of concern regarding nine common issues related to breast cancer treatment. Participants indicated their level of concern on a scale from 0 to 3 (0 = no concern, 3 = very concerned).

Decisional Conflict—We assessed conflict with surgical decision-making using a 10-item subscale of the reliable ($\alpha = 0.81$) 16-item Decisional-Conflict Scale (DCS), measuring patient's perception of decision-making across four categories.³³

Surgical Preferences—We assessed participants' preference for lumpectomy or BM as treatment for their breast cancer by asking them to rate, on a scale of 0 to 10, how likely they were to select each surgical treatment.

Statistical Analysis

We generated descriptive statistics to characterize the sample in terms of sociodemographics, age, family history, and calculated risk of *BRCA1/2* mutation. Next, we

performed bivariate analyses to determine variables related to decisional conflict and preference for BM using chi-square, t-tests, and ANOVA analyses. To identify variables independently associated with each outcome, we used a multiple linear regression with backward variable selection. On the initial step of each regression, we included all variables with a $p < 0.10$ association with the outcome in bivariate analyses. All analyses were conducted in SAS 9.2 (SAS Institute, Cary, NC).

Results

Sample Characteristics

The sample was predominantly white (65%), college-educated (79%), married (63%) and employed full-time (72%). The mean age of participants was 42.56 years ($SD = 5.67$ years; range 26–50 years). On average, participants had 0.87 ($SD = 1.13$) first or second-degree relatives with breast or ovarian cancer and an estimated risk of having a *BRCA1/2* mutation of 13.06% ($SD = 22.88\%$).

Bivariate Associations with Decisional Conflict and BM Preference

Bivariate associations are shown in Table 1. The mean decisional conflict score was 17.38 ($SD = 22.02$). Higher decisional conflict regarding the surgical decision was associated with having less than a college education ($t(284) = 3.19, p = 0.002$), being unmarried ($t(284) = 2.39, p = 0.02$), not being a candidate for lumpectomy ($t(284) = 2.10, p = 0.04$), not having received a specific surgical recommendation ($F = 9.75, p = 0.001$), higher neuroticism ($r = 0.15, p = 0.01$), higher cancer-specific ($r = 0.19, p = 0.002$) and general distress ($r = 0.20, p = 0.001$), and more concerns about the impact of radiation ($r = 0.14, p = 0.03$).

Participants reported an average preference for choosing BM of 3.16 out of a maximum of 10 ($SD = 3.75$). Stronger preference for BM was significantly associated with less education ($t(284) = 2.08, p = 0.04$), being married ($t(284) = 2.18, p = 0.03$), White ($t(284) = -2.28, p = 0.02$), of Jewish ancestry ($t(284) = 1.97, p = 0.05$), and younger age ($r = -0.19, p = 0.002$). BM preference also was associated with the following medical/family history variables: not being a candidate for lumpectomy ($t(284) = 2.95, p = 0.004$), having received a surgical recommendation ($F = 16.25, p < 0.001$), and higher estimated probability of having a *BRCA1/2* gene based on the BRCAPro model ($r = 0.35, p < 0.001$). Finally, BM preference was associated with the following psychosocial variables: higher neuroticism ($r = 0.13, p = 0.02$), greater knowledge ($r = 0.17, p = 0.004$), higher perceived risk of developing a new breast cancer ($r = 0.22, p < 0.001$), higher anxiety ($r = 0.15, p = 0.01$) and lower preference for lumpectomy ($r = -0.37, p < 0.001$).

Multivariate Models of Decisional Conflict and BM Preference

We conducted, in separate models, backward multiple regression analyses in which we included all variables associated with decision conflict and BM at the level of $p = 0.10$ (Tables 2 and 3). In our final model, women with higher decisional conflict were less educated (beta = $-0.18, p = .001$), less likely to be married (beta = $-0.14, p = .001$), more distressed (beta = $0.21, p = .001$) and less likely to report having received a surgical recommendation (beta = $-0.26, p = .001$).

The final regression model for BM preference revealed that greater preference for BM was associated with higher neuroticism (beta = $0.13, p = 0.02$), higher perceived risk for developing a new breast cancer (beta = $0.12, p = 0.03$), higher objective risk of carrying a *BRCA1/2* mutation (beta = $0.28, p < 0.001$), having received a specific surgical recommendation (beta = $-0.24, p = 0.02$), and lower preference for lumpectomy (beta = $-0.15, p < 0.001$).

