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A STUDY ON PHARMACOECONOMIC ANALYSIS IN THE MANAGEMENT OF BREAST CANCER

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ABSTRACT

Background: Pharmacoeconomic evaluation of breast cancer treatments is vital for informed decisions, comparing treatment alternatives, and evaluating cost and budget impact. Clinicians' knowledge about the prescription of anticancer treatments enhances patient outcomes.
Objectives: To study the regimen used and Pharmacoeconomical analysis for the management of breast cancer.
Methodology: After obtaining approval from the ethical committee, a prospective study was conducted to analyze the Pharmacoeconomic of commonly prescribed drugs for breast cancer management over six months. Data was collected from the patient's treatment chart using a well-designed data collection form. The cost of treatment was determined by estimating and analyzing the direct and indirect costs of materials, labor, and laboratory studies.
Result: A total of 102 patients were enrolled in the study, and the mean age of the patients was 52±8.9 years. Most of the patients were prescribed chemotherapeutic drugs. The average overall expenditure on breast cancer management was Rs. 293114.67, with total direct and indirect medical costs for the patient being Rs. 616591.7 and Rs. 8374.11 respectively. Targeted therapy costs accounted for 33.57% of the total direct medical costs during the 6-month period. The average cost for patients in the adjuvant setting was Rs. 339314.18, while in the neoadjuvant setting it was Rs. 181111.15.
Conclusion: Breast cancer therapy significantly impacts patients and healthcare providers, necessitating the establishment and strengthening of health insurance coverage mechanisms for pooling resources and risk transfer.

ORIGINAL RESEARCH ARTICLE

INTRODUCTION

Cancer is a leading cause of death worldwide and one of the most common and deadly non-contagious diseases.[1] Cancer causes 9% of global deaths, with 2.5 million cases and 556,400 deaths annually in India. Key factors include delayed detection, treatment, genetics, and lifestyle. In 2020, there were 19.3 million new cases and 10 million deaths, with breast cancer most diagnosed (2.3 million) and lung cancer leading deaths (1.8 million). [2,3,4] Chemotherapy uses anti-cancer drugs, either alone or in combination, to treat cancer. Treatment options include surgery, chemotherapy, radiation, monoclonal antibody therapy, and immunotherapy, selected based on tumor type, grade, stage, and the patient's condition.[3] Lung, colorectal, and breast cancers have the highest global economic impact. Breast cancer, the second leading cause of cancer death in women, is the most diagnosed non-skin cancer. In India, it has the highest incidence and mortality, with 14% of new cases, plus it is more common in women.[5,6,8] Breast cancer is more treatable and linked to better survival if diagnosed early. The 5-year survival rate is 98.6% at the local stage, 84.9% at the regional stage, and 25.9% at the distant stage. Early diagnosis and treatment programs aim to improve outcomes. [9,10] Cancer treatments, including chemotherapy, surgery, radiation, and immunotherapy, are based on tumor type, stage, and patient condition. For breast cancer, BCT, systemic therapy, and radiotherapy are used. Adjuvant systemic therapy reduces recurrence, and new treatments like trastuzumab, guided by precise biomarkers, improve survival rates.[8,11] Treatment plans should consider patient age, menopause status, and disease stage, grade, and hormone receptors.[7] Factors like poor screening, late detection, limited facilities, low income, and treatment costs increase breast cancer incidence and mortality. Risk factors include family history, obesity, early menarche, inactivity, delayed childbearing, and alcohol use.[6,7,8] Breast cancer imposes high financial costs, including medical expenses and indirect costs like lost productivity and early death. Costs are categorized into direct medical, direct non-medical, and indirect costs. This study explores the financial impact of breast cancer treatment.[12,13] Health economics highlights the need for cost analysis of breast cancer treatments to improve outcomes. Treatment costs vary based on equipment and supplies, and in countries without health insurance, high expenses can limit access. Pharmacoeconomic evaluation is crucial for informed decision-making.[3,14,15] Cost-effectiveness analysis compares drug prices and effectiveness to reduce financial burden and improve patient outcomes.[8,16]

MATERIALS & METHODS

An observational, prospective, and economical study was conducted in various wards of Bharath Hospital and Institute of Oncology, Mysuru for a period of six months.

