

Low Quality of life (QoL) in Indian breast cancer patients : a critical analysis of UP

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Abstract :

Background

Breast cancer is the commonest of all cancers among women across the world and India being no exception to this deadly disease. There may be many symptoms due to cancer, some are complex but some are not complex. Measuring quality of life (QoL) is important to measure overall burden of disease. It is important to evaluate cancer specific QoL which is associated to all stages of this disease. Also Quality of Life is a term that adds various dimensions of quality of life such as physical, psychological, socio-economical, spiritual, cognitional & social dimensions. Balance between all the four domains (i.e. Physical, Psychological, Social and Spiritual) means good quality of life, but in India QoL in general is not good and if we talk of cancer patients its worst.

Objective

The aim of this study is assessment of QoL in breast cancer patients undergoing treatment through various modalities at different stages of disease.

Methods

This is a cross-sectional study, a total of 150 breast cancer patients were included. Patients quality of life were assessed by Ferrel's Quality of Life Instrument-Breast Cancer patient

version and the instrument is already validated by Ferrel BR et al (2012). These questionnaires consist of general well-being, psychological well-being, distress, fearfulness, social concerns and spiritual well-being. The data obtained gives Cronbach alpha value of 0.642 which is reliable enough for further study. The QoL in for most subjects was around 50% and is a cause of concern as this is quite low as compare to global standards.

Results

A significant relationship between type of cancer, amount of pain, and fatigue (tiredness) was found. However, none of the demographic variables (age, marital status, income) were significantly related to QoL. Education and type of treatment were found to be correlated with QoL. The physical well-being score was found to be Mean = 4.82, SD = 2.19. The Psychological well-being score was found to be Mean=4.95, SD=2.02. For social well-being score was found to be Mean=4.98, SD=1.94. The highest score was for spiritual well-being Mean = 5.32, SD = 2.46.

Conclusion

Influencing quality of life (QoL) is an important issue in Breast cancer patients. Apart from effect of treatment there are other factors like socioeconomic status, psychological well-being, fear of recurrence etc., Which plays a pivotal role in patients wellbeing and if counseled at various levels like family, hospital and society can improve QoL.

Keywords: *Breast cancer, chemotherapy, Quality of life, psychological well-being, counseling*

1. INTRODUCTION:

Globally, cancer is the second leading cause of death and common cancers found in Indian women are Breast, Cervix, Ovary, Mouth & Esophagus, Colorectal and other cancers. Worldwide breast cancer is the commonest cancer (**World Health Organization, 2012**). Breast cancer, a malignant tumor that starts in the cells of the breast. Both in men and women it occurs. In males this is rare but in females this is second most common cancer in women of India, about 7% of global burden of breast cancer. It is also seen that one-fifth of all cancers among women in India is breast cancer and hence the situation is highly alarming. In 2018, 1,62,468 new cases and 87,090 deaths were reported for breast cancer in India, so with this ongoing significance of the breast cancer problem with respect to its rate, morbidity and mortality, further studies are required to assess and prevent this disease.

Lifestyle changes, older age at consummation, delayed pregnancy, sedentary physical activity and hormonal disorders are contributory factors for promotion of breast cancer in India, other factors like socio-economic status, education level be considered, especially in countries like India where a large percentage of women are from rural backgrounds with limited literacy and healthcare access (1). A number of treatment modalities are available, among them chemotherapy stands as the most preferred one with surgical, radiatherapeutic and hormonal interventions playing an adjuvant role. Although the rate of survival among breast cancer patients has increased in recent past due to rapid advancements in treatment and

mammography screening (2), the surviving women pass through various medical, physical and psychosocial challenges (3).

Clinicians are assessing the effect of various treatments on health related quality of life. A repeated QOL assessment among cancer patients is useful, this has already proved by many studies. As reported by a study 30.1% of the medical and 63.2% of non-biomedical interventions had an impact on QOL. QOL assessment is also instrumental and helpful to revise the treatment plans. As reported by a recent Indian study breast cancer patients had low QOL. Patients' scores were average for the function scale but higher on emotional scale.

