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Assessment Of Anxiety, Depression, And Sexual Dysfunction Among Post Chemotherapy Breast Cancer Patients Across Demographic Profiles

Kamaljeet Sodhi

Student

Amity Institute of Behavioural and Allied Sciences

Amity University Lucknow

Uttar Pradesh, India

ABSTRACT

This paper has discussed depressive symptoms, anxiety symptoms, and sexual functioning in people receiving chemotherapy but with special attention to the role of educational level and treatment stage. Thirty-five people did the Beck depression inventory (BDI), Beck anxiety inventory (BAI) and Female Sexual Function Index (FSFI). Descriptive statistics indicated that participants who had higher levels of education reported lower levels of depressive symptoms but no difference was found in the levels of anxiety at different levels of education. The independent samples t-tests revealed that the levels of anxiety were significantly greater among participants in Stage 2 than in Stage 1, but there were no significant differences in depressive symptoms and sexual functioning between the stages. The Pearson correlation analyses established that depression and anxiety have a significant positive relationship ($r = .675$, $p < .001$), whereas sexual functioning related significantly to neither of the two psychological variables. Also, the length of chemotherapy had no significant correlation with depression, anxiety, and sexual functioning. These results indicate that psychological distress, especially the interrelation between depression and anxiety is a key problem of the patients undergoing chemotherapy, and other factors may affect sexual functioning and treatment time. The paper shows that regular psychosocial evaluation and combined interventions in cancer care are necessary to enhance the emotional state. Further research based on larger and longitudinal studies are advised in order to gain a clearer picture of the dynamics of psychological adjustment during the treatment of cancer.

Keywords: depression, anxiety, sexual functioning, chemotherapy, oncology, psychosocial adjustment.

I. INTRODUCTION

Background

Breast cancer is one of the most common cancers impacting women around the world (Vazhenin, A. V., et al. 2022). According to WHO estimates, about 2.3 million women were diagnosed with breast cancer globally in 2020 (Samami, Elahe, et al. 2021). Improvements in screening, chemotherapy, and targeted therapy have greatly increased survival rates(Van Sebille, Ysabella Za, et al. 2019).
However, surviving breast cancer is not just about medical recovery. Women often go through psychological distress, including anxiety and depression (Lee et al.). They may also face changes in sexual functioning after chemotherapy.

Psychological Impact

The diagnosis of breast cancer disturbs the future expectations of a woman, her identity and feeling of security. Fear of recurrence, financial pressures, medical follow-ups, and family pressures are often related to anxiety of survivors (Pham et al.). Research has estimated the percentage of those survivors who develop important anxiety symptoms to range between 20 and 40 percent (Korenjak).
There is also a high prevalence rate of depression as it occurs in 10- 25 percent of breast cancer patients and this can be caused by body image changes, fertility loss, chemotherapy induced menopause, and social isolation.

Sexual Dysfunction

Chemotherapy may result in hormonal alteration that may lead to vaginal dryness, decreased libido, dyspareunia, and inability to attain sexual orgasm (Psoter and Aguilar). Such problems are not reported as much because of cultural stigma and the absence of their discussion in the clinical environment.

Rationale of the Study

1. Post-chemotherapy breast cancer patients have anxiety and depression that are often underdiagnosed.
2. Sexual dysfunction is a serious survivorship problem that has not been given much attention.
3. Sexual dysfunction and psychological distress are related to each other and ought to be researched as a unit.
4. Vulnerabilities and coping styles may depend on demographic factors.
5. It is necessary to have context-specific, combined evidence to provide holistic survivorship care.

Research Aim

The aim of this study was:
To estimate the prevalence and levels of anxiety, depression, and sexual dysfunction among breast cancer patients after chemotherapy and examine their relationship with demographic factors.

II. REVIEW OF LITERATURE

Psychological Distress among Breast Cancer.

The evidence of research has continuously demonstrated that breast cancer survivors do suffer much psychological distress and sexual dysfunction in the post-treatment period, especially after chemotherapy. According to studies, a high percentage of women acquire anxiety and depression in the course of survivorship, and it can have a detrimental impact on the quality of life and relationships with others (Carreira et al., 2018; Hashemi et al., 2020). High cases of emotional distress are constantly

recorded in breast cancer survivors. In a multicenter study, it was determined that almost two-thirds of survivors suffer anxiety and that one-third patients have moderate to severe depression.

