



A COMPARATIVE STUDY OF QUALITY OF LIFE OUTCOMES IN HEAD AND NECK CANCER PATIENTS FOLLOWING CURATIVE TREATMENT.

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ABSTRACT **Background:** One of the major health problem in India is Head and Neck cancer, which accounts to 30% of all cancers in men and 11%-16% in women. The disease and its treatment have a disproportionate impact on all aspects of patient's quality of life (QoL). QoL assessment, aids in the development of rehabilitative measures and also helps in educating the patient. **Objective:** 1. To measure the diverse domains of quality of life in head and neck cancer patients. 2. To discover the impact of the type of treatment on the quality of life of the patient. **Materials and Methods:** A comparative study on proven cases of head and neck cancer of all sites and stages following primary mode of treatment will be taken into the study from the period February 2017-august 2017. The EORTC QLC-C30 AND QLQ-HN35 questionnaires translated from the original English version to local language (kannada) was used. The questionnaire has to be filled by each patient –once pretreatment and once posttreatment (after 1 month) on OPD basis. **Results:** Overall posttreatment QoL worsened in all the H&N cancer patients. QoL in tracheostomized individuals were poor. Early stage disease had a better score than advanced stage. Combined modality of treatment showed a poor QoL scores than the other single modalities. **Conclusion:** H&N cancer has a significant impact on individuals QoL. This QoL assessment identifies that impact on the individuals functional domain and the symptom scale.

KEYWORDS : Quality of life(QoL), Head and Neck cancer(H&N cancer), EORTC-QLQ-C30(version 3), QLQ-HN 35, Raw score.

INTRODUCTION:

Cancer is a unique disease with properties of invasion and metastasis. Cancer in all forms cause about 12 % death throughout the world. In developing countries like India , about 9.5% death is caused by cancer. H&N cancer accounts to 30% of all cancers in males and 11-16% in females.

Quality of life (QoL) has emerged as an outcome measure of medical treatment, for patients with chronic or incurable disease. H&N cancer and its treatment have a great impact on the individual's quality of life. QoL measures the difference between present experience and expectations and perceived and actual goals (K C Calman 1987). WHO defines quality of life as follows "An individual's perception of their positioning in life in the context of the culture and value systems in which they live and in relation to their goals, standards and concerns". Earlier the outcome of medical care was assessed focussing on survival rates and local control rate but that lacked the assessment of patients physical, mental and emotional wellbeing.

QoL has a special relevance in Head and Neck cancer patients because of the hardships they will encounter with everyday functioning. QoL strongly correlates with satisfaction. And QoL after treatment can help as a deciding factor for treatment modality. And also QoL assessment helps the physician to understand the individuals perspective. It can also help in the development of rehabilitative services and also education materials.

QoL is a self –reported, subjective, multidimensional phenomenon that changes over time. QoL has a wide range, covering the individuals physical health, psycho-social state, level of independence , social relationships and their relationship to environment.

MATERIALS AND METHOD:

This is a comparative study conducted in Vijayanagara Institute of Medical Sciences, Ballari, Karnataka, on proven cases of head and neck cancer of all sites and stages following primary mode of treatment from the period February 2017-august 2017. A 30 proven and treated cases of H&N cancers were taken into the study.

ETHICS:

The study was approved by the Ethical Committee and Institutional Review Board of Vijayanagara Institute of Medical Sciences, Ballari , under Rajiv Gandhi University, Karnataka.

Inclusion Criteria:

1. Proven cases of head and neck cancers who had undergone primary curative treatment has been taken into the study.
2. Patients above the age of 30 years of both sexes has been taken into the study.

Exclusion criteria:

1. Patients requiring palliative treatment for the proven Head and neck cancers were excluded.
2. Patient with recurrent disease were excluded.
3. Patients who were reluctant to provide informations were excluded from the study.
4. Patients diagnosed with any second primary in other organs were excluded.

The standard questionnaire ,EORTC QLQ-C30 version 3 AND QLQ-HN35 questionnaires translated from the original English version to local language (kannada) was used. The questionnaire was filled for each patient –once pretreatment and once posttreatment(after 1 month) on OPD basis using interview technique.