Measuring QOL is a multifaceted that encompasses the impact of diagnosis, impact of treatment of the disease and its progression on daily routine activities and recovery of patients with breast cancer. Currently in oncology, QOL is a sign for assess the quality of care and its management. QOL instinctively assesses psychological, physical, and social well-being and provides the impact of different treatment effect in breast cancer patients.

After the diagnosis and long term treatment reveals positive and negative effects in recovery and QoL as different treatments have different effects. QoL states an overall sense of happiness, pleasure and fulfillment with life. It includes subjective evaluations of both positive and negative aspects of life, overall satisfaction (4), health-related quality of life (HRQoL) seems to cover aspects of overall QoL that can be shown to affect both physical and mental health (5). As argued by (6) under the contextual model of HRQoL, diverse variables like care-giving and medical care settings need to be taken into consideration (7) in order to shed more light on the topic.

Physician domain is concerned with physical manifestations of disease such as fatigue and pain, on the other hand functional domain measures the impaired functional ability of the patient owing to disease. The psychological domain assesses the positive and negative emotional effects which include anxiety, stress and depression. Social domain assesses ability to participate in social functions/celebrations and spiritual domain assesses hope/ existential dimension of the patients experience. Lastly, sexual domain evaluates the impact of the disease on the personal life of the patient.

Considering the QoL to be an important yet unaddressed aspect of breast cancer often being neglected while formulating management strategies, the present study was planned to evaluate the QOL of women with breast cancer who were under treatment and follow-up at the at King George's Medical University, Lucknow, UP, India.

2. MATERIAL AND METHODS:

Data collection

This cross-sectional study was conducted at King George's Medical University, Lucknow, UP, India between April 2018 and June, 2018. Data was collected using a two-part questionnaire. The first part collected information related with demography, disease and treatment details. Second part was a validated scale for measurement of quality of life of breast cancer patients.

Sample size

The total of 150 breast cancer patients attending the Departments of Endocrine Surgery and Radiotherapy, King Georges Medical University, Lucknow comprised the study population. The sample size was assessed using a non-probability exploratory study at 60% prevalence, 95% confidence and taking an error allowance of 10%, resulting in a calculated sample size of 92. After adding for contingency and rounding off, the sample size was kept at 100.

Sampling technique

This is a descriptive study done at King George's Medical University, UP, Lucknow. Lucknow is the capital of Uttar Pradesh, the largest state in India in terms of population. A non-probability purposive and convenience sampling was done as the Institute is a tertiary care centre and all types of cancer patients are treated here.

Inclusion and exclusion criteria

All the freshly diagnosed breast cancer patients aged <60 years receiving treatment at Outdoor and Indoor Departments of Endocrine Surgery and Radiotherapy were invited to participate in the study and those providing consent to participate were included in the study. Approval for conducting the study was obtained from the Institutional Ethics Committee too.

QoL instrument

The quality of life of patients were measured using a validated QoL questionnaire by Ferrel's Quality of Life Instrument-Breast Cancer patient version. The quality of life instrument (BREAST CANCER PATIENT VERSION) has forty-six items on ordinal scale (0-10), with higher score indicating a better QoL. This questionnaire covers QoL domains like general well-being, psychological well-being, distress, fearfulness, social concerns and spiritual well-being. As different domains had variable number of items, hence to understand the burden of disease on different domains of QoL, absolute scores of a domain were converted into weighted scores by dividing it by number of items, hence for each domain the maximum possible score was 10 and the overall weighted sum of 7 dimensions was 70.

Reliability and validity of data

For the data set obtained in present study, the reliability of scale was tested using Cronbach alpha value calculation which was found to be 0.642, thus showing a moderate reliability of the scale.

Statistical Analysis

Data was analyzed using SPSS 25.0 software. Data has been represented as frequencies and percentages and mean and standard deviation. Chi-square test, Independent samples 't'-test and ANOVA were used to compare the data.