Discussion

Although previous studies have retrospectively evaluated the impact of sociodemographic factors and physician's recommendations on receipt of BM for breast cancer treatment, to our knowledge, this study is the first to evaluate the impact of such factors on decisional conflict and preferences for BM before surgery is performed. More specifically, this report provides insight into the factors that can impact younger women's decision to undergo BM for contralateral breast cancer risk reduction. The results indicate that, for women age 50 and younger, both extrinsic and intrinsic factors play a role in the decisional conflict related to choosing a breast cancer surgery. Furthermore, such factors also impact women's likelihood to choose BM, a treatment option that significantly reduces the risk of future cancer in the contralateral breast.

Notably, a surgical recommendation was associated with lower decisional conflict and stronger preference for BM. Many studies have shown guidance from physicians and other health care professionals leads to reduction in anxiety and higher satisfaction regarding surgical choice.^{24,26} Lower preference for lumpectomy also was associated with higher preference for BM. While this further supports the need for accurate and informative surgical recommendations, additional research is needed on the complex interplay between surgeons' recommendations and patient preferences for treatment and involvement in decision making.^{6,21,27}

Further, while previous studies have found significant overestimation of the risk for contralateral breast cancer in newly diagnosed patients,²⁰ in the present study we found a strong association between both perceived and objective risk (as measured by BRCAPro score) and BM preference. Thus, although perceived risk remains an important correlate of BM preferences, the current study suggests that patient preferences may reflect a reasonably accurate understanding of their risk. Given our data were collected prior to any genetic counseling received by the participants, this accuracy suggests early and effective risk communication between patients and their surgeons. Though risk comprehension may be enhanced through additional multidisciplinary consultation, including through genetic counseling and testing, effective risk communication in these initial consultations forms a foundation for additional information and the ultimate surgical treatment decision.

Cancer-related distress was related to decisional conflict while Neuroticism was related to preference for BM. Given neuroticism can be viewed as an indicator of trait anxiety, this suggests that affective factors may play a central role in a woman's breast cancer surgery decision above and beyond her objective risk and medical guidance. Trait anxiety and Neuroticism may also explain why anxiety persists following BM among women with high levels of pre-surgical anxiety and perceived risk of developing a new breast cancer.¹⁸

While lower levels of education and being unmarried were associated with higher decisional conflict, no sociodemographic variables were associated with preference for BM in the final regression model. This contrasts with previous studies that have found sociodemographic factors to have a strong influence on decision to obtain BM.^{1, 34} However, these previous studies did not include constructs such as perceived risk or treatment preferences. The variance explained by the sociodemographic variables might have been subsumed into these constructs.

These findings must be considered within certain limitations. Our cross-sectional data do not provide information about actual surgical decisions – only self-reported preferences. However, preferences are highly predictive of behavior in a variety of medical contexts.^{35–37} Surgical recommendation also was self-report. Therefore, we cannot speak to the patient's accuracy about the surgeon's recommendation. Also, we cannot speak to

additional prognostic information, including genetic test results, or surgical recommendations obtained after the interview was conducted. These variables could have influenced their preferences or their decision conflict. Third, our recruitment response rate would be considered low for a cross-sectional survey, but reflects willingness to enter the clinical trial. Finally, our population was drawn from three institutions, whose patients were mostly White and well-educated, and a finite number of surgeons, thus limiting the generalizability of the results. These findings should be replicated in a larger study with a greater diversity of sites and participants. Despite these limitations, our findings suggest that recently observed increases in the uptake of BM are likely due to both intrinsic and extrinsic factors. Surgeons can support patients in their decision making by providing accurate and effective risk communication in a supportive environment to ameliorate distress.

