

# A STUDY ON EFFECT OF PSYCHOSOCIAL ISSUES ON TREATMENT INTERRUPTIONS AND QUALITY OF LIFE ASSESSMENT AMONG CANCER PATIENTS AND THEIR ATTENDENTS IN A TERTIARY CANCER CARE INSTITUTE.

<sup>1\*</sup>DrRadhika Parimkayala, <sup>2</sup> Dr Kanugula Sravanthi, <sup>3</sup>Dr Malladi Ramakrishna

<sup>1\*</sup>Associate Professor :Department of Medical Oncology :MNJ Cancer Hospital: Redhills Road, Redhills, Lakadikapul, Hyderabad, Telangana. Email:radhika.parimkayala@gmail.com

<sup>2</sup>Senior Resident : Department of Radiotherapy : MNJ Cancer Hospital: Redhills Road, Redhills, Lakadikapul, Hyderabad, Telangana. Email sravanthikanugula@gmail.com

<sup>3</sup>Professor &HOD: Department of Radiotherapy::MNJ Cancer Hospital: Redhills Road, Redhills, Lakadikapul, Hyderabad, Telangana. Email: rkmalladi@yahoo.com

**\*Corresponding author: Dr Radhika Parimkayala**

## ABSTRACT

**Background:** Routine screening for distress is internationally recommended as a standard of care among cancer patients. This study was conducted to assess the level of stress and determine the association between quality of life (QOL) with demographic, socio-economic status, treatment phase, cancer stage.

**Aim:** To assess the psychosocial issues in treatment interruptions, quality of life in cancer patients and their attendants.

**Materials and methods:**Prospective Observational study done inMNJ Institute Of Oncology and Regional Cancer Centre, Osmania Medical College, Hyderabad from July 2018 to June 2020. Biopsy proven cancer patients of head and neck, cervix and breast visiting OPD. The target population were interviewed using preselected questionnaires. The EORTC quality of life questionnaire (QLQ) is an integrated system for assessing the health related quality of life (QOL) of cancer patients. The core questionnaire, the QLQ – C30, is the product of more than a decade of collaborative research.

**Results:** Patients with head & neck, cervical, and breast cancer had a significantly better quality of life two months following treatment than they did throughout treatment. When compared to caregivers of breast and cervical cancer patients, caregivers of head and neck cancer patients had a lower quality of life. In comparison to before therapy, carers' quality of life was poor towards the completion of treatment. Young and male carers were found to be more burdened and disruptive. Interruptions in patient treatment were linked to caregivers' increased strain and disruptiveness.

**Conclusion:** When compared to patients with cervical and breast cancer, people with head and neck cancer had a lower quality of life. Interruptions in patient treatment were linked to caregivers' increased strain and disruptiveness.

Keywords: Quality Of Life (QOL), Disruptiveness, Burdened.

## INTRODUCTION

The global cancer burden is estimated to have risen to 18.1 million new cases and 9.6 million deaths in 2018. One in 5 men and one in 6 women worldwide develop cancer during their lifetime, and one in 8 men and one in 11 women die from the disease. A continuous increase in cancer incidence and decreased mortality rate have resulted in increased number of people living with cancer. As cancer patients are living longer due to advances in treatment, psychological well-being of patients and their family members is becoming a growing concern. Health related quality of life (QOL) is one parameter that is not usually studied but it is a significant additional end point nowadays. As cancer is a dreadful disease and treatment is multimodality approach, takes longer time to complete, there are high chances of treatment interruptions or delay in treatment due to various factors like advanced stage of the disease, elderly age of the patient, financial issues, toxicities due to treatment or other psychosocial issues of which psychosocial aspects are least studied in Asian population this study focuses on it.<sup>1</sup>

As cancer needs a long treatment period and continuous care in order to help the patient physically, psychologically and financially, so that confronting a cancer diagnosis impacts deeply not only the patient but also the family members. Usually, alongside the professional assistance, cancer care is provided by family members who help the patient during medical and daily activities, from the first symptoms to recovery or death. Therefore, to assess the burden on family members is equally important for better treatment outcomes, patient compliance and to decrease the treatment dropouts. Operational definition of an “informal caregiver is a person who provides support and assistance, formal or informal with various activities of the person with long term conditions without financial remuneration”.As they cannot take sufficient time for themselves, they seem to have higher predisposition to medical illness. The caregiver burden is considered to occur when the emotional or physical health of caregiver is threatened or when their available resources are overwhelmed by the care demands. Therefore caregivers quality of life and its association with treatment interruptions of patient and treatment outcomes are emphasized in this study.

## MATERIALS AND METHODS

Prospective Observational study done inMNJ Institute Of Oncology and Regional Cancer Centre, Osmania Medical College, Hyderabad from July 2018 to June 2020. Biopsy proven cancer patients of head and neck, cervix and breast visiting OPD along with one caregiver per patient were selected randomly based on inclusion criteria.

**Inclusion Criteria:** Age of the patient > 18 years and < 70 yrs, ECOG score 0 to 2 with Biopsy proven cases of carcinoma head and neck, cervix and breast.

**Exclusion Criteria:** Age of the patient <18 years and > 70 yrs, ECOG score >2 with Metastatic cancers of head and neck, cervix and breast.

60 cancer patients (20 of head and neck,20 of breast and 20 of cervix) attending the oncology OPD of MNJ Institute Of Oncology and RCC, Hyderabad and their accompanying person (caregiver) were enrolled in the study. The target population were interviewed using preselected questionnaires. The EORTC quality of life questionnaire (QLQ) is an integrated

system for assessing the health related quality of life (QOL) of cancer patients. The core questionnaire, the QLQ – C30, is the product of more than a decade of collaborative research. QLQ – C30

The QLQ-C30 is composed of both multi-item scales and single-item measures. These include five functional scales, three symptom scales, a global health status / QoL scale, and six single items. Each of the multi-item scales includes a different set of items - no item occurs in more than one scale. Scoring the QLQ-C30 version 3.0:-

### **General principles of scoring**

The QLQ-C30 is composed of both multi-item scales and single-item measures. These include five functional scales, three symptom scales, a global health status / QoL scale, and six single items. Each of the multi-item scales includes a different set of items - no item occurs in more than one scale. All of the scales and single-item measures range in score from 0 to 100. A high scale score represents a higher response level. Thus, a high score for a functional scale represents a high / healthy level of functioning, a high score for the global health status / QoL represents a high QoL, but a high score for a symptom scale / item represents a high level of symptomatology / problems.

