CHANGES IN QUALITY OF LIFE AMONG INDIAN BREAST CANCER PATIENTS DURING ADJUVANT TREATMENT: A SINGLE CENTRE EXPERIENCE

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ABSTRACT

AIMS AND OBJECTIVES

Although many studies on Quality of Life (QoL) have been conducted on female breast cancer patients worldwide, there have been very few studies in India. Our aim was to evaluate baseline QoL in Indian women with breast cancer and ascertain the changes in QoL during various phases of adjuvant treatment.

MATERIALS AND METHODS

In a prospective observational single centre study, QoL was assessed in 116 consecutive operated female breast cancer patients using the EORTC QLQ-C30 questionnaire at baseline after the 1st, 3rd and 6th cycles of adjuvant chemotherapy and twice during adjuvant radiotherapy.

RESULTS

Younger women and those from higher socio-economic families had lower function scale scores (Especially emotional and social function). Adjuvant chemotherapy caused substantial decrease in function scores and increase in symptom scale scores, especially nausea and vomiting, loss of appetite, fatigue and hair loss ($p=NS$). Older women and those from lower socioeconomic strata tolerated chemotherapy better. Radiotherapy did not worsen QoL, and scores improved across the board in women during radiation.

CONCLUSION

Indian breast cancer patients have similar QoL issues with respect to women elsewhere. Younger women have generally poorer QoL both before and during therapy. Socioeconomic status is inversely related to QoL scores, irrespective of age. Radiotherapy is much better tolerated than chemotherapy.

KEYWORDS

Quality of Life, EORTC QLQ-C30, Breast Cancer, Chemotherapy, Radiotherapy.

HOW TO CITE THIS ARTICLE: Basu A, Basu A. Changes in quality of life among Indian breast cancer patients during adjuvant treatment: A single centre experience. J. Evolution Med. Dent. Sci. 2016;5(82):6101-6107, DOI: 10.14260/jemds/2016/1379

BACKGROUND

Cancer of the female breast is one of the most common malignancies among patients attending our hospital. The standard treatment of operable breast cancer remains judicious surgery followed by adjuvant systemic and local therapy using an appropriate combination of chemotherapy, radiotherapy and hormone therapy in hormone responsive patients.¹ Quality of Life (QoL) is an important parameter in assessment of each patient's sense of physical, emotional and psychosocial wellbeing.² It is now an accepted tool in reporting of any standard clinical trial. A number of factors influence the Quality of Life like age and socioeconomic condition.³ Quality of Life also changes significantly over time and with treatment and acts as a surrogate marker of the patient's global health status.³

AIMS & OBJECTIVES

There have been some studies on Quality of Life in cancer

patients and the effect of treatment on overall functioning and wellbeing, but such studies have been very few in the Indian context. Our aim was to ascertain the Quality of Life in breast cancer patients undergoing treatment at our centre and analyse the changes in this parameter during various phases of treatment. We also endeavoured to assess effects of various factors like age, education and income on the changes in QoL scores during treatment.

MATERIALS AND METHODS

Period and Type of Study

From January 2009 to May 2010, a Prospective Observational Study was conducted by the authors at the Department of Radiotherapy, Medical College, Kolkata.

Inclusion and Exclusion Criteria

Subjects in our study were histopathologically proven female breast cancer patients (T1-3 N0-2 M0 according to AJCC TNM staging of Breast Cancer) attending our Outpatients' Department. All patients were 18 years or older, had an ECOG Performance Status 0-2, normal baseline haematologic, renal and hepatic profiles and cardiac function at enrolment. None of the patients had clinical or radiological evidence of metastasis and all had undergone modified radical mastectomy without reconstruction prior to presentation with negative margins of resection. None of the patients had previous history of malignancy or exposure to cytotoxic chemotherapy or radiation. None were pregnant. There was no major comorbid physical or psychiatric illness in any of

Financial or Other, Competing Interest: None.

