

## Depressive Symptoms and Anxiety: Relationship to Social Support and Functional Status among Patients with Breast Cancer Surgery

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### Abstract:

**Background:** Breast cancer is one of the most important types of cancer among women worldwide and is a significant stressor in women's life that may affect functional health status. The present study was aimed to identify psychological factors of depressive symptoms and anxiety and relationship with social support and functional status among patients with breast cancer surgery.

**Methods:** Descriptive correlation research design was conducted in the Oncology Department and Oncology Center at Mansoura University Hospital. The data were collected from 102 adult patients with primary breast cancer undergoing surgery. Data were collected utilizing the following tools: 1) A Structured Interview Questionnaire (SIQ): including socio-demographic and related medical data. 2) The Hospital Anxiety and Depression Scale (HADS) was used to measure levels of anxiety and depressive symptoms (psychological reaction). 3) The Social Support Measurement Questionnaire (SSMQ) to measure social support. 4) Inventory Functional Status-Cancer (IFS-CA) to measure Functional Status of breast cancer women.

**Findings:** The studied subjects reported total functional status subjects' scores showed slight improvement over time, from start of diagnosis of breast cancer to one week after surgery. Also, identified correlates between social support and psychological factors (anxiety and depressive symptoms). While associates of low functional status scores were almost being depressive symptoms, anxiety and low social support ( $p < 0.05$ ).

**Conclusions:** The results of this study suggest that there are strong correlation between patients' psychological distress and functional status. The psychosocial factors of anxiety and depressive symptoms are alleviated by the social support received from their family and friends, healthcare professionals.

**Keywords:** Breast cancer, depressive symptom, anxiety, psychological distress, social support, functional status.

### I. Introduction

Breast cancer remains a major public health problem,<sup>[1]</sup> and it has the highest rank among women's cancers worldwide and breast cancer prevalence is increasing particularly in developing countries.<sup>[2]</sup> It is the 2nd leading cause of death in women worldwide. Approximately one in ten women develops breast cancer all over the world.<sup>[3]</sup> The treatment modalities for primary breast cancer include surgery, chemotherapy, radiotherapy and hormonal therapy, all four of which can be used alone or in combination.<sup>[4]</sup> Surgery is a primary treatment for breast cancer, whereas adjuvant therapies such as chemotherapy and radiotherapy are commonly used after primary treatment in order to inhibit metastasis and enhance long-term survival rates.<sup>[5]</sup> Despite advances in cancer treatment, the survival rate and lifespan of breast cancer patients are significantly improved. However, women continue to suffer substantial psychological distress (symptoms of depression and anxiety) during treatment that influences cancer recovery significantly. Depression in cancer populations is estimated from 1.5% to 50%<sup>[6]</sup> with anxiety estimates ranging from 20% to 50%<sup>[7]</sup> Depression and anxiety are correlated highly in women with breast cancer, and many women suffer from both types of symptoms.

Witek-Janusek et al.<sup>[8]</sup>, Liao et al.<sup>[9]</sup> argued that anxiety levels have been reported to be significantly higher before diagnosis than afterwards, peaking just prior to biopsy and remaining elevated two months despite the diagnosis.<sup>[8]</sup> Schnur et al.<sup>[10]</sup> found that women awaiting lumpectomy are more distressed than women awaiting biopsy. Previous studies have also found that surgical procedures like mastectomy are emotionally stressful and may lead to depression and anxiety in females undergoing these procedures. The removal or alteration of body parts, which are symbolically significant, may cause major emotional repercussions to the females whose femininity and role-identity seems to be threatened by such procedures<sup>[11,12]</sup> Furthermore, some studies showed that people who perceived life changing events negatively tended to suffer from anxiety and depression.<sup>[13,14]</sup>

