

Title of the Article: A stage wise comparison of psychological distress and quality of life in breast cancer: A cross-sectional study

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Abstract

Introduction: In India, breast cancer has been found to be the most frequently diagnosed cancer in women accounting for almost 25% to 31% of all cancers. The impact of a cancer diagnosis may lead to several emotional consequences leading to changes in the functional, social and psychological aspects of the patient's life. The aim of the current study was to compare Psychological distress (depression, anxiety and trauma) and Quality of life in the initial, middle and advanced stages of breast cancer.

Study design: A cross-sectional observational comparative study.

Materials and methods: Purposive sampling was used to study 30 women (28 to 59 years old) with breast cancer in the initial, middle and advanced stages (10 in each stage). The Clinical Outcomes in Routine Evaluation and WHOQOL-BREF was used.

Results: Fifty three percent of the women were found to have symptoms of depression, anxiety and trauma; however the three stages did not differ with respect to the studied variables. Psychological distress was found to be associated with reduced quality of life.

Conclusions: Results show that psychological interventions are needed to aid the overall cancer experience irrespective of the stage at diagnosis in order to improve patient's quality of life.

Keywords: cancer staging, anxiety, depression, trauma

Introduction: Breast cancer, previously thought to be a problem pertaining to developed nations, is now the leading cause of cancer death among females in economically developing countries [1]. Worldwide trends show that in developing countries going through rapid societal and economic changes, the shift towards an industrialized lifestyle leads to a rising burden of cancers related to reproductive and dietary risk factors [2]. A similar scenario is found in India where the treatment of breast cancer is still far from perfect with a vast discrepancy between treatment centres in the urban and rural areas. Moreover most women with breast cancer come for treatment in the locally advanced or metastatic stages, rather than in the initial stages [3]. Despite of this, the scenario is much better than what it was a decade ago. With improved technology and emphasis on early detection and diagnosis, chances of survival have vastly improved thereby increasing the need for psychological interventions and palliative care among Indian women with breast cancer.

Psychological interventions have also been found to improve the quality of life (QOL) of patients with breast cancer [4]. As a result studying the psychological variables such as negative emotionality and QOL have become highly important in understanding the patient's needs and to be able to help breast cancer patients to better deal with their illness. Negative emotions such as depression, anxiety and trauma are not only a consequence of the diagnosis but may continue or even increase as treatment progresses. Feeling of psychological distress tends to be one of the primary stressors faced by cancer patients leading to coping difficulties [5]. Quality of life of cancer patients tends to be the same whether they receive surgery, radiotherapy or chemotherapy [6]. Thus the assessment of depression, anxiety and stress in breast cancer patients is crucial for complete recovery and well being.

Quality of life encompasses perceptions about one's social relationships, physical and mental well being and how one perceives his or her environment. It has been shown that assessing QOL in cancer patients could contribute to improved treatment and could even be prognostic

especially when the aims are palliative rather than curative. Above all, studies of QOL [7-9] have helped to indicate the directions needed for more efficient treatment. This is especially true for breast cancer as the number of women with breast cancer is increasing steadily resulting in more survivors.

Although several studies have been conducted on breast cancer, they have mostly focused on one particular stage of cancer at a time. Although the presence of depression and anxiety in breast cancer patients is common, studies on the psychosocial correlates of cancer is limited in a country like India, as cancer is widely believed to be a strictly medical condition by most clinical practitioners. Moreover, previous studies on breast cancer [10-12] have focused on the initial stages of cancer or those who have survived after surgery. Studies comparing women in the different stages of breast cancer are few. A stage wise comparison enables an understanding of more appropriate interventions by providing us more specific knowledge about the various needs of the patient's depending on the stage of the illness. This study thus, attempted to study these variables across the various stages of the disease in the Indian context.

This present study has compared women in different stages of breast cancer (initial, middle and advanced) with respect to the presence of psychological distress (depression, anxiety and trauma) and Quality of life in the Indian context. The study also aimed to establish the relationship between psychological distress and QOL among breast cancer patients. This study is warranted as India is facing a rapid increase in the incidence of breast cancer and understanding the psychological impact of cancer is crucial in today's context owing to the increased life expectancy and high survival rates. Furthermore, interventions aimed at alleviating psychological distress have been found to increase efficacy of treatments such as chemotherapy and radiotherapy. Finally assessing quality of life helps to identify problems related to social support, economic burden as well as acceptance of one's own self.

