

The experience of persistent pain and quality of life among women following treatment for breast cancer: an attachment perspective

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Abstract

Objectives: The aims of this study were to investigate associations between attachment and the presence of persistent pain in women following treatment for breast cancer and to investigate the relationship between attachment, pain and quality of life (QOL) in women with persistent pain.

Methods: Women (N=335) previously diagnosed with primary non-metastatic breast cancer completed an online survey with measures of attachment, pain, QOL, demographics, and medical history. Variables were compared between women with (n=128) and without (n=207) persistent pain. For those reporting pain, regression analyses were conducted to investigate relationships between attachment, pain and QOL.

Results: Higher attachment anxiety, but not attachment avoidance, was related to the presence of persistent pain. Among women with persistent pain, associations between attachment anxiety and avoidance and greater pain intensity were lost when pain catastrophizing was considered in analysis. Significant associations between attachment and diminished QOL and perceived effectiveness of pain management were identified in multivariate analysis.

Conclusions: These findings extend the available literature regarding associations between pain and attachment insecurity. In women with pain after breast cancer treatment, attachment anxiety and avoidance were associated with negative pain and QOL outcomes. Further attention regarding the use of attachment-informed approaches in supporting women following breast cancer treatment is indicated.

Keywords: Cancer, Oncology, Adult attachment, Persistent pain, Quality of life

Background

Breast cancer is the most common cancer amongst women globally.¹ Despite increased survival rates,¹ many women experience treatment side-effects, including persistent pain^{2,3} (i.e. pain lasting for at least three months⁴), and a diminished quality of life (QOL) many years post-diagnosis.⁵ Psychosocial factors, such as attachment patterns and pain catastrophizing have been extensively linked with the presence of persistent pain and diminished QOL in individuals with cancer.⁶⁻¹¹ Many women with persistent pain following breast cancer treatment report poor pain management¹² and a lack of support from healthcare providers⁵ or significant others.¹³ Attachment patterns may be important to consider in this population to help guide and optimise management.

Attachment patterns are internalized expectations of self and others developed from birth as individuals learn to utilize specific behaviours to optimize feelings of security.¹⁴ Attachment patterns can be conceptualised as levels of *attachment anxiety* and *avoidance*,¹⁵ with high levels of either or both indicating *attachment insecurity*. Individuals with higher *attachment anxiety* perceive themselves as unworthy of care and have difficulty coping with distress, while individuals with higher *attachment avoidance* consider others as unavailable to provide support and value their independence.¹⁶

Although literature is somewhat conflicting,¹⁷⁻¹⁹ individuals with higher *attachment insecurity* are thought to be more likely to experience persistent pain.²⁰ Individuals with higher *attachment avoidance* use 'deactivating' coping strategies which involve lack of acknowledgment of distress, downplaying potential threats²¹ (including suppressing thoughts,²² ignoring¹⁹ or concealing pain²²), and decreased healthcare utilization.²³ Individuals with higher *attachment anxiety* tend to be hypervigilant towards stressors,²¹ and have negative thoughts and feelings about pain (i.e. pain-catastrophizing).^{18,19,24} They have

been found to seek excessive support from others,²¹ including healthcare providers,^{23,24} and may exaggerate pain-related behaviours, possibly to acquire attention and support.¹⁸

Attachment insecurity has been associated with diminished QOL in various populations.^{6,7,9,25} Studies specific to women with breast cancer have shown associations between *attachment avoidance* and diminished QOL.^{6,7} The relationship between *attachment anxiety* and QOL in breast cancer is less clear, with an association identified between *attachment anxiety* and diminished QOL in one study,⁷ and enhanced physical well-being in another.⁶ Limitations of this previous work are sub-populations studied,⁶ the utilization of QOL measures non-specific to breast cancer,⁶ and lack of consideration of the experience of pain.^{6,7}

Despite the high number of women who experience persistent pain^{2,3} and diminished QOL⁵ following breast cancer treatment, associations between attachment, persistent pain, and QOL have not been investigated. Enhanced understanding of these relationships may inform treatment approaches to improve pain management and QOL in this population. The aims of this study were to investigate associations between attachment and the presence of persistent pain in women following breast cancer treatment, and to determine associations between attachment and pain intensity, overall pain management and QOL in those with persistent pain. The latter analysis was only performed in the subsample of women with persistent pain as pain variables were only available in this group and the aim was to extend the current literature regarding attachment and pain to women following breast cancer treatment.