The European Organization for Research And Treatment of Cancer Quality of Life Questionnaire Core- 30(EORTC QLQ- 30) is an integrated system for assessing the health-related quality of life (QoL) of cancer patients participating in international clinical trials. The core questionnaire, the QLQ-C30, is the product of more than a decade of collaborative research. Version 3.0 is currently the standard version of the QLQ-C30. And it is composed of both multi-item scale and single-item scale. 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.

An essential component of the EORTC QLQ development strategy involves the use of supplementary questionnaire module QLQ-HN 35,

which, when employed in conjunction with the QLQ-C30, can provide more detailed information relevant to evaluating the QoL in specific patient populations. This module comprises 35 questions assessing symptoms and side effects of treatment, social function and body image/sexuality.

All the questions were asked and the response was marked on a scale 1 to 4.

1-Not at all, 2- very little, 3- quite a bit, 4- very much.

The scoring was calculated as per the EORTC scoring manual: For all scales, the RawScore, RS, is the mean of the component items: $RawScore = RS = (I1 + I2 + \dots + In) / n$.

Then for Functional scales:
Score = $1 - (RS - 1) / range * 100$.

and for Symptom scales / items and Global health status / QoL:
Score = $\{(RS - 1) / range\} * 100$.

Range is the difference between the maximum possible and the minimum response to individual item.

Statistical Analysis:

Mean & Sd value was calculated for continuous variables and proportions for categorical variables. Pre & Post comparison was done with Paired t test & Wilcoxon Sign Ranked test if data fails Normality test. Inter group comparison done with Unpaired t test and by Mann-Whitney test if the data fails Normality test. P value of <0.05 was considered statistically significant.

Statistical analysis was done with IBM SPSS Version 20 for Windows

RESULTS:

A total of 30 cases of H&N cancers who had undergone curative treatment were taken into the study. In our study group we had 25 males and 5 female in the ratio 5:1. And the mean age of presentation was 53.2 years with a standard deviation of 15.01. Of which 13 (43.3%) cases were carcinoma Oral cavity, 10(33.3%) cases were carcinoma larynx, 4(13.3%) cases were carcinoma hypopharynx, 2 (6.7%) cases were carcinoma oropharynx, 1(3.3%) case of carcinoma thyroid.

In this study, we had 8(26.7%) patients who had undergone tracheostomy during the course of treatment. We had 4 cases with stage 1 disease, 6 cases with stage 2 disease, 9 cases with stage 3 disease, 11 cases with stage 4 disease. And 11 cases underwent radical radiotherapy, 5 cases underwent surgery, 11 cases underwent radiotherapy and chemotherapy, 3 cases underwent surgery and radiotherapy.

As there are no standard reference QoL scores, we have also considered a score <70 on functional scale and >30 on symptom scale to be poor rates on QoL scores.

Hence we have analysed as in that the overall pretreatment global (70.02±22.37) scores and functional scores were better compared with posttreatment global (57.33±23.38)(p<0.000) and functional scores(table 1). The affected functional domains were role and social. And in the symptom scale the significantly affected domains were fatigue, nausea and vomiting, financial difficulties, sense, trouble contact, less sexuality, open mouth, dry mouth, sticky saliva, felt ill, pain killer, nutritional supplement.

In our study we have found, that those patients who had to undergo tracheostomy during the course of treatment, their functional domain were affected significantly(table 2). Their posttreatment global scores were very low(mean 41.47), and the social domain(mean 66.63). The symptom scale affected was financial difficulties, sense, trouble contact, dry mouth, sticky saliva. One symptom scale showed improvement in scores was dyspnea.

In our study we have taken stage 1, 2 as early stage cancer, and stage 3 and 4 as advanced stage cancer. Hence comparing the early stage and the advanced stage cancers, as in we can see that the global, functional and the symptom score both pretreatment and posttreatment were better in early stage malignancy than advanced stages(table 3).