According to Berterö & Wilmoth,<sup>[15]</sup> concluded from their meta-synthesis that breast cancer affects the woman's individual, relational, and collective self, and therefore the relationship between mood disturbance,

social support, and symptoms may be more prominent than in other types of cancer. Moreover, women with breast cancer may avoid social contacts and therefore be more liable to social isolation.<sup>[16]</sup> Social support has been recognized as an important component of psychological and physical health.<sup>[17]</sup> It is known to not only directly affect stress and health outcomes, but also buffer the effects of stress on health outcomes among cancer patients. Previous studies of social support have reported that women with suspected breast cancer who received good social support were less emotional distress and anxiety and more adaptive coping responses.<sup>[18-21]</sup> Also, longitudinal studies of social support for breast cancer patients found significant relationships between social support and psychological states.<sup>[22]</sup>

Functional status has been used as a primary outcome measure in recent decades. It is a complex multi-dimensional assessment of the physical, psychological and social well-being of individuals. The physical dimensions include ability to work and physical functioning; the psychological dimensions include coping ability, self acceptance, perceived health status and adjustment to illness.<sup>[23,24]</sup> Rozema, Vollink, & Lechner<sup>[25]</sup> reported that a negative illness perception has been associated with poorer functional status and emotional health. In our previous study also showed that a diagnosis of breast cancer and its treatment are stressful events that affect the long-term functioning of patients.<sup>[26]</sup> Furthermore, some studies showed that anxiety and depression have both been shown to be negatively associated with the functional status and QOL of breast-cancer patients after diagnosis, at the start of treatment and post-treatment.<sup>[27-29]</sup>

## **II. Aim of the Study:**

The present study was aimed to identify psychological factors of depressive symptoms and anxiety and relationship with social support and functional status among patients with breast cancer surgery.

## **III. Research Questions:**

The following research questions were formulated to achieve the aim of the study:

1. What is the prevalence of anxiety and depression in patients undergoing surgery for breast cancer?
2. What is the relationship between psychological reaction, social support and functional status in patients undergoing surgery for breast cancer?

## **IV. Subjects and Methods:**

### **4.1. Research design:**

Descriptive correlational research design was utilized to conduct this study.

### **4.2. Setting:**

This study was conducted at the oncology department and oncology center of Mansoura University Hospital, which is affiliated with Mansoura University in Egypt.

### **4.3. Sample of the Study:**

A convenience sample was 102 adult patients with primary breast cancer undergoing surgery during the period from July 2013 and January 2014. The patients had been selected according to the following criteria included: a) age ranged between 18 and 60 years old, b) had undergone surgery for breast cancer, c) were diagnosed with stage I-III breast cancer, d) able to communicate and agree to participate in the study. Those who e) had a history of psychiatric disorder, h) secondary mastectomy in the first post surgical year were all excluded from the study.

### **4.4. Instruments:**

It consisted of four parts:

**4.4.1. Part 1:** Patient and Medical Information Questionnaire (PMIQ): This was designed by the researchers to collect demographic variables such as age, education, marital status, number of children, living arrangements, and employment status. The PMIQ also includes questions about year of cancer diagnosis, comorbidity, family history of cancer, cancer stage, and surgery type.

**4.4.2. Part 2:** Anxiety and depressive symptoms: The Hospital Anxiety and Depression Scale (HADS) were used to measure levels of anxiety and depression (psychological reaction). It developed by Zigmond and Snaith<sup>[30]</sup> and translated to Arabic. The scale consists of 14 items and two subscales (anxiety and depression) with seven items in each subscale. Each item is scored on a 4-point Likert-type scale (0–3), each statement has four optional responses which are scored, as follows: 3 most of time, 2 a lot of time, 1 time to time, and 0 not at all, Giving summated scores on each of the two scales between 0 and 21 and measures two constructs, anxiety

and depression with cut-off points for severity (scores: 0–7 normal; 8–10 mild; 11–14 moderate; and 15–21 severe)<sup>[31]</sup>. Total scores for each subscale are calculated by simple summation of individual items, a higher score indicating more distress.

**4.4.3. Part 3:** The Social Support Measurement Questionnaire SSMQ: This tool was adopted by Denewer et al.<sup>[32]</sup> (2011). It consists of 39 items, designed to measure social support according to its four domains; psychological, material, medical, and social. Each item was weighed on a scale of 3 points (1 = Disagree, 2 = Not sure, 3 = I agree). The total score ranges from 33 to 99. This score indicates the range of social support:  $\leq 40$  = a low degree of social support, 40–65 = moderate degree of social support, and  $\geq 66$  = a high degree of social support dimensions.

