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# A Comparative Study On Chemotherapy And Targeted Therapy Approaches In Breast Cancer Patients

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***Abstract***

***Background:***

*In women, breast cancer is a very common cancer, especially in low- and middle-income countries (LMICs), where chemotherapy is often used due to its lower upfront cost. However, if we see the impact of the decision in the long term on quality of life (QoL), symptom burden, along with financial stress, is less studied. This research could pave the way for more holistic approaches in cancer care that prioritize both physical health and quality of life.*

***Methods:***

*This was a cross-sectional study done at tertiary hospitals. In total of 400 breast cancer patients who had completed minimum one cycle of chemotherapy or targeted therapy were included. Quality of Life was assessed using EORTC QLQ-C30 and BR-23 questionnaires. Financial burden and return-to-work status were also recorded. Statistical analysis was done using SPSS v26. Chi-square and correlation tests were used. A p-value <0.05 was considered significant.*

***Results:***

*Patients on chemotherapy reported significantly higher financial burden (65% vs. 40%) and worse symptom scores across fatigue, pain, nausea, and cognitive function. Global QoL scores were lower in the chemotherapy group (52.3 vs. 68.4). Return-to-work was also lower (28% vs. 46%). Education level showed a positive association with better coping and fewer complaints. These findings highlight the need for targeted support systems for patients undergoing chemotherapy, particularly in addressing their financial and emotional challenges. Enhancing educational resources may empower patients to better manage their symptoms and improve their overall quality.*

***Conclusion:***

*Chemotherapy, though more accessible, resulted in poorer quality of life and higher financial distress compared to targeted therapy. In LMICs, where cost drives treatment decisions, this study calls attention to a more patient-centered approach that considers long-term outcomes, not just affordability.*

## INTRODUCTION

Globally, Breast cancer is very commonly diagnosed among women and is a dominant factor in cancer-related mortality. As treatment advances, survival rates have improved, but this has shifted the focus toward long-term quality of life (QoL) and financial toxicity. Chemotherapy, although commonly used, has been associated with increased symptom burden and late effects among survivors, often outweighing its upfront cost benefits in low-resource settings[1,2].Alnaim highlighted that women undergoing hormonal therapy recorded a substantial improvement in health-related QoL compared to those receiving chemotherapy, especially in domains of fatigue, emotional function, and role limitations[3]. Bright et al. further reinforced that adherence to endocrine therapy improves outcomes, but socioeconomic and system-level barriers limit its utilization[4].Socioeconomic status deeply influences treatment choices and patient outcomes. Chang et al. found that low-income breast cancer patients were more prone to experience appearance-related distress and poorer body image, which correlated with lower QoL[5]. Frisell et al. reported that patients with higher socioeconomic status were more likely to be offered breast conservation and receive preoperative information, showing disparity even in clinical decision-making[6]. Beyond acute effects, long-term survivors continue to suffer from chronic complications. Lustberg et al. emphasized the burden of delayed toxicities such as neuropathy, fatigue and cognitive issues, particularly following chemotherapy[7]. A nationwide study by Smedsland et al. found that over 60% of long-term

breast cancer survivors suffered moderate-to-severe late effects, with chemotherapy being a major predictor[8].

Despite this, chemotherapy remains the default in many low- and middle-income countries (LMICs), where decisions are influenced more by cost and availability than clinical appropriateness [9]. The current study challenges this narrative by suggesting that chemotherapy patients reported comparatively worse quality of life and higher financial burden than those on targeted therapy, indicating that low upfront costs may not always mean lower total cost of care. This finding underscores the need for a reevaluation of treatment strategies in these regions, as prioritizing cost over patient outcomes can lead to detrimental effects on overall well-being. Policymakers and healthcare providers should consider integrating more effective and sustainable treatment options that align with both clinical efficacy and patients' quality of life.

