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Citation	Psycho-Oncology, 2010, v. 19 n. 10, p. 1044-1051
Issued Date	2010
URL	http://hdl.handle.net/10722/129476
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Trajectories of psychological distress among Chinese women diagnosed with breast cancer

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Abstract

Background: The distinct trajectories of psychological distress over the first year of the diagnosis with breast cancer (BC) and its determinants have not been explored.

Methods: 285 / 405 Chinese women receiving surgery for BC were assessed at 5-days, 1-month, 4-months and 8-months post-surgery on measures of psychological distress, optimism, treatment decision-making (TDM) difficulties, satisfaction with treatment outcome, satisfaction with medical consultation, and physical symptom distress. Latent growth mixture modeling identified trajectories of psychological response to BC. Multinominal logistic regression compared TDM difficulties, satisfaction with treatment outcome, satisfaction with medical consultation, optimism, and physical symptom distress, by distress pattern adjusted for age, education, employment status, and stage of disease.

Results: Four distinct trajectories of distress were identified, namely resilience (66%), chronic distress (15%), recovered (12%), and delayed-recovery (7%). TDM difficulties, optimism, satisfaction with consultation, and physical symptom distress predicted distress trajectories. Psychologically resilient women had less physical symptom distress at early post-surgery compared to women with other distress patterns. Compared to the resilient group, women in the recovered or chronic distress groups experienced greater TDM difficulties, whereas women in the delayed-recovery group reported greater dissatisfaction with the initial medical consultation. Women in the chronic distress group reported greater pessimistic outlook.

Conclusion: Optimism and better early post-operative treatment outcomes predicted resilience to distress. Pre-operative interventions helping women to establish a realistic

expectation of treatment outcome may minimize disappointment with treatment outcome and resultant distress, whereas post-operative rehabilitation should focus on symptom management. (Word count 246)

Keywords: Oncology, Distress, Chinese women, Breast Cancer, Optimism, Resilience

Introduction

The psychological impact of breast cancer is well documented (1-2). The prevalence of affective disorders reported in Caucasian women with breast cancer ranges from 10% to 55% (1-4). Depression among Mainland Chinese women with breast cancer is around 25% (5). Among Hong Kong Chinese women diagnosed with breast cancer, around 50% experienced prolonged psychological distress over the year following diagnosis (6). Usually this psychological distress resolves within the first year following diagnosis, but recent evidence suggests that individual differences affect how women respond to the diagnosis of breast cancer over time (7-8).

Two recent longitudinal studies attempted to identify distinct psychological distress trajectories across time (7-8), adopting the approach proposed by Bonanno (9). Bonanno proposed four distinct patterns of adjustment in response to potential trauma: (1) chronic disruption of normal functioning, (2) recovery with a relatively mild and short-lived disruption of functioning, (3) delayed disruption of functioning, and (4) resilience with little or no disruption of functioning. Moreover, resilience is considered to be the most common outcome following exposure to potential trauma. Consistently, both recent studies showed that a substantial proportion of women with breast cancer (43% to 61%) reported little distress throughout the illness trajectory and appeared to be psychologically resilient, whereas a small subset of women reportedly experienced chronic psychological distress (12-19%) (7, 8). These recent studies reported that about 15% to 18% of the sample demonstrated a classical trajectory of psychological recovery, starting with initial distress that gradually resolved. Some women experienced delayed distress, though the proportion of women belonging to this group differed substantially in

the two studies (6% to 27%). Nevertheless, these studies implied that there are distinct trajectories of change in psychological outcome following the diagnosis of breast cancer.

To date, studies assessing distinct adjustment patterns in response to breast cancer have focused either on the period shortly after the beginning of the chemotherapy (i.e. about 4 to 6 months post-diagnosis) (7) or at the completion of cancer treatment (i.e. about 12 months post-diagnosis) (8). There is consistent evidence that the adjustment process proceeds over the course of the first year after the event (10). Hence, the prevailing studies that provided evidence on distinct patterns in response to breast cancer failed to capture the initial response to the diagnosis of breast cancer. We therefore attempted to fill this gap by examining the patterns of psychological distress over most of the first year following diagnosis with breast cancer. In this study, we used a latent growth mixture model (LGMM) framework, an approach that is uniquely suited to identifying multiple latent trajectories in the data (11). LGMM extends conventional latent trajectory approaches (12) by estimating growth parameters within groups or classes of individuals that represent distinct multivariate normal distributions. In effect, LGMM tests whether the population under study is composed of a mixture of discrete classes of individuals with differing profiles of growth, with class membership determined by these different growth parameters. Here we used LGMMs to identify divergent trajectories of psychological response to the diagnosis of breast cancer.