Methods:

Study design: A cross-sectional observational comparative study

Sample size and procedure: The current study consisted of 30 women diagnosed with breast cancer, 10 in each of the three stages of breast cancer, that is, initial, middle and advanced stages. The Mean age of the participants was 45.5 years (S.D. =7.49). Purposive sampling was done as per the National Cancer Institute's (United States) breast cancer staging [13] which is based on the size of the tumour and whether it has spread to lymph nodes or other parts of the body. The Initial stage comprised of stages 0, IA and IB; Middle; stages IIA and IIB and Advanced, stages IIIA, IIIB, IIIC and IV. All the participants were seeking treatment and were chosen from the Oncology units of three hospitals (Two private and One Government) of the metropolitan city of Kolkata, West Bengal. Persons with other acute or chronic physical illness/disability including intellectual disability were excluded from the study. A brief psychiatric screening tool was used to exclude participants having a history of psychosis and substance abuse. The study was approved by the Institutional Ethics Committee of Institute of Post Graduate Medical Education & Research (IPGME&R), Kolkata. Informed consent was taken from the participants to be a part of the study and the following tests was administered.

Tools used:**1. Mini International Neuropsychiatric Interview-5th Edition (M.I.N.I) [14]**

The M.I.N.I. was used as a screening tool to rule out individual's having history of substance abuse and psychosis. It is a short, structured psychiatric interview which is widely used for psychiatric evaluation and outcome assessment in psychopharmacological trials and epidemiological studies [15]. It has been found to show good validity and reliability. The

modules I (Alcohol Dependence/ Abuse, J (Substance Dependence/ Abuse Non-Alcohol) and K (Psychotic Disorders and Mood Disorders with psychotic features) was administered to the participants.

2. Clinical Outcomes in Routine Evaluation (CORE Outcome Measure) [16]

This tool was used to assess the level of psychological distress and negative emotionality (depression, anxiety and trauma) in the breast cancer patients. It consists 34 items and gives a global index of distress score. It taps psychological distress and includes subjective well-being (4 items), commonly faced problems and symptoms (12 items), life/social functioning (12 items) and risk to self and to others (6 items). It addresses the patient's global distress and like most subjective measures cannot be used to diagnose a specific disorder [16]. It is found to have good internal and test-retest reliability (0.75-0.95) and high convergent validity and sensitivity to change [17].

3. World Health Organization Quality of Life (WHOQOL-BREF) [18]

The WHOQOL-BREF, comprising of 26 items was used to assess the quality of life of the breast cancer patients in the domains of physical, psychological, social and environment. It reflects the view that QOL refers to a subjective evaluation which is embedded in a cultural, social and environmental context. Domain scores produced by the WHOQOL-BREF correlate highly (0.89 or above) with WHOQOL-100 domain scores and demonstrate good discriminant, content and internal validity as well as good test-retest reliability [19].

Statistical analysis: Statistical Package for Social Sciences for windows version 16 was used. Chi square test was done for categorical variables to determine whether there was a significant difference between the women in the three breast cancer stages on the basis of

socio-demographic details (Family type, Area of stay, Family history of cancer and Family income).

Since the variables were found to have homogenous variances according to Levene's test, One way analysis of variance (One-way ANOVA) was done to determine whether the three stages differed significantly on the basis of Age, Years of Education, Age of onset of disease, Age of detection of disease, CORE Outcome Measure and WHOQOL-BREF scores. The groups were then clubbed together and Pearson's Correlation was computed to find out the association between quality of life and psychological distress.

Results: All the women in the study have had breast surgery for treatment purpose and were seeking treatment for the disease. 13 of them (43.3%) were undergoing chemotherapy, 12 (40%) had underwent both chemotherapy as well as radiotherapy, one of them (3.3%) was taking only radiotherapy whereas four of the women (13.3%) had not yet started any of the treatment procedures after surgery.

The P values for all the socio demographic variables were higher than the accepted P value of 0.05. Thus, there was no significant statistical difference between individuals in the initial, middle and advanced stages of breast cancer, making the three groups of women comparable and increasing the power of the study (Table 1, Table 2).

Statistical analysis revealed no significant difference between the three stages with respect to the domains of psychological distress and quality of life. The P values for all the domains of the two tests were higher than the accepted P value of 0.05. (Table 3, Table 4).

Pearson's correlation showed a significant negative correlation between the domains of Wellbeing, Problems/symptoms and Functioning, as well as the CORE total score with all the domains of the WHOQOL-BREF at 0.05 level. Thus high level of psychological distress was

associated with low QOL scores. Risk score was not found to be associated with QOL (Table 5).

