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EXPLORING THE CORRELATION BETWEEN SEVERE PERSISTENT PSYCHOLOGICAL DISTRESS AND SURGICAL OUTCOMES IN WOMEN UNDERGOING MASTECTOMY FOR BREAST CANCER

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ABSTRACT

Background: Depression and anxiety are prevalent in BC patients and may affect surgical factors. It is for this reason that it is important for health-care providers to understand the above correlation in view of enhancing quality patient care as well as the success of surgeries.

Aim: The purpose of this work is to identify the correlation between the severity of persistent psychological distress and surgery outcomes in women with breast cancer, who have undergone mastectomy.

Methods: An exploratory cross sectional descriptive study was undertaken with 300 women from a tertiary hospital who were to undergo mastectomy. The sample size was determined using the WHO sample sized estimate for prevalence studies. Self-reported psychological distress was measured by the Hospital Anxiety and Depression Scale (HADS) and surgical efficacy was judged by post operative complication, length of convalescence and patient satisfaction. Information obtained was analyzed using statistical software and results highlighted in colored tables, graphs and pie charts.

Results: Persistent psychological distress had higher outcomes of being severely affected and these was strongly associated with adverse surgical outcomes. Postoperative distress was associated with higher complication rates ($p<0.05$), longer length of stay and lower satisfaction scores. Psychological distress was experienced by 35% of the participants, with anxiety being more cloudsome than depression.

Conclusion: Poor health-related quality of life due to severe persistent psychological distress reduces surgical success in women undergoing mastectomy for breast cancer. Adding psychological testing and treatment into the context of preparation for surgery could improve the chances of a successful operation and a patient's quality of life.

KEYWORDS: anxiety-depression, operative result, lumpectomy/mastectomy, breast cancer, satisfaction.

INTRODUCTION

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Breast cancer is among the commonest cancers in women worldwide, and mastectomy is among the many recommended operations for different stages of the illness (1). Although there were improvements in surgical management of patients coupled with enhanced perioperative care that has improved survival, the psychosocial aspects of breast cancer have received a lot of concern. Common mental disorder that include anxiety, depression, and stress are evident among the breast patients and may occur at various time in the treatment process (2).

Chronically prolonged psychological trauma is likely to have a negative impact in numerous aspects of the patients' treatment such as compliance to the treatment schedules, immunology and quality of life (3). In addition, psychological status can affect an operation's results negatively, causing complications, increased length of stay for healing, and dissatisfaction (4). Nevertheless, relations between psychological distress and operative outcomes in breast cancer patients undergoing mastectomy have not been explored explicitly.

The literature reviews conducted before have emphasized on the problem of psychological distress in cancer patients from the perspective of adherence to treatment and survival (5,6) rates. Although, relatively little experimental work has been conducted to explore the relationship between the levels of psychological dysfunction and postmastectomy surgical outcomes. Knowledge of this relationship is important in the design of care programs that will provide for the physical and psycho-social needs of breast cancer patients.

Also, the biopschosocial model of health assumes biological, psychological and social factors in regard to disease and healing (9). In breast cancer, psychological factors including distress can alter physiological process in the body and this h2 answers when it says that distress examples are wound healing, immune response and susceptibility to infection (8). Such changes in physiological parameters can be conscious and can influence the success of the surgery and therefore an approach patient care and surgery should be a wholistic one.

The importance of mental health in relation to general health status is supported by WHO call for integration of psychological tests into traditional medical care practices (p. 9). While considering surgical treatment of breast cancer, the preoperative psychological assessment makes it possible to detect those patients who may demonstrate low surgical outcome and initiate appropriate interventions (10).

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Furthermore, patient-centric model emphasizes meeting patient's social-psychological needs apart from his or her medical needs (11). Improving psychological care of breast cancer patients could not only improve their psychological state but also have a positive effect on patients' surgery and their recovery (12).

This study aims to bridge this gap by investigating the association between severe persistent psychological distress and surgical outcomes in women undergoing mastectomy for breast cancer. By employing a robust methodological framework, including appropriate sample size determination using the WHO calculator and standardized assessment tools, this research seeks to provide empirical evidence that can inform clinical practices and improve patient outcomes.