3. RESULT & DISCUSSION

Demographic characteristics of patients

In this study 10.7% respondents were above 60 years age and 54.7% were between 41 and 60. 37.4% were aged less than 40 years. Regarding marital status married women were 96.7% and 2.7% were unmarried. Among all these women 47.3% were illiterate and 14% were merely educated up to primary level. As far as occupation is concerned, 95.3% were housewives and 3.3% were employed as government servant. 74% woman belongs to low income category while 25.3% belongs to middle income group. (**Table-1**)

Clinical and treatment associated characteristics of patients

Staging of all breast cancer patients were I,II,III and IV. 3 patients were of stage I, 26 of stage II, 17 were of stage III while 95 were of stage IV i.e. maximum. Regarding treatment type 90.7% received neo-adjuvant chemotherapy (NACT) while 6% patients received adjuvant chemotherapy (**Table-2**).

QOL subscale domain scores in relation to demographic and clinical characteristics of the patients

Patients < 40 years of age had the highest scores and patients between 41-60 years had the lowest scores). Urban population had higher scores as compared to rural population. Obese (≥ 30 Kg/m²) had higher scores followed by normal weight (18.4-24.9 Kg/m²). Post-graduates had higher scores followed by higher secondary. Marital status also influences QoL and widows were found to score high. This can be seen through **table 3A & 3B**.

Unemployed had highest scores followed by home maker and for socio-economic status, upper had higher scores followed by middle. Patients with stage-I had highest scores followed by stage-II and surgery has shown highest level of improvement as this treatment type reflects highest scores followed by adjuvant chemotherapy Clinical stage showed significant correlation with social well-being and spiritual well-being.

Correlation between QoL subscale domain scores & demographic and clinical characteristics of the patients

No correlation was found between Total QoL with age, area, weight, marital status, occupation, socio economic status but significant correlation was found between Total QoL with Education. No correlation was found between General QoL with age, area, weight, marital status, occupation. A significant correlation was found between General QoL with Education. No correlation was found between Psychological QoL with all demographic

factors. No correlation was found between Distress QoL with age, area, weight, education, marital status and occupation. A significant correlation was found between Distress QoL with socio-economic status. No correlation was found between Fearfulness QoL with all demographic factors. No correlation was found between Self QoL with age, area, weight, marital status, occupation, socio economic status with. A significant correlation was found between Self QoL with Education. No correlation was found between Spiritual QoL with age, area, weight, and occupation. A significant correlation was found between Spiritual QoL with Education, Marital status, and Socio-economic status.

QoL item score analysis

The **table-4** gives the in-depth analysis of various dimensions used in Ferell instrument.

Physical well-being subscale-highest mean score was observed for menstrual changes or fertility (Mean = 5.41, SD = 2.35) followed by vaginal dryness/ menopausal symptoms (Mean = 5.37, SD = 2.32), Weight gain (Mean = 5.28, SD = 2.36). Psychological well-being subscale- highest score was observed for fear of metastasis (Mean = 6.03, SD = 2.58) followed by appearance (Mean = 6.01, SD = 1.53), treatment completion distress (Mean = 5.39, SD = 1.99). Social well-being subscale-highest score was observed for employment (Mean = 6.73, SD = 2.55) followed by sexuality (Mean = 5.73, SD = 2.27) and support / others (Mean = 5.66,SD = 1.47). The highest score in all was observed in spiritual well-being subscale-spiritual activities (Mean = 6.19, SD = 2.65) followed by religious activities (Mean = 5.95, SD =2.54) and spiritual changes (Mean = 5.89, SD = 2.34).

4. DISCUSSION

The present study used “Ferrel’s Quality of Life Instrument-Breast Cancer patient version” for evaluating quality of life. This scale collects information related with general, psychological, distress, fearfulness, effect on activity and spirituality domains.