We also identified factors predicting the distinct trajectories of psychological response of women diagnosed with breast cancer. We examined three sets of factors that *a priori* we felt would differentiate the distinct trajectories. First, treatment decision-making (TDM) factors, including satisfaction with TDM involvement and incongruence

between patient expected and perceived surgical outcome were explored. While little is known about the mechanisms underpinning the impact of TDM on women's adjustment to breast cancer, evidence suggests that greater disappointment with the elected breast cancer surgery outcomes is associated with more psychological distress (13,14), possibly because unexpected outcomes challenge assumptions about one's ability to predict and therefore cope with events (15). In this study, we hypothesized first, that perceived TDM difficulties (a function of satisfaction with TDM involvement) and congruence between expected and perceived outcomes of the surgery (E-OI) (reflecting satisfaction or disappointment with surgical outcome) predict the distinct trajectories of psychological distress. Second, optimism was hypothesized to predict distinct psychological trajectories. Optimism has protective effects, being associated with better psychological adjustment in women coping with breast cancer (16-18), and predicts acceptance of challenges whereas pessimism predicts avoidance (17). This suggests that optimists more accurately calibrate coping to actual demand, producing better adjustment. Lastly, physical symptom distress also contributes to psychological distress (17). We therefore hypothesized that physical symptom distress at early post-operative period predicts distinct trajectories of psychological distress.

Patients and method

Following Ethics Committee approval, all Chinese women, 18 years or older, who underwent surgery for breast cancer in six regional Hong Kong public hospitals between October 2001 and January 2003 were invited to participate. Exclusion criteria were

linguistic or intellectual difficulties, a currently active Axis I psychiatric diagnosis, and uncontrolled metastatic brain disease.

A baseline face-to-face interview assessment was conducted within five days after surgery, which was on average performed 38 days following diagnosis. Telephone interview follow-up assessments were then conducted at one-, four-, and eight-month post-surgery.

Measures

Psychological distress was measured using the 12-item Chinese Health Questionnaire (CHQ-12) (19-20). Respondents indicate agreement on a 4-point Likert scale ranging from "Not at all" (scored as 0) to "Much more than usual" (scored as 3) (19). Higher scores reflect greater psychological distress. Reported sensitivity is 78%, specificity 77%, and Cronbach's α=0.84 (20). Case criterion is met with scores >4 (19).

Satisfaction with TDM was operationalized to have two elements: perceived difficulties in TDM and satisfaction with medial consultation. The 8-items Perceived Treatment Decision Making Difficulties (TDM) Scale assessed perceived TDM difficulties (21) on a Likert response scale ranging from "strongly disagree" to "strongly agree". Scores ranged from 8 to 32, with higher scores indicating greater TDM difficulties. The 8-item Chinese-validated version of the Medical Information Satisfaction Scale (revised) (C-MISS-R) measured satisfaction with medical consultations (22). Each item is scored on a 5-point Likert scale from "strongly agree" to "strongly disagree" giving scores ranging from 8-32. Higher scores indicate greater satisfaction.

Disappointment with surgical outcome was operationalized as incongruence between expected and perceived surgical outcomes. Disappointment was measured using

the modified version of the Breast Cancer Decision Making Questionnaire (BCDMQ) (23), a 12-item, Likert-scored measure of surgical impact on appearance, social relationships, normalcy, spousal support, and anticipation of additional treatment, phrased to assess expectation (Baseline) and later perceived outcomes (follow-ups). Higher Baseline (expectancy) scores indicated greater negative expectations of later surgical outcome, and higher follow-up scores indicated poorer perceived actual outcome. Follow up totals (Perceived Outcome) subtracted from Baseline (Expected Outcome) totals give a discrepancy score reflecting Expectancy-Outcome Incongruence (E-OI) ranging from –48 to +48, with more extreme scores reflecting greater relief (negative scores) or disappointment (positive scores), (expectancy disconfirmation of elected surgical outcome) (23).