**4.4.4. Part 4:** Inventory Functional Status-Cancer (IFS-CA): Functional status of the women in this study was measured using the Inventory Functional Status-Cancer (IFS-CA) developed by Tulman et al.<sup>[33]</sup> The IFS-CA is a 39-item questionnaire. It consists of four subscales of household and family, social and community, personal care, and occupational functions, with a 4-point rating scale ranging from 1 (not at all) to 4 (fully) for household, family, social, and community activities; and 1 (never) to 4 (all of the time) for personal care and occupational activities. Possible scores range from 39 to 156, higher scores indicate better functional status. The test-retest reliability coefficient for the total IFS-CA was 88.5.

#### **4.5. Human rights and ethical consideration**

Permission to conduct the study was obtained from the hospitals' authorities of El-Mansoura University. Prior to the initial interview, the researcher introduced yourself to patients who met the inclusion criteria; each potential patient was fully informed with the purpose and nature of the study, and then an informed consent was obtained from participants who accepted to participate in the study. The researcher emphasized that participation in the study is entirely voluntary and withdrawal from the study would not affect the care provided, and confidentiality was assured through coding the data.

#### **4.6. Validity and Reliability**

The developed questionnaires tools were reviewed by five panels of experts in medical surgical nursing in order to ensure content comprehensiveness, clarity, relevancy, and applicability. The test-retest reliability showed a value of 0.83 which indicated a moderate reliability. The questionnaires were translated from English into Arabic to help the patient understand them.

#### **4.7. Pilot study**

A pilot study was carried out on ten percent from the total sample size (ten patients) to test the feasibility and clarity of the used tools; modifications were done based on the results. Subjects included in the pilot study were excluded from the main study sample.

### **V. Procedure**

Permission was obtained from the Director of El-Mansoura university Hospital and Oncology Mansoura Cancer for conducting the study in the Oncology Department and informed consents were fulfilled before data collection after explaining the purpose and nature of study to them. Subjects were informed about their voluntary right to accept or refuse participation in the study, and confidentiality was assured. At the beginning of the study demographic data were collected by interviewing subjects individually, while medical information was obtained from patients medical records.

Functional status was measured by IFSC-A which was filled by the investigator through a structured interview for each subject before surgery. It was repeated after surgery i.e., two times of measurements for each subject to determine functional status profile during the period of the study as follows: at the baseline before of surgery (T1), after surgery when patient adjustment to surgery (T2). Also were assessed for each times of conducting patient social support and psychological reaction. Finally, the profile of functional status for each subject was gathered and variables that could influence it were recorded and statistical relations of significance were performed. These tools require approximately 30 - 45 minutes for completing.

### **VI. Statistical Analysis**

Upon completion of data collection variables included in each data assessment sheet were coded and scored manually prior to computerized data entry. Descriptive statistics (frequency, percentage, mean and standard deviation) were performed for quantitative and qualitative variables. Most of the data were ordinal data and quantitative data then showed obvious deviations from the normal distribution curve, non-parametric

statistical methods were used. Person's correlation coefficient ( $r$ ) and test of significant (paired and unpaired  $t$ -test and chi-square).  $P$  value was considered significant if less than 0.05. The above mentioned statistical technique were obtained by using SPSS software; version 18 Inc.

## VII. Results

**Table 1.** This table showed that socio demographic and medical characteristic of the participants. The mean age of patients was  $43.81 \pm 7.48$  with the range from fewer 30 to 60 years old. The most of participants were married (70.58%), secondary school educated (34.31%) housewife (62.74%) and majority (93.13%) lived with another person (spouse, partner, and children). Regards type of surgery, the majority (88.23) of patients were mastectomy, while (11.76) were lumpectomy.

**Figure 1.** This figure revealed that significant increases in social support from baseline assessment to one weak assessment until patient adjustment surgery at  $p \leq 0.05$ . This attributed to positive expectations postoperative social support in different levels than preoperative.