Submission 06-09-2016, Peer Review 01-10-2016,

Acceptance 06-10-2016, Published 11-10-2016.

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DOI: 10.14260/jemds/2016/1379

the patients and none of them were participating in any other clinical trial.

All the patients were literate and capable of understanding the questions in the questionnaires (In English or their respective vernaculars–Bengali or Hindi). The study was approved by the Institutional Ethical Committee. Informed consent was taken from all patients prior to enrolment.

Study Design

All patients were assigned to get adjuvant systemic chemotherapy (CT) with FAC regime consisting of Injections 5-Fluorouracil 500 mg/m², Doxorubicin 50 mg/m² and Cyclophosphamide 500 mg/m² IV with standard premedications on day 1 every 21 days for 6 cycles. Patients who were candidates for adjuvant radiation (T3, N+) received External Beam Radiotherapy (EBRT) using Theratron 780 C Telecobalt machine. Patients who were administered EBRT were given 50 Gy (@ 2Gy/fraction, 5 days a week) by medial and lateral tangential portals and supraclavicular fields (With CT based simulation), if indicated. The Quality of Life (QoL) was assessed by the 30-point EORTC QLQ-C30 version 3 and the Breast Cancer specific BR 23 version 1 questionnaires or their Bengali or Hindi validated translations approved by the EORTC Quality of Life Working Group.^{2,4} All patients were asked to self-answer the questionnaires in adequate privacy without any time pressure. They were informed that they need not answer questions that they feel inappropriate or unanswerable. The patients were assessed at presentation, after the 1st, 3rd and 6th cycles of chemotherapy and in patients who underwent radiation, once 2 weeks after starting radiation and after completing EBRT. All patients received chemotherapy in the indoor wards and EBRT on outpatient basis.

Analysis of Data

The QLQ-C30 questionnaire consists of items arranged as three scales–Functional (physical, role, social, emotional, cognitive); Symptomatic (dyspnoea, pain, fatigue, insomnia, appetite, nausea vomiting, constipation, diarrhoea and financial difficulties) and Global Health Status/QoL.^{2,4} The Breast Cancer specific BR 23 is a supplement to the QLQ-C30 which has similar scales–Functional (body image, future perspective) and Symptomatic (systemic therapy side effects, breast symptoms, arm symptoms and hair loss).^{2,4} The Raw Score (RS) was calculated as the mean of all the data for each individual scales.⁵ The range was calculated as the difference between the maximum possible and the minimum possible value of RS.⁵ (Most items are scored 1 to 4, giving range=3. The exceptions are the items contributing to the global health status/QoL, which are 7-point questions with range=6.) Using the RS and Range, the values were linearly transformed to a scale of 0-100 to give score S by the given formulas:⁵

Functional Scales: $S = \{1 - (RS - 1)/range\} \times 100$.

Symptom Scales/Items: $S = \{(RS - 1)/range\} \times 100$.

Global Health Status/QoL: $S = \{1 - (RS - 1)/range\} \times 100$.

Higher values in the function and QoL scales indicate better level of functioning/higher QoL whereas higher values in the symptom scales indicate increased symptoms/difficulties. Missing data were accounted for

according to the method prescribed in the EORTC Manuals.⁵ Scores for individual patients were analysed and mean of scores of all patients for each parameter were calculated.

The reliability and validity of the English and translated versions (Bengali and Hindi) of the questionnaires were tested by Cronbach's alpha test (0.63-0.94) and item-scale correlation (0.59-0.91).

STATISTICAL ANALYSIS

Statistical analysis was done using Repeated Measures One-way Analysis Of Variance (ANOVA) with Dunnett's post-test was performed using the GraphPad Prism version 5.00 (for Windows, GraphPad Software, San Diego, California, USA). P values < 0.05 were considered significant. All p values reported are two tailed.