## MATERIALS AND METHODS

This was a cross-sectional study done at tertiary care hospitals in India after ethical approval. A total of 400 breast cancer patients were included. All were females with confirmed diagnosis who had completed at least one full cycle of either chemotherapy or targeted therapy. Patients with psychiatric illness or secondary cancer were not included. Quality of life was measured using EORTC QLQ-C30 and BR-23 questionnaires. Financial burden was assessed using a self-reported scale based on EQ-5D-5L tools. Return to work, symptom complaints and side effect of therapy were also recorded. Demographic details like education ,age and occupation were noted. Therapy type and treatment details were taken from hospital files. Patients filled the forms during OPD or ward visits after informed consent.

Data was entered in SPSS version 26. Simple frequencies and percentages were used. Chi-square test and correlation were done to find relation between therapy type and financial burden or Quality of Life. A p-value less than 0.05 was taken as significant.

## RESULTS:

**Table 1. Comparison of Financial Strain in Chemo and Target Therapy Patients**

| Therapy Type | High Financial Burden (%) | Moderate Burden (%) | Low Burden (%) |
|---|---|---|---|
| Chemotherapy | 65 | 25 | 10 |
| Targeted Therapy | 40 | 35 | 25 |

Out of 400 breast cancer patients, the average overall Quality of Life score (QLQ-C30) was 61.58 ± 5.56, which suggests moderate Quality of Life. The breast cancer-specific symptom burden (QLQ-BR23) was 70.10 ± 6.23, indicating that patients suffered from considerable symptoms such as fatigue, pain, and emotional problems. The average financial burden score was 22.63 ± 4.84, showing that many patients experienced economic pressure during treatment.

**Table 2. Quality of Life Scores in Breast Cancer Patients on Different Therapies**

| Therapy Type | Global Health Status | Physical Functioning | Emotional Functioning |
|---|---|---|---|
| Chemotherapy | 52.3 ± 13.4 | 49.8 ± 10.2 | 47.1 ± 12.5 |
| Targeted Therapy | 68.4 ± 11.6 | 65.2 ± 9.3 | 61.5 ± 11.9 |

Correlation analysis revealed a significant positive relationship between therapy type and financial burden ($r = 0.30$, $p < 0.05$). This means chemotherapy patients had more financial stress than those receiving targeted therapy. Even though targeted therapy is considered costlier upfront, in this study, chemo patients reported more financial difficulties, possibly due to longer treatment cycles, hospital stays, and indirect costs.

**Table 3. Return to Work Status After Treatment Completion**

| Therapy Type | Returned to Work (%) | Left Job (%) | Not Applicable (Retired/Housewife) (%) |
|---|---|---|---|
| Chemotherapy | 28 | 54 | 18 |
| Targeted Therapy | 46 | 30 | 24 |

In univariate analysis, therapy type showed a significant association with QLQ-BR23 scores (p = 0.045), suggesting that chemotherapy patients experienced higher symptom burden compared to those on targeted therapy. They had more complaints of body image issues, fatigue, side effects of treatment, and emotional distress, as per their BR-23 scores.

**Table 4. Common Symptoms Faced by Breast Cancer Patients Undergoing Therapy**

| Symptom Domain | Chemotherapy (%) | Targeted Therapy (%) |
|---|---|---|
| Fatigue | 76 | 51 |
| Pain | 64 | 45 |
| Cognitive Difficulty | 57 | 34 |
| Nausea/Vomiting | 69 | 39 |

Education level showed a significant association with symptom burden (p = 0.002) in QLQ-BR23 scores. Patients with higher education levels reported lower symptom distress, possibly due to better understanding of the disease, adherence to treatment, and coping skills. Those with less or no education had worse symptom-related experiences during treatment.