Study Design: Observational, Prospective and Economical study.

Study Site: The study was conducted at Bharath Hospital and the Institute of Oncology, Mysore, Karnataka.

Study Period: April 2023 to October 2023.

Study Population: Patients aged 18 and older diagnosed with breast cancer and receiving at least one treatment were included in the study.

Study Procedure: The study was carried out after obtaining the ethical clearance from Institutional Ethics Committee. A total of 102 patients are enrolled in the study. A well-designed data collection form was prepared to collect data. The collected data includes demographic data, family history of breast cancer, current disease condition, past medical or medication history, comorbid condition, advised regimen, drugs used, including the name of the drug, dosage schedule (form,

route, and frequency), duration of treatment, and adverse drug reactions. The cost details were collected from Drugs up-to-date, pharmacy bills, patient's medical bills and hospital formulary. The collected data was entered into an Excel sheet and checked. Microsoft Excel 2019 was used for data processing and analysis. Descriptive statistics for the clinical and demographic data were computed and displayed in tables as frequencies and percentages.

RESULT

Table 1 summarizes characteristics of 102 female breast cancer patients involved in the study, mostly aged 51–60 years (38.23%), from urban areas (70%) and middle-income groups (62.74%). Invasive Ductal Carcinoma (59.80%) and Stage IV (26.47%) were most prevalent. Hypertension (17.64%) was the leading co-morbidity, and 71% underwent surgery, primarily MRM+AD. Most payments were made through government schemes like SAST (55%), emphasizing advanced-stage disease and financial reliance on government schemes. The hormonal receptor status assessment revealed that most patients (62.74%) had HER-2-negative breast cancer, while 55.88% and 57.84% had ER- and PR-negative breast cancer, respectively. (Fig 1) Figure 2 summarizes the risk factors of breast cancer.

Table 1: details of patient characteristics

VARIABLES	CATEGORIES	FREQUENCY (n)	PERCENTAGE(%)
AGE	<40 Years	8	7.84
	41 - 50 Years	35	35.29
	51 - 60 Years	39	38.23
	61 - 70 Years	17	16.66
	>70 Years	2	1.96
GENDER	Female	102	100
RESIDENCE	Urban	71	70
	Rural	31	30
ECONOMIC STATUS	Low Income group	15	14.70
	Middle Income group	64	62.74
	High Income group	23	22.54
MODE OF PAYMENT	SAST	56	54.90
	ESIC	20	1.96
	Cash	17	16.66
	Allied Insurance Company	5	4.90
	ECHS	2	1.96
	Railways	1	0.98
CO-MORBID CONDITIONS	Hypertension	18	17.64
	Diabetes Millitus	17	16.66
	Hypothyroidism	1	0.98
	Asthama	1	0.98
	None	76	74.50
TYPES OF BREAST CANCER	IDC	61	59.80
	IFDC	17	16.66
	ILD	5	4.90
	MBC	19	18.62
STAGES OF BREAST CANCER	Stage I	3	2.94
	Stage IIA	21	20.58
	Stage IIB	14	13.72
	Stage IIIA	21	20.58
	Stage IIIB	12	11.76
	Stage IIIC	4	3.92
	Stage IV	27	26.47
SURGERY UNDERWENT	YES	72	71
	NO	30	29