**The principle for scoring these scales is the same in all cases:**

1. Estimate the average of the items that contribute to the scale; this is the raw score.
  2. Use a linear transformation to standardize the raw score, so that scores range from 0 to 100; a higher score represents a higher ("better") level of functioning, or a higher ("worse") level of symptoms. Item range is the difference between the possible maximum and the minimum response to individual items; most items take values from 1 to 4, giving range = 3.
- Interpretation of scores

The raw QLQ-C30 scores can be transformed to scores ranging from 0 to 100. The use of these transformed scores has several advantages, but transformed scores may be difficult to interpret. For example, what does an emotional function score of 60 or a difference of 15 mean? Also, there are no grounds for regarding, say, an emotional function score of 60 as being equally good or bad as scores of 60 on the other functioning scales. However, there are a number of ways to ease the interpretation of QLQ-C30 results.

One can report the raw scores in addition to the transformed scores. For example, it may be clinically relevant to know the proportion of patients that are 'Quite a bit' or 'Very much' constipated. This also applies to results from multi-item scales when the responses to the individual items are of interest. In some cases it may be useful to dichotomize scores, for example by grouping scores into 'Not at all' vs. 'Any extent'

### **QLQ-H&N<sup>2</sup>: Head & Neck cancer module-**

The head & neck cancer module is meant for use among a wide range of patients with head & neck cancer, varying in disease stage and treatment modality (i.e. surgery, radiotherapy and chemotherapy) (12) The module comprises 35 questions assessing symptoms and side effects of treatment, social function and body image/sexuality. The module has been developed according to the guidelines, and pre-tested on patients from Norway, Sweden, Denmark, the

UK and French-speaking Belgium. It has been field tested in Norway, Sweden and The Netherlands, and in a large cross-cultural study involving more than ten countries (EORTC Protocol 15941).

Scoring of the head & neck cancer module:-

The head & neck cancer module incorporates seven multi-item scales that assess pain, swallowing, senses (taste and smell), speech, social eating, social contact and sexuality. There are also eleven single items. For all items and scales, high scores indicate more problems (i.e. there are no function scales in which high scores would mean better functioning). The scoring approach for the QLQ-H&N35 is identical in principle to that for the symptom scales / single items of the QLQ-C30.

### **Breast cancer module: QLQ-BR<sup>3</sup>**

The breast cancer module is meant for use among patients varying in disease stage and treatment modality (i.e. surgery, chemotherapy, radiotherapy and hormonal treatment) (Sprangers et al., 1996). The module comprises 23 questions assessing disease symptoms, side effects of treatment (surgery, chemotherapy, radiotherapy and hormonal treatment), body image, sexual functioning and future perspective (Appendix 2a). The module has been developed according to the guidelines, and approved after formal review. Validation studies in The Netherlands, Spain and the United States have been completed. It has been field tested in a larger cross-cultural study involving 12 countries (EORTC Protocol 15931).

#### **Scoring of the breast cancer module:**

The breast cancer module incorporates five multi-item scales to assess systemic therapy side effects, arm symptoms, breast symptoms, body image and sexual functioning. In addition, single items assess sexual enjoyment, hair loss and future perspective.

The scoring approach for the QLQ-BR23 is identical in principle to that for the function and symptom scales / single items of the QLQ - C30.

### **CANCER CERVIX MODULE - QLQ -CX24**

This module is meant to use in patients of varying disease stage and treatment modality (surgery, radiotherapy). This module comprises 24 questions assessing symptoms, side effects of treatment, body image/ sexuality. The 24-item QLQ-CX24 was initially designed by the QLG to consist of five multi-item scales on clinically distinct dimensions (sexual functioning, body image and gastrointestinal, urologic and vaginal symptoms) and several single-item measures. The scoring approach for the QLQ-CX24 is identical in principle to that for function and symptom scale/single item of QLQ - C30. After attaining the informed written consent the QLQ-C30 and respective site wise questionnaires were administered in the sequence. The patients were interviewed before starting the treatment, at the end of third week, at the end of treatment and at first follow up. The patients with treatment breaks were interviewed using self made questionnaire to know the psychosocial issues responsible for treatment breaks.

### **Assessment of quality of life in caregivers**

The quantification of family caregiver's burden using a valid and reliable instrument, is vital for clinicians trying to identify caregivers who need intervention. The CQOLC is a self

administered scale specifically designed to assess quality of life issues in family caregivers of patients with cancer, especially to evaluate the broader impact of caregiving on QOL. The original version of the CQOLC developed by Michael A. Weitzner. The scale measured four conceptual domains of QOL: physical functioning, emotional functioning, family functioning and social functioning.

The CQOLC scale consists of 35 scale items that have a 5 point Likert format that ranged from 0 to 4.

0	-	not	at	all
1	-	a	little	bit
2	- somewhat			
3	- quite a bit			
4	- very much			

Ten items related to burden, seven items related to disruptive ness, seven to positive adaptation, three to financial concerns and eight single item to additional factors like disruption of sleep, satisfaction with sexual functioning, day to day focus, mental strain, informed about illness, protection of patient, management of patient's pain and family interests in caregiving.