It was found that the overall QoL was only 47.8% which is very low and alarming. The major reasons are that in tertiary care hospitals, the treatment is usually provided for inpatients and referral patients from all part of UP (8). Breast cancer and breast cancer treatment affect woman’s QoL in many areas like physical and psychological domains (9). Breast Cancer is associated with compromised QoL and decreased functional capacity in women with breast cancer. (10). Breast cancer patients perceived benefit by treatment in long term but they reported many problems like pain, body image, arm symptoms etc. with global quality of life and functional scores did not improve even after 18 months follow-up of their treatments. (11). Patients receiving chemotherapy HRQoL was negatively affected (12). A study (13) showed that most of the Breast cancer patients had poor QoL although married patients had reasonably better QOL than unmarried. A strong correlation was found among QoL and number of treatment cycles, a need to comprehend the basic variables in the patients QoL (13).

Strength of relationship was found between clinical and socio-demographic factors and breast cancer patients QoL. Psychological and financial assistance may improve QoL in women with breast cancer (14). Financial assistance and social support may significantly improve the QoL of breast cancer patients (15). More studies are required for better understanding of QoL issues in breast cancer patients (16). Many influential factors are affecting QoL of breast cancer patients, it is required to think of all the patients' feedback about different problems faced by them and further research is required in the area of QOL of breast cancer patients.(17).

In case of Cancer patients, generally this disease is reported at an advance stage and hence treatment becomes complicated. Considering the population pressure these Centre's cannot cater all the referred patients on one hand and those cater are mainly render mere treatment with no psychological counseling. Psychological, socio-economical, spiritual, cognitional and social dimensions due to various constraints are not given due importance as the patients are from lower or middle income status, financial burden of the disease is very high and hence social and constraint plays a pivotal role.

The findings of the study revealed that there is no correlation between all QoL domains with age, area (rural/urban),weight / BMI category, marital status and occupation, however, a significant correlation between QoL domains like General QoL, Self QoL and spiritual QoL and education was found. A significant correlation between QoL domains like General, Distress, Effect on activity and spiritual QoL with socio-economic status was also found. A significant correlation was found between spirituality and marital status.

5. CONCLUSION

QoL was evaluated in those patients who were diagnosed with breast cancer and undergoing treatment and follow-up at different departments like Endocrine Surgery department at King Georges Medical University, Lucknow, UP, India. This study demonstrates the strength of the relationship between clinical and socio-demographical factors and quality of life of breast cancer patients. This study demonstrates the strength of the relationship between education and physical well-being, education with social well-being and education with spiritual well-being. A strong relationship was found between marital status and spiritual well-being. A strong relationship was found between clinical stage and spiritual well-being. A good relationship was found between tumor stage and social and spiritual well-being. A strong relationship was also found between type of treatment and physical, psychological, and social well-being. This study fills a gap in the literature related to QoL in Indian women suffering from carcinoma breast.

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Registration of breast cancer patients (Stage II or above) receiving chemotherapy, neoadjuvant chemotherapy or surgical management at KGMU, Lucknow (n=150)

Demographic and clinical data and details regarding type of treatment collected

Quality of Life Assessment using Ferrel's QoL Scale on four domains, viz. physical, psychological, social and spiritual subscales

Physical (4.82±2.19)	Psychological (4.95±2.02)	Social (4.98±1.94)	Spiritual (5.32±2.46)
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QoL domains were correlated with demographic and clinical factors of patients

Factors affecting physical well-being <i>Education, tumor stage and treatment type</i>	Factors affecting psychological well-being <i>Treatment type</i>	Factors affecting social well-being <i>Education, tumor stage, treatment type</i>	Factors affecting spiritual well-being <i>Education, marital status, socioeconomic status, clinical stage, tumor stage, treatment type</i>
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Table 1: Demographic and General Profile of Patients

SN	Characteristic	No.	Percentage
1.	Age		
	≤40 Years	52	34.7
	41-60 Years	82	54.7
	>60 Years	16	10.7