RESULTS

Between January 2009 and May 2010, we enrolled 120 consecutive patients who met the inclusion criteria. The baseline patient profile is listed in Table 1. One hundred and sixteen patients ultimately underwent the trial. Of the 4 patients who missed, 1 had a histology different from Infiltrating Duct Carcinoma and 3 did not complete therapy due to various reasons. The menopausal status was defined as per NCCN Guidelines v 1.2009.⁶ Patients who studied till class V were designated as Up to Mid School, those who studied up to class X were designated as Up to High School & those who studied beyond were designated as Higher Education. Of the total 116 patients, a majority of 57% were ER-. Although 23 were HER2/neu overexpressed, adjuvant anti-HER2 therapy was not used to financial constraints. Early Breast Cancer (EBC) was defined as AJCC⁷ T1-T2N0M0 and Locally Advanced Breast Cancer was defined as AJCC T1-3N1M0 and T3N0M0 (Operable LABC). Most patients (39%) were in AJCC stage group IIB. All patients completed per protocol chemotherapy. The median treatment duration for CT was 19.5 weeks (With 13 patients not being able to complete the 6 cycles on time) and EBRT was 6.7 weeks (7 patients not being able to complete on time). High risk features included presence of either high grade, lymphovascular invasion and/or positive proliferation markers. Ninety three percent of the patients could be given full doses of drugs during CT. Seventy seven patients required per protocol post-mastectomy EBRT.

Translated and validated local language questionnaires were used for most (84%) of the patients with the Bengali version for 68% and Hindi version for 16% patients. Analysis of QoL at baseline (Table 2) revealed better functional scores for women who were older, less educated and economically backward. Working women had better scores. Younger women and those with higher education or family income had especially poor scores in emotional function. The major symptoms at presentation were fatigue and lack of appetite. Younger women having children < 10 yrs. had poorer emotional scores and QoL.

Quality of Life was assessed after 1st (CT 1), 3rd (CT 3) and 6th (CT 6) cycles of chemotherapy and twice during the course of EBRT (After 2 weeks of starting radiation and after completion).

Mean Physical (PF2) and Role Function (RF2) Scores were (Table 3) 62.3 and 61.1 at baseline, 58.4 and 56.3 after CT 1, 60.5 and 58.0 after CT 6, 62.1 and 64.6 during EBRT

(two weeks after starting; EBRT 2 weeks) and 67.9 and 66.4 after completion of radiotherapy (EBRT COMPL). There was a clear trend of decrease in scores from baseline after CT 1 (Table 3) with gradual improvement subsequently (Table 4; Figure 1). Younger women and those who were better educated or from higher income families had poorer scores. Working women had consistently higher scores than their non-working counterparts. Cognitive function remained more or less same throughout therapy.

There was substantial decrease in Emotional and Social Function (EF, SF) Scores during chemotherapy (43.4 vs. 51.2 at baseline for EF and 46.3 vs. 55.9 for SF after CT1; $p=NS$) and appreciable improvement during EBRT (Table 4; Figure 1). These scores were especially lowered in younger, non-working females with LABC and those who had young children. However, these subgroups also showed maximum improvement in scores during radiotherapy, and most subsets had better scores than their baseline, by the time they completed EBRT. Body Image scores (BRBI) remained fairly low throughout and were lower in younger women of higher socioeconomic class.

The predominant symptoms at baseline survey were fatigue, insomnia and lack of appetite. Some patients also complained of symptoms at the chest flap or arm region. After CT 1, there was substantial increase in nausea-vomiting (39.6 after CT 1 vs. 22.3 at baseline; $p=0.562$) and loss of appetite (44.3 vs. 31.7 at baseline; $p=0.711$), especially in younger, more well off women (Figure 2). Working and elderly women had lower symptoms throughout. Hair loss was a major concern among all women, irrespective of age or socioeconomic stratification. High scores of 56.9 and 59.1 after CT 1 and CT 3 gradually decreased after CT completion and during EBRT. As expected, younger women were much more concerned than other subgroups (64.8 vs. 56.9 after CT1; $p=0.648$). Older women complained more of constipation or diarrhoea. Interestingly, women with EBC had more symptoms like nausea, loss of appetite and insomnia than patients with LABC.