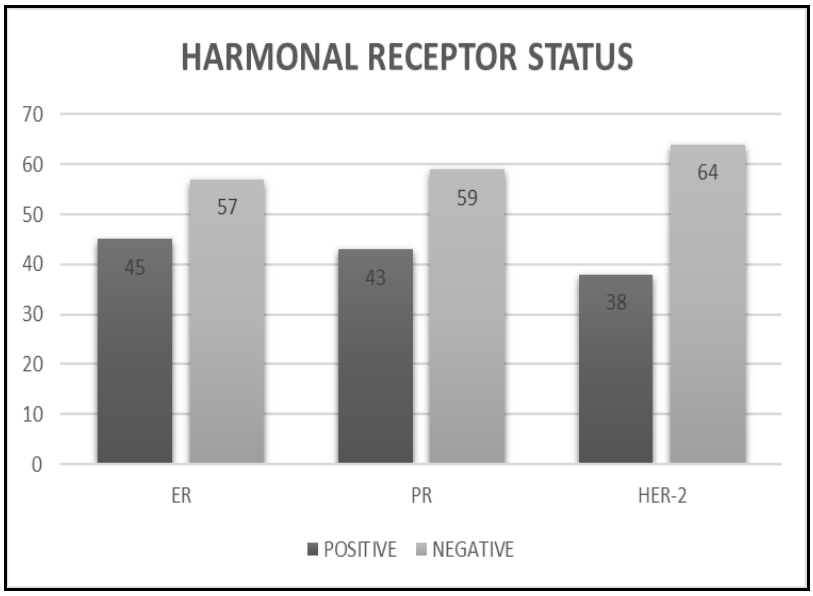

Figure 1: Hormonal Receptor Status of the patients

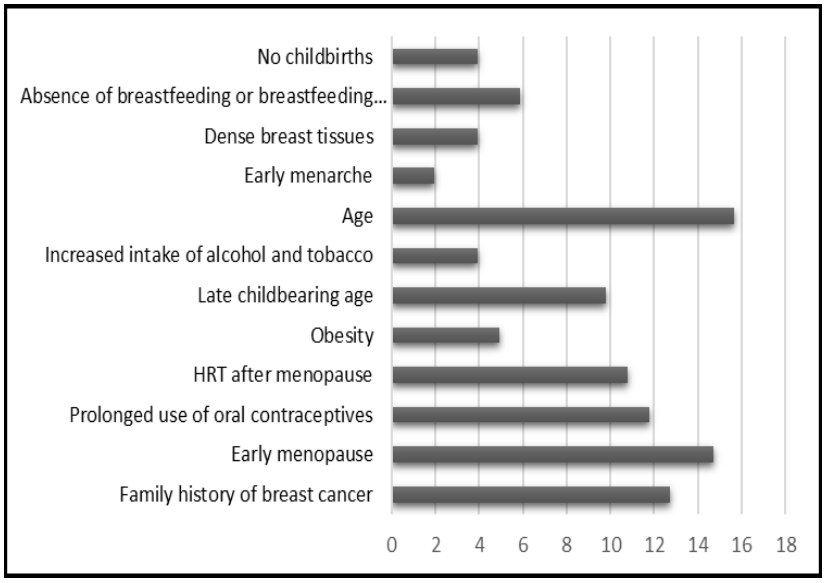

Figure 2: Risk factor of the patients

Chemotherapy was the most common treatment (56%), followed by radiation therapy (18%), targeted therapy (17%), and hormonal therapy (9%) (Fig 3). Table 2 describes the composition of the treatment regimen. Regimen 1 was the most used (34.31%), followed by Regimen 2 at 16.66%. (Fig 4) During the management of breast cancer, the most commonly reported adverse drug reactions were fatigue and weakness (81.37%) and alopecia (70.58%), while arm symptoms were the least frequent, occurring in 18.62% of cases.