In early stage cancer posttreatment the affected domains were global, financial, sense, trouble contact, less sexuality, open mouth, dry mouth, sticky saliva and pain killers. Whereas in advanced stage cancer the affected domains were global, role, social, nausea, vomiting, dyspnea, financial, sense, trouble contact, dry mouth, sticky saliva, felt ill, pain killer, nutritional supplement.

In this study, the cases treated with surgical modality(5 cases)(all were early stage cancer) the pretreatment and posttreatment QoL didn't show a significant difference except in the financial difficulties(table 4). In radiotherapy group(11 cases) (which had both early and advanced cancer) the domains that showed significant changes posttreatment are global, role, sense, speech, trouble contact, dry mouth, sticky saliva(table 4). Among the combined modality (surgery+ radiotherapy+/-chemotherapy) (3 cases) all the cases were advanced cancer in this group both pretreatment and posttreatment QoL scores were poor with no significant change but in the symptom scale the domain pain has improved posttreatment(table 4). In the combined modality (radiotherapy+chemotherapy) we had 11 cases all were advanced cancer and in this group we have found that significant worsening happened posttreatment in the following domains global, role, social, appetite loss, financial difficulties, sense, trouble contact, dry mouth, sticky saliva, pain killers(table 4). And the only domain improved posttreatment in this group was swallowing.

In our study in relation to the site we had 13 cases of oral cavity, 4 cases of hypopharynx, 10 cases of larynx, in which the pretreatment QoL scores were worst for hypopharyngeal malignancy followed by larynx then oral cavity. For oral cavity malignancies the domains affected posttreatment were the following global, role, financial, sense, trouble contact, less sexuality, open mouth, dry mouth, sticky saliva, pain killer(table 5). The domain improved was pain.

In laryngeal malignancy group domains worsened were role, sense, trouble contact, dry mouth, sticky saliva(table 5). Rest all the domains both pre and post treatment were worse with no significant change. In hypopharyngeal cases cognitive, trouble contact, dry mouth, sticky saliva, felt ill (table 5). And the domain improved posttreatment was swallowing.

DISCUSSION:

Across the globe the cancer burden has estimated to be 22 million(WHO UICC 2003). And every year the newly diagnosed cases were estimated to be 10 million across the globe(WHO UICC 2003){1}. H&N cancer is the 10th leading malignancy across the world. In India, it accounts about 30-40% of all the malignancies which has caused significant impact on health and the psychosocial domains.

More than 65 years ago, Karnofsky was the first to use a performance status measure, which is still in use. He was the first to recognize the value of nonsurvival outcomes, commenting that, "subjective improvement was indicated by the patient's feeling of well-being, his increased appetite and strength, and the relief of specific complaints." {2}

QoL is associated with the individual's degree of satisfaction in life in all the aspects (family, love, social life). {3} The QoL assess the impact of the disease and the treatment on the individual's life. {4}. The QoL scales help the H&N cancer patients to express their issues adequately to their doctors and to seek the relevant help. {5}

In this study we have found that both the pretreatment and posttreatment QoL scores of all H&N cancer in all domains were low. And the posttreatment the global and functional domains (role, social) were worsened along with the symptoms pain, sense, open mouth, dry mouth, sticky saliva, financial difficulties, fatigue, less sexuality. Another study by Connor et al, he has shown that posttreatment the patients had progressive worsening of the physical function. {6} In another study by Scharloo et al, in which there was an improvement in the emotional function and worsening of social function. {7} In another study they showed that at the end of the treatment there was higher rate of fatigue, dyspnea, diarrhoea and financial difficulties. {8}

In our study we have seen that the QoL in tracheostomised individuals global function score were poor compared to nontracheostomised individuals, in whom the global function score being 63. And in all domains, individuals who had undergone tracheostomy had a poor scores.

