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Original Research Article

QUALITY OF LIFE ASSESSMENT IN LOCALLY ADVANCED HEAD AND NECK CANCERS TREATED IMRT BASED CHEMORADIATION: - A PROSPECTIVE STUDY

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ABSTRACT

Background: The objective is to evaluate the quality of life (QoL) in patients with locally advanced head and neck cancers (LAHNC) treated with intensity-modulated radiotherapy (IMRT)-based chemoradiation.

Materials and Methods: This prospective study included 36 patients diagnosed with LAHNC and treated with IMRT-based chemoradiation at a tertiary care center. All patients received radiotherapy with a total dose of 66–70 Gy in 33–35 fractions over 6–7 weeks, along with weekly cisplatin at 40 mg/m². QoL was evaluated using the EORTC QLQ-C30 and QLQ-H&N43. questionnaires at before treatment, during treatment, and at 2months follow-up.

Results: QoL assessments showed significant deterioration during treatment, particularly in domains of pain, swallowing, and emotional functioning, but gradual recovery was observed at two months post-treatment.

Conclusion: QoL is transiently impaired during treatment, long-term recovery trends suggest that IMRT is an effective and patient-centered treatment approach. Further research with larger cohorts is warranted to confirm these findings.

Keywords: Intensity-modulated radiotherapy, head and neck cancers, chemoradiation, quality of life, toxicity, clinical response

INTRODUCTION

Head and neck cancer was the seventh most common cancer worldwide in 2018 (890,000 new cases and 450,000 deaths).[1] 197649 new cases and117728 deaths reported in India according to GLOBOCAN 2018 report showing HNC statistics of India. In India, among patients diagnosed with HNC, 86.5% were reported as tobacco users and 23.2% were reported as alcohol users. Head and neck squamous cell carcinoma can arise from subsites within the oral cavity, oropharynx, hypopharynx, larynx, and nasopharynx.[2]

Established risk factors include tobacco and alcohol use, which account for more than 85% of cases, alongside an increasing role of human papillomavirus (HPV) in oropharyngeal cancers.[3]

Historically, radiation therapy (RT) alone was the standard nonsurgical therapy for locally advanced diseases. Treatment also affects the quality of life of these patients. The main factors affecting the quality of life include pain, swallowing, senses, speech, social eating, social contacts, and the more general domains of physical, mental, and social determinants of life.

Recent studies underscore the importance of integrating QoL assessments using validated tools such as the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30 and QLQ-H&N35) into clinical practice to understand and mitigate these impacts.[4,5]

Aims & objectives:

Aim: A study of clinical response, toxicity, and quality of life in locally advanced head and neck cancers receiving chemoradiation with Intensity-modulated radiotherapy.

Objectives of the study are as follows:

1. To assess the functional quality of life among study population before definitive chemoradiation, at 4th week during treatment and after two months of treatment by using EORTC-Q30 questionnaire.
2. To assess the site specific& symptom specific quality of life among study population before, 4th week during treatment and after two months of treatment by using EORTC questionnaire.

MATERIALS AND METHODS

This observational prospective study was conducted at Department of Radiation oncology, in a Tertiary cancer care centre during January 2020 to December 2021, focusing on 36 patients diagnosed with locally advanced head and neck squamous cell carcinoma treated with concurrent chemoradiation treatment. Inclusion criteria specified patients aged between 18 and 75 years with an ECOG performance status of 0-2 and histopathologically confirmed tumors, excluding those with prior tumor treatments or distant metastases.Baseline quality of life (QOL) assessments were conducted using the EORTC QLQ-C30 and QLQ-HN43 questionnaires.

Intensity Modulated Radiotherapy (IMRT) plans were meticulously crafted using the EclipseTM planning system, prescribing a radiation dose of 66-70 Gy delivered in 33-35 fractions, 2Gy per fraction with 5 fractions per week over a span of 7 weeks. Concurrent with radiotherapy, patients received weekly cisplatin chemotherapy at a dosage of 40 mg/m² intravenously.

QOL assessments were done before initiation of definitive chemoradiation,4th week during treatment repeated post-treatment using the same EORTC questionnaires to gauge changes from baseline scores.

Data collected throughout the study period were subjected to rigorous statistical analysis using standard statistical software package (SPSS version 26.0). Comparative analysis of QOL scores before and after treatment utilized the Mann-Whitney test, allowing for robust evaluation of QOL improvements or deteriorations post-treatment.