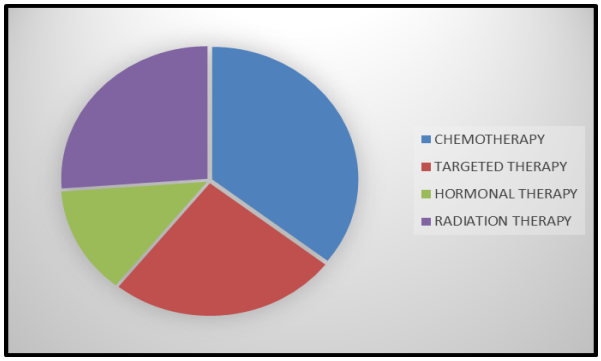

Figure 3: Details of Treatment Modalities

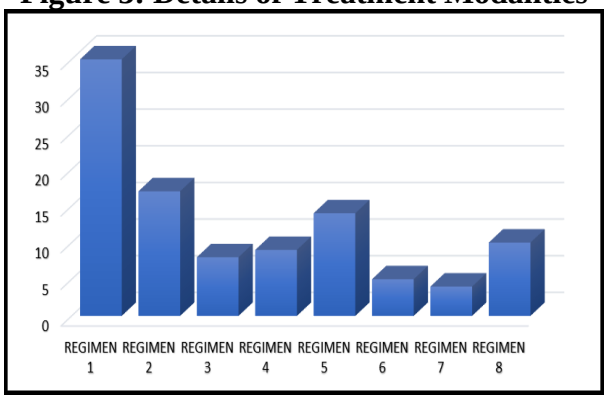

Figure 4: Details of Treatment Regimens

Table 2: Details of Composition of Treatment Regimen

Regimen	Name of Regimen	Composition of Regimen
Regimen 1	AC+PACLI	Adriamycin, Cyclophosphamide and Paclitaxel
Regimen 2	TC	Docetaxel and Cyclophosphamide
Regimen 3	PACLI	Paclitaxel
Regimen 4	GEMCI+CARBO	Gemcitabine and Carboplatin
Regimen 5	TRASTU	Trastuzumab
Regimen 6	PACLI+TRASTU	Paclitaxel and Trastuzumab
Regimen 7	ERIBULIN	Eribulin
Regimen 8	OTHERS	Zoledronic acid, Fulvestarant, CMF, TC+Pacli

Table 3: Details of Direct medical cost

Cost categories	Total cost (Rs)	Percentage (%)
Hospitalization cost	38843.13	6.29%
Pre-medication cost	4236.39	0.68%
Diagnostic cost	30434.8	4.93%
Surgical cost	123236	19.98%
Radiation therapy cost	121405.55	19.68%

Hormonal therapy cost	1830.42	0.29%
Chemotherapy cost	89588.6	14.52%
Targeted therapy cost	207016.81	33.57%
Chemo-port placement cost	20250	3.28%

The average total direct medical cost was ₹616,591.7, with targeted therapy (33.57%) being the highest contributor, followed by surgery (19.98%) and radiation therapy (19.68%). (Table 3) The result of the questionnaire applied to the 102 patients included in the study are summarized in table.(Table 4)

Table 4: Details of Direct non medical and Indirect cost

Category	Value	No. Of subjects	Percentage (%)
Transportation cost	<500	32	31.37
	500-1000	38	37.25
	1000-2000	18	17.64
	>2000	14	13.72
Mode of Transport	Car	41	40.19
	Bus	45	44.11
	Taxi	12	11.76
	Motor bike	4	3.92
Travel time to hospital	<60minutes	34	33.33
	60-90minutes	24	23.52
	90-120minutes	33	32.35
	>120minutes	11	10.78
Cost of meals during hospital visit	<150	23	22.54
	150-300	44	43.13
	>300	35	34.31
Time spent in hospital	<3hours	35	34.31
	4-7hours	64	62.74
	>8hours	3	2.94
Absence from work	Yes	40	39.21
	No	62	60.78
Accompanying person	Spouse	33	32.35
	Son	41	40.19
	Daughter	16	15.68
	Brother or sister	9	8.82
	other	3	2.94
Lost Productivity	Yes	11	10.78
	No	91	89.21
Other expenses	<5000	26	25.49
	5000-10000	3	2.94
	10000-20000	24	23.52
	>20000	49	48.03

Comparison of total cost between different regimen among adjuvant setting: A Bonferroni Post hoc test was performed to compare the total cost of various advised regimens among both adjuvant and neoadjuvant settings. The results indicate that Regimen 5 shows a statistically significant higher total cost in the adjuvant setting (Table 5), while Regimen 6, which contains paclitaxel and trastuzumab, shows a statistically

significant higher total cost in the neoadjuvant setting.(Table 6)