Discussion: The present study attempted to compare the psychological distress and quality of life in the three stages of breast cancer to see how the cancer stage affected the patient's psychological response and quality of life. The study also assessed the relationship between psychological distress and QOL. Results show that the three breast cancer stages did not differ, although more than half of the participants showed symptoms of depression, anxiety and trauma as a result of the cancer diagnosis. Psychological distress and QOL was found to be related with more psychological symptoms leading to poorer quality of life.

There was no difference between the three stages of breast cancer with respect to socio-demographic and clinical variables, making the study free from confounding variables and facilitating the effective comparison of the cancer stages (Table 1, Table 2).

Breast cancer patients in the initial, middle and advanced stages of breast cancer did not differ with respect to psychological distress and symptoms (Table 3). The Problems/symptoms domain of the CORE Outcome Measure assessed the presence of symptoms of depression, anxiety and trauma in the women with breast cancer. In the present study it was found that 16 out of 30 women (53 %) had scores higher than the cut off values indicating clinically significant levels of psychological distress and presence of depressive and anxiety symptoms. Recent studies also yielded similar findings [20, 21]. Depressive and anxiety symptoms did not vary stage wise. This finding is especially important in the Indian context as patients in India, especially in the rural areas are often kept unaware of the diagnosis and illness by family members and clinicians. Lack of knowledge and awareness about the stage of cancer and its implications coupled with the stigma and fear attached to a cancer diagnosis may be an important reason for there being no difference between the three

stages of breast cancer in this study. Elevated levels of psychological distress in more than half the women reveals the importance of psychological interventions such as counselling and psychotherapy in the treatment of breast cancer in India at every stage of the illness.

In this study the three breast cancer stages also did not differ on any of the domains of the WHOQOL-BREF (Table 4). Psychosocial factors are found to be the strongest predictors of QOL, not the stage of cancer or treatment [22]. Quality of life is found to be disrupted in individuals in all three stages. This is because breast cancer affects a woman's identity, regardless of the stage and tumour size. The loss of one's breasts, which is a vital part of a woman's being, interferes with the patient's role as a mother, wife and partner [23]. The diagnosis of the disease, fears and concerns regarding death, disturbed body image, and alteration of femininity, sexuality and attractiveness are factors that cause psychological distress at all stages of breast cancer [24, 25]. Moreover the diagnosis of cancer not only changes the patient's perception of herself but also changes others perception of her. Thus not only psychological and physical but social functioning is also affected having an impact on the patient's overall wellbeing.

There was no difference between the three stages on the Risk score (Table 3). One study however found that the risk of suicide increased with increasing stage of breast cancer [26]. The study was longitudinal and the same individuals were assessed as their disease progressed. Moreover it was conducted on women in the United States and Scandinavia. The difference in the study methods and participants may have resulted in the difference in findings with the current study. Although our study did not find difference between the three stages it does not undermine the need for interventions to prevent risk to self and others in breast cancer patients. In fact, it indicates that interventions and preventive measures should be provided to all patients irrespective of the stage.

Results found that high CORE outcome measure score were associated with low score of the WHOQOL-BREF (Table 5). Among the breast cancer patients, greater difficulties in wellbeing/ functioning and increasing symptoms of anxiety, depression and trauma was found to be related to lowered quality of life. Other studies [27, 28] also found that anxiety and depression was associated with a lowered quality of life in cancer patients. This is because depression and anxiety tends to reduce biological functioning and tends to interfere with treatment procedures thereby reducing one's quality of life. Not only do the patients feel helpless and less optimistic, it brings about social isolation and feelings of worthlessness. Quality of life measures including social support, nutrition and home environment in turn are important to alleviate psychological symptoms in breast cancer patients.

The findings suggest that the cancer experience does not differ in entirety based on the stage at diagnosis, and more individual factors such as age, coping style and personality factors may instead be more important when understanding the patient's psychological and social functioning in breast cancer, thereby warranting further research in the Indian context. It also suggests the need for psychological assessment and intervention at every stage in order to improve patient's quality of life and treatment outcome.

Limitations: The study had a small sample size and a larger sample would have increased the power of the study. There was no control group thereby limiting our understanding of how much the breast cancer patients differed from the healthy cancer free individuals with respect to psychological distress and QOL. Predictive statistics could not be used due to the small sample size. Therefore, no conclusion could be drawn regarding which variable predicts the other. The CORE Outcome Measure did not have standardized norms for the Indian population thus acting as a limitation of the study.