Methods

Study design and participants

Women who were at least 18 years old and previously diagnosed with primary non-metastatic breast cancer were recruited through Breast Cancer Network Australia's Review & Survey Group for this cross-sectional study. An email about the study was sent to 2004 group members. Participants provided informed consent. Participants who did not provide consent or complete responses to attachment and pain-related questions were excluded from the study. The study was approved by an institutional Human Research Ethics Committee (#2014000313).

Measures

An online survey was used to collect participant demographics, breast cancer medical history (diagnosis, past and current treatment), and information on attachment, pain, and QOL.

Attachment was measured using the Experiences in Close Relationships Scale (ECR-M16),²⁶ a brief dimensional measure²⁷ which has been validated with individuals with cancer.⁷ The tool uses two 8-item subscales to *attachment avoidance* and *anxiety* in their relationships with close others. Each item was rated on a 7-point Likert scale (1='disagree' to 7='agree'), and the average score was calculated. Higher scores indicate greater attachment insecurity. High internal consistency and test-retest reliability have been demonstrated.²⁶ Cronbach's alpha in our sample was 0.82 and 0.91 for attachment avoidance and anxiety respectively.

Presence of persistent pain associated with breast cancer treatment was determined through a dichotomous (yes/no) question that asked, "Do you currently experience persistent pain (pain present for 3 months, or pain coming and going for at least 3 months) that you

believe is related to your breast cancer treatment?”. Participants indicated their *location(s) of pain* by selecting from the following options: “breast, chest or underarm”, “arm(s)”, “leg(s)” and “head, neck and/or back”. Women were asked about pain in all body areas as pain in multiple and remote body regions occur following breast cancer treatment.^{28,29}

Worst and average *pain intensity* in the past month was measured using an 11-point numeric rating scale (NRS) (0=‘no pain’; 10=‘worst pain imaginable’). The NRS has proven validity and high responsiveness when used to measure pain intensity in adult populations.^{30,31} The NRS was also used to rate the *overall effectiveness of pain management* (0=‘not at all’; 10=‘completely effective’).

Pain catastrophizing was measured using the Pain Catastrophizing Scale (PCS).³² Thirteen items are rated on a scale anchored with ‘not at all’ (0) and ‘all the time’ (4). An overall score was calculated. Higher scores indicated greater catastrophizing. The PCS has well-established construct and concurrent validity.³³ Good internal consistency was demonstrated in the present sample (Cronbach’s alpha=0.94).

QOL was measured using the 37-item Functional Assessment of Cancer Therapy-Breast (FACT-B) (Version 4).³⁴ There are four subscales: physical, social, emotional and functional well-being, and a Breast Cancer Subscale (BCS). Participants rated each item on a scale from 0 (‘not at all’) to 4 (‘very much’). Scores were summed, with higher scores indicating higher QOL. FACT-B is a well-validated tool with high internal consistency,³⁴ which was demonstrated in the present sample for all scales (Cronbach’s alpha=0.81-0.89), except for BCS (Cronbach’s alpha=0.43). These observations are consistent with previous research.³⁴ As recommended³⁴ the BCS subscale was retained to include a measure of breast cancer-specific concerns.