Table 5: Comparison of Total Cost Between Different Regimens Among Adjuvant Settings

Column 1	Column 2	Mean diff.	Std. Error	t-test	P-value	95% CI lower limit	95% CI upper limit
REGIMEN 1	REGIMEN 2	2266.99	31918.014	0.07	1	-102390.01	106923.99
REGIMEN 1	REGIMEN 3	10776.44	47018.17	0.23	1	-143392.95	164945.83
REGIMEN 1	REGIMEN 4	17266.31	40999.431	0.42	1	-117168.04	151700.66
REGIMEN 1	REGIMEN 5	-328070.13	37237.683	-8.81	**<.001**	-450169.97	-205970.3
REGIMEN 1	REGIMEN 6	-142212.72	58709.482	-2.42	0.515	-334717.12	50291.69
REGIMEN 1	REGIMEN 7	-88479.06	70653.535	-1.25	1	-320147.21	143189.09
REGIMEN 1	REGIMEN 8	-16669.88	58709.482	-0.28	1	-209174.29	175834.53
REGIMEN 2	REGIMEN 3	8509.45	50163.096	0.17	1	-155971.94	172990.84
REGIMEN 2	REGIMEN 4	14999.32	44571.08	0.34	1	-131146.23	161144.87
REGIMEN 2	REGIMEN 5	-330337.13	41137.244	-8.03	**<.001**	-465223.36	-195450.89
REGIMEN 2	REGIMEN 6	-144479.71	61257.091	-2.36	0.604	-345337.55	56378.14
REGIMEN 2	REGIMEN 7	-90746.05	72784.269	-1.25	1	-329400.73	147908.63
REGIMEN 2	REGIMEN 8	-18936.87	61257.091	-0.31	1	-219794.72	181920.97
REGIMEN 3	REGIMEN 4	6489.87	56378.453	0.12	1	-178371.25	191350.99
REGIMEN 3	REGIMEN 5	-338846.58	53704.949	-6.31	**<.001**	-514941.46	-162751.69
REGIMEN 3	REGIMEN 6	-152989.16	70316.285	-2.18	0.937	-383551.48	77573.17
REGIMEN 3	REGIMEN 7	-99255.5	80557.424	-1.23	1	-363397.83	164886.83
REGIMEN 3	REGIMEN 8	-27446.32	70316.285	-0.39	1	-258008.65	203116.01
REGIMEN 4	REGIMEN 5	-345336.45	48522.846	-7.12	**<.001**	-504439.57	-186233.33
REGIMEN 4	REGIMEN 6	-159479.03	66442.644	-2.4	0.545	-377339.95	58381.89
REGIMEN 4	REGIMEN 7	-105745.37	77199.376	-1.37	1	-358876.89	147386.14
REGIMEN 4	REGIMEN 8	-33936.19	66442.644	-0.51	1	-251797.11	183924.73
REGIMEN 5	REGIMEN 6	185857.42	64189.692	2.9	0.147	-24616.23	396331.06
REGIMEN 5	REGIMEN 7	239591.08	75269.086	3.18	0.064	-7211.15	486393.3
REGIMEN 5	REGIMEN 8	311400.26	64189.692	4.85	**<.001**	100926.61	521873.9
REGIMEN 6	REGIMEN 7	53733.66	87895.356	0.61	1	-234469.25	341936.56
REGIMEN 6	REGIMEN 8	125542.84	78615.996	1.6	1	-132233.68	383319.35
REGIMEN 7	REGIMEN 8	71809.18	87895.356	0.82	1	-216393.73	360012.09

Table 6: Comparison of Total Cost Between Different Regimens Among Neoadjuvant Setting