**Figure 2.** This figure showed that mean score of anxiety and depression decreased over time (13.34 ,12.45 for anxiety and 10.8, 9.83 for depression respectively) at two points of assessment

**Table 2.** This table illustrated that functional status dimensions were significantly associated with recipient of surgery with poorer health. This led to decreasing the likelihood of undergoing surgery ( $p < 0.001$ ). This means patients receiving surgery were also more likelihood to need help with ADL and increase social contact. The significant mention above illustrated graphically (**Figure 3**)

**Table 3.** Showed that low social support correlated negatively with anxiety and depressive symptoms; correlated significantly with moderate degree of social support. In addition, depressive symptoms were positively correlated with high social support.

**Table 4.** Revealed that there is a significant correlation between age and functional status activities ( $r = - 0.463$ ,  $p = 0.001$ ), which means that older patients tend to have lower personal care, social, household, occupational activities scores than younger patients do. One week post surgery, there was also a negatively correlation with depression and anxiety ( $r = -.360$ ,  $p = .001$ ; anxiety HAD scale  $r = 0.189$ ,  $p = .003$  respectively). In relation to social support there are positively correlation between basal social support and functional status activity. This means that support from family and friends increase feeling of hope and lead to improve functional status activities. However, there was no statistically significant correlation between marital status, education level, and functional status at one week after surgery.

## VIII. Discussion

Breast cancer patients on surgery experienced high level of depressive and anxiety symptoms. This reflects on the functional aspects, like the inability to work, troubles meeting the needs of the family, work being less fulfilling, etc. This is also seen in the results of the present study where the functional well-being of women showed significant deterioration after surgery related to pain, body image, fatigue, and lymphoma.

### Patient demographics

The present study revealed that the most of study subjects have an age that ranged between 40 and 60 years old. This coincide with Pandeyl, et al. [34] study two hundred and fifty four women with cancer of the breast. Found that the mean age of the women was 45.6 years with an age-range of 17–80 years. In contrast, Winnie et al., [35] reported that overall, the mean age was 51.7 years. The majority of our study subjects were married, had completed secondary school educated, and housewife and majority of patients were mastectomy. This finding is supported by Winnie [35] who concluded that a large number of the subjects were married (77.1%), had completed a secondary education (64.7%), were not employed (73.9%), did not have a family history of cancer, and had undergone mastectomy (74.3%).

### Prevalence of anxiety and/or depression

The results of the present study showed that more than half of the participants had psychological distress, such as anxiety and depression. The findings reflect those reported in other studies, [36,37] and indicate the importance of assessing the mental health of such patients throughout the process of cancer treatment. This coincide with studies of El-Hennawi, El Missiry et al., [38,39] the results were found in Egyptian studies that revealed anxiety disorders and mood disorders to be the most prevalent diagnoses among breast cancer patients.

Hill et al.<sup>[40]</sup> reported that depression and anxiety are the commonest psychiatric disorders after diagnosis of breast cancer. In predicting these disorders following breast cancer diagnosis, low social support has been found to be an independent predictor and therefore may have a causal role.<sup>[41]</sup>

### **Social support**

Social support seems to play an important function as a buffer for depression in cancer patients. Social support network comprised mainly family members (i.e., spouses, daughters, sons, sisters, brothers, grandchildren), friends, neighbors, other breast cancer patients, health care professionals, and others. The findings regarding social support networks in the present study are consistent with those of Kobayashi<sup>[42]</sup> and Hashimoto<sup>[43]</sup>. Moreover, Kobayashi<sup>[42]</sup> studied some characteristics of social support networks among elderly Japanese, and she reported their social support networks mainly included family members who lived in the same household.<sup>[39]</sup> A number of studies have shown that social support can reduce or buffer the negative impact of the diagnosis and treatment of cancer and may have a positive influence on psychological wellbeing.<sup>[44,45]</sup> Walker et al.,<sup>[46]</sup> also emphasized that social support is buffering effects on well-being and emotional adjustment in cancer.