Individual CQOLC factor scores obtained by summing the responses to the items that load on that particular factor. Total CQOLC score obtained by summing scores for all 35 items. Not all 35 items load on a factor; items 2,4,13,15,23,30,32 and do not load on any factor, but are included in total CQOLC score. The CQOLC scale is scored by adding up yields scores on each item to yield a total score for the instrument and scores can range from 0-140. For all item and domains that measure QOL, a higher score represents a better quality of life.

In the present study one caregiver for each patient was interviewed using CQOLC Scale before treatment and at the end of the treatment. 29

### Statistical Analysis

Data entry was done using MS Excel and statistically analyzed using statistical package for social sciences (SPSS Version 16) for MS Windows. Descriptive statistical analysis was carried out to explore the distribution of several categorical and quantitative variables. Categorical variables were summarized with n (%). while quantitative variables were summarized by mean  $\pm$  S.D. All the results were presented in tabular form and were also shown graphically using bar diagram or pie diagram as appropriate. The correlation coefficient is used to measure strength of the relationship between two variables. P values less than 0.05 considered to be statistically significant.

### RESULTS

Twenty cases of head and neck cancers belonging to stage II and III, twenty cases of carcinoma cervix of stage II To III and twenty cases of carcinoma breast who came to the institution between June 2018 and 2020 along with one caregiver for each patient were selected randomly. Quality of life of patients on radiotherapy was assessed before , at third week ,at the end of treatment and 2months after treatment. Quality of life of caregivers before, at the end of treatment and relation between the caregivers quality of life and

treatment interruptions was assessed. The mean age is 46.65 years ranging from 27 to 75 years and the male to female ratio is 4:1. 90% of the patients are with ECOG performance status of 1. Most of the patients belong to upper lower socioeconomic status (55%) based on kuppuswamy scale. The mean age of distribution is 49.55 years ranging from 36-70 years.

According to kuppuswamy scale 30% patients belong to upper lower socioeconomic status, 30% to lower and 25% to upper middle group. Mean age is 49.15 years ranging from 36 to 60 years. 45% of patients are with stage 2B and 35% with stage 3B.

**Table-1: Demographic distribution in study**

<b>Gender</b>		<b>Frequency</b>	<b>Percent</b>
Head and neck cancers	Male	16	80.0%
	Female	4	20.0%
	Total	20	100.0%
Breast cancer	Females	20	100%
Cervical cancer	Females	20	100%
<b>ECOG performance</b>			
Head and neck cancers	1	15	75.0%
	2	5	25.0%
Breast cancer	1	18	90.0%
	2	2	10.0%
Cervical cancer	1	16	80.0%
	2	4	20.0%
<b>Comorbidity</b>			
Head and neck cancers	DM	2	10 %
	DM, HTN	1	5%
	HTN	2	10 %
	NIL	15	75.0%
	Total	20	100.0%
Breast cancer	DM	2	10%
	HTN	1	5%
	NIL	17	85.0%
	Total	20	100.0%
Cervical cancer	DM	1	5%
	HTN	2	10%
	NIL	17	85.0%
	Total	20	100.0%
<b>Socioeconomic status,</b>			
Head and neck cancers.	upper middle	2	10.0%
	lower middle	2	10.0%
	upper lower	11	55.0%
	Lower	5	25.0%

	Total	20	100.0%
Breast cancer	upper middle	5	25.0%
	lower middle	3	15.0%
	upper lower	6	30.0%
	Lower	6	30.0%
	Total	20	100.0%
cervical cancer	upper middle	4	20.0%
	lower middle	5	25.0%
	upper lower	7	35.0%
	Lower	4	20.0%
	Total	20	100.0%

### QUALITY OF LIFE:

Out 20 patients with head and neck cancer 5 patients were dead after treatment and before follow up and one patient did not come for follow up. The mean score of global health before treatment in head and neck cancer patients was 64.77, during third week was 61.025 and at the end of treatment was 60.8 the reduction in scores of functional scales and global health indicates the deterioration of quality of life. The scores of global health were increased at 2months after treatment compared to the scores before and during treatment indicating improved quality of life at first follow up in head and cancer patients.

There was reduction in scores of functional scales during treatment which were improved 2months after treatment (role functioning  $p=0.001$ , social functioning  $p=0.001$ ). There is significant reduction in symptom scores at the first follow up compared to scores before treatment, cancer related pain( $p=0.006$ ), appetite( $p=0.001$ ),swallowing difficulty( $p=0.003$ ), speech difficulty( $p=0.003$ ), mouth opening( $p=0.001$ ), cough( $p=0.001$ ). The reduction in symptom scales scores indicates the improved quality of life at first follow up.

**Table-2: Quality of life in head and neck cancers**

Head and neck	Before treatment		Third week		End of treatment		First follow up		r	P VALUE
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
GLOH EA	64.770	8.4851	61.025	9.1853	60.800	11.6529			-	-
PF	82.995	25.2785	82.995	25.2785	82.620	26.8947			-	-
RF	90.845	17.4826	90.845	17.4826	87.345	17.8040	94.67	14.075	0.89	0.001
EF	87.930	28.7602	94.995	9.1354	92.905	9.0915	98.887	4.3119	-0.13	0.62
CF	95.80	13.185	96.60	10.465	98.30	7.603			-	-
SF	95.00	13.401	97.50	8.230	97.60	5.862	98.93	4.131	0.78	0.001
FATIGUE	22.685	30.7351	22.	28.4	22.065	22.8808	5.180	8.2498	0.09	.73