Column 1	Column 2	Mean diff.	Std. Error	t-test	P-value	95% CI lower limit	95% CI upper limit
Regimen 1	Regimen 2	-3576.98	44134.073	-0.08	1	-163159.48	156005.53
Regimen 1	Regimen 3	-122298.15	44134.073	-2.77	0.33	-281880.65	37284.35
Regimen 1	Regimen 5	-124889.73	36925.215	-3.38	0.083	-258406.03	8626.57
Regimen 1	Regimen 6	-231889.08	51751.788	-4.48	**0.006**	-419016.15	-44762.01
Regimen 1	Regimen 7	-34210.58	51751.788	-0.66	1	-221337.65	152916.49
Regimen 1	Regimen 8	51514.26	51751.788	1	1	-135612.81	238641.33
Regimen 2	Regimen 3	-118721.17	54052.98	-2.2	1	-314169.03	76726.68
Regimen 2	Regimen 5	-121312.75	48346.455	-2.51	0.583	-296126.63	53501.12
Regimen 2	Regimen 6	-228312.1	60433.068	-3.78	**0.033**	-446829.44	-9794.76

Regimen 2	Regimen 7	-30633.6	60433.068	-0.51	1	-249150.94	187883.74
Regimen 2	Regimen 8	55091.24	60433.068	0.91	1	-163426.1	273608.58
Regimen 3	Regimen 5	-2591.58	48346.455	-0.05	1	-177405.45	172222.3
Regimen 3	Regimen 6	-109590.93	60433.068	-1.81	1	-328108.27	108926.42
Regimen 3	Regimen 7	88087.57	60433.068	1.46	1	-130429.77	306604.92
Regimen 3	Regimen 8	173812.41	60433.068	2.88	0.262	-44704.93	392329.76
Regimen 4	Regimen 1	-78414.58	51751.788	-1.52	1	-265541.65	108712.49
Regimen 4	Regimen 2	-81991.56	60433.068	-1.36	1	-300508.9	136525.78
Regimen 4	Regimen 3	-200712.73	60433.068	-3.32	0.095	-419230.08	17804.61
Regimen 4	Regimen 5	-203304.31	55387.822	-3.67	**0.043**	-403578.76	-3029.86
Regimen 4	Regimen 6	-310303.66	66201.11	-4.69	**0.004**	-549677.42	-70929.9
Regimen 4	Regimen 7	-112625.16	66201.11	-1.7	1	-351998.92	126748.6
Regimen 4	Regimen 8	-26900.32	66201.11	-0.41	1	-266274.08	212473.44
Regimen 5	Regimen 7	90679.15	55387.822	1.64	1	-109595.3	290953.6
Regimen 5	Regimen 8	176403.99	55387.822	3.18	0.13	-23870.46	376678.44
Regimen 6	Regimen 7	197678.5	66201.11	2.99	0.204	-41695.26	437052.26
Regimen 6	Regimen 8	283403.34	66201.11	4.28	**0.01**	44029.58	522777.1
Regimen 7	Regimen 8	85724.84	66201.11	1.29	1	-153648.92	325098.6

An independent sample t-test displays a statistically significant higher mean total cost that was observed among adjuvant settings when compared to neoadjuvant settings.(Table 7)

Table 7: Comparison of Mean Total Cost Between Adjuvant and Neoadjuvant Settings

		N	Mean Total cost	SD	t	P Value
Type of Chemotherapy	ACT	72	339314.2	145853.2	5.24	0.001*
	NACT	30	181111.2	101841.2		

A pharmacoeconomic analysis identified Regimen 1 as the most cost-effective, achieving 28.57% excellent and 68.57% moderate quality of life, with the lowest overall cost among all regimens.