### **Functional status**

Results of the current study showed a statistically significant decline in the total functional status scores among patients over time ( $p < 0.010$ ). This declines were demonstrated by personal care activities, and household activities ( $p < 0.001$ ), as well as social activities and occupational ( $p = 0.002$ ) which may be attributed to pain after surgery, fear of future, depression and anxiety, disturbance body image. This result was fatherly supported by Arzouman, Dudas, Ferrans, and Holm<sup>[47]</sup> stated that cancer diagnosis and subsequent treatment of cancer impair patients' work. In the previous study by Wyatt and Friedman<sup>[48]</sup> studied 46 patients with breast cancer who are age 55 or older, to investigate the patterns of functioning and psychosocial adjustment of midlife and older women following surgery for breast cancer. Found that No differences existed between the two treatment groups at baseline, with the exception of lower functional status reported by the surgery-only group. This in line with Chirikos et al.,<sup>[49]</sup> found that key changes in the functional status of the subjects.

### **Correlates of functional status profile of cancer patients receiving surgery**

Results of the current study documented that subjects age was a negatively correlated to total functional status before and after breast cancer surgery. These findings were similar to those obtained by Ganz, Schang and Heinrich<sup>[50]</sup> revealed that no difference between the aged and the young in regard to frequency of problems encountered with daily living activities resulting from cancer treatment. Also Repetto et al.,<sup>[51]</sup> concluded that age is associated with reduced social resources among cancer patients.

Regarding educational level, there was a positive relationship between educational level and functional status dimensions, demonstrated in social activities and total functional status over time. These findings are congruent with those of Dirksen<sup>[52]</sup> who reported that higher quality of life was associated with higher levels of education among cancer patients. Peuckmann et al.<sup>[53]</sup> reported that poor HRQOL was significantly associated with being single (all subscales:  $P < 0.05$ ), short education (all subscales:  $P < 0.05$ , except "social function"). Satariano et al.<sup>[54]</sup> showed that the stage of disease was strongly associated with functional limitations, after taking into account breast cancer, financial adequacy, education, marital status, and comorbidity. Izano et al.,<sup>[55]</sup> found that overall, functional limitations were more prevalent among African-American women.

Our study showed that there were the positively correlation between social support and functional activities, which is consistent with reports from Ozkan and Ogce,<sup>[56]</sup> stated that social support and assistance with daily life are important elements of the endeavor to reduce and compensate for the disadvantages that result from cancer and therapies. In a study performed by Goodwin, Hunt and Samet<sup>[57]</sup> with 65 years or older aged newly diagnosed 799 cancer patients; it was found that, subjects with functional limitations were more likely to have poor social support networks than subjects without such limitations. In a study with 161 breast and gynecological cancer survivors, Lim and Zebract reported<sup>[58]</sup> that functional social support directly influences QoL. Ozkan and Ogce<sup>[56]</sup> reported that significant independent associations between support and functional status outcomes.

As the findings of this study demonstrate, there were the negative correlation between depression and anxiety and functional status among subjects. This in line with Hann et al.,<sup>[59]</sup> reported that the negative impact of depressive symptoms on cancer patients takes many forms, including reduced quality of life, functional status and poorer medical outcomes and possibly reduced survival time. This finding is congruent with study Chen, Chang and Yeh<sup>[60]</sup> who reported that cancer patients' anxiety and depression can be predicted significantly by functional status and perceived treatment effect. In addition to pain status, cancer patients' depression can be predicted by their functional status

In the present study there were significantly negative relationships between of the social support with both the anxiety and the depression in breast cancer patients. These results support the buffering effect hypotheses about social support positively affecting health outcomes. [44,45] It can be expected that social support for breast cancer patients will always produce beneficial effect on patients' psychological state and be helpful in constructing positive and reasonable attitude towards the disease as a challenge. Simpson et al., [54] reported that patients with different types of cancer, the incidence of treatment psychological disorder one year after diagnosis was found to be 31.8%, while it was observed that patients with low social support scores were diagnosed with depression.

