Archives of Psychiatry and Psychotherapy, 2008; 4 : 57–62

Women with breast cancer: relationships between social factors involving anxiety and depression

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Summary

Aim. The impact of social factors on the anxiety and depression of breast cancer patients has yet to be thoroughly studied. The present study on social factors influencing patients' anxiety and depression enables the identification of the most vulnerable patients who are in need of psychosocial assistance.
Subjects and methods. The present study included 117 female patients with cT1-T2/N0-N1/M0 stages of breast cancer, treated at the Breast Surgery and Oncology Department of a community hospital. Prior to surgery, the study participants completed the Hospital Anxiety and Depression Scale (HADS). Six to seven subsequent to surgery, they completed the HADS and a form about their social status.
Results. The depression and anxiety scores of the employed females significantly decreased after surgery, while those of retired or unemployed females remained unchanged. The depression and anxiety scores in married females decreased significantly, reaching moderate ES on HADS-A subscale, while in the group of single, widowed or divorced females, there was no change in depression and a small change in anxiety scores. One week after the surgery, mean depression scores in married females were lower than in single, widowed or divorced females, a difference was due to a decrease in depression level in those who were married. A similar effect was observed, when comparing employed females to those who were unemployed and retired. In multivariate analysis only employment status and marital status were independently associated with depression as assessed by HADS one week post surgery.
Conclusions. Employment and marital status have a significant impact on the anxiety and depression in those suffering from breast cancer, particularly during the early post-surgical period.

breast cancer / anxiety / depression

INTRODUCTION

The diagnosis of breast cancer posits an enormous shock to its victims. The stress they experience manifests itself in a wide range of symptoms, including fluster, fear of death, compunction, insomnia, appetite changes, and anxiety among others. Usually this state lasts for a week, followed by a gradual adjustment to the diagnosis. However, anxiety and depression in women with breast cancer may last longer, depending on certain variables. According to research data, within one year of being diagnosed, the incidence of anxiety and depression decreases, however, even after one year, 20-40 % of women demonstrate clinically significant anxiety and depression. Success in adaptation to a diagnosis of cancer depends on the support from a partner, family members and friends [1]. Maly et al., who investigated 222 breast cancer patients aged less than 55 years found that support from part-

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ners and adult children lowered anxiety and depression levels [2]. Marital status was also found to exert the most considerable influence on the quality of life of breast cancer victims in comparison with the other social and demographic factors [3].

Four months post breast surgery, the psychological adaptation of employed women was worse than those who were unemployed, however, this difference decreased 13 months post surgery [4].

The impact of different social factors on anxiety and depression in breast cancer patients have not yet been thoroughly studied. This research focuses on social factors that may influence the development of anxiety and depression in breast cancer patients in order to identify the most vulnerable patients in need of psychosocial assistance.

SUBJECTS AND METHODS

An open prospective non-randomized study of patients with early stages of breast cancer was conducted in 2004–2005 at the Institute of Oncology, Vilnius University, Lithuania. The study was approved by the Lithuanian Bioethics Committee on December 10, 2003. The study population included all women diagnosed with cT--T2/N0-N1/M0 stages of breast cancer who were treated at the Breast Surgery and Oncology Department during the study period.

A total number of 123 patients volunteered and signed the informed consent, 6 (4%) of these met at least one of the exclusion criteria. The following exclusion criteria were considered: no breast cancer, language problems, diagnosis of psychosis, major depressive episode, a manic episode, panic attacks, substance dependence or any other mental disorder that might interfere with the patients' conscious participation in the study or influence its results. Before presenting the questionnaires, the mental status of all the patients had been assessed during a psychiatric interview.

The women had completed the Hospital Anxiety and Depression Scale (HADS) prior to surgery. Six – seven days post surgery, the patients completed the HADS and a form about their social status. The data on the patients' diagnosis and age were taken from their hospital case-records.

The HADS is a 14-item scale designed for use in a medical setting [5]. The research confirmed (n=65648) the internal consistency of anxiety and depression subscales and a good factorial structure of the questionnaire, as well as the interrelation and homogeneity of the subscales [6]. Studies on cancer patients validated the factorial structure and internal consistency of the HADS and proved the scale to be a proper method for determining mood disorders in breast cancer patients [7, 8].

The Lithuanian version of the HADS is the most widely used measure of psychological distress in cancer patients in Lithuania. HADS depression subscale correlated well with clinically diagnosed depression (r=0.70) and the anxiety subscale with clinically diagnosed anxiety (r=0.74) [9].

The internal consistency reliability of the HAD subscales was tested in the research sample. The Cronbach alpha of the anxiety subscale yielded a value of 0.821, with the Cronbach alpha of the depression subscale yielding a value of 0.768.

