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Surgical treatment decision making in breast cancer among Chinese women: predicting psychological morbidity

Key Messages

1. Ask women about their preferred level of involvement in breast cancer treatment decision making and involve them only as much as they wish to be involved.
2. Provide information whenever necessary to assist women with treatment decision making.
3. Effective management of physical symptom distress helps reduce postoperative psychological morbidity.

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Introduction

Depression rates following breast cancer (BC) surgery vary from a high of 55% reported in Italian women,[1] to 14% in South African women,[2] to more than 25% in Mainland Chinese women.[3] Psychological morbidity peaks at 1 to 3 months post-surgery,[4] and persists for >16 months. Social disruption affects 10% and reduced attractiveness affects 22% of women with BC for at least 6 years.[5]

Greater psychological morbidity has been primarily associated with body image disruption, with morbidity reportedly highest following modified radical mastectomy (MRM) and lowest following breast conserving treatment (BCT).[6] Symptom distress, coping, optimism and self-efficacy for coping, mediate cancer distress in western studies. Additional predictors include consultation, decision making, uncertainty and treatment practices, patient values, expectations and beliefs about cancer, and family and community norms and responses.

Methods

This study was conducted from October 2000 to June 2003. Following institutional ethics approval, we approached all women receiving surgery for stage 0 to IV BC in six regional Hong Kong public hospitals between October 2001 and January 2003 within 5 days following surgery (baseline). Following immediate assessment at baseline, participants were followed up 1 month later. Inclusion criteria were age over 19 years and Cantonese fluency. Exclusion criteria were linguistic or intellectual difficulties, active Axis I psychiatric diagnosis, or uncontrolled metastatic brain disease. Of 480 women, 447 (93%) were available and eligible, 405 (91%) gave fully informed consent and completed a baseline face-to-face interview assessment. At 1-month post-surgery, these women completed a telephone interview outcome assessment.

The Chinese Health Questionnaire (CHQ12) assessed psychological morbidity; higher scores represent greater morbidity. Dispositional optimism was assessed using the revised Chinese Life Orientation Test, which comprised six items scored on a four-point Likert scale from 'strongly disagree' to 'strongly agree'; higher scores reflect greater trait optimism. Dispositions are theoretically stable and can be reliably measured at any time. The Chinese Generalized Self-efficacy Scale (GSeS) was used to measure general self-efficacy. The 10 GSeS items are personal-response-oriented, eg "I can solve most problems if I invest the necessary effort", and scored on a four-point Likert scale from 'exactly true' to 'not at all'; higher scores reflect greater self-efficacy. Among Hong Kong Chinese women with BC, factor analyses reveal stable factors.[7] Women were asked at baseline to rate expected impacts of treatment outcomes (outcome expectation) using the modified Breast Cancer Treatment Decision Making Questionnaire. The 13 items address expectations of negative surgical impact on respondents' sense of femininity, appearance, sexuality, normality, attractiveness and their routine, likelihood of recurrence, additional treatment and reconstruction, speed of recovery, partner support and cure.[7] To assess treatment decision making (TDM) difficulties, women completed eight four-point Likert items scored from 'strongly disagree' to 'strongly agree'; six of the items measure perceived TDM barriers (eg shocked, couldn't think what to do), and two measure TDM

Table 1. Change in psychological morbidity from baseline to outcome

Chinese Health Questionnaire (CHQ12)	Total baseline sample (A) [n=405] No. (%)	Baseline sample with matching outcome data (B) [n=367] No. (%)	Lost to follow-up (C=A-B) No. (%)	Outcome (D) [n=367] No. (%)	% Change (E=D-B) No. (%)
CHQ12 score*					
Low (0-5)	120 (29.6)	106 (28.9)	14 (0.3)	119 (32.4)	13 (3.5)
Mild (6-10)	114 (28.1)	105 (28.6)	9 (0.2)	117 (31.9)	12 (3.3)
Moderate/severe (>10)	171 (42.2)	156 (42.5)	15 (0.3)	131 (35.7)	-25 (6.8)
Pro-rated CHQ12 score					
Low (0-5)	-	108 (29.4)	-	125 (34.1)	17 (4.6)
Mild (6-10)	-	103 (28.1)	-	112 (30.5)	9 (2.4)
Moderate/severe (>10)	-	156 (42.5)	-	130 (35.4)	-26 (7.1)