Most of the symptoms scores remained fairly uniform during the course of chemotherapy and improved during EBRT. However, there was a slight increase in fatigue and loss of appetite and a slight decrease in nausea throughout the course of chemotherapy. Breast and arm symptoms were more at presentation due to patients coming after surgery. Of note, breast symptoms decreased steadily through therapy whereas arm symptoms remained pretty high. Older, working and better educated women reported more financial difficulties but surprisingly, women from both lower and higher income families had fairly similar scores in this regard (23.2 vs. 25.8).

The patient cohort was subsequently followed up. Sixteen patients were lost to followup. The 3-year disease-free survival was 76% with twenty four patients failing-nine locoregionally and fifteen distally. Significant (Grade 3) late toxicities were found in 18 patients with lymphoedema, arm mobility restriction and subcutaneous fibrosis being most common. Quality of life was not assessed after treatment as per the trial design.

Characteristics	% Distribution
Age	
20 – 40	36
40 – 60	45
> 60	19
Menopausal Status	
Premenopausal	61
Postmenopausal	39
Type of Cancer	
EBC	42
LABC	58
ER Positive	43
ER Negative	57
Stage Group	
I A	0
I B	0
II A	27
II B	39
III A	34
Parity	
0 – 2	29
2 – 4	46
> 4	24
Educational Qualifications	
Up to Mid School	53
Up to High School	35
Higher Education	12
Family Income per Month	
< Rs. 2000	29
Rs. 2000–10000	52
> Rs. 10000	18
Working	
Yes	27
No	73
ECOG Performance Status	
0	28
1	57
2	15

Table 1: Baseline Demographic Profile (n=116)

Scores	Stage		Age (In Yrs.)			Education			Family Income (Rs. / Month)			Working	
	EBC	LABC	20-40	40-60	>60	Up to Mid School	Up to High School	Higher Education	<5000	5000-10000	>10000	Yes	No
PF2	73.2	59.4	68.3	59.7	48.1	71.4	62.9	61.4	69.3	62.7	55.9	70.9	60.4
RF2	67.3	56.7	67.2	56.9	50.4	65.9	59.4	54.3	61.5	60.3	58.1	63.6	59.1
CF	87.5	79.8	88.6	82.3	72.2	78.3	80.5	89.2	80.8	82.4	86.7	84.3	76.8
EF	62.1	54.9	43.9	52.6	63.1	63.7	56.1	46.0	63.0	59.7	56.8	63.7	54.9
SF	66.3	53.0	47.0	58.5	69.4	57.3	59.5	63.8	55.9	61.5	64.4	65.0	59.3
BRBI	52.5	45.2	40.8	45.3	51.9	44.2	42.6	36.1	46.6	45.1	41.2	48.8	41.2

BRFU	62.8	47.7	35.5	43.9	61.7	56.6	51.9	41.4	46.5	49.3	53.7	50.3	61.1
DY	9.3	16.9	8.7	14.4	17.0	9.1	11.3	17.4	11.3	10.4	16.0	10.6	16.6
PA	18.4	28.6	16.8	22.1	27.3	18.2	20.5	29.6	16.5	22.8	34.4	18.3	26.9
FA	24.1	32.7	22.3	26.9	30.5	22.7	27.8	36.9	21.7	26.5	37.0	22.3	34.8
SL	19.4	25.8	24.9	21.6	19.5	20.5	23.2	31.6	19.9	23.4	31.6	20.7	24.1
AP	34.2	46.9	31.7	37.0	33.1	35.7	37.3	42.6	36.9	37.2	45.4	32.9	38.1
NV	11.4	15.3	20.9	14.2	10.7	12.6	13.5	20.9	13.4	14.1	23.7	11.9	14.7
CO	13.5	21.0	9.6	14.3	26.9	14.8	14.2	21.6	14.7	16.9	22.3	15.5	19.0
DI	9.8	12.1	6.8	9.4	14.3	9.9	10.4	11.1	10.6	11.2	10.8	11.4	11.2
BRBS	17.5	15.6	13.9	11.0	8.7	14.1	15.6	17.9	15.8	13.0	11.2	15.5	14.6
BRAS	18.9	16.3	20.3	16.6	18.1	16.9	12.0	22.5	12.7	16.4	14.1	15.7	17.2
QL	56.4	48.9	45.7	51.3	57.8	53.3	54.5	46.8	49.2	50.5	52.6	59.9	45.1
FI	37.9	41.6	46.8	42.2	39.0	35.7	42.4	43.1	57.9	48.6	38.3	46.7	39.1