Dispositional optimism was measured with the 6-item Chinese revised Life Orientation Test (CLOT-R) (24). Responses are scored strongly disagree, disagree, agree and strongly agree. Potential scores range from 6 to 24, with higher scores reflecting greater optimism.

Physical symptom distress was measured by a 14-item checklist (21) either “I do not have this symptom” (0), or “mild” (1), through to “very severe” (4). Scores ranged from 0 to 56 with higher scores indicating greater physical symptom distress.

Age, education, marital status, occupation and disease stage, time since surgery, type of surgery, lymph nodes status and adjuvant therapy were gathered from patients and medical records, respectively.

All measures were gathered at Baseline excepting Satisfaction with treatment outcome and physical symptom distress, which were measured at 1-, 4-, and 8-months

post-surgery, and the C-LOT-R, which was assessed at one-month post-surgery. The CHQ12, was assessed at all four time points.

Data analysis

We used Mplus 5.1 to identify latent classes of event response (psychological distress in this study). Mplus employs a robust full-information maximum-likelihood (FIML) estimation procedure for handling missing data. FIML assumes missing data are unrelated to the outcome variable (missing at random). The appropriateness of FIML is widely endorsed (25,26).

Our analyses followed three steps. First, we identified a univariate single-class growth model without covariates. Second, we compared one- to five-class unconditional LGMMs (no covariates), assessing relative fit with conventional indices, including the Bayesian, (BIC), sample-size adjusted Bayesian (SSBIC), and Aikaike (AIC) information criterion indices, entropy values, the Lo-Mendell-Rubin likelihood test (LRT) (27), and the bootstrap likelihood ratio test (BLRT) (28). Using the likelihood ratio chi-square test to determine fit, we examined models with linear and quadratic parameters. Additionally, we examined models in which the growth parameters and their covariances were constrained to be equivalent across classes, as well as models in which these constraints were relaxed. We sought a model with lower values for the criterion indices, higher entropy values, and significant *p* values for both the LRT and the BLRT. We also used theory regarding prototypical loss trajectories to inform our model selection (29).

Consistent with recommendations for correct model specification (30), a third step was to extend the LGMM to include covariate predictors of class membership. We

selected covariates that would be likely to improve class assignment but that were also of substantive interest. However, we were mindful that too many covariates, especially with weak associations to psychological distress, would impair model convergence. Since not all of the proposed predictors could be included in the model due to convergence problems, multinominal logistic regression was independently performed to identify predictors of class membership and all of the proposed predictors were included in this analysis.

Results

Overall, 91% (405/443) of eligible women completed the baseline interview and 367 completed first (91%), 331 (82%) completed the second, and 338 (84%) completed the third follow-up. Refusal rates ranged from 3 to 9% at each follow-up. Women refusing or lost to follow-up did not differ by demographic or medical factors. Overall 303 (75%) participants completed all four assessments. In this report, the analyses were based on only the 285 / 303 (70%) participants who provided complete data on all the studied variables. Table 1 summarizes the demographic and clinical characteristics of the women, and shows the difference in the sample from the general population of Hong Kong. Because this is a sample drawn from only the public hospitals, we expect to see a sample that is of slightly lower income and education, and slightly older age as a result of the diagnostic inclusion criterion.

Mean scores for CLOT-R (mean 16.91 ± standard deviation (SD) 2.7) reflected predominantly moderately optimistic scores. Mean TDM difficulties scores (mean 13.18 ± SD 4.9) indicated women experienced a low level of TDM difficulties. Mean

expectancy-outcome incongruence (mean 1.12 ± SD 5.4) showed women on average experienced slight disappointment in the treatment outcome. Mean physical symptom distress scores at 1-month (mean 7.63 ± SD 6.9) post-surgery indicated women experienced mild physical symptom distress. However, 45% reported fatigue severity as moderate/severe at 1-month post-surgery.

Distinct trajectories of psychological distress

Unconditional Model. Preliminary analyses indicated that the best fitting unconditional models were those in which the slope and quadratic variance was constrained across classes. Table 2 summarizes the fit statistics for the one- to five-class solutions. Increasing class size from two to four classes provided successive improvements according to the AIC, SSBIC, BLRT, and entropy. The five-class solution resulted only in a modest improvement over the four-class solution but failed to converge when covariates were included in subsequent analyses. Accordingly, the four-class solution was adopted for further examination in conditional models.