* The number of subjects with lower CHQ12 scores at outcome than at baseline is 186. The number of subjects with higher CHQ12 scores at outcome than at baseline is 143. The number of subjects with no change is 38 (Z= -2.911, P<0.004). Follow-up CHQ12 scores significantly correlated with baseline CHQ12 scores (r=0.570), age (r= -0.186), employment status (r= -0.161), outcome expectation (r=0.434), and TDM difficulties (r=0.339), and at follow-up, with optimism (r= -0.369) active chemotherapy (r=0.143), and physical symptom distress (r=0.625)

facilitators (adequacy of time and information); higher scores reflect greater TDM difficulties. Women indicated perceived degree of TDM involvement as follows: (1) "I was not allowed to participate", (2) "less participation than I wanted", (3) "as much participation as I wanted", (4) "more participation than I wanted", and (5) "much more participation than I wanted". Women rated satisfaction with physician communications using the Chinese version of the Medical Information Satisfaction Scale-Revised (C-MISS-R). Two four-item sub-scales measure cognitive (understanding, expectations, and knowledge) and affective (satisfaction, worry, and interpersonal elements) aspects of consultations. Items are scored on a five-point Likert scale from 'strongly agree' to 'strongly disagree'; higher scores reflect greater satisfaction.

A physical symptom distress measure was derived from earlier work and the literature. For each of 14 physical symptoms, respondents indicated (0) 'do not have this symptom', (1) 'mild', (2) 'moderate', (3) 'severe', or (4) 'very severe'. All items are summed, with higher scores indicating greater physical symptom distress. Demographic (age, marital status, occupation, education) and medical data (surgical type, disease stage, BC history, and concurrent treatments) were gathered from patients and medical records respectively. All measures were gathered at baseline, except that the revised Chinese Life Orientation Test and physical symptom distress were collected at the 1-month follow-up, and the medical data that were collected later from medical records. The outcomes were CHQ12 scores at the 1-month follow-up.

Data analysis
Analyses initially examined correlations between baseline and consultation variables. Analysis of variance (ANOVA) examined differences in CHQ12 baseline scores as a function of categorical, including medical, variables. Then, correlations identified variables significantly associated with follow-up CHQ12 scores. Variation by categorical variables was examined using ANOVA. The Wilcoxon rank test, t test, and Chi squared test were used for univariate comparisons for ranked, continuous, and categorical data.

Next, correlates with baseline CHQ12 scores were entered into forward-entry stepped multivariate linear regression models to adjust follow-up CHQ12 scores.

Results

At the 1-month follow-up, 367 of the 405 participating women did not differ by demographic or medical criteria, surgery type, or disease stage from non-participants. Most non-participants were married (82%) and 60% had no formal education. Of participants, 33% had only primary and 56% secondary education, most (79%) were married, the age range was 28 to 79 years (mean, 51.8; standard deviation [SD], 11.1 years). Among those whose cancer staging information was available, 18% had stage 0 disease, 28% had stage I, and 49% stage II.

Self-efficacy, optimism, and consultation satisfaction were high. Mean scores for outcome expectation were modest, while mean TDM difficulties scores fell into the second lowest quartile. Physical symptom distress was slightly higher in women on active treatment, but overall this was quite low.

Prevalence of psychological morbidity
At baseline, 28% of women met case criteria for mild, and 42% for moderate/severe morbidity (Table 1). At the 1-month follow-up, 32% women met criteria for mild, and 36% for moderate/severe psychological morbidity: 7% fewer women reported moderate/severe distress and 3.5% more reported no distress compared to the baseline. To exclude the possibility of inflated distress due to contamination of CHQ12 items addressing physical symptoms of distress (pressure in the chest, palpitations, headaches) from treatment side-effects, CHQ12 scores were recalculated to exclude three physical symptom items. No significant changes resulted in the proportions of cases and non-cases (Table 1).

Psychological morbidity predictors
Baseline CHQ12 scores were unrelated to type of

Table 2. Forward entry stepwise multiple regression models of the Chinese Health Questionnaire (CHQ12) [models 1 and 3] and physical symptom distress (model 2) on predictors

Model	Step	R² change	Adjusted R²	β coefficient	P value
Model 1* (5 steps)					
Physical symptoms	1	0.397	0.395	0.607	<0.001
Optimism	1+2	0.710	0.465	-0.179	<0.001
Outcome expectation	1+2+3	0.036	0.500	0.158	<0.001
Chemotherapy‡	1+2+3+4	0.020	0.519	-0.164	<0.001
TDM difficulties§	1+2+3+4+5	0.007	0.525	0.100	0.018
Model 2† (3 steps)					
Chemotherapy‡	1	0.120	0.117	0.289	<0.001
Baseline CHQ12	1+2	0.055	0.160	0.231	<0.001
Radiotherapy‡	1+2+3	0.014	0.180	0.119	0.026
Model 3 (6 steps)					
Physical symptoms	1	0.397	0.395	0.565	<0.001
Baseline CHQ12	1+2	0.156	0.550	0.352	<0.001
Optimism	1+2+3	0.022	0.572	-0.138	<0.001
Chemotherapy‡	1+2+3+4	0.014	0.585	-0.142	<0.001
Nodal status§	1+2+3+4+5	0.011	0.600	0.106	0.004
Outcome expectation§	1+2+3+4+5+6	0.006	0.605	0.093	0.026