Statistical Analyses

All statistical analyses, including tests for outliers and normality, were conducted using SPSS V25. With the exception of some FACT-B variables, all variables met requirements for parametric testing. As a relatively large number of analyses were conducted, statistical significance was set at $p \leq 0.01$; however, because this study is exploratory in nature, results where $p \leq 0.05$ are also reported. In keeping with published recommendations, missing FACT-B item ratings were derived based on the mean of answered items if more than half the items in the subscale were answered.³⁵ In all other analyses, missing variables were treated as missing, resulting in decreased numbers in some analyses. Independent t-tests and chi-square tests were used to compare women with and without persistent pain on continuous and categorical variables, respectively. Because pain variables were available only for women reporting persistent pain, analyses including these variables were restricted to this subsample.

Pearson correlation coefficients were calculated for associations between attachment and all continuous, normally-distributed variables for women with pain. In the case of the non-normal FACT-B scores, Spearman's rank correlation coefficients were calculated instead.³⁶ In preparation for regression analyses, potential control variables were identified based on previous associations with pain and/or QOL in the literature: *age*,^{17,37} and *pain catastrophizing*.³⁸ These variables were included in regression analyses to investigate the relationships between attachment and pain (intensity/management) and QOL in women with persistent pain. Multiple linear regression analyses were used to investigate the normally-distributed pain variables, while binary logistic regression analyses were used to investigate the non-normal FACT-B scores. For each QOL domain, binary variables (below or above mean) were derived for use in these analyses. Residual variables were developed following regression analyses and tested for multi-collinearity. All VIF values were checked to ensure they were between 1-10.

Results

Comparing pain and non-pain samples

Of the 2004 individuals emailed about the study, 367 women (18.3%) entered the online survey. The 335 women (91.3%) who completed attachment and pain measures were included in the study. Study participants were similar in age (mean (SD): 58.2 (9.6) years) and time since breast cancer diagnosis (mean (SD): 5.0 (3.9) years) to overall demographics of the Breast Cancer Network Australia's Review & Survey Group members of which 62% were aged 50-69 years, and 64% were 3-10 years post-breast cancer diagnosis. There were no significant differences in demographic variables between those who completed attachment and pain measures and non-completers.

Participant demographic details are presented in Table 1. Persistent pain was reported by 128 women (38.2%; Table 1). Among this subgroup, women with *persistent pain* reported significantly higher levels of *attachment anxiety* but not *attachment avoidance* (Table 1). The presence of *persistent pain* was also associated with greater *pain catastrophizing* and lower FACT-B scores across all *QOL* domains (Table 1).

<Insert Table 1 here>

Preliminary analyses for women with pain

As seen in Table 2, both *attachment anxiety* and *avoidance* were positively correlated with perceptions of *average* and *worst pain intensity* over the last month and *pain catastrophizing*, and negatively associated with perceived *effectiveness of pain management*. *Attachment anxiety* was negatively correlated with all *QOL* domains. The same results were obtained for *attachment avoidance*, with the exception of the *BCS*.

<Insert Table 2 here>

Attachment, pain, and QOL for women with pain

Regression analyses revealed that correlations between both *attachment anxiety* and *avoidance* and *average* and *worst pain intensity* were lost when controlling for *age* and *pain catastrophizing*, with *catastrophizing* accounting for the significant regression result (see Table 3). As results pertaining to *average* and *worst pain intensity* were similar, only results related to *average pain intensity* are reported in the Table. With *age* and *pain catastrophizing* controlled for, *attachment avoidance* was still negatively associated with perceived *effectiveness of pain management* in women with persistent pain, although this link was lost for *attachment anxiety* (Table 3). When controlling for *age*, *pain catastrophizing* and *pain intensity*, links between attachment and some QOL variables were lost; however, there are a number of notable exceptions. *Attachment anxiety* and *avoidance* both remained the most significant predictor of *overall and social QOL* domains in women with persistent pain (see Table 4). *Attachment anxiety* also remained the most significant predictor of *functional well-being* and contributed significantly ($p < 0.05$) to *emotional well-being* (Table 4).