Conditional Model. Using log-likelihood ratio chi squares to adjudicate fit, we identified four covariates that significantly improved model fit, $\chi^2(9, N = 285) = 568.65$, $p < .001$. These variables were income, satisfaction with medical consultation, distress from physical symptoms, and perceived treatment decision-making difficulties. Table 3 shows growth parameter estimates for the final conditional model. Note that the slope growth factor is interpreted as the estimate of total change from 5 days post-surgery to 8 months post-surgery. The trajectory patterns in the conditional model were essentially identical to those in the unconditional model and the percentages of participants assigned to each class were similar. Figure 1 shows that two of the classes had essentially flat

trajectories with non-significant slope parameters. The majority of participants (66.3%) were assigned to a class with relatively stable levels of low distress across assessment points. We labeled this class *resilient*. The second largest class (15.4%) was composed of participants with stable high levels of distress at each measurement. We labeled this class *chronic distress.* The two remaining classes evidenced different quadratic patterns indicative of recovery. One class (11.5%), which we labeled *recovered,* had elevated distress after hospitalization but gradually declined in distress and by 8-months had levels of distress similar to the resilient group. The remaining class and also the least frequent (6.6%) showed a reverse quadratic pattern of relatively low distress after surgery, then elevated distress at 1-month and 4-months post-surgery, followed by low distress at 8-months post-surgery. We labeled this class *delayed-recovery.*

Prediction of distinct trajectories of psychological distress.

To assess the role of covariates in the LGMM, we first designated the resilient category as the reference group. The resilient group had significantly less distress from physical symptoms than did the recovered (B = -.16, SE = .038, $p < .05$), chronic distress (B = .24, SE = .07, $p < .001$), and delayed-recovery groups (B = .21 SE = .06, $p < .001$). The resilient group also perceived significantly less treatment decision-making difficulties than the recovered (B = 0.29, SE = .09, $p < .01$) and chronic distress groups (B = 0.30, SE = .07, $p < .001$). Since not all of the proposed predictors could be included in the model due to convergence problems, multinominal logistic regression was independently performed to identify predictors of class membership. Hence, all of the proposed predictors were included in this analysis. Univariate analyses showed age (F=3.85, p=. 010), education (χ^2=35.26, df 9, p<. 001), occupation (χ^2=27.56, df 15, p=.

024), and stage of disease (χ^2=15.58, df 6, p=. 016) were associated with class membership. Hence, the analysis was adjusted for the effect of age, education, occupation and stage of disease.

Multinominal logistic regression compared TDM difficulties, Expectancy-outcome incongruence, satisfaction with medical consultation, optimism, and physical symptom distress at 1-month by distinct trajectories of psychological distress, adjusted for age, education, employment status, and stage of disease. TDM difficulties (χ^2 72.96, p<.001), optimism (χ^2 = 25.80, p < 0.001), satisfaction with medical consultation (χ^2 = 15.64, p = 0.001) and physical symptom distress at 1-month post-surgery (χ^2 = 65.15, p < 0.001) predicted psychological distress trajectories (Table 4). The model was significant (χ^2 = 222.97, p < 0.001) accounting for 54% of variation in class status (Cox and Snell R^2). Compared to the resilient group, women assigned to the chronic distress, recovered, and delayed-recovery groups reported greater physical symptom distress at 1-month post-surgery (OR 1.28, 95% CI 1.18-1.39, p<.001; OR 1.22, CI 1.13-1.33, p<.001; OR 1.23, CI 1.13-1.34, p<.001, respectively). The recovered (OR 1.44, CI 1.27-1.64, p<.001) and chronic distress groups (OR 1.45 , CI 1.28-1.66, p<.001) reported greater perceived difficulties in TDM in comparison to the resilient group. Compared to the resilient group, women in the chronic distress group reported less optimism (OR.62, CI .51-.77, p<.001) and women in the delayed-recovery group reported lower satisfaction with medical consultation (OR .77, CI .66-.89, p<.001).