The HADS anxiety and depression subscale scores are interpreted as follows: 0-7 normal, 8-10 borderline anxious/depressed and ≥11 probable case anxiety/depression. In our investigation, the cut-off for anxiety or depression was a score of 8.

T tests were conducted to test for difference in mean HAD scale scores pre and post treatment. To provide an estimate of magnitude of differences in mean scores of HAD scales, effect sizes (ES) were calculated. The ES were interpreted as proposed by J. Cohen, using 0.2, 0.5 and 0.8 as threshold values for small, moderate and large differences in means, respectively.

Binomial logistical regression analysis was used to determine which of the social factors were independently associated with depression and anxiety one week post surgery. Depression or anxiety were chosen as dependent variables, coded as 1, if a patient scored eight or more points on HADS depression or anxiety subscales, respectively. The independent variables representing social factors were categorized in the same way as shown in Table 2. To control for the possible effect of age and that of different treatment methods received, a categorical

variable "age group" (≤49, 50-59, 60-69, ≥70) and variables representing different treatment methods (mastectomy: yes/no, chemotherapy: yes/no, radiotherapy: yes/no) were created. Respective groups of variables were entered into the analysis in various blocks.

The level of statistical significance in all of the above mentioned analyses was set at $p<0.05$. SAS for Windows statistical package was used.

RESULTS

The mean age of the patients was 53.1 ± 10.6 years (range 32–78). Frequencies and percentages of anxiety and depression cases reported by HADS, according to patients' characteristics are shown in Tables 1 and 2.

One week post surgery, the anxiety and depression scores significantly decreased from baseline values, irrespective of educational level of the patients (Tab. 3 and 4). The largest change in anxiety scores, translating into moderate ES, was observed in women with university education.

The depression and anxiety scores with employed females significantly decreased after the operation, while those who were retired or unemployed remained unchanged.

The depression and anxiety scores in married females decreased significantly, reaching moderate ES on the HADS-A subscale, while in the group of single, widowed or divorced females showed no change in depression and a small change in the anxiety score (Tab. 3 and 4).

Table 1. Depression and anxiety according to HADS by age groups

	N	HADS-D ≥ 8		HADS-A ≥ 8	
		Time point 1 N (%)	Time point 2 N (%)	Time point 1 N (%)	Time point 2 N (%)
Age					
≤ 39	10	1 (10.0)	2 (20.0)	5 (50.0)	3 (30.0)
40-49	39	12 (30.8)	4 (10.3)	25 (64.1)	13 (33.3)
50-59	37	4 (10.8)	2 (5.4)	17 (45.9)	9 (24.3)
60-69	15	3 (20.0)	3 (20.0)	7 (46.7)	4 (26.7)
≥ 70	16	6 (37.5)	4 (25.0)	5 (31.3)	6 (37.5)

Table 2. Depression and anxiety according to HADS by patients' social characteristics

Groups by social factors (N=117)		n	HADS-D ≥ 8		HADS-A ≥ 8	
			Time point 1 N (%)	Time point 2 N (%)	Time point1 N (%)	Time point 2 N (%)
Education						
	Some/ completed secondary school	25	6 (24.0)	5 (20.0)	10 (40.0)	9 (36.0)
	Professional	31	10 (32.3)	4 (12.9)	18 (58.1)	16 (51.6)
	University	61	10 (16.4)	6 (9.8)	31 (50.8)	10 (16.4)
Employment status						
	Employed	77	15 (19.5)	8 (10.4)	43 (55.8)	22 (28.6)
	Retired	32	8 (25.0)	5 (15.6)	10 (31.3)	9 (28.1)
	Unemployed	8	3 (37.5)	2 (25.0)	6 (75.0)	4 (50.0)
Marital status						
	Married	70	15 (21.4)	4 (5.7)	40 (57.1)	20 (28.6)
	Single	11	2 (18.2)	2 (18.2)	6 (54.5)	3 (27.3)
	Widowed/divorced	36	9 (25.0)	9 (25.0)	13 (36.1)	12 (33.3)

Table 3. Change in mean HADS-D scores in patients' groups by social factors

Groups by social factors	Before surgery (m ± SD)	One week after surgery (m ± SD)	P	Effect size
Some/ completed secondary school/ professional education	5.1 ± 3.9	3.8 ± 3.5	0.003	0.35
University education	4.0 ± 3.2	3.2 ± 2.7	0.001	0.27
Retired/ unemployed	5.0 ± 3.9	4.5 ± 3.6	0.2	-
Employed	4.3 ± 3.4	2.9 ± 2.7	< 0.001	0.46
Single/ widowed/ divorced	4.9 ± 3,8	4.4 ± 3.5	0.19	-
Married	4.3 ± 3,5	2.8 ± 2.7	< 0.001	0.48