<Insert Table 3 here>

<Insert Table 4 here>

Discussion

This is the first study to investigate associations between attachment and pain, and between attachment and QOL in the context of persistent pain, in women following breast cancer treatment. Findings highlight associations between specific attachment patterns and pain-related variables in this population. Consistent with data involving other populations,²⁰ *attachment anxiety* was linked with the *presence of pain*; that is, women who reported persistent pain following breast cancer treatment were more likely to report higher levels of attachment anxiety. This is consistent with literature suggesting higher rates of attachment insecurity in adults with persistent pain. In contrast, higher *attachment avoidance* was not associated with persistent pain. This does not necessarily mean that these women did not experience more pain. Women with higher *attachment avoidance* may minimize, fail to recognize, or attempt to conceal pain experienced.^{19,22} There is evidence that women previously diagnosed with breast cancer who have higher attachment avoidance restrict expression of negative emotions.⁶ Further investigation of attachment avoidance in the context of persistent pain following breast cancer treatment is warranted to better support women with avoidant attachment patterns.

Among women with pain, higher *attachment anxiety* and *avoidance* were both associated with greater *pain intensity*, although this was lost when controlling for pain catastrophizing. This suggests that women identifying as more insecurely attached were more likely to engage in catastrophizing, which was then related to more intense pain and greater adverse effects of this pain. Women with higher levels of both *attachment patterns* also reported lower *effectiveness of pain management*, and this was retained for higher *attachment avoidance* even when controlling for pain intensity.

Despite quite similar results for *attachment anxiety* and *avoidance*, previous research suggests that mechanisms for these associations may differ. For example, women with higher

attachment avoidance may not seek sufficient treatment or support for their pain;²³ whereas, women with higher attachment anxiety may not perceive support from healthcare providers as helpful in reducing their pain.⁸ Future studies on attachment-related health behaviours demonstrated by women following treatment for breast cancer may provide valuable insights into these different mechanisms and help customise management. A summary of these possible mechanisms is provided in a recent publication.³⁹

The present study is the first to investigate attachment and *QOL* subscales for women with persistent pain following breast cancer. Higher *attachment anxiety* was linked with diminished *QOL* in most subscales, even after controlling for covariates. This is in contrast to previous research that found *enhanced* physical well-being in Portuguese women with breast cancer with higher attachment anxiety when pain was not considered.⁶ While it is tempting to suggest that pain may affect the relationship between attachment anxiety and physical well-being following breast cancer treatment, this inconsistency suggests the need for further research.

Women with higher *attachment avoidance* reported diminished *overall QOL* and *social well-being* after considering covariates. Since *social well-being* is based on support from family and friends, our findings are consistent with reports that individuals with higher attachment avoidance perceive support from others as less helpful.⁸

Clinical implications

Since women previously treated for breast cancer with higher attachment insecurity perceive greater pain intensity and report lower *QOL*, it may be important for clinicians to identify attachment patterns and provide individualized support to meet unique attachment needs for those with higher attachment insecurity. For instance, women with higher *attachment anxiety* may benefit from a more holistic approach consisting of positive

relationships with, and consistent support from, healthcare professionals to address challenges they face. Women with higher *attachment avoidance* may benefit from education on self-management strategies that facilitate independence. These propositions require empirical attention to support the development of attachment-informed approaches to minimize development of pain, manage persistent pain, and improve QOL in women following breast cancer.