			130	787						
N and V	3.3 25	8.70 24	4.9 90	10.9 326	.83 0	3.71 19	.00	.000	-	-
PAIN	39. 125	30.2 237	27. 475	18.1 615	25. 805	19.8 442	14. 556	14.7 344	0. 85	0.00 6
DYSP	3.3 30	14.8 922	3.3 30	14.8 922	11. 340	24.1 096			-	-
SL	23. 320	37.6 030	18. 325	33.2 820	11. 655	22.3 383	.00	.000	-	-
AP	3.3 30	14.8 922	1.6 65	7.44 61	3.3 30	10.2 495	2.3 79	8.89 98	1. 00	0.00 1
CO	3.3 30	14.8 922	3.3 30	14.8 922	3.3 30	10.2 495	.00	.000	-	-
DI	.00	.000	.00	.000	.00	.000	.00	.000	-	-
FI	1.6 65	7.44 61	1.6 65	7.44 61	.00	.000	.00	.000	-	-
H&NP A	24. 140	27.6 858	17. 890	21.4 995	17. 470	21.4 352	12. 767	27.4 349	0. 58	0.00 1
H&NS W	18. 320	21.8 960	16. 645	15.0 574	16. 645	17.3 138	8.3 20	13.3 631	0. 71	0.00 3
H&NS E	7.5 0	18.3 17	7.5 0	18.3 17	5.8 30	15.5 526	7.2 88	17.1 772	0. 91	0.00 1
H&NS P	14. 395	20.9 527	9.4 35	12.6 175	4.9 95	9.16 39	6.2 44	11.4 416	0. 90	0.00 1
H&NS O	18. 320	27.3 785	14. 985	24.5 701	11. 235	18.7 730	13. 525	20.3 713	0. 90	0.00 1
H&NS C	5.6 60	13.0 195	3.9 90	10.2 251	2.6 55	7.60 40	1.2 38	2.66 05	0. 60	0.01
H&NT E	6.6 60	20.4 990	3.3 30	10.2 495	1.9 95	7.51 44	.82 5	2.25 43	1. 00	0.00 1
H&N MO	26. 630	42.6 790	24. 930	40.2 083	19. 930	34.7 818	19. 973	35.1 759	0. 75	0.00 1
H&ND R	14. 990	27.5 080	12. 485	22.1 904	10. 820	18.9 254	6.2 25	13.3 835	0. 83	0.00 1
H&NS TIC	38. 315	42.2 561	33. 310	37.4 447	26. 645	31.6 956	12. 494	29.4 923	0. 58	0.01
COUGH	21. 645	37.8 802	14. 985	27.4 917	8.3 25	18.3 190	4.1 63	11.3 741	0. 85	0.00 1
H&NF I	24. 990	37.2 623	19. 985	29.4 042	23. 315	32.6 038			-	-
H&NP K	70. 00	47.0 16	70. 00	47.0 16	70. 00	47.0 16			-	-
H&NN U	5.0 0	22.3 61	5.0 0	22.3 61	5.0 0	22.3 61	.00	.000	-	-
H&NF E	.00	.000	15. 00	36.6 35	35. 00	48.9 36	.00	.000	-	-
H&N WL	55. 00	51.0 42	55. 00	51.0 42	55. 00	51.0 42	6.2 5	25.0 00	0. 22	0.39
H&N WT	.00	.000	.00	.000	.00	.000	.00	.000	-	-

**BREAST:**

• There was no much change in global health and functional scales scores during treatment, indicating no much difference in QoL during treatment. But significant change at 2months of treatment. Global health(p=0.009), physical functioning(p=0.003).

• There was improvement in symptoms like fatigue(p=0.01), systemic therapy symptoms(p=0.001), breast symptoms(p=0.002), indicating better quality of life at first follow up compared to baseline scores.

**Table-3: Quality of life in breast cancers**

BREAST	Before treatment		Third week		End of treatment		First follow up		r	P VALUE
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
GLOBAL HEALTH	74.965	7.6568	74.965	7.6568	74.965	7.6568	79.560	5.0334	0.56	0.009
PF	96.315	5.0863	96.315	5.0863	96.315	5.0863	98.660	2.7496	0.47	0.003
RF	100.000	.0000	100.000	.0000	100.000	.0000	100.000	.0000	-	-
EF	94.135	6.1267	94.135	6.1267	94.135	6.1267	98.320	3.4473	0.38	0.009
CF	100.000	.0000	100.000	.0000	100.000	.0000	100.000	.0000	-	-
SF	93.320	11.3653	94.155	9.8053	94.155	9.8053	100.000	.0000	-	-
FATIG UE	4.995	7.6183	4.995	7.6183	4.995	7.6183	1.110	3.4165	0.52	0.001
N and V	.000	.0000	.000	.0000	.000	.0000	2.490	6.0814	-	-
PAIN	4.150	7.3747	4.150	7.3747	4.150	7.3747	2.490	6.0814	0.72	0.001
DYSP	3.330	10.2495	3.330	10.2495	3.330	10.2495	.000	.0000	-	-
INSO MNIA	9.990	15.6564	9.990	15.6564	9.990	15.6564	3.330	10.2495	0.50	0.002
AP	6.660	13.6660	6.660	13.6660	6.660	13.6660	6.660	13.6660	-	-
CO	.000	.0000	.000	.0000	.000	.0000	.000	.0000	-	-
DI	.000	.0000	.000	.0000	.000	.0000	.000	.0000	-	-
FI	38.295	12.1994	38.295	12.1994	38.295	12.1994	33.300	.0000	-	-
BRBI	11.225	9.4653	10.385	8.4803	8.715	6.8523	6.225	5.3009	0.85	0.001
BRSEF	13.305	13.8742	13.305	13.8742	13.305	13.8742	16.640	17.0928	0.86	0.001
BRSEE	8.325	15.0	8.325	15.0	8.325	15.0	16.6	17.3	0.10	0.54

		605		605		605	50	904	9	
BRFU	61.6 25	27.0 936	61.6 25	27.0 936	61.6 25	27.0 936	39.9 60	17.4 208	0. 5 6	0.0 09
SYSTEMIC THERAPY	18.5 22	4.87 97	13.5 30	4.43 66	8.32 2	4.84 28	5.59 8	4.04 10	0. 6 8	0.0 01
BREA SYSTEM	5.40 0	7.27 74	5.40 0	7.27 74	9.54 5	5.56 78	1.66 0	3.40 62	0. 6 4	0.0 02
ARM SYM	11.1 00	8.05 28	11.1 00	8.05 28	11.1 00	8.05 28	8.88 0	8.52 23	0. 4 8	0.0 3
UPSE T BY HL	29.9 75	28.3 926	33.3 05	28.5 968	33.3 05	28.5 968	11.6 55	16.2 957	0. 6 5	0.0 02

### CERVIX:

- There were no significant changes in global health status and functional scale scores during treatment but there was significant improvement at 2months of treatment (global health p=0.01, physical functioning p=0.001,role functioning p=0.01,social functioning p=0.007).
- There was significant improvements in symptom scale(p=0.001), symptom experience(p=0.04), body image(p=0.001), which indicates not much deterioration during treatment and improved QoL at first follow up.