Discussion

The present study identified distinct trajectories of psychological distress over the eight months following breast cancer surgery. Consistent with previous longitudinal studies on breast cancer (7, 8), four distinct trajectories were identified, namely chronic distress, recovered, delayed-recovery, and resilience. The largest proportion of women, belonging to the resilient group, demonstrated relatively stable low levels of psychological distress over the eight months post-surgery. This concurred with prior western studies, but our study showed a slightly higher proportion of women in the resilient group (66% in the current study vs. 43% to 61% from previous studies) (7, 8). This may be due to differences in statistical procedures. For example, in contrast to earlier trajectory approaches, LGMM allows for inclusion of covariates, which directly influence the growth factors and consequently the number and shape of the trajectories (31). The discrepancy across studies may also be due to differences in the operationalization of psychological distress. Deshields et al (8) studied the trajectories of depression measured by the Center for Epidemiological Studies-Depression scale, whereas Helgeson et al (7) studied the trajectories of psychological functioning as one of the dimensions of health-related quality of life measured by SF-36. The current study focused on the trajectories of undifferentiated psychological distress measured by CHQ-12, and not specifically depression. Interestingly, the current study and Deshield et al's study (8) both focused on distress and revealed the resilient group comprised a higher proportion of their sample (63% and 61%, respectively), whereas Helgeson et al's study (7) focused on psychological functioning finding a lower proportion of women (43%) in the resilient group. This would be expected given that distress can include a mix of

depression, anxiety, possibly anger and other affective components which are more generic. Quality of life is not synonymous with negative affect.

Moreover, unlike previous studies that recruited women with breast cancer either at the initial stage of chemotherapy (7) or after the completion of adjuvant treatment (8), we recruited women immediately after surgery. Hence, our study offered insights into patterns of psychological response from the initial treatment stage. Our findings demonstrate that the majority of women were able to maintain a stable psychological functioning as early as the initial treatment stage.

Consistently with prior studies (7, 8) which showed 12% to 19% of women experienced chronic distress resulting from the diagnosis of breast cancer, a similar small proportion of women (15%) in our study comprised a chronic distress group. Similarly, only 12% of the women in our study demonstrated a classical trajectory of psychological adjustment, starting with an initial episode of distress which gradually resolved. Furthermore, also consistent with previous studies (32), our results showed the greatest change in psychological response took place within the 4 months following the breast cancer surgery. This is not surprising as many women were at the stage of adjusting to side effects resulting from chemotherapy, as well as the impacts of the surgery (33).

The present study also examined potential predictors of trajectories of psychological distress. Less physical symptom distress at early post-surgery predicted psychological resilience. Compared to women in the other three trajectory patterns, women in the resilient group experienced less physical symptom distress at early post-surgery. This is consistent with previous studies that unrelieved symptoms are distressing and have been associated with poorer quality of life (34). Hence, our findings suggest that

failure to effectively manage physical symptom distress during treatment increases women's risk for persistent psychological distress.

Optimistic outlook also differentiated distress trajectories. Women with chronic distress reported a less optimistic outlook than did women in the resilient group. Perhaps, holding negative future expectations prompts adoption of ineffective coping strategies in the face of breast cancer resulting in a negative psychological response to the impacts of breast cancer (35,36).

Compared to women in the resilient group, women in the recovered and chronic distress groups experienced greater difficulties in making decisions for breast cancer surgery. These women experienced more uncertainty about their treatment choice. How this might lead to more distress is as yet unclear. One possibility is that uncertainty raises the expectation of problems and that this sensitizes women to difficulties thereby precipitating greater negative reaction to the normal demands of rehabilitation. Interestingly, women in the delayed-recovery group did not experience more TDM difficulties, but reported greater dissatisfaction with the initial medical consultation, experiencing relatively low distress immediately post-surgery, followed by elevated distress at 1-month and 4-monts post-surgery, which gradually declined by 8-months post-surgery. It is possible such women had less clear understanding of recovery, and hence unrealistic expectations of progress, which if slower than anticipated, could lead to later distress which eventually resolves once women restore their lives.

While we assessed psychological distress at the initial stages of breast cancer treatment, we could not assess distress at the pre-diagnostic and diagnostic stages. Such information would allow us to examine how pre-diagnostic psychological functioning

affects the distress pattern over the illness trajectory Also, we only followed women up to 8-months post-surgery, so how distress patterns continue to unfold over a longer period is unknown. We are currently conducting a 6-years follow-up assessment on this cohort.