Study limitations

A number of limitations must be considered. This study was retrospective and cross-sectional; thus, it remains inconclusive whether attachment insecurity is a cause or consequence of pain. This complex interrelationship requires further investigation using longitudinal studies. Second, while the sample size was relatively large, it consisted mostly of Caucasian women who were married or in a de facto relationship, which limits generalizability of findings. Third, the use of self-report measures meant that the results were an indication of the perceptions of women following breast cancer treatment. Future studies might consider alternative measures of QOL that do not rely solely on self-report. Fourth, the study sample was influenced by selection bias. Study participants were recruited through Breast Cancer Network Australia's Review & Survey Group. It is possible that attachment style may have influenced women's choice to be part of this group and to participate in this study. However, this would be expected to decrease the likelihood of identifying significant findings. Fifth, possible underlying causes of participants' pain were not investigated in this study. As literature suggests that pain following breast cancer treatment is often multifactorial and unknown,²⁹ an accurate cause would be difficult, if not impossible, to report. Finally, although the FACT-B BCS was utilized based on the recommendations in the literature,³⁴ the low internal consistency warrants caution in interpreting related findings.

Conclusions

Results of this cross-sectional study indicate associations between attachment insecurity and the presence of persistent pain, increased pain intensity, and diminished QOL in women following treatment for breast cancer. These findings suggest the potential value of adopting an attachment-informed approach when managing persistent pain in this population. This may help to address the diminished QOL experienced by an increasing number of women following treatment for breast cancer.

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Declarations

The authors declare no conflict of interest or funding.

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Table 1. Descriptive details and results of preliminary analyses comparing women with and without pain

Characteristic	Total N=335		Women without pain n=207		Women with pain n=128		Test statistic
	n	%	n	%	n	%	
>1 breast cancer diagnoses							0.14
Yes	34	10.2	20	9.7	14	10.9	
No	301	89.9	187	90.3	114	89.1	
Past treatment							
Lumpectomy	210	62.7	129	62.3	81	63.3	0.03
Mastectomy	168	50.2	101	48.8	67	52.3	0.40
Axillary/sentinel node removal	263	78.5	154	74.4	109	85.2	5.43*
Breast reconstruction	87	26.0	46	22.2	41	32.0	3.96*
Radiation	230	68.7	138	66.7	92	71.9	1.00
Chemotherapy	195	58.2	114	55.1	81	63.4	2.19
Hormone Therapy	246	73.4	154	74.4	92	71.9	0.26
Targeted Therapy	46	13.7	25	12.1	21	16.4	1.25
Currently receiving treatment							0.58
Yes	175	52.2	105	50.7	70	54.7	
No	160	47.8	102	49.3	58	45.3	
Current treatment							
Radiation	7	2.1	5	2.42	2	1.6	‡
Chemotherapy	5	1.5	3	1.45	2	1.6	‡
Hormone Therapy (e.g. Tamoxifen, Anastrozole)	158	47.2	96	46.38	62	48.4	0.14
Targeted Therapy (e.g. Trastuzumab, Zoledronic acid)	8	2.4	6	2.90	2	1.6	‡
Unspecified	3	0.9	0	0.00	3	2.3	‡
Pain location [†]							
Breast, chest and/or underarm					111	86.7	
Arm(s)					74	57.8	
Leg(s)					38	29.7	
Head, neck and/or back					33	25.8	

	Mean	SD	Mean	SD	Mean	SD	
Marital Status							1.86
Married/de facto	257	76.72	157	76.2	100	78.7	
Divorced, widowed or separated	52	15.52	36	17.5	16	12.6	
Never married	24	7.16	13	6.3	11	8.7	
Missing	2	0.60	1	0.5	1	0.8	
	Mean	SD	Mean	SD	Mean	SD	
Age (years)	58.2	9.6	58.6	10.0	57.5	8.9	1.13
Body Mass Index (kg/m ²)	27.3	5.8	26.8	6.1	28.2	5.1	-2.26*
Years breast cancer since diagnosis	5.0	3.9	5.4	4.0	4.7	3.8	1.63
Attachment Anxiety	2.7	1.4	2.5	1.3	2.9	1.5	-2.66**
Attachment Avoidance	3.0	1.2	3.0	1.2	3.0	1.2	-0.64
Pain Catastrophizing	9.7	9.4	8.0	8.6	12.3	10.0	-4.05***
Overall well-being	105.3	18.3	112.1	14.4	94.5	18.7	9.08***
Physical	22.5	4.9	24.3	3.3	19.6	7.1	8.72***
Social	19.4	6.5	20.6	5.8	17.5	3.6	4.14***
Emotional	17.1	3.4	17.8	3.0	16.0	5.6	4.68***
Functional	20.1	5.5	21.7	4.8	17.6	4.6	6.74***
Breast Cancer Subscale	26.7	4.9	28.3	4.4	24.2	7.1	8.12***
Perceptions of [†]							
Worst pain intensity					5.0	2.2	
Average pain intensity					3.8	1.8	
Effectiveness of pain management					4.7	2.5	