### **IX. Conclusions and Recommendation**

Patients awaiting breast cancer surgery, as well as experiencing anxiety directed at handling uncertainty about the future and about the severity of their cancer. Also cancer and treatment therapy were experiencing low functional status. There are a close correlation between the age, social support and depression and anxiety of the patients. Therefore, both family and patients should be supported altogether with a family-centered approach during the treatment of the cancer patients. It is necessary for cancer patients to know social support can prevent depression and provide an early treatment should be planned. Future research should be directed at follow-up studies regarding the potential impact of pre surgery experiences on later experiences of living with breast cancer, concerning physical, psychological, social and spiritual adaptation. Replication of this study on a larger sample and in different hospital settings with increasing the duration of treatment is suggested for generalization of results. In addition, a longitudinal study design is needed to assess the association between social support and anxiety and depressive symptoms in breast cancer patients

### **Conflicting Interest**

The author declared that there was no conflict of interest.

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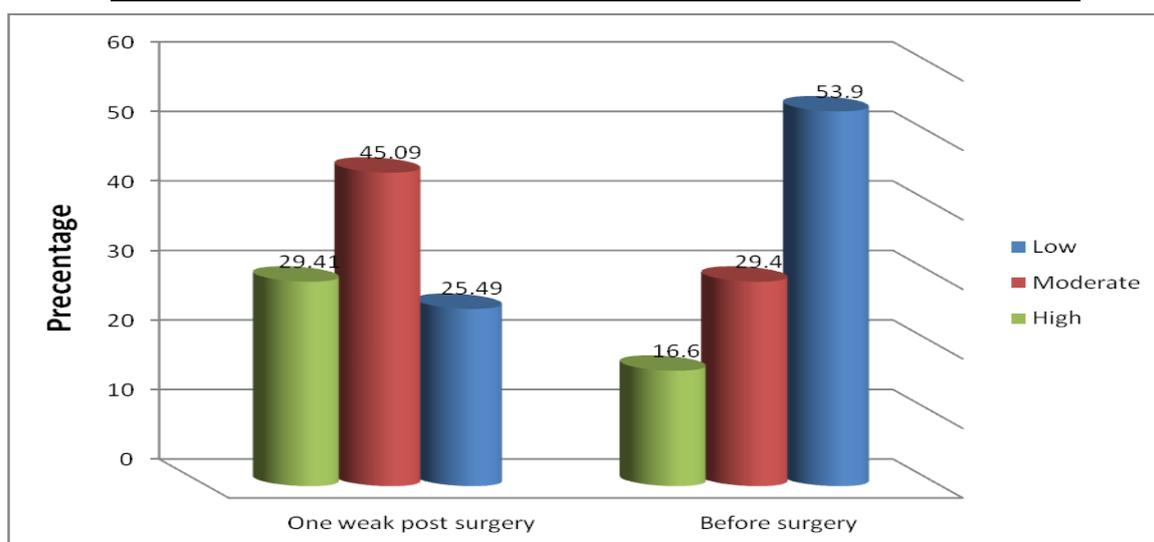
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**Result:**

**Table 1: Socio demographic and medical characteristics of women with breast cancer surgery (N=102)**

Variables	N	%
Age		
≤30	15	14.70
31-40	25	24.5
41-50	37	36.27
51- 60	25	24.5
Mean ±SD		43.81 ± 7.48
Marital status		
Married	72	70.58
Single	10	9.80
Widowed /divorced	22	21.56
Education		
Illiterate	30	29.41
Primary school	15	14.70
Secondary school	35	34.31
University	22	21.56
Employment status		
Employed	10	9.80
Teacher	12	11.76
Retired	4	3.92
Housewife	64	62.74
Worker	12	11.76
Household status		
Living alone	7	6.86
Living with family	95	93.13
Type of surgery		
Mastectomy	90	88.23
Lumpectomy	12	11.76