Women who did not show a resilient trajectory seemed to have difficulties of some kind surrounding the early consultation period, or in the clinical encounter. This points to the need to ensure that optimal communications and decision-making support are in place early in the post-diagnostic period. Women in the chronic distress group need to be identified early and offered support to assist in managing their distress. A role for distress screening is apparent.

In summary, we have demonstrated that most women were resilient to psychological distress over the first 8-months following breast cancer surgery. These women were optimists and had better early post-operative treatment outcomes including less physical symptom distress, greater satisfaction with medical consultation, and fewer TDM difficulties. Pre-operative interventions helping women to establish a realistic expectation of treatment outcome may minimize dissatisfaction with treatment outcome (5,6); post-operative rehabilitation should focus on symptom management.

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Table1. Characteristics of study participants (N=285 women)

Characteristics	**No. of patients (%)**	**Comparison with general population, %**	**Δ observed (sample) and Expected (population)**
Demographics			
Age (yrs) mean ± SD	50.6 ± 10.1		
Martial status			
Single	24 (11.9)	30.5	0.41
Married/cohabiting	209 (73.3)	55.3	
Divorced/separated/widowed	42 (14.8)	14.3	
Education level			
No formal education	23 (8.1)	8	0.41
Primary (up to 6 years formal education)	96 (33.7)	19	
Secondary (Completed high school)	132 (46.3)	50.5	
Tertiary (college/university)	34 (11.9)	22.6	
Total monthly household income (HK$)*			
<$10,000	97 (34)	27.9	0.24
$10,001-20,000	95 (33.3)	27.7	
$20,001-30,000	42 (14.7)	17.4	
>$30,0001	51 (17.9)	26.9	
Age of children			
< 18 years	68 (27,2)		
≥ 18 years	182 (72.8)		
Occupation			
Full-time occupation	106 (37.2)	51.6	1.06
Part-time occupation	17 (6.0)		
Retired	46 (16.1)	14.8	
Housewife	76 (26.7)	20.8	
Unemployed before diagnosis	19 (6.7)	1.6	
Unemployed after diagnosis	21 (7.4)		
Family history of breast carcinoma			
Yes	29 (10.2)		
No	256 (89.8)		
Medical information			
Mean (± SD) days since breast carcinoma diagnosis	37.9 (54.5)		
Mean (± SD) days since surgery	2.38 (1.6)		
Disease Stage			
0	38 (13.3)		

I	78 (27.4)
II	136 (47.7)
III	18(6.3)
IV	2 (.7)
Missing	13 (4.6)
Surgery type	
BCT	61 (21.4)
MRM	207 (72.6)
MRM plus reconstruction	17 (6.0)
Current adjuvant therapy (8-months post-surgery)	
Chemotherapy	13 (4.6)
Radiation therapy	76(2.1)
Hormonal therapy	159 (87.4)

SD: Standard deviation; HK$: Hong Kong dollars *1 US$=7.8 HK$; MRM: mastectomy; BCT: breast-conserving treatment

Table 2.

Fit Indices for One- to Five-Class Growth Mixture Models (Unconditional)

	Growth Mixture Model				
Fit Indices	1 Class	2 Classes	3 Classes	4 Classes	5 Classes
AIC	7472.59	7441.74	7401.88	7374.36	7358.28
BIC	7491.16	7475.17	7450.16	7437.49	7436.27
SSBIC	7475.31	7446.62	7408.93	7383.58	7369.67
Entropy	--	.74	.75	.79	.80
LRT *p* value	--	.39	.02	.14	.18
BLRT *p* value	--	<.001	<.001	<.001	<.001

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; SSBIC = sample size adjusted Bayesian information criterion; LRT = Lo-Mendell-Rubin test; BLRT = bootstrap likelihood ratio test.