Sexual Dysfunction

Karaçin & Kucuksahin (2025) established that there was sexual dysfunction symptoms in 87 percent of breast cancer survivors, whose level of depression was strongly linked to a decrease in desire and satisfaction. Cross-sectional studies also show that the problem of sexual dysfunction is quite widespread among survivors, which can be related to aspects of desire, arousal, lubrication, and satisfaction . There is a tendency to think that psychological distress and sexual functioning are connected; depressive and anxious conditions are linked with worse sexual satisfaction and problems with relationships (Alacacioglu et al., 2014; Guedes et al., 2025).

Psychological Interventions

Mindfulness-based interventions and cognitive-behavioral therapy (CBT) have been demonstrated to decrease the anxiety and depression in cancer patients.
These outcomes can be further determined by demographic factors, including age, education level, marital status, and the treatment factors. To give a few examples, sexual dysfunction has been attributed to older age, menopause, and hormonal treatments, whereas psychological distress has been identified as being more associated with lower rates of education and lack of social support (Karaçin & Kucuksahin, 2025; Trapani et al., 2022). Systematic reviews also reveal that the fear of cancer recurrence and treatment side effects are also the causes of the persistent feeling of anxiety and depressive symptoms among survivors (Maheu et al., 2021; Fortin et al., 2021).

In general, the literature indicates the relevance of the measurement of anxiety, depression, and sexual dysfunction in a unified package to patients undergoing breast cancer post-chemotherapy under various demographic characteristics to gain a clearer view of the survivorship issues as well as create overall psychosocial interventions.

Research Gap
Majority of the past researches have looked at psychological distress or sexual dysfunction as independent variables whilst the studies with relationships between these variables within a particular demographic setting are few.

III. RESEARCH METHODOLOGY

Research Design

The study used a **cross-sectional descriptive research design** to examine psychological and sexual functioning among women who had undergone chemotherapy.

Hypothesis

- Hypothesis 1: With post-chemo breast cancer patients, most of them will indicate significant symptoms of depression clinically.
- Hypothesis 2: In breast cancer patients who have gone through chemotherapy, a significant proportion of patients will be reporting clinically significant symptoms of anxiety.
- Hypothesis 3: Sexual dysfunction will be common among the patients of breast cancer after chemotherapy, with the low percentage of the patients still having normal sexual activity.

Sample

- Sample size: **35 participants**
- Age range: **25–50 years**
- Breast cancer stage: **Stage 1 or Stage 2**

- All participants had completed **1–6 cycles of chemotherapy**.

Inclusive Criteria

- Along with this, women aged between 25 and 50 and were breast cancer survivors, married people, and at Stage 1 or Stage 2 of cancer were included in the study.
- The participants were at least 18 years old and they had gone through at least three chemotherapy cycles and given informed consent.
- These criteria were used to make sure that the participants were able to make meaningful reports about their psychological and sexual experiences post-treatment.

Exclusive Criteria

- Women with Stage 3 or Stage 4 breast cancer or those women who had undergone pregnancy or breastmilk feeding or women with already developed psychiatric disorders were eliminated.
- Participants: Only participants who had had chronic diseases that compromised their sexual functioning and those who were not willing or not able to complete questionnaires and give consent to the research were not included as this would guarantee the collection of reliable and ethical data.

Instruments

They were three standardized instruments:

- **Beck Depression Inventory (BDI)**

Ratings depressive feelings on 21 items.

- **Beck Anxiety Inventory (BAI)**

Evaluates the level of anxiety symptoms.

- **Female Sexual Function Index (FSFI).**

Assesses six areas of sexual functioning, which include desire, arousal, lubrication, orgasm, satisfaction, and pain.

Statistical Analysis

Data were analyzed using:

- Descriptive statistics
- Independent samples t-tests
- Pearson correlation analysis (SPSS).

Procedure

They were recruited at oncology outpatient clinics. They filled in self-administered questionnaires of depression, anxiety, and sexual functioning after giving informed consent.