	Mean age±SD (Range) in years	46.55±11.10 (22-75)	
2.	Area		
	Rural	115	76.7
	Urban	35	25.3
3.	Weight/BMI Category		
	Underweight (<18.5 kg/m ²)	5	3.3
	Normal weight (18.4-24.9 kg/m ²)	90	60.0
	Overweight (25.0-29.9 kg/m ²)	47	31.3
	Obese (≥30 kg/m ²)	8	5.3
4.	Education		
	Illiterate	71	47.3
	Primary	21	14.0
	Upper Primary	13	8.7
	High School	25	16.7
	Higher secondary	3	2.0
	Graduate	14	9.3
	Postgraduate	3	2.0
5.	Marital Status		
	Unmarried	4	2.7
	Married	145	96.7
	Widow	1	0.7
6.	Occupation		
	Govt. service	5	3.3
	Homemaker	143	95.3
	Unemployed	1	0.7
	Labourer	1	0.7
7.	Socioeconomic status		
	Low	111	74.0
	Middle	38	25.3
	Upper	1	0.7

Table 2: Clinical Profile of Patients (TNM Staging)

SN	Characteristic	No.	Percentage
1.	Tumor Stage (n=141)		
	1	3	2.1
	2	26	18.4
	3	17	12.1
	4	95	67.4
2.	Nodal involvement	142	94.7
3.	Metastasis (n=145)	26	17.9
4.	Treatment Type		
	Adjuvant chemotherapy	9	6.0
	Neoadjuvant chemotherapy	136	90.7
	Surgery	4	2.7
	Targeted therapy	1	0.7

Table 3A : QOL subscale domain scores in relation to demographic and clinical characteristics of the patients

		Physical well-being			Psychological well-being		
		Mean	SD	p-value	Mean	SD	p-value
Age (years)	<= 40 years	4.45	1.56	.331	5.01	.450	.215
	41-60 years	4.05	1.46		4.87	.719	
	>60 years	4.27	1.95		5.12	.490	
Geographical area	Urban	4.30	1.55	.181	4.96	.626	.614
	Rural	3.90	1.52		4.90	.602	
Weight/BMI Category	Underweight (< 18.5 Kg/m ²)	4.05	1.34	.809	4.69	.684	.438
	Normal weight (18.4-24.9 Kg/m ²)	4.23	1.65		4.92	.621	
	Over weight (25.0-29.9 Kg/m ²)	4.11	1.48		4.96	.624	
	Obese (≥30 Kg/m ²)	4.68	.933		5.23	.516	
Education level	Illiterate	3.95	1.38	.011	4.91	.672	.786
	Primary	4.45	1.55		4.95	.642	

	Upper Primary	5.21	1.47		5.13	.540	
	High School	3.66	1.72		4.87	.522	
	Higher Secondary	5.37	.695		4.81	.363	
	Graduation	4.71	1.70		5.04	.575	
	Post Graduation	5.50	1.06		5.28	.824	
Marital status	Unmarried	5.65	1.89	.085	4.80	.438	.839
	Married	4.16	1.53		4.95	.625	
	Widow	6.00			5.18		
Occupation	Govt Servant	4.10	.872	.236	5.40	.661	.239
	Homemaker	4.20	1.56		4.93	.615	
	Unemployed	7.37			4.95		
	Manual Laborer	3.75			4.18		
Socio economic status	Low	4.03	1.52	.051	4.88	.654	.133
	Middle	4.73	1.55		5.11	.477	
	Upper	4.75			5.18		
Clinical Stage	IIA	3.45	1.58	.053	4.90	.867	.543
	IIB	5.13	1.93		5.20	.897	
	IIIA	4.92	1.70		5.02	.465	
	IIIB	3.71	1.15		4.94	.460	
	IIIC	3.99	1.56		4.89	.659	
	IV	4.62	.		4.00	.	
	Unknown	4.50	1.23		5.01	.527	
Histo-pathological Grade	I	3.99	1.72	.651	4.84	.661	.732
	II	4.28	1.57		4.96	.636	
	III	4.04	1.37		4.97	.507	
	Unknown						
Tumor stage	1	6.37	1.02	.046	5.68	1.06	.257
	2	4.60	1.70		4.96	.542	
	3	3.83	1.13		4.92	.422	
	4	4.07	1.51		4.90	.641	
	Unknown	4.55	1.79		5.12	.704	
Treatment type	Adjuvant Chemotherapy	3.72	1.64	.023	4.66	.428	.004
	Neoadjuvant Chemotherapy	4.21	1.51		4.94	.609	
	Surgery	6.03	1.41		5.93	.423	