**Table-4: Quality of life in cervical cancers**

CERVIX	Before treatment		Third week		End of treatment		First follow up		r	P VA LU E
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
GLOHE A	73.285	7.94 58	73.285	7.94 58	73.7 05	7.79 44	81.6 35	9.2183	0.53	0.01
PF	93.635	4.59 84	93.635	4.59 84	93.9 70	4.81 18	96.6 50	3.4370	0.79	0.0 01
RF	100. 000	.000 0	100.000	.000 0	100. 000	.0000	100. 000	.0000	0.52	0.0 1
EF	83.7 20	6.31 45	83.7 20	6.31 45	87.4 55	5.05 09	94.5 50	5.61 38	0. 2 7	0.2 4
CF	100. 000	.000 0	100. 0000	.000 00	100. 0000	.000 00	100. 000	.000 0	-	-
SF	81.6 30	14.2 324	81.6 30	14.2 324	76.6 20	12.5 907	89.9 80	8.39 38	0. 5 8	0.0 07
FATIGU E	29.4 15	23.4 155	19.9 80	13.7 606	23.8 65	15.3 954	7.77 0	8.89 46	0. 6	0.0 02
N and V	10.8 05	12.3 983	10.8 05	12.3 983	21.6 20	10.9 502	4.98 0	7.80 47	0. 4 6	0.0 3
PAIN	11.6 35	13.3 406	9.13 0	8.47 29	4.15 0	7.37 47	3.32 0	6.81 25	0. 5 7	0.0 08
DYSP	9.99 0	15.6	9.99 0	15.6	6.66 0	13.6	.000	.000 0	-	-

		564		564		660				
SL	28.3 05	22.3 383	23.3 10	15.6 564	11.6 55	16.2 957	9.99 0	15.6 564	0. 3 1	0.1 7
AP	28.3 05	12.1 994	28.3 05	12.1 994	18.3 15	16.9 969	9.99 0	15.6 564	0. 2 7	0.2 4
CO	6.66 0	13.6 660	6.66 0	13.6 660	11.6 55	16.2 957	4.99 5	12.1 994	0. 8 4	0.0 01
DI	4.99 5	12.1 994	4.99 5	12.1 994	11.6 55	16.2 957	6.66 0	13.6 660	0. 8 4	0.0 01
FI	44.9 55	22.3 383	44.9 55	22.3 383	53.2 80	16.7 374	44.9 55	22.3 383		
SYMPTOM	14.1 35	9.51 19	14.1 35	9.51 19	5.80 5	6.39 11	3.93 0	4.75 97	0. 7 7	0.0 01
EXPERIENCE	38.2 95	8.42 66	38.2 95	8.42 66	12.2 10	9.45 99	8.32 5	7.08 92	0. 4 6	0.0 4
BODY IMAGE	3.33 0	8.13 29	3.33 0	8.13 29	.555	2.48 20	.555	2.48 20	0. 8 6	0.0 01
SEXUAL VAGINA L FUNCTI ON	.000	.000 0	.000	.000 0	.000	.000 0	.000	.000 0	-	-
LIMPHE DEMA	8.32 5	14.7 939	6.66 0	13.6 660	.000	.000 0	.000	.000 0	-	-
PERIPH ERAL NEURO PATHY	.000	.000 0	.000	.000 0	4.99 5	12.1 994	4.99 5	12.1 994	-	-
MENOP AUSAL SYMP	23.3 10	19.0 223	21.6 45	16.2 957	23.3 10	19.0 223	23.3 10	19.0 223	-	-
SEXUAL WORTH Y	41.6 25	14.7 939	41.6 25	14.7 939	43.2 90	15.6 564	43.2 90	15.6 564	-	-
SEXUAL ACTIVIT Y	.000	.000 0	.000	.000 0	.000	.000 0	0	.000	-	-
SEXUAL ENJOY MENT	.000	.000 0	.000	.000 0	.000	.000 0	.00	.000	0. 6 3	0.0 03

### CAREGIVER QOL HEAD AND NECK:

Mean income was 7,800. There was significant increase in burden ( $p=0.001$ ) and disruptiveness ( $p=0.001$ ) at the end of treatment compared to base line scores. Mean quality of life score before treatment was 62.95, at the end of treatment was 64.35. Higher the score better the quality of life, there was overall improvement in quality of life.

**Table-5: Caregiver QOL head and neck cancers**

Head and neck	Before treatment		End of treatment		r	P VALUE
	Mean	SD	Mean	SD		
INCOME	7800.0 0	5625.13 2	7800.0 0	5625.13 2	-	-

BURDEN	19.150	4.2831	19.750	3.7399	0.86	0.001
DISRUPTIVENESS	11.55	2.685	12.00	2.938	0.90	0.001
POSITIVE ADAPTATION	14.20	2.802	15.40	2.037	0.80	0.001
FINANCIAL CONCERN	5.80	1.508	5.65	1.348	0.94	0.001
OTHER	12.25	3.143	11.60	2.644	0.93	0.001
TOTAL	62.95	8.075	64.35	7.177	0.91	0.001

- Quality of life of female attendants was poor (mean 59.3 and 62.18) compared to male attendants (mean 66.8 and 67), but burden and disruptiveness scores were high in male attendants, before and at the end of the treatment.
- Overall improvement in positive adaptation ( $p=0.003$  and  $0.001$ ) by the end of treatment in attendants (both male and female).