IV. RESULTS AND DISCUSSION

Table 1: BAI Scores by Education Level

Education Level	Mean	Std. Deviation	Minimum	Maximum	Range
Primary	22.90	8.48	9	35	26
Secondary	22.20	6.22	15	31	16
Tertiary	22.25	7.11	7	30	23

The Beck Anxiety Inventory (BAI) was employed to study the differences in anxiety among education groups using the descriptive statistics. The primary education participants obtained a mean score of 22.90 (SD = 8.48), secondary education participants obtained a mean score of 22.20 (SD = 6.22), and tertiary education level obtained a mean score of 22.25 (SD = 7.11). These means are quite close which indicates that the levels of anxiety were more or less the same in relation to levels of education. The skewness values were between -0.86 and 0.44 and that indicates more or less normal distributions, and the values of kurtosis were between -0.44 and -0.17, which is within the acceptable limit. There was a maximum variability in the primary education category and minimum variability in the secondary education category.

BDI Scores by Education Level

Education Level	Mean	Std. Deviation	Minimum	Maximum	Range
Primary	26.10	12.72	8	40	32
Secondary	28.40	9.84	16	40	24
Tertiary	21.65	8.80	8	40	32

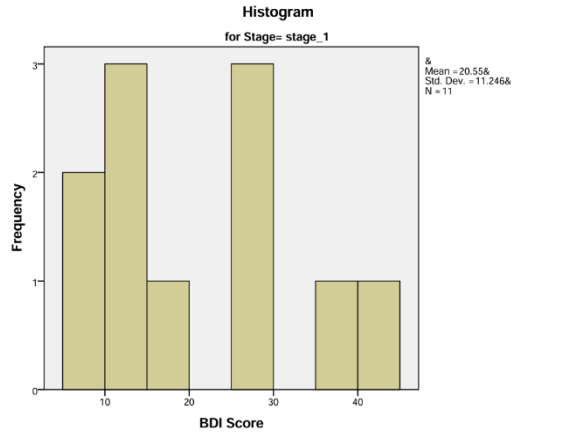
The Beck Depression Inventory (BDI) was used to calculate the descriptive statistics as the means of studying the depressive symptoms by the education level. The mean depression score of the participants who had primary education was 26.10 (SD = 12.72). The sample of secondary education demonstrated the highest mean score (M = 28.40, SD = 9.84) whereas the sample of tertiary education demonstrated the lowest mean score (M = 21.65, SD = 8.80). These findings indicate that depressive symptoms can be correlated with higher education. The most variable was the primary education group with the least varying tertiary group. The values of skewness (-0.27 to 0.45) and kurtosis (-1.90 to -0.61) showed that the distributions were almost normal and hence could be analyzed using the parametric tests.