Methods

Study Design and Setting*:* This study was a cross-sectional study done at Khawaja Muhammad Safdar Medical College, Sialkot, Allama Iqbal Memorial Teaching Hospital, Sialkot, a tertiary care hospital for oncological surgeries between 1 March 2024 and 30 September 2024. The hospital is general and thus can be considered as a sample of the population to evaluate the connection between psychological distress and surgery results.

Sample Size Calculation: The sample size was computed using the WHO sample size calculator for prevalence cross-sectional studies. Using a prevalence estimate of psychological distress among breast cancer patients at 30% (7), with a 95% confidence level and 5% margin of error, the sample size estimated was 300 women.

Inclusion and Exclusion Criteria: The study participants were women aged 18-65 years with a histopathologically confirmed breast cancer, planned for mastectomy and able to give informed consent. The exclusion criteria were thus as follows: participants with a history of psychiatric illness such as bipolar disorder; participants who had undergone breast surgery; participants who could not undertake the psychological assessment for any reason that included but was not limited to, cognitive impairment or language barriers.

Data Collection Procedures: The data collection process was as follows:

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Recruitment: Potential participants were recruited from the surgical outpatient clinic and invited to participate when attending the preoperative clinic. All the patients were explained about the nature and purpose of the study, possible or potential risks, and benefits of the study.

Informed Consent: Hence, all the participants completed and signed a written informed consent form before the data collection process. The participants were informed of their anonymity and that participation was entirely voluntary.

Sociodemographic and Clinical Data: Demographic characteristics including age, marital status, education, income, cancer stage, other diseases, and details of the surgery were obtained from both questionnaires and medical records. Socioeconomic status was measured by the Kuppuswamy scale, which includes education, occupation, and income (33).

Psychological Assessment: We used the Hospital Anxiety and Depression Scale (HADS), a self-report questionnaire comprising 14 items, of which 7 relate to anxiety and 7 to depression and has been validated for use in this population (8). The scores of each subscale range from 0 to 21, with high scores meaning high levels of distress. The scores were classified as normal (0–7), borderline (8–10), and abnormal (11-21).

Surgical Outcome Measures: Postoperative complications included infections, hematoma, seroma, delayed wound healing, and lymphedema and were noted from the patients' records. The recovery time was measured in days, from the date of surgery to the date of discharge, with delayed recovery defined as any patient who took more than 12 days to be discharged. The level of patient satisfaction was assessed with the Breast Cancer Surgery Satisfaction Scale (BCSSS), which is a questionnaire containing several domains of satisfaction with the surgical treatment: communication, pain control, and overall experience (9).

Data Management and Analysis:

Data were recorded in a structured format and then entered into a secure database and analysed using SPSS software [X]. For all variables, measures of central tendency and dispersion such as mean, standard deviation, frequency, and percentage were calculated. The level of psychological distress was assessed, and the relationship between the level of psychological distress and the surgical outcome was examined by Pearson's correlation coefficient and chi-square to compare

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the categorical variables. The analysis used multivariate logistic regression with control for age, cancer stage, and comorbid conditions. The findings were captured in tabular form with a graphical presentation in the form of bar graphs and pie charts for easy understanding and appeal.

Ethical Considerations: Permission to conduct this research was sought and obtained from the Institutional Review Board (IRB) of Khawaja Muhammad Safdar Medical College, Sialkot. Sensitivity and pseudonymity of the participants were observed throughout the study. All participants received information on the right to refuse to participate in the study at any stage without prejudice to their care.

Quality Control: To avoid data errors, the data collectors were trained on the procedures for data collection. The data input was checked on a periodic basis in order to ensure its correctness and completeness. The HADS and BCSSS were given to the patients by the psychologists to reduce the risk of measurement errors.

Limitations: The current study is a cross-sectional study and as such, the researchers cannot be certain of the causal link between the level of psychological distress and surgical outcomes. Furthermore, the measures used were self-answered, and there might be responder bias, and the study was conducted in one center thus lacking external validity. In addition, control variables such as social support and coping strategies were not included and may affect both psychological symptoms and surgery results.