	Targetted therapy	1.50			4.36	.	
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Table 3B : QOL subscale domain scores in relation to demographic and clinical characteristics of the patients

		Social well-being			Spiritual well-being		
		Mean	SD	p-value	Mean	SD	p-value
Age (years)	<= 40 years	2.93	.897	.054	5.04	1.70	.240
	41-60 years	2.58	.856		5.51	1.48	
	>60 years	2.52	.900		5.25	1.64	
Geographic area	Urban	2.73	.886	.332	5.23	1.56	.218
	Rural	2.57	.888		5.61	1.61	
Weight/BMI Category	Underweight (< 18.5 Kg/m ²)	2.48	.696	.121	5.00	1.25	.370
	Normal weight (18.4-24.9 Kg/m ²)	2.62	.900		5.50	1.62	
	Over weight (25.0-29.9 Kg/m ²)	2.73	.845		5.10	1.50	
	Obese (≥30 Kg/m ²)	3.38	.900		4.80	1.74	
Education level	Illiterate	2.59	.865	.003	5.42	1.51	.000
	Primary	2.94	.611		4.42	.960	
	Upper Primary	3.28	.998		4.49	2.11	
	High School	2.25	.663		6.58	1.11	
	Higher Secondary	3.59	1.33		4.09	.436	
	Graduation	2.80	1.07		5.16	1.63	
	Post Graduation	3.29	.780		4.19	.704	
Marital status	Unmarried	3.00	.696	.373	6.96	1.12	.024
	Married	2.68	.890		5.29	1.56	
	Widow	3.77			2.57		
Occupation	Govt Servant	2.35	.829	.737	5.05	1.40	.443
	Homemaker	2.71	.893		5.31	1.59	
	Unemployed	3.11			7.85		

	Manual Laborer	2.22			5.28		
Socio economic status	Low	2.60	.872	.064	5.57	1.50	.005
	Middle	2.98	.888		4.62	1.62	
	Upper	2.22			4.57		
Clinical Stage	IIA	2.96	1.84	.183	5.28	1.50	.002
	IIB	3.04	1.12		4.90	1.72	
	IIIA	2.95	.805		4.24	1.63	
	IIIB	2.64	.939		5.30	1.69	
	IIIC	2.51	.814		5.81	1.43	
	IV	3.00			4.71	.	
	Unknown	2.97	.838		4.71	1.36	
Histo-pathological grade	I	2.88	1.01	.491	5.11	1.43	.372
	II	2.64	.904		5.43	1.63	
	III	2.79	.678		4.96	1.44	
Tumor stage	1	4.48	.390	.002	3.23	.951	.002
	2	2.80	.868		4.69	1.73	
	3	2.59	.782		5.27	1.69	
	4	2.58	.836		5.65	1.45	
	Tx	3.17	1.07		4.44	1.23	
Treatment type	Adjuvant Chemotherapy	2.22	.890	.002	6.58	.777	.005
	Neoadjuvant Chemotherapy	2.70	.852		5.27	1.57	
	Surgery	3.94	.717		3.60	1.18	
	Targetted therapy	1.00			1.00		

Table 4 : Dimension wise Mean Absolute and Weighted Scores*

SN	Dimension	No. of items	Mean Absolute score±SD	Mean Weighted score±SD
1.	General	7	33.70±12.43	4.81±1.78
2.	Psychological [@]	8	38.85±3.66	4.86±0.46
3.	Distress	7	34.35±10.65	4.91±1.52
4.	Fearfulness	5	25.61±6.24	5.12±1.25
5.	Self	4	14.47±4.43	3.62±1.11

6.	Effect on activity	5	24.17±7.82	4.83±1.56
7.	Spirituality	7	37.26±11.09	5.32±1.58
	Total score	7 Dimensions	208.42±28.53	33.48±4.98