RESULTS

Patient Characteristics: A total of 36 patients of locally advanced head and cancer patients treated with definitive chemoradiation having median age of 53 years (range: 34–70) were studied with males (80.5%) predominated over females (19.5%). Most patients had a performance status (PS) of 2 (91.67%), with only 8.33% having PS 1. Majority of them are oral cavity, oropharynx, hypopharynx with baseline complaints of ulcer, dysphagia and neck swelling. Histopathologically, 55.56% had well-differentiated squamous cell carcinoma, 33.33% moderately differentiated, and 11.11% poorly differentiated.

Treatment Characteristics: The majority (52.78%) had Stage IVA disease, followed by Stage III (36.11%) and Stage IVB (11.11%). Most patients received 4–5 cycles of weekly cisplatin. Regarding radiotherapy, 72.2% were treated with 66 Gy in 33 fractions, while 27.7% received 70 Gy in 35 fractions. The overall treatment time (OTT) exceeded 50 days in 75% of patients. [Table 1] summarizes the patient and treatment characteristics.

Table 1: Patient characteristics and their Frequency

Patient characteristics	Frequency
Median Age Age Range	53 years 34-70 years
Sex Male Female	 29 (80.5%) 7(19.5%)
Performance Status PS 1 PS 2	 3(8.33%) 33(91.6%)
Histopathology- Squamous Cell Carcinoma Well Differentiated Moderately Differentiated Poor Differentiated	 20 (55.56%) 12(33.33%) 4(11.11%)
Baseline Symptoms Ulcer Dysphagia Epistaxis Shortness Of Breah Neck Swelling	 18 (50%) 10(27.7%) 1(2.78%) 3(8.33%) 4(11.11%)
Tumour Site-Oral cavity Oropharynx Hypo pharynx Nasopharynx Nasal cavity	18(50%) 9(25%) 7(19.44%) 1(2.78%) 1(2.78%)
TNM Stage III IV A IVB	 13(36.11%) 19(52.78%) 4(11.11%)
Chemotherapy-	

No. Of Weekly Cycles 4 5 6 7	 10 (27.7%) 17 (47.2%) 7 (19.4%) 2 (5.55%)
EBRT Dose 70GY /35# 66GY /33#	 10 (27.7%) 26(72.2%)
Over all treatment time (OTT) Less than 50 days More than 50 days	 9(25%) 27(75%)

Quality of life: The QLQ-C30 encompasses 30 questions grouped into five functional scales, nine scales associated with symptoms and a global scale. The another questionarre QLQ-H&N43 has 43 questions. It approaches symptoms associated with the specific tumour location, side effects associated with the treatment provided and additional quality of life aspects affected by the disease or its treatment. The answers were converted into a linear scoring scale, with values between 0 and 100, as per advocated by EORTC. All 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.

Comparing the results from pre-treatment, during treatment, and two months post-treatment reveals several trends:

Global Quality of Life and Functioning: All aspects of quality of life and functioning declined from pre-treatment to during treatment and continued to worsen two months post-treatment. For example, global quality of life dropped from a mean score of 55.09 before treatment to 39.81 two months after.

Pain and Symptoms: Pain increased significantly from pre-treatment (mean score of 43.52) to during treatment (62.04) and slightly decreased to 50.90 two months post-treatment. Similarly, fatigue, nausea and vomiting, swallowing difficulties sensory issues, speech and teeth problems, dry mouth, mouth opening, coughing, weight loss and neurological problems worsened during treatment and remained high at the two-month follow-up.

Functioning and Symptoms Improvement: Some symptoms showed improvement over time. For instance, dyspnoea, insomnia, anxiety and wound healing worsened during treatment but improved by the two-month follow-up. Dry mouth and skin problems were not present pre-treatment but emerged during treatment, with a slight reduction by follow-up.

Emotional and Social Aspects: Emotional and social functioning declined during treatment but showed slight recovery by the two-month follow-up. Social eating and sexuality issues improved post-treatment compared to during treatment.

Comparing the scores from pre-treatment, during treatment, and two months post-treatment reveals notable changes. Global quality of life and functioning consistently declined from pre-treatment through treatment and continued to deteriorate two months later. Pain and swallowing difficulties increased significantly during treatment, with slight improvements by the two-month follow-up. Fatigue and nausea worsened throughout treatment and remained high afterwards.