Table 2: Baseline Quality of Life. (n=116) (Using EORTC QLQ-C30 v3.0 and EORTC BR-23 v1.0)

Abbreviations: Function Scales: QLQ C30: PF2-Physical Functioning (Revised); RF2-Role Functioning (revised); CF- Cognitive Functioning; EF-Emotional Functioning; SF-Social Functioning; BR 23: BRBI-Body image; BRFU-Future Perspective; Symptom Scales: QLQ C30: DY-Dyspnoea; PA-Pain; FA-Fatigue; SL-Insomnia; AP-Appetite; NV-Nausea and Vomiting; CO-Constipation; DI-Diarrhoea; FI-Financial Difficulties; BR 23: BRBS-Breast Symptoms; BRAS-Arm Symptoms; Global Health Status/Quality of Life Scale:QL.

Scores	Stage		Age (In Yrs.)			Education			Family Income (Rs./Month)			Working	
	EBC	LABC	20-40	40-60	>60	Up to Mid School	Up to High School	Higher Education	<5000	5000-10000	>10000	YES	NO
PF2	64.9	52.6	61.6	53.0	42.5	65.3	59.1	54.7	61.4	57.3	50.5	56.9	61.3
RF2	60.1	52.3	57.4	52.7	49.6	60.0	53.5	48.5	60.6	56.4	49.8	57.6	50.1
CF	85.4	80.1	86.9	80.3	73.4	78.7	79.9	86.5	79.4	81.0	85.6	82.9	75.8
EF	55.6	49.4	38.6	47.9	57.3	56.5	50.1	40.2	53.8	49.4	43.9	55.7	49.6
SF	57.2	50.4	41.2	52.3	60.7	49.9	52.7	56.6	49.3	54.6	58.1	53.3	50.7
BRBI	52.5	45.2	40.8	45.3	51.9	44.2	42.6	36.1	46.6	45.1	41.2	48.8	41.2
BRFU	62.8	47.7	35.5	43.9	61.7	56.6	51.9	41.4	46.5	49.3	53.7	50.3	61.1
DY	9.3	16.9	8.7	14.4	17.0	9.1	11.3	17.4	11.3	10.4	16.0	10.6	16.6
PA	18.4	28.6	16.8	22.1	27.3	18.2	20.5	29.6	16.5	22.8	34.4	18.3	26.9
FA	24.1	32.7	22.3	26.9	30.5	22.7	27.8	36.9	21.7	26.5	37.0	22.3	34.8
SL	19.4	25.8	24.9	21.6	19.5	20.5	23.2	31.6	19.9	23.4	31.6	20.7	24.1
AP	34.2	46.9	31.7	37.0	33.1	35.7	37.3	42.6	36.9	37.2	45.4	32.9	38.1
NV	11.4	15.3	20.9	14.2	10.7	12.6	13.5	20.9	13.4	14.1	23.7	11.9	14.7
CO	13.5	21.0	9.6	14.3	26.9	14.8	14.2	21.6	14.7	16.9	22.3	15.5	19.0
DI	9.8	12.1	6.8	9.4	14.3	9.9	10.4	11.1	10.6	11.2	10.8	11.4	11.2
BRBS	27.5	35.6	33.9	31.0	22.7	24.1	27.6	37.9	25.8	29.0	31.2	25.5	34.6
BRAS	30.9	37.3	40.3	36.6	28.1	26.9	32.0	42.5	22.7	26.9	34.1	26.7	35.2
BRST													
BRHL													
QL	56.4	48.9	45.7	51.3	57.8	53.3	54.5	46.8	49.2	50.5	52.6	59.9	45.1
FI	37.9	41.6	46.8	42.2	39.0	35.7	42.4	43.1	57.9	48.6	38.3	46.7	39.1