Conclusion: This study found that psychological distress associated with breast cancer diagnosis can interfere with functioning and lower quality of life irrespective of the stage at diagnosis. Psychological interventions should therefore be provided at every stage. The current study is an attempt to understand the psychological aspects of the breast cancer experience thereby helping in the better management of breast cancer patients. Psychological response and QOL influence each other and are related. Therefore efforts at improving quality of life by reducing psychological distress can be brought about by strengthening the breast cancer patient's coping repertoire and support system. The findings re-establish the importance of psycho-oncology and role of mental health professionals in the area. Future studies on the Indian population with respect to the psychological correlates of breast cancer are warranted.

List of Abbreviations: WHOQOL-World Health Organization quality of life; QOL; quality of life; M.I.N.I- Mini International Neuropsychiatric Interview, ANOVA-analysis of variance.

Conflict of interest: There was no conflict of interests.

Ethical considerations: The study was approved by the institute ethics committee.

Author's contribution:

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Table 1: Comparison of Socio-demographic (categorical) variables

Variables	Sub-categories	Initial stage (N=10)	Middle stage (N=10)	Advanced stage (N=10)	Chi- square (df=2)	p value
Family type	Nuclear	6	5	6	0.271	0.873
	Joint	4	5	4		
Area of stay	Urban	10	7	6	4.845	0.089
	Rural	0	3	4		
Family history of cancer	Present	3	1	5	3.810	0.149
	None	7	9	5		
Family income	<25,000	5	7	7	1.148	0.563
	25,000 and above	5	3	3		

Table 2: Comparison of Age, education and clinical details

	Stages	Mean	SD	F	P value
				Df=29	
Age	Initial	43.4	7.36659		
	Middle	46.4	7.90499	.575	.569
	Advanced	46.7	7.54321		
Yrs of	Initial	11.5	2.01384		
Education	Middle	11.4	3.65756	.011	.989
	Advanced	11.3	3.09300		
	Initial	42.3	7.27324		
Age of onset of disease	Middle	45.5	7.80669	.641	.534
	Advanced	45.7	7.51369		
	Initial	42.9	7.30981		
Age of detection of disease	Middle	46.0	7.70281	.566	.574
	Advanced	46.0	7.54247		

Table 3: Comparison on the CORE Outcome Measure

	Stages	Mean	SD	F	P value
				Df=29	
Wellbeing	Initial	6.0	3.55903		
	Middle	7.2	5.30827	.484	.622
	Advanced	5.5	2.54951		
Problems/symptoms	Initial	21.6	11.94618		
	Middle	19.6	11.08753	.084	.920
	Advanced	21.2	11.56431		
Functioning	Initial	12.6	9.07010		
	Middle	13.1	8.30596	.266	.768
	Advanced	10.6	6.78561		
Risk score	Initial	2.7	2.75076		
	Middle	3.8	5.55378	.494	.616
	Advanced	2.1	2.60128		
Total score	Initial	42.9	24.31940		
	Middle	43.7	26.86199	.087	.917
	Advanced	39.4	21.98585		

Table 4: Comparison on Quality of life

	Stages	Mean	SD	F	P value
				Df=29	
Overall QOL	Initial	7.3	1.33749		
	Middle	7.1	1.72884	.302	.742
	Advanced	6.8	1.22927		
Physical	Initial	20.6	7.36659		
	Middle	22.9	4.81779	.364	.698
	Advanced	22.3	6.30784		
Psychological	Initial	19.1	5.76291		
	Middle	19.0	6.11010	1.094	.349
	Advanced	22.1	3.81372		
Social	Initial	11.9	3.10734		
	Middle	11.2	3.04777	.277	.760
	Advanced	12.1	2.28279		
Environment	Initial	30.9	5.32186		
	Middle	29.0	6.91215	.337	.717
	Advanced	29.0	5.57773		

Table 5: Association between psychological distress and QOL

Variables	Overall	Physical	Psychological	Social	Environment
	QOL				
Wellbeing	-.616**	-.491**	-.681**	-.425*	-.455*
Problems/Symptoms	-.624**	-.761**	-.711**	-.397*	-.487**
Functioning	-.646**	-.574**	-.815**	-.658**	-.613**
Risk score	-.242	-.348	-.348	-.295	-.315
CORE total score	-.650**	-.687**	-.775**	-.524**	-.560**

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).