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References

1. Arrington AK, Jarosek SL, Virnig BA, Habermann EB, Tuttle TM. Patient and surgeon characteristics associated with increased use of contralateral prophylactic mastectomy in patients with breast cancer. *Ann Surg Oncol*. 2009; 16:2697–704. [PubMed: 19653045]
2. Tuttle TM, Habermann EB, Grund EH, Morris TJ, Virnig BA. Increasing use of contralateral prophylactic mastectomy for breast cancer patients: a trend toward more aggressive surgical treatment. *J Clin Oncol*. 2007; 25:5203–9. [PubMed: 17954711]
3. Yao K, Stewart AK, Winchester DJ, Winchester DP. Trends in contralateral prophylactic mastectomy for unilateral cancer: a report from the National Cancer Data Base, 1998–2007. *Ann Surg Oncol*. 2010; 17:2554–62. [PubMed: 20461470]
4. Schwartz MD, Lerman C, Brogan B, et al. Impact of BRCA1/BRCA2 counseling and testing on newly diagnosed breast cancer patients. *J Clin Oncol*. 2004; 22:1823–9. [PubMed: 15067026]
5. Schrag D, Kuntz KM, Garber JE, Weeks JC. Life expectancy gains from cancer prevention strategies for women with breast cancer and BRCA1 or BRCA2 mutations. *JAMA*. 2000; 283:617–24. [PubMed: 10665701]
6. King TA, Sakr R, Patil S, et al. Clinical management factors contribute to the decision for contralateral prophylactic mastectomy. *J Clin Oncol*. 2011; 29:2158–64. [PubMed: 21464413]
7. Chung A, Huynh K, Lawrence C, Sim MS, Giuliano A. Comparison of patient characteristics and outcomes of contralateral prophylactic mastectomy and unilateral total mastectomy in breast cancer patients. *Ann Surg Oncol*. 2012; 19:2600–6. [PubMed: 22396004]
8. Fisher CS, Martin-Dunlap T, Ruppel MB, Gao F, Atkins J, Margenthaler JA. Fear of recurrence and perceived survival benefit are primary motivators for choosing mastectomy over breast-conservation therapy regardless of age. *Ann Surg Oncol*. 2012; 19:3246–50. [PubMed: 22833001]
9. Metcalfe KA, Lubinski J, Ghadirian P, et al. Predictors of contralateral prophylactic mastectomy in women with a BRCA1 or BRCA2 mutation: the Hereditary Breast Cancer Clinical Study Group. *J Clin Oncol*. 2008; 26:1093–7. [PubMed: 18195327]
10. Ji J, Hemminki K. Risk for contralateral breast cancers in a population covered by mammography: effects of family history, age at diagnosis and histology. *Breast Cancer Res Treat*. 2007; 105:229–36. [PubMed: 17115107]
11. Rawal R, Lorenzo BJ, Hemminki K. Risk of subsequent invasive breast carcinoma after in situ breast carcinoma in a population covered by national mammographic screening. *Br J Cancer*. 2005; 92:162–6. [PubMed: 15570309]

