# PSYCHOSOCIAL MORBIDITY IN PATIENTS UNDERGOING MASTECTOMY FOR BREAST CANCER

*Kavitha Konnakkaparambil Ramakrishnan[1], Sreekumar Damodaran[2]*

*[1]Assistant Professor, Department of Psychiatry, Government Medical College, Thrissur, Kerala.*
*[2]Professor and HOD, Department of Psychiatry, Amala Institute of Medical Sciences, Amalanagar, Thrissur, Kerala.*

**ABSTRACT**

**BACKGROUND**

Breast Cancer is the most common female cancer worldwide and carries significant psychosocial morbidity. The diagnosis of the disease and the treatment modalities like surgery and chemotherapy contribute to the morbidity. The recognition of the psychosocial morbidity associated with mastectomy can help us formulate effective counselling strategies.
The objectives of this study were- to assess the psychosocial morbidity in patients undergoing mastectomy for carcinoma breast, to identify the preoperative variables that predict the morbidity and to find out the correlation between degree of neuroticism of the individual and morbidity.

**MATERIALS AND METHODS**

35 female patients who had mastectomy for breast cancer were evaluated at three time-points, preoperatively, immediately after surgery and 2 months after surgery. Anxiety and depression was assessed using Hospital Anxiety and Depression Scale (HADS), psychological distress was measured using General Health Questionnaire (GHQ-12) and neuroticism was assessed by Eysenck Personality Inventory Neuroticism subscale (EPI-N).

**RESULTS**

There was a high level of anxiety, depression and GHQ scores preoperatively with a further worsening of these over the three interviews. Age, marital status and menopausal status were factors which had an influence on psychosocial morbidity. Preoperative EPI-N scores positively correlated with psychosocial morbidity.

**CONCLUSION**

There is a high level of psychosocial morbidity in patients undergoing mastectomy for breast cancer and mastectomy seems to worsen it in the first two months after surgery. Our study shows that psychosocial morbidity is affected by age, marital status, menopausal status and level of neuroticism.

**KEYWORDS**

Psychosocial Morbidity, Breast Cancer, Mastectomy, Neuroticism.

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## BACKGROUND

Breast cancer is the most common cancer among females worldwide and constitutes 25% of all cancers with an estimated 1.67 million cases newly diagnosed in 2012. In India breast cancer is the leading cause of cancer death among women.[1] Breast is regarded as a potent symbol of femininity and any disease and subsequent loss of the organ, either total or partial, is expected to be associated with serious psychosocial sequelae.

The earlier studies in psychosomatic literature described the personality and psychodynamics of breast cancer patient.[2,3,4] Many later authors have found a high degree of psychosocial morbidity after mastectomy coming up to even 83%.[5,6.7,8] The effects of adjuvant therapy like chemotherapy, radiotherapy and hormonal therapy also have a bearing on the psychosocial morbidity in the mastectomy patient.[9] The recognition of psychosocial morbidity after mastectomy can help formulate more effective counselling methods. Counselling by a trained nurse has, in fact reduced the morbidity in some of the published studies.[10]

Kerala is a state in South India with literacy and health indices at par with some of the developed nations. There are hardly any published reports from this region on the psychosocial aspects of breast cancer and mastectomy and this study was done in this background.

### Aims and Objectives

1. To assess the psychosocial morbidity in patients undergoing mastectomy for carcinoma breast.
2. To identify the preoperative variables which predict the morbidity.
3. To find out the correlation between degree of neuroticism of the individual and psychosocial morbidity.

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*Corresponding Author:*
*Dr. Kavitha Konnakkaparambil Ramakrishnan,*
*'Dilkhush', Krishna Lane,*
*North of Karthiayani Temple,*
*Chembukkavu, Thrissur- 680020, Kerala.*
*E-mail: drmadhavanvp@gmail.com*
*DOI: 10.18410/jebmh/2018/125*

## MATERIALS AND METHODS

The study was conducted prospectively at Medical College Kozhikode, a tertiary care teaching hospital in Kerala. A total of 35 female patients attending the Surgery outpatient department with a diagnosis of carcinoma breast and undergoing mastectomy and receiving adjuvant therapy at the institution itself were included in the study. Patients were interviewed three times during the study. The first interview was done after a diagnosis of breast cancer was made but well before the day of surgical procedure. Care was taken not to interview the patient on the immediate preoperative day. Second interview was done during the postoperative period after the patient was well ambulant and pain free. Third interview was made at the end of second month after surgery.