* Excluded variables in model 1 are age, employment status, diagnosis, consultation satisfaction (Chinese version of the Medical Information Satisfaction Scale-Revised), treatment decision making (TDM) participation satisfaction, self-efficacy (Chinese Generalised Self-efficacy Scale), and radiotherapy
† All variables were retained in model 2
‡ Currently active treatment
§ Variables contributing <0.01 change to the R² value. Despite being statistically significant, these variables were not considered meaningful additions to the model and were not considered in interpretation

surgery, disease stage, place of surgery, demographic factors, or degree of TDM involvement. Significant correlations emerged with perceived outcome expectation (r=0.506), TDM difficulties (r=0.445), age (r= –0.218), C-MISS-R (r= –0.209), and GSeS (r= –0.330). In turn, TDM difficulties correlated with outcome expectation (r=0.495) and the affective (r= –0.333) and cognitive (r= –0.206) domains of the C-MISS-R. Multiple regression of baseline CHQ12 on all of the above variables retained only outcome expectation, TDM difficulties, and GSeS (adjusted R^2=0.312). Mean follow-up CHQ12 scores were unrelated to surgery type (BCT=9.5, MRM=9.4, MRM plus breast reconstruction=8.9), disease stage, hospital, and demographic factors. Women whose perceived TDM involvement was "as much as I desired" had significantly lower CHQ12 scores at follow-up (mean, 8.8) than women perceiving "I was not allowed to participate at all" (mean, 14.7) [F=6.702, df=3, P<0.001, Bonferroni post hoc difference= –5.96, P=0.011]. No underlying variable identified women falling into the 'no participation' group.

In Table 2, model 1 examined predictors of outcome CHQ12 after adjustment for demographic, medical, treatment, and dispositional factors. Before entering physical symptom distress and optimism, outcome expectation was the strongest predictor. Model 2 examined if psychological distress at baseline predicted follow-up physical symptom distress after adjustment for age, surgery type, and tumour stage. Physical symptom distress was predicted by current chemotherapy, baseline CHQ12, and radiotherapy. Model 3 adjusted for the contribution of baseline CHQ12 on physical symptom distress, by adding baseline CHQ12 and nodal status into the output from model 1; only TDM difficulties was ejected. This model accounted for 60.5%

of variance. However the contributions to R^2 change of nodal status and outcome expectation were marginal. A forced entry regression confirmed both variables to be non-significant. The amended model 3 accounted for 58.5% of variance in follow-up CHQ12 scores. Only 25 women attended a support group, too few to meaningfully enter into the multivariate model. We therefore used a t test to compare women attending with those not attending (mean follow-up CHQ12 scores, 11.36 vs 9.24), but the difference in follow-up CHQ12 scores was non-significant (t= –1.62, df=364, P=0.106).

Discussion

Treatment decision making difficulties and outcome expectation strongly predicted postoperative and outcome psychological morbidity, after adjustment for disposition and coping efficacy. Consultations, mediated by TDM-related factors, can exacerbate baseline distress, in turn mediating adjustment 1 month postoperatively. Physical symptom distress, accounting for most variance in outcome CHQ12, was itself predicted by active treatment and baseline CHQ12.

Paradoxically, chemotherapy enhanced physical symptom distress, but lowered follow-up psychological morbidity. Hong Kong Chinese women may feel that they are receiving additional treatment and thus feel reassured despite the side-effects. We did not find similar reports on western patients.

These data suggest clinicians should assess preferred TDM involvement at the initial consultation with Chinese women with BC. Most Chinese women prefer shared TDM,

one third prefer to decide alone or with their family while others prefer the surgeon to decide.[8] Women may need help, or support, to decide treatment. Decision making support through treatment recommendations, accurate information on appearance outcomes and information about expected symptoms following surgery is desirable. Psychological distress at 1 month post-surgery should be sensitive to interventions providing personalised support around expected symptoms and decision making, and by preparation for physical symptoms. Minimising opportunities for misattribution helps reduce unnecessary anxiety. Interactions with other women who have successfully completed BC treatments are likely to be particularly beneficial. Chinese women having significant difficulty with TDM should be considered at high risk of later psychological distress.

Acknowledgements

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