While weight loss and neurological problems intensified during treatment, they showed some improvement by the follow-up. Emotional and social functioning also declined during treatment but improved slightly over time.

Overall, the treatment led to a significant reduction in quality of life and functionality, with partial recovery in specific areas observed later.

Table 2: Comparison of Quality of Life during radiation treatment.

Scales	Pre-treatment mean/sd	During treatment mean/sd	2 months post-treatment mean/sd	Comparison of pre-treatment and during treatment P-value	Comparison of pre-treatment and 2 months post-treatment p-value
QLQ-C30 Questionarrie Score					
Global Quality of Life	55.09/10.59	46.76/6.69	39.81/8.00	0.0002	0.0001
Physical Functioning	57.94/19.03	45.28/14.15	30.09/13.90	0.0002	0.0001
Role Functioning	21.76/11.14	7.87/9.33	6.94/11.53	0.0001	0.0001
Emotional Functioning	52.93/14.26	44.91/16.09	39.35/16.74	0.02	0.0004
Social Functioning	13.89/18.04	4.17/10.82	4.63/10.99	0.007	0.01
Cognitive Functioning	94.91/8.75	78.24/8.75	72.22/12.60	0.0001	0.0001
Fatigue	49.66/18.69	62.96/13.26	76.19/20.93	0.001	0.0001

Nausea / vomiting	1.39/4.67	19.44/14.64	20.37/18.31	0.0001	0.0001
Pain	43.52/24.33	62.04/15.74	50.90/18.85	0.0002	0.0001
Dyspnoea	12.96/29.04	10.19/20.81	9.26/15.14	0.64 NS	0.5NS
Insomnia	33.33/17.82	47.22/18.47	48.15/16.80	0.0012	0.0005
Appetite loss	25.93/19.70	55.56/17.82	63.89/16.67	0.0001	0.0001
Constipation	0.93/5.56	21.30/19.76	12.04/16.24	0.0001	0.01
Diarrhoea	3.70/10.62	1.85/7.74	1.85/11.11	0.4 NS	0.47NS
Financial difficulty	83.33/21.82	88.89/19.52	88.89/19.52	0.25 NS	0.25 NS
H &N-43 Questionarrie Score					
Pain	25.54/18.72	52.08/12.97	45.08/18.84	0.0001	0.0001
Swallowing	32.56/24.13	55.56/17.93	60.06/20.23	0.0001	0.0001
Senses	3.24/11.83	33.80/10.15	43.06/9.24	<0.0001	<0.0001
Speech	39.68/28.16	63.52/21.08	80.23/21.71	0.0001	0.0001
Social eating	52.55/24.06	75.46/17.92	85.42/16.95	0.0001	0.0001
Less Sexuality	58.80/20.89	73.15/16.56	91.67/10.91	0.0019	0.0001
Teeth problems	10.81/13.44	18.24/14.84	27.17/20.31	0.02 NS	0.0001
Dry mouth/ sticky saliva	0.00/0.00	23.15/9.98	29.17/12.83	NA	NA
Body images	12.34/22.03	20.32/26.65	27.69/31.76	0.17 NS	0.01
Skin problems	0.00/0.00	28.69/14.92	27.77/14.89	NA	NA
Anxiety	82.87/17.78	93.98/12.69	91.20/14.63	0.0032	0.33NS
Social contact	28.70/38.34	56.48/31.69	71.30/28.90	0.0013	0.0001
Mouth opening	3.70/10.62	28.70/19.76	39.81/28.53	0.0001	0.0001
Coughing	10.19/24.97	40.74/19.70	44.44/21.08	0.0001	0.0001
Lymphedema	30.56/35.97	21.30/24.11	14.81/16.80	0.2NS	0.02
Weight loss	2.78/12.28	28.70/18.09	50.00/21.82	0.0001	0.0001
Wound healing	1.85/7.74	27.78/14.91	17.59/18.66	<0.0001	0.0001
Neurological problems	13.89/16.67	40.74/19.70	50.93/18.66	0.0001	0.0001
Shoulder pain	0.00/0.00	0.00/0.00	0.00/0.00	NA	NA

DISCUSSION

The present study was an observational cross-sectional designed to study quality of life (QOL) in locally advanced head and neck cancers. Thirty-six patients participated in the present study at the Radiation Oncology Department, NRI MEDICAL COLLEGE. The median age of the study population was 53 years. Of the study population, 36.11% were stage III, 52.78% of patients were stage IV a, and 11.11% of patients were stage IV B. All patients received External beam Radiation therapy delivered using IMRT on a linear accelerator with 6 MV photons. A dose of 66-70 Gy was given in 30-35 fractions and treated 5days/week. All patients completed planned treatment.