**Table-6: Quality of life of attendants head and neck cancers**

Head and neck- males attendants	Before treatment		End of treatment		r	P VALUE
	Mean	SD	Mean	SD		
Income	12111.11	4106.228	12111.11	4106.228	-	-
Burden	19.000	4.9497	19.000	4.7434	0.90	0.001
Disruptiveness	13.00	2.550	13.89	2.571	0.78	0.01
Positive Adaptation	15.67	2.784	16.11	2.147	0.86	0.003
Financial Concern	5.11	1.364	5.00	1.118	0.90	0.001
Other	14.11	3.333	13.00	2.739	0.93	0.001
Total	66.89	9.413	67.00	7.746	0.92	0.001
<b>Females attendants</b>						
Income	4272.73	4027.180	4272.73	4027.180	-	-
Burden	19.273	3.9010	20.364	2.7667	0.85	0.001
Disruptiveness	10.36	2.248	10.45	2.296	0.95	0.001
Positive Adaptation	13.00	2.280	14.82	1.834	0.69	0.01
Financial Concern	6.36	1.433	6.18	1.328	0.96	0.001
Other	10.73	2.054	10.45	2.018	0.87	0.001
Total	59.73	5.255	62.18	6.194	0.91	0.001

Treatment interruptions were associated with increased disruptiveness scores before treatment ( $p=0.02$ ).

**Table-7: Treatment interruptions were associated with increased disruptiveness scores before treatment in head and neck cancers**

		Treatment Gaps	N	Mean	Std. Deviation	T test	P Value
Before treatment	BURDEN	Present	3	20.667	1.5275	0.65	0.52
		Absent	17	18.882	4.5810		
	DISRUPTIVENESS	Present	3	14.67	.577	2.45	0.02
		Absent	17	11.00	2.525		

End treatment of	BURDEN	Present	3	21.00 0	1.0000	0.61	0.54
		Absent	1 7	19.52 9	4.0174		
	DISRUPTIVENESS	Present	3	15.00	2.000	2.0 7	0.05 2
		Absent	17	11.47	2.787		

**BREAST:**

- Burden scores were decreased at first follow up compared to the scores before treatment, whereas disruptiveness was increased.
- Overall mean scores were also decreased at the end of treatment (61.15 mean) , which was not significant statistically(p=0.4).

**Table-8: Caregiver QOL breast cancers**

BREAST	Before treatment		End of treatment		R	P VALUE
	Mean	SD	Mean	SD		
Income	13000.00	5845.226	13000.00	5845.226	-	-
Burden	21.35	3.329	16.20	1.609	0.25	0.28
Disruptiveness	9.20	1.322	10.60	2.303	- 0.30	0.19
Positive	17.40	1.429	17.40	1.729	0.57	0.009
Adaptation						
Financial Concern	6.00	.973	4.50	.513	0.10	0.65
Others	13.50	1.433	12.60	1.698	0.36	0.11
Total	67.45	6.253	61.15	4.120	0.17	0.46

Quality of life in female (mean 64.10 and 61.70) attendants was poor compared to male attendants (mean 70.80 and 60.80). Burden and disruptiveness scores were more in male attendants(23, 10) than female attendants (19,8.4).

**Table-9:Quality of life of attendants breast cancers**

Males attendants	Before treatment		End of treatment		r	P VALUE
	Mean	SD	Mean	SD		
Income	13400.00	5758.086	13400.00	5758.086	-	-
Burden	23.10	2.807	16.20	1.989	0.77	0.009
Disruptive Ness	10.00	.667	9.70	2.791	- 0.41	0.22
Positive Adaptation	18.20	1.135	18.20	1.317	0.34	0.33
Financial Concern	6.20	.919	4.50	.527	0.45	0.18

Others	13.30	1.889	12.00	1.333	0.30	0.38
Total	70.80	5.329	60.60	5.232	0.42	0.22
<b>Females attendants</b>						
Income	11666.67	7234.178	11666.67	7234.178	-	-
Burden	19.60	2.951	16.20	1.229	- 0.40	0.24
Disruptive Ness	8.40	1.350	11.50	1.269	0.25	0.46
Positive Adaptation	16.60	1.265	16.60	1.776	0.46	0.17
Financial Concern	5.80	1.033	4.50	.527	- 0.20	0.57
Others	13.70	.823	13.20	1.874	0.54	0.10
Total	64.10	5.405	61.70	2.791	0.12	0.74

**CERVIX:**

- There was reduction in burden (means 13.70 & 12.40) and increase in disruptiveness (mean 10.20 & 11) scores at the first follow up compared to the scores before treatment.
- Overall reduction in scores indicates comparatively poor quality of life at the end of treatment (p=0.001).

**Table-9: Caregiver QOL cervical cancers**

Cervix	Before treatment		End of treatment		r	P VALUE
	Mean	SD	Mean	SD		
Income	10000.00	3247.377	10000.00	3247.377	-	-
Burden	13.70	9.680	12.40	7.877	0.99	0.001
Disruptiveness	10.20	4.786	11.00	4.565	0.95	0.001
Positive adaptation	20.90	1.518	21.00	1.451	0.95	0.001
Financial Concern	5.10	.912	5.05	.759	0.82	0.001
Other	17.75	5.794	16.50	4.335	0.95	0.001
Total	67.65	19.821	65.95	15.609	0.98	0.001

Overall quality of life of male attendants (mean 70.46 and 68.38) is good compared to female attendants (mean 62.43 and 61.43). The burden and disruptiveness scores were high in male attendants, the mean scores for burden before treatment were 15.85 and 9.7 in males and females respectively.