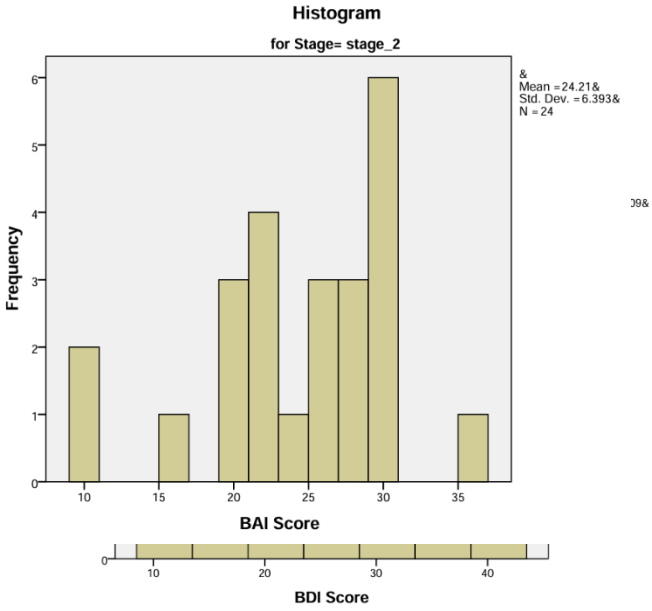
Group Statistics

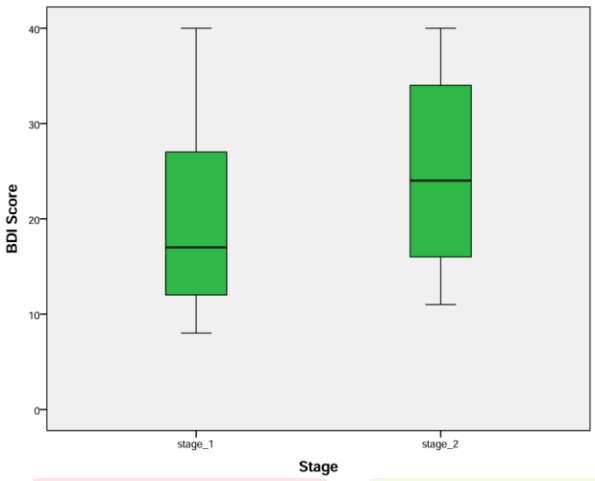
	Stage	N	Mean	Std. Deviation	Std. Error Mean
BDI Score	stage_1	11	20.55	11.246	3.391
	stage_2	24	25.42	9.609	1.962
FSFI Interpretation	stage_1	11	2.64	5.874	1.771
	stage_2	24	.63	3.066	.626
BAI Score	stage_1	11	18.55	7.634	2.302
	stage_2	24	24.21	6.393	1.305

BDI Score

Histograms





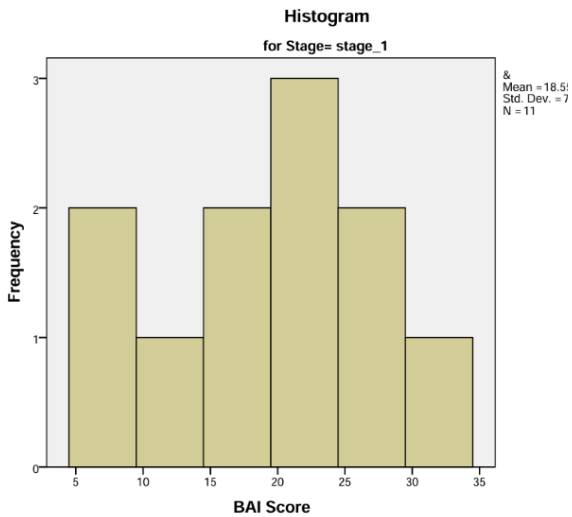


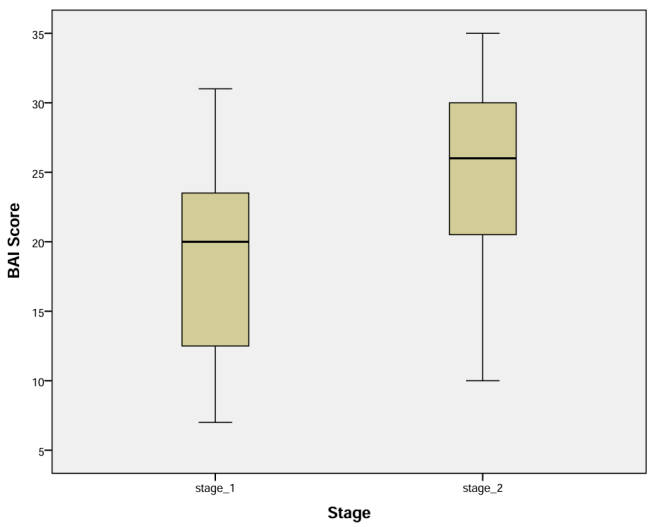
BDI Scores

Stage 1 (M = 20.55, SD = 11.25) showed less depressive symptoms compared to Stage 2 (M = 25.42, SD = 9.61). The test of equal variance of Levene was not significant, F (1, 33) = 0.67, p=.419, which means that the assumption of the equal variance was not violated. Thus, it was assumed that the variance was equal.

The independent samples t-test showed that the difference between the two stages of BDI scores was not statistically significant, t (33) = 1.32, p =.196. The mean difference interval value was 95 percent to cover a range of between -12.38 and 2.64 which shows that the actual mean difference may have a value of zero.