### Exclusion Criteria

Following patients were excluded from the study-

1. Patients who had a history of psychiatric illness.
2. Patients having advanced metastatic disease with low life expectancy and possibility of cerebral metastasis.
3. Patients who were not willing or capable of answering the questionnaire either due to illness or due to unwillingness.
4. Patients with recurrent and bilateral carcinoma breast.

The study was approved by the Hospital Ethical Committee. Informed consent was obtained from all the patients.

### Tools

**1. Eysenck Personality Inventory– Neuroticism subscale (EPI-N)**

Eysenck Personality Inventory assesses the two dimensions which account for majority of the variations in personality namely Extroversion/Introversion (E) and Neuroticism/Stability (N).[11] Thus EPI has two scales E and N to assess these two dimensions. The neuroticism scale was used for this study. The high end of neuroticism is indicative of instability and over reactivity. Individuals who have high scores tend to be emotionally over responsive and have difficulty in returning to normal state after emotional experiences. Individuals with low scores tend to be better adjusted and emotionally more stable. EPI has two parallel forms, A and B. EPI has been standardised in India and vernacular versions are available. In the present study, we used EPI Form A standardised by Varghese and Abraham.[12] EPI-N consists of 24 questions with answers either 'yes' or 'no', 'yes' being scored as 1 and 'no' being scored as 0. Scores up to 8 are taken as low, 9 to 16 as moderate and 17 and above as high degree of neuroticism. Since this is a stable dimension it was used only once, at the time of entry into the study.

**2. General Health Questionnaire (GHQ-12)**

General Health Questionnaire is an instrument widely used to detect psychiatric disorders in medical practice.[13] It assesses the physical health of the individual, as perceived by herself, capacity to carry out one's daily activities, her relationship with environment and society and psychological wellbeing of the individual. The shorter 12-item version of GHQ-12 used in this study has been used in General Health Care settings as well as study of breast cancer patients.[14,15] The responses are recorded on a four-point scale with a likert type scoring (0,1,2,3). The general population scores range from 11-12, scores above 15 indicates distress and above 20 indicates severe psychological stress.

**3. Hospital Anxiety and Depression Scale (HADS).[16]**

This scale was developed to identify depression and anxiety in patients with medical illness. HADS is a 14-item questionnaire, 7 items regarding anxiety and 7 items regarding depression. Each of them has 4 possible responses scored from 0 to 3. Cut-off score for both anxiety and depression is 8 and the total cut-off score is 16. It has a high inter-rater reliability and validity, has been adapted to Indian population and has been used in assessing the psychological aspects in patients with breast cancer.[17,18,19]

### Methodology

A specifically designed pro forma was used to gather relevant socio-demographic information. At the first interview patients were assessed using the following scales:

1. Eysenck Personality Inventory –Neuroticism subscale (EPI-N).
2. General Health Questionnaire (GHQ-12).
3. Hospital Anxiety and Depression Scale (HADS).

During the subsequent visits all questionnaires except the EPI-N were administered. Disease was staged using TNM classification.[20]

**Statistical Analysis-** Data obtained was tabulated; levels of morbidity at three interviews were calculated. Statistical analysis was done using SPSS Software. For data analysis, non-parametric tests namely Wilcoxon Signed Rank Test, Mcnemar Test, Kruskal Wallis Test, and Mann Whitney-U Test were used. For correlation Spearman's rho was used.