12. Bedrosian I, Hu CY, Chang GJ. Population-based study of contralateral prophylactic mastectomy and survival outcomes of breast cancer patients. *J Natl Cancer Inst.* 2010; 102:401–9. [PubMed: 20185801]
13. Herrinton LJ, Barlow WE, Yu O, et al. Efficacy of prophylactic mastectomy in women with unilateral breast cancer: a cancer research network project. *J Clin Oncol.* 2005; 23:4275–86. [PubMed: 15795415]
14. McDonnell SK, Schaid DJ, Myers JL, et al. Efficacy of contralateral prophylactic mastectomy in women with a personal and family history of breast cancer. *J Clin Oncol.* 2001; 19:3938–43. [PubMed: 11579114]
15. Frost MH, Slezak JM, Tran NV, et al. Satisfaction after contralateral prophylactic mastectomy: the significance of mastectomy type, reconstructive complications, and body appearance. *J Clin Oncol.* 2005; 23:7849–56. [PubMed: 16204003]
16. Geiger AM, West CN, Nekhlyudov L, et al. Contentment with quality of life among breast cancer survivors with and without contralateral prophylactic mastectomy. *J Clin Oncol.* 2006; 24:1350–6. [PubMed: 16549829]
17. Graves KD, Vegella P, Poggi EA, et al. Long-term psychosocial outcomes of BRCA1/BRCA2 testing: differences across affected status and risk-reducing surgery choice. *Cancer Epidemiol Biomarkers Prev.* 2012; 21:445–55. [PubMed: 22328347]
18. Tercyak KP, Peshkin BN, Brogan BM, et al. Quality of life after contralateral prophylactic mastectomy in newly diagnosed high-risk breast cancer patients who underwent BRCA1/2 gene testing. *J Clin Oncol.* 2007; 25:285–91. [PubMed: 17159191]
19. Beesley H, Ullmer H, Holcombe C, Salmon P. How patients evaluate breast reconstruction after mastectomy, and why their evaluation often differs from that of their clinicians. *J Plast Reconstr Aesthet Surg.* 2012; 65:1064–71. [PubMed: 22475685]
20. Abbott A, Rueth N, Pappas-Varco S, Kuntz K, Kerr E, Tuttle T. Perceptions of contralateral breast cancer: an overestimation of risk. *Ann Surg Oncol.* 2011; 18:3129–36. [PubMed: 21947590]
21. Hawley ST, Griggs JJ, Hamilton AS, et al. Decision involvement and receipt of mastectomy among racially and ethnically diverse breast cancer patients. *J Natl Cancer Inst.* 2009; 101:1337–47. [PubMed: 19720966]
22. Collins ED, Moore CP, Clay KF, et al. Can women with early-stage breast cancer make an informed decision for mastectomy? *J Clin Oncol.* 2009; 27:519–25. [PubMed: 19114703]
23. Lee CN, Chang Y, Adimorah N, et al. Decision making about surgery for early-stage breast cancer. *J Am Coll Surg.* 2012; 214:1–10. [PubMed: 22056355]
24. Caldon LJ, Collins KA, Wilde DJ, et al. Why do hospital mastectomy rates vary? Differences in the decision-making experiences of women with breast cancer. *Br J Cancer.* 2011; 104:1551–7. [PubMed: 21559024]
25. Johnson JD, Roberts CS, Cox CE, Reintgen DS, Levine JS, Parsons M. Breast cancer patients' personality style, age, and treatment decision making. *J Surg Oncol.* 1996; 63:183–6. [PubMed: 8944063]
26. Katz SJ, Hawley ST, Abrahamse P, et al. Does it matter where you go for breast surgery? : attending surgeon's influence on variation in receipt of mastectomy for breast cancer. *Med Care.* 2010; 48:892–9. [PubMed: 20808256]
27. Morrow M, Jagsi R, Alderman AK, et al. Surgeon recommendations and receipt of mastectomy for treatment of breast cancer. *JAMA.* 2009; 302:1551–6. [PubMed: 19826024]
28. University of Texas Southwestern Medical Center at Dallas, The BayesMendel Group at Johns Hopkins. [accessed October 16, 2012] CancerGene. Version 5.1. Available: <http://www4.utsouthwestern.edu/breasthealth/cagene/>
29. Schwartz MD, Isaacs C, Graves KD, et al. Long-term outcomes of BRCA1/BRCA2 testing: risk reduction and surveillance. *Cancer.* 2012; 118:510–7. [PubMed: 21717445]
30. Horowitz M, Wilner N, Alvarez W. Impact of Event Scale: a measure of subjective stress. *Psychosom Med.* 1979; 41:209–18. [PubMed: 472086]
31. Derogatis LR, Melisaratos N. The Brief Symptom Inventory: an introductory report. *Psychol Med.* 1983; 13:595–605. [PubMed: 6622612]

32. Costa, PT.; McCrae, RR. NEO-PI-R Professional Manual. Odessa, FL: Psychological Assessment Resources, Inc; 1992.
33. O'Connor AM. Validation of a decisional conflict scale. *Med Decis Making*. 1995; 15:25–30. [PubMed: 7898294]
34. Bleicher RJ, Abrahamse P, Hawley ST, Katz SJ, Morrow M. The influence of age on the breast surgery decision-making process. *Ann Surg Oncol*. 2008; 15:854–62. [PubMed: 18058182]
35. Blinman P, Alam M, Duric V, McLachlan SA, Stockler MR. Patients' preferences for chemotherapy in non-small-cell lung cancer: a systematic review. *Lung Cancer*. 2010; 69:141–7. [PubMed: 20570009]
36. O'Neill SC, Valdimarsdottir HB, DeMarco TA, et al. BRCA1/2 test results impact risk management attitudes, intentions, and uptake. *Breast Cancer Res Treat*. 2010; 124:755–64. [PubMed: 20383578]
37. Ozanne EM, Wittenberg E, Garber JE, Weeks JC. Breast cancer prevention: patient decision making and risk communication in the high risk setting. *Breast J*. 2010; 16:38–47. [PubMed: 19889168]

Synopsis

For younger women facing a breast cancer diagnosis, a surgical recommendation is associated with lower decisional conflict and stronger intention for BM. Results highlight the importance of effective risk communication and decision support between a woman and her surgeon.