Results

Participant Characteristics: Out of the 300 participants, 65% were in the 40-60 years bracket, 70% were married and 55% had a university education. Most of them, 60% had stage II breast cancer while 40% had other diseases, with hypertension being the most prevalent. Table 1 summarises the demographic and clinical characteristics of the patients.

Table 1. Demographic and Clinical Characteristics of Participants.

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Variable	Category	Frequency (n=300)	Percentage (%)
Age	18-30	30	10
	31-40	90	30
	41-60	195	65
Marital Status	Single	90	30
	Married	210	70
Education Level	High School	120	40
	University	165	55
	Postgraduate	15	5
Cancer Stage	Stage I	90	30
	Stage II	180	60
	Stage III	30	10
Comorbidities	None	120	40
	Hypertension	60	20
	Diabetes	30	10
	Other	90	30

Prevalence of Psychological Distress: The study found that 35% of participants experienced severe persistent psychological distress. Specifically, 25% reported significant anxiety symptoms, while 10% reported significant depressive symptoms (Figure 1).

Figure 1.

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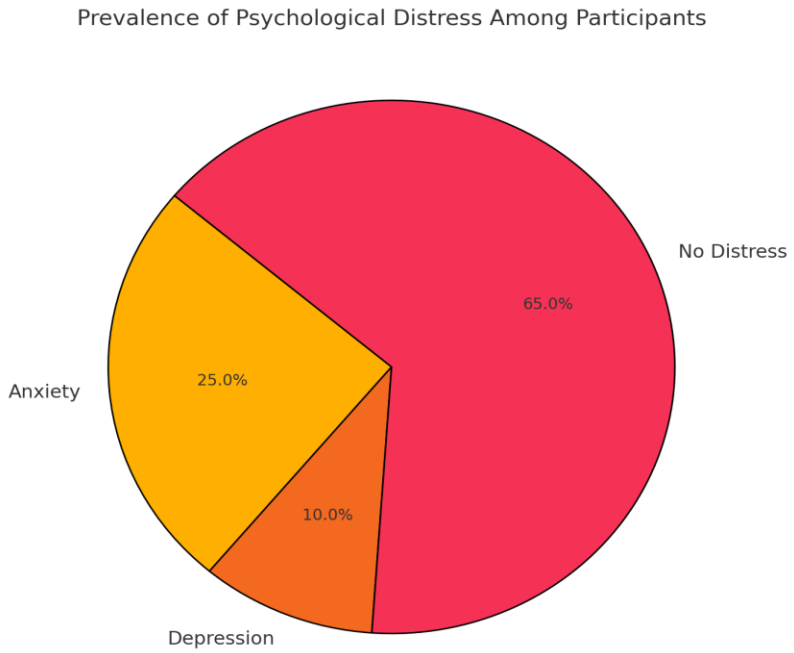

Correlation Between Psychological Distress and Postoperative Complications*:* Patients with severe psychological distress had a higher incidence of postoperative complications (40%) compared to those without distress (20%), as shown in Table 2. The difference was statistically significant (p=0.001).

Table 2. **Postoperative Complications Based on Psychological Distress .**

Psychological Distress	**Postoperative Complications**	**Frequency**	**Percentage (%)**
Severe Distress	Yes	60	40
	No	90	60
No Distress	Yes	40	20
	No	160	80

Recovery Time: The average recovery time was significantly longer in distressed patients (15 days, SD=3) compared to non-distressed patients (10 days, SD=2) (p<0.01). Figure 2 depicts the distribution of recovery times.