Table 3 *Growth Factor Parameter Estimates for 4-Class Conditional Model*

	Intercept	Slope	Quadratic
	Mean (SE)	Mean (SE)	Mean (SE)
Recovered	16.98 (1.84)***	-7.34 (1.73)***	1.35 (0.45)**
Chronic distress	16.38 (1.62)***	0.91 (1.38)	-0.13 (0.36)
Resilient	8.89 (0.54)***	-0.57 (0.52)	0.09 (0.16)
Delayed-recovered	7.93 (1.32)***	11.48 (4.30)**	-3.91 (1.59)*

Note. Est. = Estimate. CI = confidence interval. ** = $p < .01$; *** = $p < .001$ (two-tailed)

Figure 1

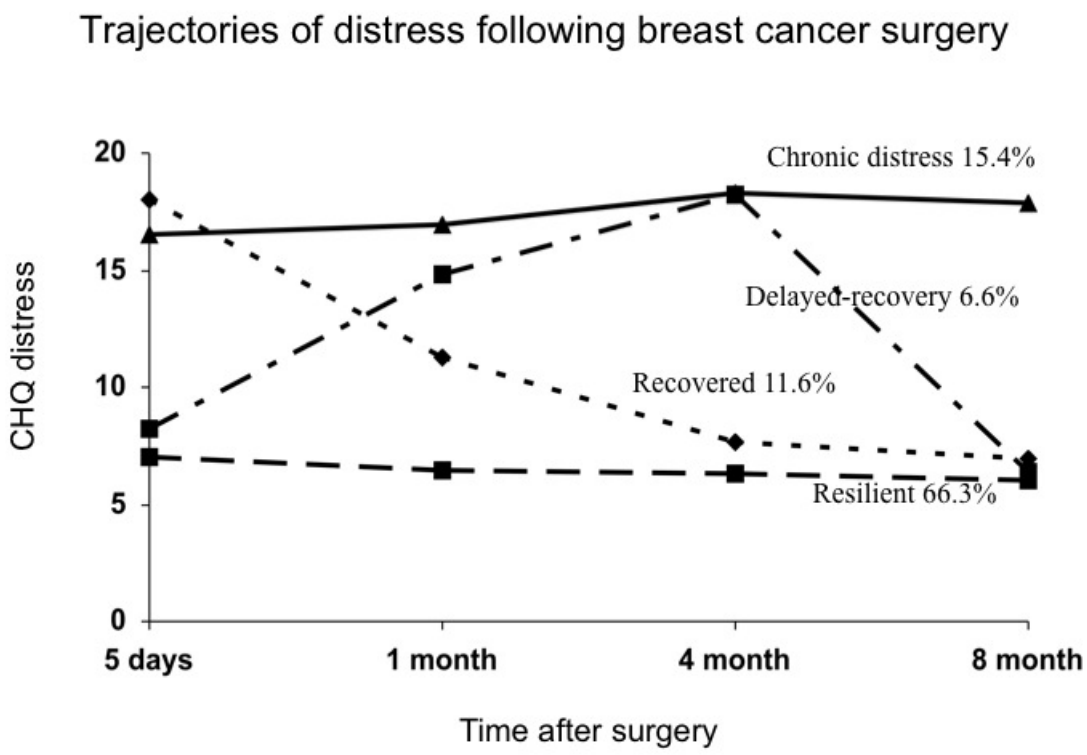
Trajectories of distress following breast cancer surgery
CHQ distress
20
15
10
5
0
5 days
1 month
4 month
8 month
Time after surgery
Chronic distress 15.4%
Delayed-recovery 6.6%
Recovered 11.6%
Resilient 66.3%

Table 4. Multinomial logistic regression of predictors on psychological distress trajectories (Resilient group as referent)

Predictors	Odds ratio (95% CI)	SE	P value
"Recovered" group			
Optimism	.90 (.72 – 1.11)	.11	NS
Physical symptom distress	1.22 (1.13 – 1.33)	.04	<..001
TDM difficulties	1.44 (1.27 – 1.64)	.07	<.001
Satisfaction with medical consultation	.98 (.87 – 1.10)	.06	NS
"Chronic distress" group			
Optimism	.62 (.51 - .77)	.11	<.001
Physical symptom distress	1.28 (1.18 – 1.34)	.04	<.001
TDM difficulties	1.45 (1.28 – 1.65)	.07	<.001
Satisfaction with medical consultation	1.03 (.91-1.17)	.06	NS
"Delayed-recovery" group			
Optimism	.90 (.71 – 1.14)	.12	NS
Physical symptom distress	1.23 (1.13 – 1.34)	.04	<.001
TDM difficulties	.98 (.85 – 1.15)	.08	NS
Satisfaction with medical consultation	.77 (.66-.89)	.07	<.001