Table 3: Quality of Life after 1st cycle of Chemotherapy (n=116) (EORTC QLQ-C30 v3.0 & EORTC BR-23 v1.0)

Abbreviations: Function Scales: QLQ-C30: PF2-Physical Functioning (Revised); RF2-Role Functioning (Revised); CF- Cognitive Functioning; EF-Emotional Functioning; SF-Social Functioning; BR 23 :BRBI-Body image; BRFU-Future Perspective; Symptom Scales: QLQ-C30: DY-Dyspnoea; PA-Pain; FA-Fatigue; SL-Insomnia; AP-appetite; NV-Nausea and Vomiting; CO-Constipation; DI-Diarrhoea; FI-Financial Difficulties; BR 23: BRBS-Breast Symptoms; BRAS-Arm Symptoms; BRST-Side Effects of Systemic Therapy; BRHL-Hair Loss; Global Health Status/Quality of Life Scale: QL.

QoL Scales	Mean Scores				
	Base Line	After CT 1	After CT 6	After EBRT 2 WKS.	After EBRT COMPLETION
PF2	62.3	58.4	60.5	62.1	67.9
RF2	61.1	56.3	58.0	64.6	66.4

CF	82.5	80.6	81.4	81.8	80.3
EF	51.2	43.4	46.5	54.8	59.0
SF	55.9	46.3	52.1	53.7	56.8
BRBI	50.6	41.3	44.2	45.0	41.8
BRFU	52.8	47.3	48.2	50.5	54.9
DY	10.3	14.6	18.7	23.2	22.6
PA	26.8	22.4	25.7	21.1	23.0
FA	32.9	43.6	49.2	40.9	36.6
SL	39.6	41.7	40.3	34.5	32.1
AP	31.7	44.3	48.2	32.5	27.7
NV	22.3	39.6	35.9	28.4	21.0
CO	13.8	19.7	24.0	16.2	17.4
DI	9.5	13.3	15.9	12.6	13.1
BRBS	24.3	28.9	22.0	19.4	25.5
BRAS	26.7	29.5	22.4	18.1	26.9
BRST	-	46.8	53.9	43.3	35.6
BRHL	-	56.9	52.7	43.5	31.1
QL	54.9	46.8	50.2	56.7	59.5
FI	24.5	33.9	37.8	29.6	26.2

**Table 4: Changes in QoL Scores during Treatment (Using EORTC QLQ-C30 v3.0 and BR 23 v1.0)
(n=116 for chemotherapy, n=77 for EBRT)**

DISCUSSION

There are a number of scoring methods for QoL assessment including the EORTC QLQ-C30, the Subjective Significance Questionnaire (SSQ) and the Functional Assessment for Cancer Therapy-General (FACT-G). Numerous studies have validated the EORTC QLQ-C30 questionnaire.^{2,8,9} Of importance, a study from Tata Memorial Hospital, Mumbai has validated the EORTC questionnaires in the Indian population and also recommended use of the regional language versions.⁸