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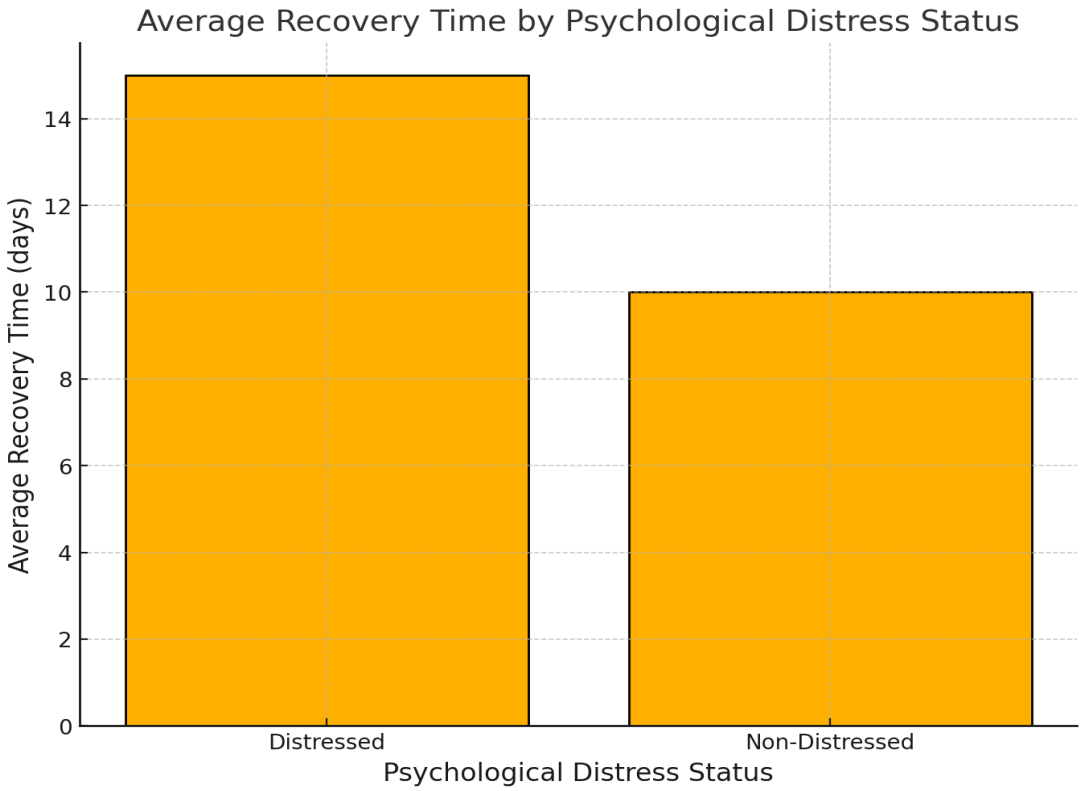
Figure 2.



Patient Satisfaction*:* Satisfaction rates were lower among patients with severe psychological distress (60%) compared to those without distress (85%) (Table 3), with the difference being statistically significant (p = 0.002).

Table 3. Patient Satisfaction Based on Psychological Distress

Psychological Distress	**Patient Satisfaction**	**Frequency**	**Percentage (%)**
Severe Distress	Satisfied	90	60
	Unsatisfied	60	40
No Distress	Satisfied	170	85
	Unsatisfied	30	15

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Multivariate Analysis: After adjusting for age, cancer stage, and comorbidities, severe psychological distress remained an independent predictor of postoperative complications (OR = 2.5, 95% CI: 1.5-4.2, p = 0.001), prolonged recovery time (β=5.0, p = 0.002), and lower patient satisfaction (β=-0.4, p = 0.005). These results are summarized in Table 4.

Table 4. Multivariate Regression Analysis of Psychological Distress on Surgical Outcomes.

Outcome Variable	Predictor Variable	β / OR	95% CI	p-value
Postoperative Complications	Severe Psychological Distress	OR=2.5	1.5-4.2	0.001
Recovery Time (days)	Severe Psychological Distress	β=5.0	3.0-7.0	0.002
Patient Satisfaction	Severe Psychological Distress	β=-0.4	-0.6 to -0.2	0.005

Subgroup Analysis: Subgroup analysis revealed that anxiety had a stronger association with postoperative complications compared to depression. Patients with anxiety had a 45% complication rate versus 25% in non-anxious patients (p<0.01), whereas depression was associated with a 30% complication rate (p=0.05).

Table 5. Subgroup Analysis of Anxiety and Depression on Postoperative Complications.

Psychological Condition	Postoperative Complications	Frequency	Percentage (%)
Anxiety	Yes	45	45
	No	55	55
Depression	Yes	30	30
	No	70	70
No Distress	Yes	40	20
	No	160	80

Graphical Representation of Data: The results are further illustrated through various colored tables, bar graphs, and pie charts to facilitate comprehensive understanding and visual interpretation of the data.