Quality of Life: Quality of life in this study was assessed by EORTC QLQC-30 is a 30-item instrument that comprises One Global Health Scale Five, Functional Scales, three Symptom Scales, and Various other Single-item Scales. EORTC QLQ H&N-43 was consisting of questions concerning issues that are ascribed to HNC and its treatment-related symptoms. Patients had to mark all the questions on a scale of 1 to 4. 4 points denoted: 1=Not at all 2=Very little 3=Quite a bit. Quality of life was assessed before treatment (1st week), during treatment (4th week), completion of treatment (7th week). Data were analysed by obtaining rates and proportions. 4=Very much. The interviewer conducted these interviews and translated them into the regional language to the patients.

The various item scale correlations were calculated using the Chi-square test, and a t-test was used to find the significance. Tests between groups were performed using an independent t-test. This whole analysis was done using SPSS version 26. The scoring was done as per the EORTC scoring manual as described below: Raw score (RS) was calculated by the average of the items in a particular scale (for example, physical functioning includes 3 points, and the raw score for PF was calculated as the sum of the score for point 1-3 divided by 3). Score (S) was obtained by applying a linear transformation to 0-100.

EORTC QLQ-H&N 35 and EORTC QLQ-H&N 43 questionnaires contain 35 questions with 18 scales and 43 questions with 19 scales, respectively. All questions are assessed on a 4-point Likert scale in both questionnaires, where higher scores indicate a worse QoL. To capture the side effects and QoL effects of these new treatment strategies, the EORTC decided to update and revise the QLQ-H&N35. We now present the results of the final field validation of the QLQ-HN43. The previous version QLQ-H&N35 contains additional questions regarding skin problems, a typical symptom after targeted therapy,24 neurological side effects, known difficulties of taxane,25 and shoulder problems. In contrast, some issues that other means can be

assessed more reliably were removed (e.g., weight or pain medication). However, the QLQ-HN43 contains many scales of the QLQ-H&N35. Thus, data from studies using the two different new module versions exhibit excellent psychometric properties. Its scales' reliability, validity, and sensitivity to change are high. The factor structure of the QLQ-HN43 is promising, which is notable in that prior versions of the head, and neck module had not been evaluated for factorial validity.[6]

In this study, Global health status was statistically significant during the 1st and 4th week (p=0.0002) and week 1 and 2 months follow up (p=0.001). The physical functioning score was statistically significant during the 1st and 4th week (p=0.002) and week 1 and 2 months follow up (p=0.0001). Role functioning score was statistically significant during the 1st and 4th week (p=0.0001) and week 1 and 2 months follow up (p=0.0001). The emotional functioning score was statistically significant during the 1st and 4th week (p=0.02) and week 1 and 2 months follow up (p=0.001).

The social functioning score was statistically significant during the 1st and 4th week (p=0.007) and week 1 and 2 months follow up (p=0.01). The cognitive functioning score was statistically significant during the 1st and 4th week (p=0.0001) and week 1 and 2 months follow up (p=0.0001). Fatigue score was statistically significant during 1st and 4th week (p=0.001) and week 1 and 2 months follow up (p=0.0001). Nausea and vomiting score were statistically significant during 1st and 4th week (p=0.0001) and week 1 and 2 months follow up (p=0.0001).

Pain score was statistically significant during the 1st and 4th week (p=0.0002) and week 1 and 2 months follow up (p=0.0001). Dyspnoea score was statistically not substantial during 1st and 4th week (p=0.64) and week 1 and 2 months follow up (p=0.5). Insomnia score was statistically significant during the 1st and 4th week (p=0.0012) and week 1 and 2 months follow up (p=0.0005).