## RESULTS

The socio-demographic data revealed that 68.6% of the patients were in the below fifty years age group and almost 90% were below sixty years. Mean age of study population was 47.46 years. 82.9% of the patients were from a rural background. 85.7% from low income group and remaining were from a middle-income group and none of them were from a high-income group. 88.5% of our patients were educated up to primary or high school level and only 8.6% did not receive any formal education. 71.4% of our patients were married, 14.3% were widowed, 8.6% were separated from their husbands and 5.7% were unmarried. 51.4% of our patients had stage 2 disease and 48.6% had stage 3 disease. 92.4% of the subjects received some form of

chemotherapy. While 37.1% received it preoperatively as neo-adjuvant chemotherapy followed by postoperative continuation chemotherapy, 55.1% received it only during the postoperative period. Table 1 shows the positivity rates of anxiety, depression and GHQ at the three interviews. With 8 or >8 as cut-off score, 65.7% of patients were scored positive for anxiety as well as depression at the first visit. Over the three visits there was a gradual increase in positivity rates. There was significant change in anxiety, depression and GHQ scores between second and third visits and first and third visits. (Table 2, 3). There was no significant difference between the first and second visits (Table 4). There was significant negative correlation between age and psychosocial morbidity, older patients being less likely to suffer from psychiatric and psychological stress (Table 5). Comparing those who had preoperative chemotherapy and those who did not, there was no significant difference between the two groups in anxiety, depression and GHQ score at the first visit (Table 6). No correlation existed between psychosocial morbidity and the place of living (rural vs urban), socioeconomic status, religion and educational status. Also, the identity of the caregiver (whether the patient was taken care of by the husband or sons or daughters) did not have a correlation with morbidity. However married patients had a poorer psychosocial profile compared to widowed (Table 7). We found significantly more depression and deranged GHQ in premenopausal women (Table 8). Premenopausal women were more anxious also though the difference did not reach significant levels. Radiotherapy did not have any effect on psychosocial morbidity. We found a high degree of positive correlation between EPI-N scores and psychosocial morbidity. Higher the EPI-N scores higher was the morbidity (Table 9).

| | First Visit | | Second Visit | | Third Visit | |
|---|---|---|---|---|---|---|
| | **Positive (%)** | **Negative (%)** | **Positive (%)** | **Negative (%)** | **Positive (%)** | **Negative (%)** |
| Anxiety* | 23 (65.7) | 12 (34.3) | 24 (68.6) | 11 (31.4) | 25 (71.4) | 10 (28.6) |
| Depression† | 23 (65.7) | 12 (34.3) | 26 (74.3) | 9 (25.7) | 26 (74.3) | 9 (25.7) |
| GHQ-12‡ | 23 (65.7) | 12 (34.3) | 25 (71.4) | 10 (28.6) | 26 (74.3) | 9 (25.7) |
| ***Table 1. Levels of Morbidity at Three Interviews*** | | | | | | |

*Anxiety as measured by HADS ≥ 8= Positive. †Depression as measured by HADS ≥ 8= Positive.
‡GHQ ≥15= Positive.

| | Median Score at Second Visit (IQR) | Median Score at Third Visit (IQR) | Significance* |
|---|---|---|---|
| Anxiety† | 12 (9.00) | 13 (11.00) | P= 0.037‡ |
| Depression† | 12 (9.00) | 16 (13.00) | P= 0.004‡ |
| GHQ-12 | 23 (11.00) | 24 (16.00) | P= 0.001‡ |
| ***Table 2. Comparison of Median Score of Psychosocial Measures between Second and Third Visit*** | | | |

*Wilcoxon Signed Ranks Test. †As measured by HADS. ‡P=<0.05 taken as significant. IQR-Inter-quartile range.

| | Median Score at First Visit (IQR) | Median Score at Third Visit (IQR) | Significance* |
|---|---|---|---|
| Anxiety† | 11.5 (8.75) | 13 (11.00) | P=0.038‡ |
| Depression† | 14 (11.50) | 16 (13.00) | P=0.012‡ |
| GHQ-12§ | 23.5 (13.00) | 24 (16.00) | P=0.005‡ |
| ***Table 3. Comparison of Median Score of Psychosocial Measures between First and Third Visit*** | | | |