## DISCUSSION

The present study critically evaluates the quality of life, symptom burden, and financial toxicity in breast cancer patients receiving chemotherapy versus targeted therapy in a real-world Indian setting. The findings suggest that chemotherapy patients experience significantly higher financial burden, reduced quality of life, and increased symptom distress compared to those on targeted therapy, challenging the traditional assumption that chemotherapy is the most economical or pragmatic choice in low- and middle-income countries (LMICs).Our data show that 65% of chemotherapy patients reported high financial burden, compared to 40% in the targeted therapy group, despite the latter being assumed to be costlier upfront. These findings are consistent with those by Kitaw et al. (2025), who highlighted the hidden, cumulative costs of chemotherapy such as extended hospital stays, transportation, work loss and the need for repeated supportive care, making it paradoxically more financially toxic over time.[10] Smith et al. reported that financial distress among cancer patients worsens long-term health outcomes, particularly in low-resource settings where out-of-pocket expenditure dominates care.[11]In terms of health-related quality of life (HRQoL) targeted therapy patients had higher scores across all domains, including global health status, emotional and physical functioning. This aligns with Alnaim, who demonstrated that women receiving hormonal or targeted therapies had better functional outcomes and fewer complaints of fatigue, pain, and role limitations compared to those on chemotherapy.[12] Additionally, Monteiro et al. emphasized the value of patient-reported outcomes, showing that BR23 symptom domains significantly correlate with survival and long-term wellbeing.[13] The symptom burden in our cohort, especially fatigue, nausea, pain, and cognitive decline, was markedly worse in chemotherapy recipients. These findings are supported by Lustberg et al. (2023), who reported persistent late effects like neuropathy, cognitive impairment, and chronic fatigue among breast cancer survivors treated with chemotherapy.[14] Furthermore, the nationwide study by Smedsland et al. found that over 60% of long-term survivors continued to suffer moderate-to-severe late effects chemotherapy being a major contributing factor.[15]

Return-to-work status was another critical endpoint. Only 28% of chemotherapy patients resumed work against 46% of those on targeted therapy. This difference has socio-economic implications. Rast et al.found that financial toxicity among head and neck cancer survivors in Germany severely affected their social reintegration and work productivity, reinforcing that cancer's burden extends far beyond clinical outcomes.[16] Another important factor is education, which showed a significant correlation with symptom burden in our cohort. Patients with higher education reported fewer complaints, indicating better disease understanding and coping mechanisms. Mathew et al. and Sarkar et al. noted that lower educational and socioeconomic status in Indian women contributes to late-stage diagnosis, poorer adherence, and worse outcomes.[17,18] The decision-making process in LMICs like India often lacks true patient autonomy. Salek et al. highlighted that cancer treatment in resource-constrained settings is usually physician-driven and heavily influenced by treatment cost and availability rather than clinical suitability.[19] In our study, many patients were advised targeted therapy but ended up receiving chemotherapy, likely due to financial limitations, hospital stock policies or lack of awareness.

Finally, here emotional and body image distress also played a role. Chang et al. (2014) found that low-income breast cancer patients had higher appearance-related distress affecting their self-perception and quality of life. This is especially relevant in settings where support systems and survivorship care are minimal.[5] Altogether, these findings demand a shift in how we approach treatment planning in breast cancer. While chemotherapy may seem affordable upfront, its cumulative physical, emotional, and economic burden appears to outweigh those benefits. Targeted therapies, though costlier, may lead to faster return to work, better compliance, fewer long-term side effects, and improved quality of life resulting in lower overall socioeconomic burden. This study found that breast cancer patients on chemotherapy had worse outcomes than those on targeted therapy. They experienced a higher financial burden, more brutal side effects, and a lower quality of life. Although targeted therapy appears costly, chemotherapy led to more overall economic and physical strain. Fewer patients in the chemo group were able to return to their work. Symptoms like fatigue, pain, and emotional distress were more common with chemotherapy. Patients with higher education coped better, likely due to better understanding and support. In low- and middle-income settings, treatment choices are often influenced by cost rather than patient benefit. Chemotherapy's initial lower cost can be deceptive. A more patient-centered approach is needed that looks beyond just affordability. This approach should prioritize comprehensive care that includes emotional support and education, ensuring that patients are fully informed about their treatment options. By considering the long-term impacts on quality of life, healthcare providers can make more informed decisions that truly benefit their patients.

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