In this study, the QoL scales were better in early stage disease (stage 1 and stage 2) than advanced stage disease. Likewise in another study, they also have concluded that in all the tumour sites, the composite scores have been significantly worse in the advanced cancer. {9}

In our study, comparing the treatment modality, only surgery group had a better QoL than other groups. The combined modality groups, in which all cases were advanced cancer, in those groups all the domains were poor. Another study also has shown that the combined modality have shown to have a negative impact on the individuals QoL. {10}

In radiotherapy group, global, role, sense, speech, trouble contact, dry mouth, sticky saliva these domains were seen to be worsened. A study by Bansal et al., he assessed 45 patients with indications for head and neck radiotherapy, and showed a worsening of the physical function and an increase in symptoms such as: fatigue, pain, loss of appetite. {11} Blanco et al, also showed an increase in the symptoms scale (pain, fatigue and weight loss) and decline on the functional scale, with loss of physical, social and emotional function and role performance. {12}

In this study we have compared the site of malignancy and we found the oral malignancy had a better QoL scores compared to larynx and hypopharynx. Other studies, they have found that patients with oral malignancy had significant problems with teeth, mouth opening, pain, social contact compared with laryngeal and hypopharyngeal malignancy, in whom speech and cough were the problems. {13}

Hence this patient reported outcome allows the health care giver to understand the a patient's reaction to the disease and its treatment and also the outcome.

CONCLUSION:

The QoL measurement has a role in evaluating treatment outcomes, helping to define the treatment protocols. The QoL and performance assessment of the H&N cancer patients is critical to enable optimum care of these patients, complete assessment of options for treatment and improvement of educated rehabilitative services and patient training.

Table 1: overall QoL comparison

Quality of life	Overall comparison		P Value
	Treatment		
	Pre	Post	
Global	70.72 ± 22.37	57.33± 23.38	<0.000
Role	89.5 ± 18.7	69.1 ± 23.33	<0.000
Social	89.5 ± 16.0	78.97 ± 23.88	<0.01
Fatigue	17.5 ± 25.4	26.6 ± 17.6	.057
nausea, vomiting	0.00	3.88 ± 9.5	.032
Financial	28.8± 29.9	62.9 ± 22.1	.000
Sense	0.33 ± 3.03	30.1 ± 28.2	.000
trouble contact	4.27 ± 7.7	26.9 ± 18.3	.000
less sexuality	43.6 ± 31.2	57.67± 31.5	.041
open mouth	13.3 ± 25.6	26.6 ± 37.5	.016
dry mouth	5.5 ± 17.67	56.5 ± 31.7	.000
sticky saliva	2.2 ± 8.5	52.1± 29.9	.000
felt ill	18.8 ± 24.5	28.8± 22.5	.034
pain killer	21.0 ± 16.3	32.1± 10.6	.001

Table 2: tracheostomy and QoL

Quality of life	Tracheostomy - Yes (N=8)				P Value
	Pre		Post		
	Mean	Std. Deviation	Mean	Std. Deviation	
Global	60.83	12.34	41.47	17.18	.001
Social	93.80	12.29	66.73	30.87	.035
dyspnea	54.01	30.52	8.25	15.28	.020
financial	16.65	17.80	62.26	21.39	.004
sense	0.00	0.00	60.39	33.26	.001
trouble contact	0.00	0.00	40.07	9.98	.000
dry mouth	4.16	11.77	70.68	21.47	.000
sticky saliva	0.00	0.00	70.60	21.49	.000

Table 3: Staging and quality of life

Quality of life	Treatment modality - Surgery(N=5)				P Value
	Pre		Post		
	Mean	Std. Deviation	Mean	Std. Deviation	
financial difficulties	0.00	0.00	59.96	36.51	.021
Quality of life	Treatment modality - RT(N=11)				P Value
	Pre		Post		
	Mean	Std. Deviation	Mean	Std. Deviation	
Global	75.83	17.14	63.95	24.73	.034
Role	84.89	20.32	66.82	23.59	.053
sense	0.00	0.00	39.78	33.30	.003
speech	18.94	19.00	31.84	28.15	.046
trouble contact	2.00	6.63	20.03	16.93	.008
dry mouth	9.08	21.53	63.45	18.01	.000
sticky saliva	3.03	10.04	63.48	23.43	.000
Quality of life	Treatment modality - Combined (Surgery + RT) (N=3)				P Value
	Pre		Post		
	Mean	Std. Deviation	Mean	Std. Deviation	
pain	72.27	19.28	11.07	9.58	.008
Quality of life	Treatment modality - Combined (RT+CT) (N=11)				P Value
	Pre		Post		
	Mean	Std. Deviation	Mean	Std. Deviation	
Global	64.47	16.95	44.56	18.71	.011
Role	94.00	19.90	74.47	23.74	.011
Social	92.45	17.21	69.75	25.63	.013
appetite loss	6.05	13.47	30.25	23.33	.012
financial difficulties	18.14	17.36	66.40	21.09	.000
swallowing	32.52	21.87	19.66	6.68	.053
sense	0.00	0.00	31.76	25.21	.002
trouble contact	5.64	8.32	38.22	12.50	.000
dry mouth	0.00	0.00	75.58	21.69	.000
sticky saliva	0.00	0.00	63.42	18.06	.000
pain killer	24.14	15.50	36.22	10.08	.038