*Wilcoxon Signed Ranks Test. †As measured by HADS. ‡P=<0.05 taken as significant. IQR-Inter-quartile range.

| | Median Score at First Visit (IQR) | Median Score at Second Visit (IQR) | Significance* |
|---|---|---|---|
| Anxiety† | 11.5 (8.75) | 12 (9.00) | P=0.599‡ |
| Depression† | 14 (11.50) | 12 (9.00) | P=0.731 |
| GHQ-12 | 23.5 (13.00) | 23 (11.00) | P=0.824‡ |
| ***Table 4. Comparison of Median Score of Psychosocial Measures between First and Second Visit*** | | | |

*Wilcoxon Signed Ranks Test. †As measured by HADS. ‡P=<0.05 taken as significant. IQR-Inter-quartile range.

| | | | **Age** |
|---|---|---|---|
| Spearman's rho | Anxiety (HADS) | Correlation coefficient | -.404 |
| | | Sig (2-tailed) | .016 |
| | Depression (HADS) | Correlation coefficient | -.437 |
| | | Sig (2-tailed) | .009 |
| | GHQ | Correlation coefficient | -.356 |
| | | Sig (2-tailed) | .036 |
| ***Table 5. Correlation between Age and Psychosocial Measures*** | | | |

All scores are for the third visit.

| | Chemotherapy | Median Score | 'p' value |
|---|---|---|---|
| Anxiety (HADS) | Yes | 13.00 | 0.106 |
| | No | 9.00 | |
| Depression (HADS) | Yes | 15.00 | 0.302 |
| | No | 11.00 | |
| GHQ | Yes | 24.00 | 0.216 |
| | No | 19.00 | |

***Table 6. Preoperative Chemotherapy and Psychosocial Profile at the First Visit***

Mann-Whitney U test.

| Dependent Variable | | | Sig |
|---|---|---|---|
| Anxiety (HADS) | Unmarried | Married | 1.000 |
| | | Widow | .078 |
| | | Separated | 1.000 |
| | Married | unmarried | 1.000 |
| | | Widow | .025 |
| | | Separated | 1.000 |
| | Widow | Unmarried | .078 |
| | | Married | .025 |
| | | Separated | .019 |
| .Depression (HADS) | Unmarried | Married | 1.000 |
| | | Widow | .165 |
| | | Separated | 1.000 |
| | Married | Unmarried | 1.000 |
| | | Widow | .020 |
| | | Separated | 1.000 |
| | Widow | Unmarried | .165 |
| | | Married | .020 |
| | | Separated | .082 |
| GHQ | Unmarried | Married | 1.000. |
| | | Widow | .139 |
| | | Separated | 1.000 |
| | Married | Unmarried | 1.000 |
| | | Widow | .012 |
| | | Separated | 1.000 |
| | Widow | Unmarried | .139 |
| | | Married | .012 |
| | | Separated | .100 |

***Table 7. Comparison of Scores based on Marital Status***

Bonferroni. All scores are for the third visit.

| | Menopausal status | Mean Score | 'p' value |
|---|---|---|---|
| Anxiety (HADS) | Premenopausal | 13.00 | 0.271 |
| | Postmenopausal | 8.94 | |
| Depression (HADS) | Premenopausal | 16.25 | 0.034 |
| | Postmenopausal | 10.15 | |
| GHQ | Premenopausal | 26.12 | 0.04 |
| | Postmenopausal | 19.10 | |

***Table 8. Menopausal Status and Psychosocial Measures***

Mann Whitney U test. All scores are for the third visit.

| | | EPI-N Score |
|---|---|---|
| Anxiety (HADS) | Correlation coefficient | 0.837 |
| | Sig (2-tailed) | <0.001 |
| Depression (HADS) | Correlation coefficient | 0.653 |
| | Sig (2-tailed) | <0.001 |
| GHQ | Correlation coefficient | 0.605 |
| | Sig (2-tailed) | <0.001 |