In our study, we tried to minimise variations in treatment modalities to enable more uniform comparison among the patients. Studies have shown that breast conserving surgery (BCS) was consistently associated with better QoL scores, especially with regards to body image, in comparison to modified radical mastectomy (MRM).^{10,11,12} Because it was

not possible to ensure breast conservation in all patients, and choosing a population, where some patients had BCS and others had MRM, would place the latter group at a distinct disadvantage vis-a-vis QoL scores, we deliberately chose only those patients who had undergone MRM. Similarly, we kept the regime, interval and number of cycles of chemotherapy and the dose and treatment portals of radiotherapy same. Hypofractionated EBRT, although gaining popularity now, was not standard at the time of this trial and was hence not used. Adjuvant endocrine therapy (Tamoxifen 20 mg OD for premenopausal women or Anastrozole 1 mg/Letrozole 2.5 mg OD for postmenopausal women) was added in ER positive patients after EBRT completion. Anti-HER-2/neu therapy was not used. This allowed us to properly interpret effect of age, socioeconomic status, education etc. on changes in QoL during treatment.

A problem that we faced was regarding responses to questions regarding sexual wellbeing. None of the patients were willing to answer these questions. Consequently, we did not include responses to this section of the BR-23 questionnaire in our analysis. This problem is probably unique to Indian society and has not been commonly reported in Western literature.

Age is an important factor in interpreting Quality of Life.^{13,14,15,16} Younger women are especially at high risk for having lower QoL.^{14,15,16} Younger breast cancer survivors are at risk for impaired QoL up to several years after diagnosis.^{15,16} Breast cancer patients who had been diagnosed at an older age showed worse QoL outcomes in the physical domain, while those who had received diagnoses at a younger age showed worse QoL outcomes in the social and emotional and perception of body image domains.^{14,15,17} Our study corroborated these facts in the Indian context. Moreover, we found higher education, family income and working status to have a clear inverse relationship with most QoL function scale scores. Another finding of importance was lower scores both prior to and during therapy in younger women who had small children. Expectedly, body image

problems were more in younger women of higher socioeconomic strata.

During treatment, there was a global deterioration of functional scores during chemotherapy and gross improvement (In some cases, beyond baseline scores) during radiotherapy. This is similar to findings of other studies in breast cancer patients which show decrease in physical, role and social function during chemotherapy^{8,17,18,19} and good, stable QoL scoring during radiotherapy indicating that it was well tolerated.²⁰ Studies show that fatigue, sleep disturbances and pain were moderately intense during treatments and decreased significantly over time.^{17,18,19} Our patients had similar complaints with loss of appetite ranking as one of the other major symptoms.

Treatment outcomes were different with respect to age, as in other studies, with younger women reporting higher symptoms and poorer QoL than their older counterparts.¹³⁻¹⁹ We also found poorer QoL scores in more educated working women of higher income families. Nausea and vomiting was a major symptom during chemotherapy peaking after the first cycle, but decreasing gradually thereafter. The trends showed a steep rise in symptom scores combined with a sharp decline in emotional and social function and QoL after the 1st cycle of chemotherapy (compared to baseline) probably owing to initial anxiety and adjustment to a new therapeutic intervention. The scores did not alter hugely with subsequent cycles and some scores actually improved. Although the exact reason for this is not clear, it may be due to patients getting used to chemotherapy and its effects better with repeated cycles. Hair loss was a major problem and accounted for worse socio-emotional scores in all women but more so in the young.

Drawbacks of our study were the small number of patients and inability to ascertain changes over a long period of time, especially considering long term late effects due to sequel of treatment or disease relapse. We intend to conduct a larger study that assesses QoL parameters in Breast Cancer patients over time, starting before treatment and continuing through longterm followup, in a bigger patient population, based on this initial study.

CONCLUSIONS

Quality of Life in breast cancer patients and its alteration during treatment is of paramount importance, but is unfortunately, often underestimated. Breast cancer patients in India face similar problems and respond in similar fashion to their counterparts elsewhere in the world. The effect of age, education, family income and working status on various QoL scores is clearly defined in our patients. Adjuvant chemotherapy causes substantial worsening whereas Radiotherapy maintains and improves Quality of Life. As Oncologists, we need to appreciate these findings and incorporate them in our day-to-day practice. Larger studies are required to better understand QoL issues in breast cancer patients in India.

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