TABLE 1

Bivariate Associations with Decisional Conflict

Variable	Decisional Conflict			BM Preference		
	M	SD	r	M	SD	r
Education						
College or Beyond	14.87***	19.85		2.92*	3.65	
Less than College	26.74	26.91		4.05	4.03	
Married						
Yes	15.02*	20.65		3.53*	3.70	
No	21.45	23.77		2.53	3.77	
Ashkenazi Jewish Ancestry						
Yes	16.41	21.80		4.36*	4.26	
No	17.51	22.09		3.00	3.66	
Race						
Caucasian	15.63*	21.52		3.53*	3.79	
Other	20.65	22.68		2.47	3.60	
Employed						
Full-Time	16.83	21.28		3.17	3.82	
Other/Unemployed	18.77	23.87		3.15	3.59	
Candidate for Lumpectomy						
Yes	15.62*	20.45		4.17*	3.80	
No or Don't Know	21.62	25.05		2.75	3.66	
Surgical Recommendation						
None	24.36**	24.79		4.25*	3.91	
Lumpectomy	12.67	17.88		1.67	2.91	
UM or BM	13.31	20.48		3.89	3.96	
BRCAPro Score	12.2	18.9	.02			.33***
Age	42.60	5.70	.02			-.18***
Perceived Risk of Contralateral Breast Cancer	34.2	25.8	.02			.22***
Cancer-Specific Distress	32.7	15.5	.19***			.01

Variable	Decisional Conflict			BM Preference		
	M	SD	r	M	SD	r
General Distress	20.0	6.06	.20***			.14**
Knowledge	3.97	1.33	-.07			.17**
Neuroticism	24.1	5.77	.15**			.13*
Concern Regarding:						
Quickness of Surgery	2.19	0.94	-.05			.03
Physical Appearance	1.71	1.06	.07			.02
Reconstruction Options	1.79	1.05	.07			.04
Body Image	1.59	1.09	.07			.00
Sexual Satisfaction	1.32	1.07	.07			.01
Partner's Reaction	0.94	0.95	.07			.07
Radiation Treatment	1.91	1.91	.14*			.00
Cancer Recurrence	1.90	1.90	.06			.02
Decisional Conflict	17.38	22.02	--			.04
Lumpectomy Preference	6.43	4.15	.11			-.37***
BM Preference	3.16	3.75	.04			

* P .05

** P .01

*** P .001.

TABLE 2

Backward Linear Model of Decisional Conflict

Variable	Beta	P-value
Education	−0.182	<0.001
Marital Status	−0.135	0.001
Baseline Distress	0.205	<0.001
Surgeon's Recommendation	−0.261	<0.001

Final Model $R^2 = 0.167$ (df) = 4, $p = 0.001$. Variables not included in final model: neuroticism ($p = 0.288$), candidate for lumpectomy ($p = 0.284$), radiation side effects ($p = 0.175$), and cancer-related distress ($p = 0.167$).

TABLE 3**Backward Linear Model of Preference for Bilateral Mastectomy**

Variable	Beta	P-value
Neuroticism	0.126	0.02
Perceived Risk of New Cancer	0.115	0.03
BRCA1/2 Risk	0.282	<0.001
Preference for Lumpectomy	-0.239	<0.001
Surgeon's Recommendation	-0.146	0.02

Final Model $R^2 = 0.275$ (df) = 5, $p = 0.001$. Variables not included in the final model: Jewish ancestry ($p = 0.903$), Higher anxiety ($p = 0.659$), age ($p = 0.499$), race ($p = 0.172$), candidate for lumpectomy ($p = 0.138$), knowledge ($p = 0.860$), marital status ($p = 0.0709$), and education ($p = 0.0932$).