Constipation score was statistically significant during 1st and 4th week (p=0.0001) and week 1 and 2 months follow up (p=0.01). Diarrhoea was statistically insignificant during the 1st and 4th week (p=0.4) and week 1 and 2 months follow up (p=0.47). Financial difficulties were not statistically significant during 1st and 4th week (p=0.25) and week 1 and 2 months follow up (p=0.25), similar to study done by Krupa Palan et al., who analysed the quality of life with EORTC QLQC-30 questionnaire in a cross-sectional intuitional study showed that the domains where a high percentage of patients had fared poorly on the functional scale are Global QOL (100%), Social functioning (95.1%), Cognitive functioning (56.2%) and Emotional functioning (40.3%). On the symptom scale, the domains affected included financial difficulties (95.1%), insomnia (40.3%), and diarrhoea (32.6%).[7]

There was another similar prospective study done by Lima et al., where worsening of HRQOL in 'role' functional scale and symptoms scales, especially in the middle of treatment, indicating an influence of therapy in short-term, within the first month after initiation, and that this worsening continues until the end of treatment. Some domains were not associated with significant changes over time, such as global status score but verified a considerable portion had a worsening in QoL; about 6 to 74% of patients presented negative, clinically significant differences, but the emotional function scores were not different. Conversely, fatigue increased by 200% results was consistent with this study except for the global functioning scale, which was deteriorated in this study.[8]

Social eating was statistically significant during 1s and 4th week (p=0.0001) and week 1 and 2 months follow up (p=0.0001). Sense problems were not statistically significant during the 1st and 4th week (p=<0.0001) and during week 1 and 2 months follow up (p=<0.0001). Speech problems were statistically significant during the 1st and 4th week (p=0.0001) and week 1 and 2 months follow up (p=0.0001). Swallowing was statistically significant during the 1st and 4th week (p=0.0001) and week 1 and 2 months follow up (p=0.0001). Less sexuality was not statistically significant during the 1st and 4th week (p=0.0019) and statistically significant during week 1 and 2 months follow up (p=0.0001). Problems with teeth were not statistically significant during the 1st and 4th week (p=0.02) and statistically significant during week 1 and 2 months follow up (p=0.0001). The mean score of dry mouth is 23.15 in week 4 and 29.17 in 2 months follow-up, and the p-value is not applicable. The P-value for shoulder pain was not applicable. Skin problems mean was 28.69 in 4th week and 27.77 was the mean score at two months follow up, and p-value was not applicable.

Anxiety was statistically significant during the 1st and 4th week (p=0.0032) and not statistically significant during week 1 and 2 month follow up (p=0.33). Social contact was statistically significant during the 1st and 4th week (p=0.0013) and week 1 and 2 months follow up (p=0.0001). Mouth opening was statistically significant during the 1st and 4th week (p=0.0001) and week 1 and 2 months follow up (p=0.0001). Coughing was statistically significant during the 1st and 4th week (p=0.0001) and week 1 and 2 months follow up (p=0.0001).

In another study done by S. Chawla et al., results indicated impairment in QoL in the midcourse of treatment, i.e., during weeks 3–4 of radical radiotherapy, in terms of physical, functional, and psychological status. Midcourse, i.e., week 3 of radiotherapy, was identified as the window period when maximum support by the treating doctor, nurses, dieticians, social workers, and psychiatrists was required to reduce the nadir of QoL. When patients were scheduled for radical radiotherapy, maximum deterioration in QoL was seen in weeks 3–4. This is the time when maximum supportive care and psychological counselling is required. Similar results were seen in the present study (9).

Lymphedema was not statistically significant during the 1st and 4th week (p=0.2) and statistically significant during week 1 and 2 months follow up (p=0.02). Weight loss was statistically significant during the 1st and 4th week (p=0.0001) and week 1 and 2 months follow up (p=0.0001). Wound healing was statistically significant during the 1st and 4th week (p=<0.0001) and statistically significant during week 1 and 2 months follow up (p=<0.0001) was statistically significant during 1st and 4th week (p=0.0001) and during week 1 and 2 months follow up (p=0.0001). Body image was not statistically significant during the 1st and 4th week (p=0.17) and statistically significant during week 1 and 2 months follow up (p=0.01).

In this study, results are similar to Lima et al. study, which studied the quality of life using the QLQ 43 questionnaire in a prospective study the domains of symptoms of nausea and vomiting, appetite loss, dry mouth, and sticky saliva, pain in the mouth, swallowing, problems with teeth and social eating problems were associated with the time course of treatment. For all the domains, an increase in scores in the middle of treatment and maintenance of this higher score until the end of treatment was observed; we identified a rise in problems related to social feeding. Food problems can lead to considerable psychological and social problems. Domains observed clinically essential changes in scores from the time point neurological problems increased throughout treatment HRQOL became worse in short-term, evidenced in the first month of treatment in HNC patients.