**Table-10: Quality of life of attendants cervical cancers**

CERVIX-Male attendants	Before treatment		End of treatment		r	P VALUE
	Mean	SD	Mean	SD		
Income	10000.00	3405.877	10000.00	3405.877	-	-
Burden	15.85	10.699	14.08	8.713	0.99	0.001
Disruptiveness	10.69	5.234	11.85	4.964	0.95	0.001
Positive adaptation	21.38	1.557	21.54	1.391	0.93	0.001
Financial Concern	5.00	.913	4.92	.641	0.71	0.006
Other	17.54	6.839	16.00	5.000	0.95	0.001
Total	70.46	22.915	68.38	17.891	0.98	0.001
<b>CERVIX-female attendants</b>						
Income	10000.00		10000.00		-	-
Burden	9.71	6.264	9.29	5.219	0.99	0.001
Disruptiveness	9.29	4.030	9.43	3.505	0.98	0.001
Positive adaptation	20.00	1.000	20.00	1.000	-	-
Financial Concern	5.29	.951	5.29	.951	-	-
Other	18.14	3.532	17.43	2.820	0.94	0.001
Total	62.43	12.040	61.43	9.727	0.99	0.001

- The high burden scores before treatment were associated with treatment interruptions (p=0.03).

**Table-11: Treatment interruptions were associated with increased disruptiveness scores before treatment in head and neck cancers**

		Treatment Gaps	N	Mean	Std. Deviation	T test	P Value
Before treatment	BURDEN	Present	2	27.00	1.414	2.25	0.03
		Absent	18	12.22	9.026		
	DISRUPTIVENESS	Present	2	16.00	1.414	1.93	0.06
		Absent	18	9.56	4.592		
End of treatment	BURDEN	Present	2	22.00	1.000	1.94	0.06
		Absent	18	11.33	7.569		
	DISRUPTIVENESS	Present	2	16.00	1.414	1.71	0.104
		Absent	18	10.44	4.462		

- The overall quality of life was poor in attendants of head & neck cancer patients (mean 62.95 and 64.35) compared to attendants of carcinoma cervix (mean 67.65 and 65.95) and breast (mean 67.45 and 61.15).

## DISCUSSION

In the oncology field, medical advances and development of evidence based medicine have produced major progress in terms of both survival and quality of care. At the same time patients and their family member's quality of life has become a major objective of cancer care. Studies that have prospectively reported QOL in patients who suffer from malignancies are few in number, there are many studies comparing QOL in cancer patients of same site with different treatment modalities or different techniques or different fractionation schedules but there are less number of studies on comparing the quality of life of cancer patients of different sites during treatment.

The QOL is understood as the result of quantitative measures to assess the levels of wellness of the patient using psychometric approach and several concepts such as for instance physical functioning, role functioning, bodily pain, general health perception, vitality, social functioning, role-emotional and mental health. The main rationale of this study is to assess changes in quality of life that is deterioration and eventual recovery of health related quality of life in head & neck, cervix and breast cancer patients. In the present study the health related QOL of patients was assessed using EORTC questionnaires before treatment, during third week, at the end and 2 months after treatment (i.e first follow up after radiotherapy).

According to Osoba et al<sup>4</sup> >20 points change in the score was considered a large effect and <10 points change was considered a small effect in quality of life. A change in score between 10 and 20 was called moderate effect in quality of life. Based on this study, in the present study it was found that in EORTC QLQ C30, the functional scales and symptom scales showed a small change (<10 points) during third week of treatment compared to the scores obtained before treatment and moderate to large (>10 points) change at two months of treatment in all three sites especially symptoms scales like pain, cancer related fatigue.

The global health was poor in head & neck cancer patients compared to breast and cervix cancer patients almost all the functional scales had lower scores in head & neck cancer patients compared to breast and cervix cancer patients indicating poor quality of life.

Ahmed Masroor Karimi et al<sup>5</sup> assessed health related quality of life in head and neck cancer patients during and at 3 months after radiotherapy using a validated EORTC QLQ C30 and H&N C35. There was significant reduction in QOL in patients throughout treatment in relation to symptoms and all functions in the treatment of head and neck cancers. However all the functions and most of the symptoms returned to baseline at 3 month follow up.

In the present study there is deterioration of quality of life during treatment and improvement in most of the symptoms like difficulty in speech ( $p=0.001$ ), swallowing ( $p=0.003$ ), mouth opening ( $p=0.001$ ), cough ( $p=0.001$ ) at the first follow up compared to baseline. The increased functional scores and reduced symptom scores indicate that there is improved quality of life. There are no studies on quality of life in breast cancer patients who are on radiotherapy treatment. In the present study there is no much change in emotional functioning of patients at the first follow up and during treatment compared to baseline score ( $p=0.09$ ). There is statistically significant change in cancer related fatigue ( $p=0.001$ ). There is improvement in symptoms related to systemic therapy at first follow up compared to baseline. There is small change in quality of life (<10 points) in breast cancer patients before, during and 2 months after radiotherapy in present study.

Neha Dahiya et al.<sup>6</sup> Assessed quality of life in patients with advanced carcinoma cervix before and after chemoradiotherapy. According to this study there is significant improvement

in the functional scales comprising physical, role, emotional, cognitive functioning after chemoradiotherapy ( $p=0.012, 0.044, 0.000026, 0.00062$ ). There was no change in social functioning score. Symptoms like fatigue, pain, loss of appetite improved significantly. There were significant changes in cervical cancer specific module scores EORTC QLQ CX24. Overall health score and quality of life score improved significantly ( $p<0.021$ ) following treatment in stage IIb, but this improvement was not significant in stage 3 and 4. Improvement in overall quality of life is significant in patients receiving chemotherapy and radiotherapy.