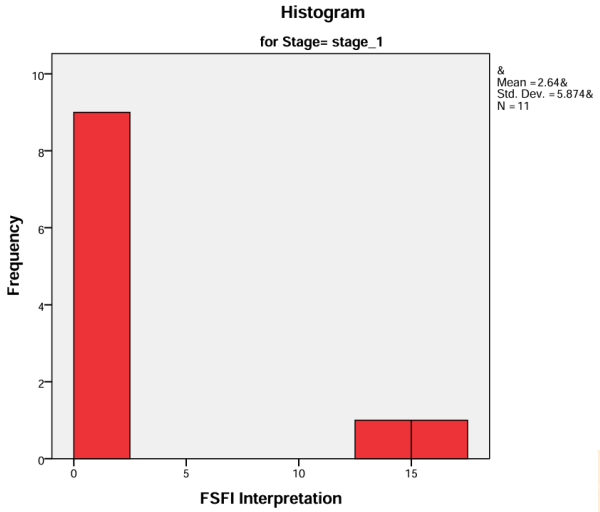
Interpretation: The difference in the mean scores in depression was not statistically significant, though the participants of Stage 2 showed higher mean scores.

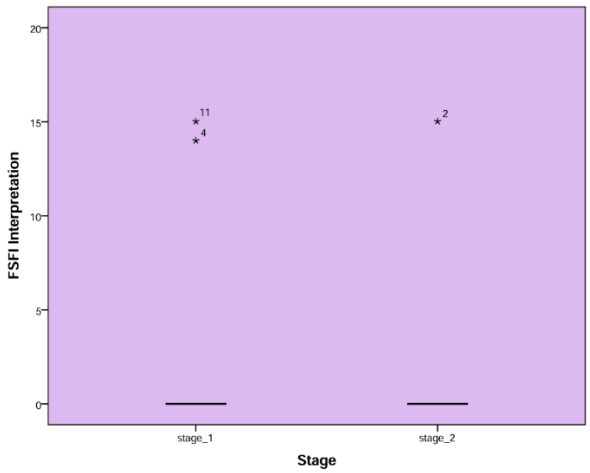




BAI Scores

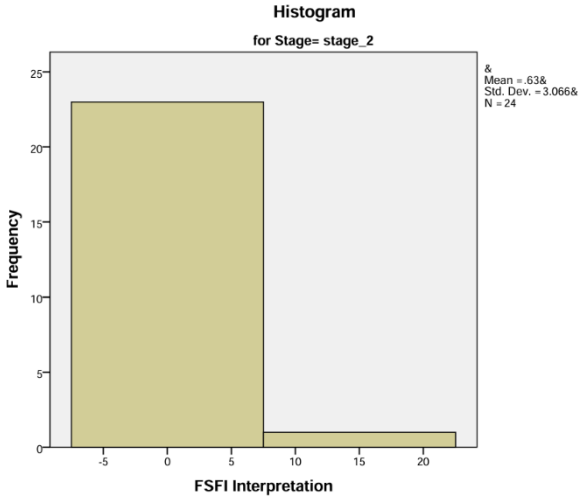
The participants in Stage 1 (M = 18.55, SD = 7.63) experienced less anxiety symptoms than Stage 2 participants (M = 24.21, SD = 6.39).The test of Levene was not significant, F (1, 33) = 0.54, p =.467 and, therefore, equal variances were assumed. The t-test of independence showed that the result of difference of the scores of anxiety was significant, t (33) = -2.29, p =.029. The confidence interval of the mean difference was between 95 percent (-10.70 and -0.63).
Interpretation: Respondents in Stage 2 indicated high anxiety levels as compared to Stage 1.





FSFI Interpretation Scores

The participants of Stage 1 (M = 2.64, SD = 5.87) had better FSFI scores than Stage 2 participants (M = 0.63, SD = 3.07). The test by Levene, F (1, 33) = 7.52, p =.010, was significant and this showed the violation of homogeneity of variances. Thus, the outcomes in which equal variances were not taken were interpreted.
The independent samples t-test revealed that it was not significant, t (12.57) = 1.34, p =.189. The confidence interval of the difference in means was 95 percent and it was between -1.04 and 5.07.
Interpretation: No statistically significant difference between the FSFI scores was found between Stage 1 and Stage 2.