***Table 9. Correlation between EPI-N Score and Psychosocial Measures at Third Visit***

## DISCUSSION

The analysis of socio-demographic data reveals that over two-thirds of our patients were in the below fifty years age group and almost 90% were below 60 years. The mean age of our patients (47.46 years) was in accordance with the current trend of decreasing age of breast cancer in India.[21] We can presume that this younger age of patients would have contributed to the high level of psychosocial morbidity in our patients because, in the discussion that follows our data itself shows a higher morbidity in younger patients. Most of our patients were from a rural background, low income group and educated up to primary or high school level. However, all the patients in the study were literate and with this 100% literacy we found that all patients had some degree of awareness about breast cancer and its seriousness. Their high degree of awareness about breast cancer could have contributed to the psychological sufferings of the patients. Our findings are in contradiction to the findings of a study from Nagpur in which the authors observed that subjects were totally ignorant of the severity of breast cancer.[22]

Our patients had a high level of morbidity (65.75%) at the first visit itself which did not change much during the second interview, but significantly worsened during the third interview. Thus, surgery did not make any significant impact in the immediate postoperative period as far as anxiety, depression and GHQ was concerned. However, with time, the patients became more anxious, depressed and psychologically disturbed. Probably the patients experienced more psychological problems when they were back home and trying to get back to normal life. This was also the period during which most of them were getting continuation chemotherapy doses and experiencing some of the side effects of chemotherapy. Maguire et. al[7] reported that 57% of their patients had some symptoms of anxiety and 59 % of them had some symptoms of depression. They also found that morbidity increases in 4 months after mastectomy. Morris et. al [23] reported that 46% of their patients were stressed 3 months after surgery. These findings are similar to our study in that there is a high preoperative morbidity that increases after the surgery and continues for several months after surgery.

Our study found significant negative correlation between age and psychosocial morbidity, older patients being less likely to suffer from psychiatric morbidity. Hughson et.al[24] found that in patients below 50 years, depression and anxiety were much commoner. Premenopausal women had significantly more depression and deranged GHQ than postmenopausal women. They were also more anxious though this difference did not reach statistical significance. Menopausal status has been found to influence the morbidity in a previous study by Dean.[25]

Married patients had a poorer psychosocial profile compared to widowed. This is probably because sexual and body image disturbances bothered the married group compared to the other groups namely widowed, separated or unmarried. Morris et al[23] had found that married or cohabiting persons had a tendency to adjust poorly to mastectomy though this was not statistically significant.

In the present study 92.4 % of the patients received some form of chemotherapy, 37.1% getting it prior to surgery. The effect of chemotherapy on the psychosocial status has been underlined in many studies.[9,26] and there is a possibility that this could have confounded the results of our study. So we compared the measures of morbidity at the first visit between those who had preoperative chemotherapy and those who did not have and did not find any significant difference between them in psychosocial morbidity. Overall the number of patients in the non-chemotherapy group was so low that any analysis between chemotherapy group and non-chemotherapy group was not possible at further visits.

28.7% of our patients were in a low neuroticism category while 34.3% were in moderate and 37.3% in high neuroticism category. The level of neuroticism indicates the emotional responsiveness of the patient and those with higher EPI-N scores are likely to develop neurotic disorders under stress. Morris et al.[23] found that patients who were stressed at 2 years after mastectomy had a higher EPI-N score (median 18) compared to those who were not stressed (median 10). Dean C.[24] found a significant relationship with neuroticism level and deterioration of marital relationship less than three months after operation. Similarly, our study also shows a high degree of correlation between EPI-N scores and morbidity. Higher the EPI-N scores higher was the morbidity. Thus, the preoperative EPI-N scores could be useful in predicting the psychological outcome after mastectomy and also in identifying the subset of population who will need more intense counselling strategies.

**Limitations of the study**- This study assessed the morbidity in the short term only. The sample size was relatively smaller, and a larger sample size and a longer follow-up is needed to further elaborate on the study findings.

## CONCLUSION

Thus, we conclude that there is a high level of psychosocial morbidity in patients undergoing mastectomy for breast cancer and mastectomy seems to worsen it in the first two months after surgery. Psychosocial morbidity is affected by age, marital status, menopausal status and level of neuroticism.

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