Cost outcome analysis	**Excellent QOL**	28.57%	11.76%	12.50%	0.00%	35.71%	0.00%	0.00%	0.00%
	Moderate QOL	68.57%	88.20%	75%	88.88%	50%	80%	100%	100%
	Poor QOL	2.85%	0.00%	12.50%	11.11%	14.28%	20%	0.00%	0.00%
Cost Benefit Analysis		-	-	-	-	-	-	-	-

Table 10: Details of Pharmacoeconomic

Regimens	Cost Minimization analysis	Cost Effective analysis			Cost Utility analysis
		Average total direct cost	Average total indirect	Average overall cost	
Regimen 1	-	242624.83	7702.85	250327.69	-
Regimen 2	-	253386.8	8164.70	261551.5	-
Regimen 3	-	259041.65	12210	271251.65	-
Regimen 4	-	256324	8542.22	264866.2	-
Regimen 5	-	481674.5	8714.28	490388.78	-
Regimen 6	-	39947.22	6400	406347.22	-
Regimen 7	-	266064.17	8100	274164.17	-
Regimen 8	-	241740.7	8480	250220.7	-

DISCUSSION

Breast cancer, one of the most frequent neoplasms in women, is a primary cause of cancer-related fatalities worldwide, and it accounts for a significant amount of cancer patients' healthcare expenditures. A prospective, observational, and economic study was conducted to study the various costs associated with breast cancer management. A total of 102 patients were reviewed during the study period of six months. The mean age of the patients admitted to different wards of BHIO was found to be 52±8.9 years. Most of the patients were in the age group of 51–60 years, which accounts for about 38.23%. Only female patients (100%, n = 102) were enrolled in our study. Most of the participants in the study are from urban areas. Among the patients, most of them are admitted to the daycare ward.

The economic status of the patients was categorized into three different groups based on their family income. Families with an annual income of less than 2 lakh are categorized under the low-income group; those with an annual income of 2 lakh to 8 lakh are categorized under the middle-income group; and those with an annual income of more than 8 lakh are grouped under the high-income group. Most of the patients in the present study were from middle-income groups. The predominant modes of payment among the patients were SAST (Suvarna Arogya Suraksha Trust), followed by ESIC (Employees State Insurance Co-operation), cash, allied insurance companies, ECHS (Ex-

Servicemen Contributory Health Scheme), and the Railways scheme. Risk factors of breast cancer were assessed among the patients, and the most seen risk factors in the study were age-related risk factors, followed by early menopause, family history of breast cancer, prolonged use of oral contraceptives, use of hormone replacement therapy after menopause, late childbearing age, absence of breastfeeding or breastfeeding for less than 6 months, obesity, no childbirths, dense breast tissues, and early menarche.

The hormonal receptor status of the patients was assessed in the study, and the results show ER was positive in 57 patients, PR was positive in 59 patients, and HER-2 was positive in 64 patients, which indicates HER-2-positive breast cancer was most common among the study patients. The breast cancer was categorized into different stages based on the TNM staging of the patient. In this study, most of the patients had stage 4 breast cancer (26.47%), which indicates a poor prognosis. The majority of the patients in the present study underwent surgery, and out of them, most underwent MRM+AD (Modified Radial Masstectomy and Axillary Dissection).

Among these patients, the most the most commonly administered treatment was chemotherapy. In the present study, the different treatments are categorized into eight regimens. The most frequently used treatment regimen was Regimen 1. The present study assessed the adverse effects caused by the treatment of breast cancer and found that alopecia (70.58%) was the most often reported adverse effect, next to fatigue and weakness (81.37%). Several other adverse effects, including ageusia, constipation, mouth ulcers, muscular pain, hot flashes, arm and breast symptoms, dryness of skin, and loss of appetite, have also been recorded, and these adverse effects have been associated with an increase in resource loss.

The costs of treatment were determined by collecting treatment information from case files and interviewing patients or their caretakers. For all the patients included in the study, the average total direct cost was calculated for 6 months, and that was found to be Rs. 616591.7. During the study period, it was noted that targeted therapy consumed about 33.33% of the total direct medical cost, whereas premedication costs consumed the least. In the present study, the average transportation cost and average cost of meals spent by the patient were calculated for 6 months and found to be Rs. 6530.98 and Rs. 1843.13, respectively. Most of the patients use cars as their primary mode of transportation (40.19%). The majority of the patients were accompanied by a son, which accounts for about 40.19%, and 32.35% were accompanied by a spouse. 39.21% of the patients missed their work, and 10.78% of the patients lost productivity due to illness. Most of the patients in the study spent more than Rs.20000 on other expenses related to the disease.