In the present study there was no much change in global health status during treatment, but there is significant improvement 2 months after treatment ( $p=0.01$ ). There are significant changes in the scores of all the functional scales (EORTC QLQ C30) including social functioning which did not change significantly in the previously mentioned study. There is significant improvement ( $p<0.05$ ) in almost all the symptoms at the follow up compared to baseline except loss of appetite and insomnia, whose scores did not vary significantly ( $p=0.17, 0.24$  respectively).

EORTC QLQ CX24 cervical cancer specific module scores were improved significantly symptom ( $p=0.001$ ), symptom experience ( $p=0.004$ ), sexual and vaginal function ( $p=0.001$ ) in the present study also. In present study patients with stage II had better quality of life compared to stage III.

Cancer is a decided source to the stress to the patient and also affect the family caregiver. Both the caregiver and patient must struggle to adjust and respond to the demands this threat. Several studies have documented the considerable impact that caregiving has on caregiver quality of life. Family caregivers experience symptoms of depression, anxiety, restriction of roles and activities, strain in marital relationships. Therefore, complete and proper care of the patient with cancer should involve support for the family caregiver. Michael A. Weitzner et al<sup>7</sup> assessed family caregiver quality of life: differences between curative and palliative cancer treatment settings. They assessed the quality of life in caregivers using caregiver quality of life index-cancer (CQOLC). In this study the palliative /supportive group reported significantly lower quality of life scores on CQOLC ( $p<0.0001$ ). the palliative group showed greater impairment in physical functioning, general health and vitality. No significant differences were detected in mental functioning, social functioning and overall mental health between both the arms.

In the present study caregiver quality of life was assessed only in curative treatment settings using CQOLC before and at the end of treatment. The caregivers of head & neck cancer patients (mean 62.95) had poor quality of life compared to cervix (mean 67.65) and breast (mean 67.45) cancer patients. The overall quality of life scores were improved in caregivers of head and neck cancer patients at the end of (64.35) treatment compared to before treatment.

The caregivers of elderly patients and patients with advanced disease had poor quality of life as they requires more care and more time of the caregivers which affected the caregivers other daily activities and work. Among the 6 psychosocial issues studied, absence of caregiver at the time of treatment with the patient was the major cause of treatment interruptions. The effect of quality of life of caregiver on treatment interruptions was also noted. There were treatment interruptions in patients with head & neck cancer and cervical cancer. Due to increased burden and disruptiveness among the caregivers. Among 20 head & neck cancer patients three people had treatment interruptions due absence of attendant with

them. Caregivers of patients who had treatment interruptions had higher disruptiveness before initiation of treatment ( $p=0.02$ , mean 20.667). Among 20 patients with cervical cancer, 2 patients had treatment interruptions which were due to absence of caregiver who usually take them to hospital for treatment. This absence of caregiver corresponded to the high burden ( $p=0.03$ ) scores.

The burden scale comprises of 10 items, disruptiveness is 7 item scale used to know restrictions in their role and activities which indirectly effects the quality of caregiving. As the better quality of life of both patient and caregiver may result in better treatment outcomes and less dropouts, hence quality of life of both should be given equal importance in management of cancer.<sup>8,9</sup>

## CONCLUSIONS

Patients with head and neck cancer had poor quality of life compared patients with cervix and breast cancer. There is significant improvement in quality of life of patients with head&neck, cervical and breast cancer at 2 months after treatment than during treatment. Quality of life of caregivers of head & neck was poor compared to attendants of breast and cervical cancer patients. The quality of life caregivers was poor at the end of treatment compared to before treatment. Young and male caregivers had more burden and disruptiveness scores. The increased burden and disruptiveness in caregivers was associated with interruptions in patient treatment.

## REFERENCES

1. Stieler F, Wolff D, Schmid H, et al. A comparison of several modulated radiotherapy techniques for head and neck cancer and dosimetric validation of VMAT. *Radiother Oncol.* 2011;101:388–93.
2. The EuroQol Group. EuroQol: a new facility for the measurement of health-related quality of life. *Health Policy.* 1990;16:199–208.
3. Luckett T, Goldstein D, Butow PN, Gebiski V, Aldridge LJ, McGrane J, et al. Psychological morbidity and quality of life of ethnic minority patients with cancer: a systematic review and meta-analysis. *Lancet Oncol.* 2011;12:1240–1248
4. Osoba D, Rodrigues G, Edvard Abel, Ewa Silander, Jan Nyman, Mogens Bove, Leif Johansson, Thomas Björk- Eriksson, and Eva Hammerlid, et al. Impact on quality of life of IMRT versus 3-D conformal radiation therapy in head and neck cancer patients: A case control study 2017 May 12.
5. Aaronson NK, Ahmedzai S, Bergman B, Bullinger M, Cull A, Duez NJ, et al. The European Organization for Research and Treatment of Cancer QLQ-C30: a quality-of-life instrument for use in international clinical trials in oncology. *J Natl Cancer Inst* 1993 Mar 3;85(5):365-76.
6. Dahiya N, Acharya AS, Bachani D, Sharma D, Gupta S, Haresh K, Rath G. Quality of Life of Patients with Advanced Cervical Cancer before and after Chemoradiotherapy. *Asian Pac J Cancer Prev.* 2016;17(7):3095-9.
7. Weitzner MA, McMillan SC, Jacobsen PB. Family caregiver quality of life: differences between curative and palliative cancer treatment settings. *J Pain Symptom Manage.* 1999 Jun;17(6):418-28.
8. Graessel, E., Berth, H., Lichte, T. *et al.* Subjective caregiver burden: validity of the 10-item short version of the Burden Scale for Family Caregivers BSFC-s. *BMC Geriatr* 2014;14, 23 .

9. Pendergrass, A., Malnis, C., Graf, U. *et al.* Screening for caregivers at risk: Extended validation of the short version of the Burden Scale for Family Caregivers (BSFC-s) with a valid classification system for caregivers caring for an older person at home. *BMC Health Serv Res:2018: 18, 229.*