SD=Standard deviation

*p≤0.05, **p≤0.01, ***p≤0.001

[†]Data available only for women with pain, n=128

[‡]Number of women in each category did not fulfil requirement for Chi-square test

Table 2. Correlations between variables for women with pain (N=128)

Variables	1. Age	2	3	4	5	6	7	8	9
2. Body Mass Index	-0.04	-	-	-	-	-	-	-	-
3. Years since diagnosis	0.33***	0.07	-	-	-	-	-	-	-
4. Average pain intensity#	0.03	0.14	0.06	-	-	-	-	-	-
5. Worst pain intensity#	-0.06	0.13	-0.09	0.75***	-	-	-	-	-
6. Effectiveness of pain man	0.09	-0.09	-0.12	-0.23**	-0.04	-	-	-	-
7. Attachment Anxiety	-0.06	0.09	0.08	0.22*	0.20*	-0.17*	-	-	-
8. Attachment Avoidance	-0.14	0.12	0.04	0.26**	0.22*	-0.25**	0.50***	-	-
9. Pain Catastrophizing	-0.07	0.18	0.07	0.42***	0.44***	-0.16	0.47***	0.38***	-
10. Overall Well-being	0.14	-0.06	-0.06	-0.43***	-0.41***	0.31***	-0.62***	-0.47***	-0.63***
11. Physical Well-being	0.19*	-0.09	0.13	-0.45***	-0.53***	0.21*	-0.28**	-0.24**	-0.50***
12. Social Well-being	0.06	-0.07	-0.17	-0.19*	-0.11	0.21*	-0.66***	-0.59***	-0.39***
13. Emotional Well-being	0.21*	0.03	0.10	-0.18*	-0.17*	0.16	-0.43***	-0.26**	-0.48***
14. Functional Well-being	0.07	<-0.01	-0.06	-0.43***	-0.34***	0.23**	-0.56***	-0.40***	-0.54***
15. Breast Cancer Subscale	0.06	-0.13	-0.03	-0.31***	-0.37***	0.24**	-0.20*	-0.12	-0.37***

*p<0.05, **p<0.01, ***p<0.001; # over the past month

Pearson's correlations used for all analyses except for those including wellbeing, for which Spearman's correlations were used.

Table 3. Output from hierarchical multiple regression analyses for associations between attachment and perceptions of pain in women with pain (N=128)

Model	Average pain intensity (past month)			Effectiveness of pain management		
	B	SE	95%CI	B	SE	95%CI
<i>Step 1</i>						
Attachment anxiety	0.26***	0.10	0.06,0.47	-0.29*	0.15	-0.57,0.01
F(df)	6.38** (1,126)			3.86* (1,124)		
R ²	0.05			0.03		
<i>Step 2</i>						
Attachment anxiety	0.33	0.11	-0.19,0.25	-0.19	0.15	-0.52,0.13
Age	0.01	0.02	-0.02,0.04	0.03	0.03	-0.02,0.07
Pain catastrophizing	0.07***	0.02	0.04-0.11	-0.004	0.03	-0.06,0.05
Average pain intensity				-0.28*	0.14	-0.55,-0.01
F(df)	9.18*** (3,124)			2.47*(4,121)		
R ²	0.18			0.08		
<i>Step 1</i>						
Attachment avoidance	0.39**	0.13	0.13,0.64	-0.52**	0.18	-0.88,-0.16
F(df)	9.11** (1,126)			8.08** (1,124)		
R ²	0.07			0.06		
<i>Step 2</i>						
Attachment avoidance	0.19	.13	-0.07,0.45	-0.39*	0.20	-0.79,0.01
Age	0.01	0.02	-0.02,0.05	0.02	0.03	-0.03,0.07
Pain catastrophizing	0.07***	0.02	0.04,0.10	-0.003	0.03	-0.05,0.05
Average Pain intensity				-0.24	0.14	-0.51,0.03
F(df)	9.96*** (3,124)			3.12* (4,121)		
R ²	0.19			0.09		