In this study, the total overall cost between different regimens in adjuvant and neoadjuvant settings was compared. A Bonferroni post hoc test was used to compare the groups in pairs to find out which was significantly different among adjuvant and neoadjuvant settings. In the adjuvant setting, the Bonferroni post hoc test revealed that the pairwise regimen comparisons of Regimen 1–Regime 5, Regimen 2–Regime 5, Regimen 3–Regime 5, Regimen 4–Regime 5, and Regimen 5–Regime 8 have a p-value less than 0.05, and thus, based on the available data, it shows that these pair of regimens are each significantly different. This indicates Regimen 5 shows a statistically significant higher total cost when compared to other regimens in adjuvant settings. In the neoadjuvant settings, the Bonferroni post hoc test revealed that the pairwise regimen comparisons of Regimen 1-Regimen 5, Regimen 1- Regimen - Regimen 6,

Regimen 2 - Regimen 6, Regimen 4 - Regimen 5, Regimen 6 - Regimen 8 have a p-value less than 0.05, and thus, based on the available data, it showed that these pair of regimens are each significantly different. This indicates Regimen 6 shows a statistically significant higher total cost when compared to other regimens in neoadjuvant settings. Similarly, Regimen 5 shows a statistically significant higher total cost when compared to Regimen 4. An independent sample t test displayed that a statistically higher mean total cost was observed among adjuvant settings when compared to neoadjuvant settings.

The current study examined pharmacogenomic analysis in breast cancer treatment, utilizing cost-effectiveness and cost-outcome analyses. According to the findings, Regimen 1 had an average total expenditure of Rs. 250327.69, with 2.85% of patients having low QOL, 68.75% having moderate QOL, and 28.57% having excellent QOL. Similarly, Regimen 3 was predicted to have an average total cost of Rs. 271251.65, with 12.5% of patients expressing poor QOL, 75% reporting moderate QOL, and 12.5% reporting exceptional QOL. Regimen 4 had an average total cost of Rs. 264866.2, resulting in 88.88% moderate QOL and 11.11% bad QOL. Regimen 5 had an average total expenditure of Rs. 490388.78, with 14.28% of patients having poor QOL, 50% having moderate QOL, and 35.71% having excellent QOL. Regimen 6 had an average total expenditure of Rs. 406347.22, with 20% poor QOL and 80% moderate QOL. Regimen 7 had an overall cost of Rs. 274164.17 with a moderate QOL. Similar findings were made for Regimen 8, whose total cost was determined to be Rs. 250220.7 with moderate QOL. The analysis indicates that Regimen 1 is the most cost-effective, with 28.57% of excellent quality of life and 68.57% of moderate quality of life.

CONCLUSION

The purpose of this study is to evaluate the various costs associated with breast cancer management. Patients with breast cancer experience a significant financial burden in the healthcare system and in society. Targeted therapy and surgical costs were significant components of the total cost. According to this study, regimen 1 is the most often used treatment for breast cancer and is efficient in terms of both cost and outcome. The study reports that the cost of treatment in the adjuvant setting is significant when compared to the neoadjuvant setting. Among the study's patients, the majority of them had financial support through different schemes provided by the government. Breast cancer patients may require additional services to address their financial burden. This analysis highlights the complex relationship between chemotherapeutic regimens and QOL during cancer treatment. While "moderate" QOL is common, there is significant variability in patient experiences, emphasizing the need for patient-centered, individualized care. Healthcare providers and researchers should continue to explore the factors influencing QOL and work towards optimizing the cancer treatment experience for all patients. A pharmacoeconomic examination of all available alternative therapeutic choices will help decision-makers make optimal use of the limited resources in health care that are allotted to patient care and cancer treatment.

Conflict of Interest: The authors declare no conflict of interest.

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