Table 4. Change in mean HADS-A scores in patients' groups by social factors

Groups by social factors	Before surgery (m ± SD)	One week after surgery (m ± SD)	P	Effect size
Some/ completed secondary school	7.9 ± 4.3	6.0 ± 3.7	**< 0.001**	0.47
University education	7.9 ± 3.8	5.5 ± 3.6	**< 0.001**	**0.65**
Retired/ unemployed	6.7 ± 3,8	5.5 ± 3.5	0.57	**-**
Employed	8.5 ± 4,6	5.9 ± 3.7	**< 0.001**	**0.68**
Single/ widowed/ divorced	7.2 ± 3.7	5.7 ± 3.5	**0.006**	0.42
Married	8.3 ± 4.2	5.7 ± 3.7	**< 0.001**	**0.66**

One week post surgery, mean depression scores in married females were lower than in those who were single, widowed or divorced (p=0.005, ES=0.51). The difference was due to a decrease in depression level in those who were reportedly married. Similar effect size was observed (p=0.01, ES=0.50) when comparing employed women to those who were unemployed and retired. The mean HADS-A scores were not significantly different across levels of employment and marital status at this time point.

The multivariate analysis (Tab. 5) yielded that only employment status and marital status were found to be independently associated with depression as assessed by HADS one week post surgery.

The chances of scoring ≥8 points on HAD depression subscale were 92% lower in retired

Table 5. Results of the logistic regression analysis

	Regression coefficient b	Standard error	Wald Chi-square	P	Odds ratio	95% C.I. for odds ratio
Employment status*						
retired	-2.49	1.25	3.98	0.046	0.08	(0.01–0.96)
unemployed	1.16	1.09	1.14	0.285	3.19	(0.38–26.76)
Marital status**						
single	1.40	1.05	1.80	0.179	4.07	(0.53–31.58)
widowed/ divorced	2.06	0.76	7.44	0.006	7.86	(1.79–34.63)
Age groups***						
≤ 49	-2.56	1.32	3.75	0.053	0.08	(0.01–1.03)
50-59	-4.55	1.63	7.83	0.005	0.01	(0.001–0.26)
60-69	-0.81	1.04	0.60	0.437	0.45	(0.06–3.43)
Constant	-1.43	0.54	7.07	0.008	0.24	

*Reference category: "employed"; **Reference category: "married"; ***Reference category: "≥ 70".

women than in those who were employed. The chances of depression in widowed and divorced females were almost eightfold in comparison with married females. Age was also significantly associated with depression, age group 50-59 having 99% lower chances of exceeding the cut-off for depression, compared to age group ≥70.

Social factors were not independently associated with HADS anxiety scores in multivariate analysis.

DISCUSSION

The most important outcome of this research is that the employment status (irrespective of age) had a significant impact on the emotional condition of breast cancer patients. Employed females felt greater anxiety prior to surgery than unemployed patients. It is possible that they worried about how the disease may affect their professional life or not being able to fulfil job requirements at their former places of employment. The impact of employment status on the patients' psychological adaptation has yet to be investigated.

More importantly, the probability of depression one week post surgery was lower in women aged 50–59 years than 70 and over. While previous studies [10, 11, 12, 13] suggest that older females with cancer manifest fewer and less severe psychosocial problems. With this study, the findings indicate that women aged 50-59 years might have greater adaptation abilities.

In this study, it was found that higher education positively influences levels of anxiety and (to a lesser degree) depression. This finding can, in part, be explained by the fact that the higher educational level correlates with better job opportunities and higher income. Findings of other researchers indicate that higher family income positively affects an overall quality of life [14, 15].

The results in the current study support the notion that strong predictors of anxiety and depression in breast cancer patients are poor family relationship and functioning [16]. There was a higher vulnerability of widowed and divorced women in the early post-surgery periods.

This study has several limitations. The first is that the study sample consisted of well educated females, with 52% of cases having achieved a university education. These findings may not be applicable to the less well-educated population of patients. Second, the results of the current study may not be generalizable to the population of advanced stage breast cancer patients. This is an aspect that requires further exploration. Lastly, the short follow-up period did not allow for evaluating the durability of effect that social factors may exert on the emotional status of patients suffering from breast cancer.

CONCLUSIONS

The employment and marital status have a significant impact on the anxiety and depression of breast cancer patients in the early post-surgical period.

On the basis of this research, it is recommended to consider the higher vulnerability of widowed and divorced women, while rendering psychosocial interventions.

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