df=degrees of freedom; CI=confidence intervals; SE=standard error. *p≤0.05, **p≤0.01, ***p≤0.001

Table 4. Output from logistic regression analyses for associations between attachment and QOL in women with pain (N=128)

Model	Overall Well-being		Physical Well-being		Social Well-being	
	OR	95%CI	OR	95%CI	OR	95%CI
Attachment anxiety	0.47***	0.31,0.72	0.85	0.69,1.36	0.43***	0.30,0.61
Age	1.05*	1.00,1.11	1.04	0.99,1.09	1.01	0.97,1.06
Average pain intensity	0.67**	0.49,0.92	0.72*	0.54,0.95	1.02	0.79,1.32
Pain catastrophizing	0.93*	0.87,1.00	0.88***	0.82,0.95	0.97	0.92,1.02
Chi-square(df)	46.65***(4)		36.57***(4)		43.36***(4)	
Nagelkerke R ²	0.43		0.34		0.38	
Correct classification	80.5%		71.1%		73.4%	
Attachment avoidance	0.55**	0.35,0.87	1.07	0.72,1.59	0.39***	0.25,0.60
Age	1.04	0.99,1.10	1.04	0.99,1.10	1.00	0.96,1.05
Average pain intensity	0.70*	0.52,0.94	0.71*	0.53,0.94	1.05	0.82,1.35
Pain catastrophizing	0.91**	0.85,0.97	0.88***	0.82,0.94	0.95*	0.90,1.00
Chi-square(df)	39.15***(4)		36.65***(4)		38.67***(4)	
Nagelkerke R ²	0.37		0.34		0.35	
Correct classification	76.6%		72.7%		71.1%	
Model	Emotional Well-being		Functional Well-being		Breast Cancer Subscale	
	OR	95%CI	OR	95%CI	OR	95%CI
Attachment anxiety	0.70*	0.52,0.95	0.51**	0.34,0.76	0.96	0.69,1.33
Age	1.04	1.00,1.09	1.02	0.97,1.07	1.01	0.97,1.06
Average pain intensity	1.10	0.86,1.41	0.74*	0.55,1.00	0.74*	0.56,0.97
Pain catastrophizing	0.93**	0.88,0.98	0.95	0.89,1.01	0.92**	0.87,0.98
Chi-square(df)	26.70***(4)		38.15***(4)		22.17***(4)	
Nagelkerke R ²	0.25		0.36		0.22	
Correct classification	66.4%		78.9%		70.3%	
Attachment avoidance	0.96	0.68,1.37	0.70	0.47,1.05	0.94	0.64,1.37
Age	1.04	1.00,1.09	1.02	0.97,1.07	1.01	0.96,1.06
Average pain intensity	1.08	0.85,1.38	0.75*	0.57,0.99	0.74*	0.56,0.97

Pain catastrophizing	0.91**	0.87,0.96	0.92**	0.86,0.98	0.92**	0.87,0.98
Chi-square(df)	21.41***(4)		27.99***(4)		22.23***(4)	
Nagelkerke R ²	0.21		0.28		0.22	
Correct classification	64.1%		72.7%		72.7%	

CI=confidence interval; OR=odds ratio

*p<0.05, **p<0.01, ***p<0.001