Correlations

		BDI Score	BAI Score	FSFI Interpretation	Chemotherapy Period
BDI Score	Pearson Correlation	1	.675**	.056	.098
	Sig. (2-tailed)		.000	.749	.574
	N	35	35	35	35
BAI Score	Pearson Correlation	.675**	1	-.124	.002
	Sig. (2-tailed)	.000		.478	.991
	N	35	35	35	35
FSFI Interpretation	Pearson Correlation	.056	-.124	1	.033
	Sig. (2-tailed)	.749	.478		.851
	N	35	35	35	35
Chemotherapy Period	Pearson Correlation	.098	.002	.033	1
	Sig. (2-tailed)	.574	.991	.851	
	N	35	35	35	35

Correlation Analysis

The Pearson product-moment correlation coefficients were calculated to test the correlation between depressive symptoms (BDI), anxiety symptoms (BAI), sexual functioning (FSFI interpretation) and chemotherapy period. Those who were included in the analysis were 35.

Correlation analysis showed a strong positive relationship between depression and anxiety. Correlation BDI and BAI scores were high and significant, r (33) =.675, p <.001, which means that the more the depressive symptoms are correlated with the high level of anxiety in the sample. But depression was not significantly associated with sexual functioning, r (33) =.056, p = -749. Equally, anxiety did not have a significant relationship with sexual functioning, r (33) = -.124, p =.478. The duration of chemotherapy did not show any significant correlations with depression, anxiety, or sexual functioning. All in all, the studied findings suggest that sexual functioning, as well as chemotherapy period, is not tightly connected with depression and anxiety.

V. DISCUSSION

The results suggest that women receiving chemotherapy experience psychological distress frequently. The close association of depression and anxiety is a testimony to the literature indicating the high levels of comorbidity between the conditions.

The participants who had higher education were more likely to report lower levels of depressive symptoms, which may be as a result of the ability to cope and the availability of resources.

Stage 2 patients experienced anxiety much more and this implies that later in the treatment the distress levels can rise as the side effects continue to accumulate and the patients may not have a clear understanding of the prognosis.

There were no significant correlations between sexual functioning and psychological variables in this sample, which could be attributed to physiological effects of treatment or cultural constraints of disclosing sexual issues.

VI. CONCLUSION

The current research study investigated the correlation between depressive symptoms, anxiety symptoms, sexual functioning, educational level and treatment stage of chemotherapy patients. With the

help of descriptive statistics, t-tests of independent samples, and Pearson correlations, several significant results were determined.

Depression and anxiety were significantly correlated and the correlation was strong meaning that people who had higher levels of depressive symptoms had higher levels of anxiety. This result shows the strong correlation between these psychological constructs in populations with oncology and the significance of measuring both concurrently in clinical practice.

Comparison of the difference in the treatment stage showed that anxiety level was significantly more in the Stage 2 than in Stage 1. There were however no significant differences in stages regarding depressive symptoms, or sexual functioning. These findings indicate that the anxiety levels might rise over the course of treatment, which might be attributed to accumulating stressors related to chemotherapy, whereas the depression and sexual functioning levels might be relatively stationary over the stages.

The descriptive results also revealed that those respondents who had a high level of education showed a low level of depressive symptoms, so education could be taken as some sort of protective factor. Conversely, there were relatively the same levels of anxiety between educational groups.

There was no significant correlation between sexual functioning with depression, anxiety, and the duration of chemotherapy. Also, psychological distress did not have any significant correlation with chemotherapy period. Such results indicate that it might be possible that individual and psychosocial variables can affect the psychological outcomes rather than the length of treatment alone.

On the whole, this paper has demonstrated the great interactions between depression and anxiety in people receiving chemotherapy and that merger psychosocial assessment and intervention is required. The psychological distress is an issue that can help to improve the psychological well-being of patients during their treatment and improve their quality of life in general. It is advisable to conduct larger sample and longitudinal studies in the future which can help to better understand these associations and make appropriate clinical interventions based on the results.

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Kamaljeet Sodhi
M.A. Clinical Psychology, 4th semester, Batch 2024-2026
Amity University, Lucknow Campus
Uttar Pradesh

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