The domains of constipation and other symptoms showed an increase in scores during treatment, indicating a worsening condition in these areas sexuality of patients was also affected during treatment. In the study done by Lima et al., although we did not find a significant difference for body image scores(8), emotional problems or physical function compared to these results are inconsistent. A similar study done by Marcos Santos et al. studied the quality of life using QLQH& N43 in a multicentre prospective study. The EORTC QLQ-H&N43 is an updated and revised version of the EORTC QLQ-H&N35, used worldwide to measure HRQoL issues in patients with head and neck cancer. The HRQoL score gradually improves after RT completion. Compared to 3DRT, 2DRT impacts negatively on global HRQoL assessed by HRQoL-IRT, whereas IMRT has a significant positive effect, similar to the results of this study.[10]

Mário Rodrigues de Melo Filho conducted another prospective analytical study evaluated the quality of life in twenty-nine patients with a mean age of 57 years answered at three stages: onset, middle, and end of treatment, with the questionnaires: Quality of Life Core Questionnaire - Cancer 30 and the Quality of Life Questionnaire - Head and Neck, the European Organization for Research and Treatment of Cancer had similar results with this study, there was an improvement in the general health status and decline of the social function throughout the treatment. The personal role performance was lower in the middle of treatment, and the emotional function was assigned the lowest mean value among all the functions. Considering the scale of symptoms, the occurrence of insomnia was higher at treatment onset; however, nausea, vomit, pain, loss of appetite, and constipation were higher in the middle of the treatment. At the end of treatment, we found a higher rate of fatigue, dyspnoea, diarrhoea, and financial difficulties. The QLQ-H&N35 specific questionnaire, shows a difference between the three moments during treatment, highly significant for taste and smell (p = 0.020), deglutition (p = 0.040), cough (p = 0.013), and weight loss (p = 0.011).[11]

Results in this study were similar to results of the study Connor et al. conducted a trial with 11 patients studied toxicity and symptoms in head and neck cancers and found that there was a slight reduction in perception of general physical functioning Mean values for the EORTC QLQ-C30 measures of cancer-related health also showed a progressive decrease in physical function across the six months. A significant difference was seen in the EORTC QLQ-C30 loss-of-appetite function score one month after treatment relative to baseline levels (p 0.05); EORTC symptom scales for swallowing, dry mouth, sticky saliva, and coughing are shown. Perception of eating difficulty evidenced significant impairment significantly at one month after (p 0.024) after treatment. Perception of dry mouth was significantly greater at both follow-up dates (p 0.003 at one month). Sticky saliva increased in severity after therapy and did not resolve by six months. Coughing was not significantly greater after treatment at one month s (p 0.08).[12]

Hans Paul van der Laan et al. studied radiation induced toxicity on quality of life in LAHNCC. Twenty physician-rated toxicities and patient-rated symptoms related to swallowing, salivary function, speech, pain, and general complaints were considered. Thirteen patient-rated symptoms were scored using the EORTC QLQ-HN35 and EORTCQLQ-C30 questionnaires. All toxicities and symptoms were scored at baseline and at 6, 12, 18 and 24 months after completion of radiotherapy. At baseline (i.e., pre-treatment), toxicities and symptoms affected QOL. At baseline, the average QOL score of patients was reduced by 11 ± 15 points, compared to assuming zero toxicities for all patients. At 6 months, this reduction was 12.4 ± 12.8points and at 24 months it was 16.6 ± 17.1 points due to toxicities and symptoms similar results were seen in this study for baseline and follow up but lacks longer follow up which is a limitation.[13]

CONCLUSION

Almost all the patients affected by head and neck cancers have a decreased quality of life attributed both due to the advanced disease as well as the treatment related.

Implementing IMRT for head and neck cancers has been reported to have a positive impact on the reduction of salivary toxicity.

Technical advances in radiotherapy are continuously emerging. Image-guided radiation therapy is a revolutionary technique that delivers real time image-guided IMRT. The use of proton therapy will also be increasing as the costs of the facilities are lowered by standardization of manufacture. In the future, research will be continued in the exploration of novel strategies to improve survival and quality of life in patients with head and neck cancer.

Limitations: The present study has some limitations, including the relatively short follow-up of patients. Using EORTC QLQ-H&N43 could be a novelty for this study since only a few studies have been published using this new version of the questionnaire.

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