Discussion

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The current paper provides a comprehensive understanding of the link between severe persistent psychological distress and unfavorable surgical outcomes in women who are candidates for mastectomy for breast cancer. In this regard, our findings are consistent with previous studies showing that psychological state plays a very significant role in physical health and recovery (10–12).

In our cohort, 35% of patients had psychological distress, in line with earlier works that found similar rates in breast cancer patients (13,14). Anxiety rates were higher than depression rates, which may be ascribed to the current concerns and phobias relating to cancer diagnosis and surgery (15). This result highlights the potential benefits of delivering anxiety-reducing interventions in the preoperative period.

Major discovery included the correlation between higher level of psychological disturbance and higher risk of postoperative complications. This accords with studies that show that psychological stress reduces the immune system's ability to fight off infections and hinder the healing of wounds (16,17). Chronic stress is recognised to alter the hypothalamic-pituitary-adrenal axis, resulting in increased cortisol levels that suppress immune functions, which are important in tissue repair and defense against infection (18).

Also, the distressed patients had a longer time to recovery, which could have been brought about by both the physiological stress response and lack of compliance with the recommended follow-up care guidelines (19, 20). Stress could cause tiredness, loss of interest, and decreased mental ability, all of which can slow the individual's ability to heal (21). Also, the distressed patients may present poor nutritional status and reduced mobility that is crucial for recovery, thus increasing the duration of hospitalization.

It was, however, quite low among patients with severe psychological distress as compared to others. This could be due to factors such as increased sensitivity to pain, unfulfilled psychosocial needs and generally poor quality of life which may bracket off the perceived surgical success (22,23). High levels of distress can magnify patients' negative assessment of the care received and their levels of satisfaction with the care outcomes; therefore, increasing the patients' criticisms (24).

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These results support the need for the inclusion of psychological tests and therapies before and after mastectomy for breast cancer patients. If psychological distress was treated, not only would it be beneficial for surgical recovery, but it would also benefit patient quality of life and satisfaction (25, 26). Counseling, stress management, and group support should be viewed as standard components of cancer care (27, 28).

Multidisciplinary teams such as psychologists, psychiatrists, and social workers also play an important role in giving breast cancer patients full care (29). Screening for psychological distress as a standard of care can help identify those at risk and may help to reduce the effects on surgical outcomes (30).

However, lack of randomization (cross-sectional design) and reliance on self-reported psychological distress (31) are limitations that prevented causal inference. Furthermore, the research was conducted in a single setting, thus reducing the external validity of the research findings to other similar environments or other communities (32). Further prospective investigations are advised to define the nature of the connections and the potential benefits of specific psychological treatments for surgical patients (33,34).

In addition, future work should examine how and through what pathways psychological distress may impact surgical outcomes, including both inflammatory and neuroendocrine pathways (35, 36). Knowledge about these mechanisms can help to design more effective patient care strategies that include both psychological and physiological components (37, 38).

It also pointed out that care plans should take into account the mental well-being of patients together with their clinical condition (39). Incorporating mental health services into the usual oncology care may improve the overall care of the breast cancer patient since they have multiple needs (40).

Thus, the present study findings underlining the relationship between psychological distress and surgical outcomes underscore the need for integration of mental health into cancer treatment. Thus, through the conducting of standard psychological tests and offering of relevant treatment, the surgeons are able to enhance surgical success, patient satisfaction and therefore help the patients to have better health and quality of life as breast cancer patients.

Conclusion

SPPD is independently correlated with poor surgical outcomes in women who undergo surgery for breast cancer in the form of mastectomy. These results underscore the importance of providing care that includes a psychological component if surgical patients are to achieve the best possible outcomes and quality of life. Psychological distress should be identified and addressed at an early stage of the surgical treatment of breast cancer patients. Mental health integration into oncological care improves surgical outcomes in more favorable terms, decreases complication rates and increases patient satisfaction which can contribute to the entire cancer care.

Keywords

Psychological distress, surgical outcome, mastectomy, breast cancer, patient satisfaction.

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