**Figure1. Social support at two point's assessment**

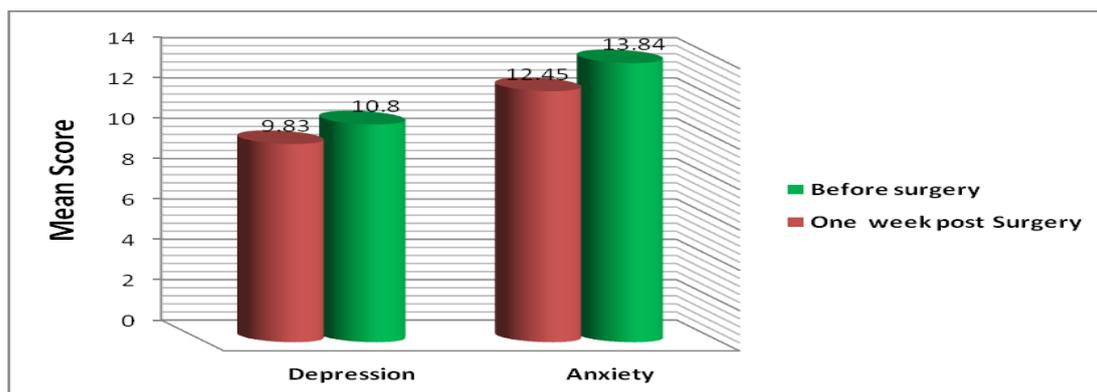


Figure 2. Anxiety and depression scale (HADS) at two point's assessment

Table 2. Measurement of central tendency and distribution of functional status among patients over two times of assessment

IFS-CA	Before surgery	One week after surgery	p-value
Personal care	25.29 ±2.04	23.52 ± 2.13	<0.001
Mean + SD	23-30	18-26	
Range			
Household and family	22.35 + 5.36	17.18 +3. 61	<0.001
Mean + SD	16-30	15-28	
Range			
Social and community activities	11.60+1.38	10.10 +1.33	0.002
Mean + SD	8-14	8-12	
Range			
Occupation activities	10.13 + 4.42	9.07 + 3.98	0.095
Mean + SD	8-20	8- 18	
Range			
TIFSCA	74.19 + 9.86	62.68 + 8.15	0.010
Mean + SD	56-86	50- 80	
Range			

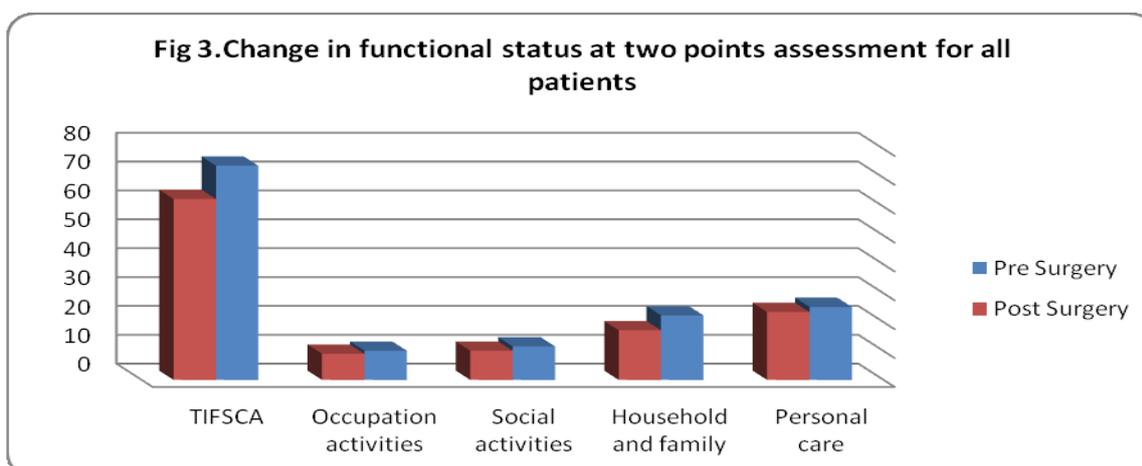


Table 3. Relationship between social support with anxiety and depressive symptoms in breast cancer patients

Independent variables	Anxiety (r)	Depression (r)
Social support		
• Mild degree of social support	-0.126 **	-0.141 **
• Moderate degree of social support	0.0130*	0.0130*
• High degree of social support	0.110 *	0.085 **

P<0.05; \*\*p<0.01

**Table4. Correlates between functional status and different research variables at one week after breast cancer surgery**

<b>Research variable</b>	<b>Regression coefficient</b>	<b>P - value</b>
Age	-0.402	0.004
Education level	0.118	0.064
Marital status	2.04	0.006
Anxiety	-0.288	0.003
Depression	-0.350	0.001
Social support	.314	0.000

P $\leq$ 0.05 indicated significant