Table 4: treatment modality and quality of life

Quality of life	Treatment modality - Surgery(N=5)				P Value
	Pre		Post		
	Mean	Std. Deviation	Mean	Std. Deviation	
financial difficulties	0.00	0.00	59.96	36.51	.021
Quality of life	Treatment modality - RT(N=11)				P Value
	Pre		Post		
	Mean	Std. Deviation	Mean	Std. Deviation	
Global	75.83	17.14	63.95	24.73	.034
Role	84.89	20.32	66.82	23.59	.053
sense	0.00	0.00	39.78	33.30	.003
speech	18.94	19.00	31.84	28.15	.046
trouble contact	2.00	6.63	20.03	16.93	.008
dry mouth	9.08	21.53	63.45	18.01	.000
sticky saliva	3.03	10.04	63.48	23.43	.000
Treatment modality - Combined (Surgery + RT) (N=3)					
Quality of life	Pre		Post		P Value
	Mean	Std. Deviation	Mean	Std. Deviation	
	pain	72.27	19.28	11.07	
Treatment modality - Combined (RT+CT) (N=11)					
Quality of life	Pre		Post		P Value
	Mean	Std. Deviation	Mean	Std. Deviation	
	Global	64.47	16.95	44.56	
Role	94.00	19.90	74.47	23.74	.011
Social	92.45	17.21	69.75	25.63	.013
appetite loss	6.05	13.47	30.25	23.33	.012
financial difficulties	18.14	17.36	66.40	21.09	.000
swallowing	32.52	21.87	19.66	6.68	.053
sense	0.00	0.00	31.76	25.21	.002
trouble contact	5.64	8.32	38.22	12.50	.000
dry mouth	0.00	0.00	75.58	21.69	.000
sticky saliva	0.00	0.00	63.42	18.06	.000
pain killer	24.14	15.50	36.22	10.08	.038

Table 5: head and neck malignancy primary site and quality of life

Site - CA Oral Cavity (N=13)					
Quality of life	Pre		Post		P Value
	Mean	Std. Deviation	Mean	Std. Deviation	
Global	74.49	20.04	58.42	22.87	.005
Role	89.80	17.32	65.68	22.82	.015
financial	25.59	27.70	58.36	19.80	.002
pain	38.64	21.07	22.38	16.41	.037
sense	1.28	4.60	20.41	15.44	.001
trouble contact	5.77	8.24	20.43	23.40	.018
less sex	44.35	33.29	66.54	27.29	.029
open mouth	28.16	32.89	58.85	36.37	.012
dry mouth	5.12	18.47	46.02	34.72	.004
sticky saliva	2.56	9.24	40.95	33.75	.002
pain killer	22.96	15.93	33.16	0.16	.040
Site -CA Larynx (N=10)					
Quality of life	Pre		Post		P Value
	Mean	Std. Deviation	Mean	Std. Deviation	
Role	85.08	23.99	63.50	26.94	.013
sense	0.00	0.00	40.49	32.20	.003
trouble contact	4.20	8.87	31.96	15.10	.001
dry mouth	9.99	22.48	63.19	18.97	.000
sticky saliva	3.33	10.53	66.53	22.28	.000
Site -CA Hypopharynx (N=4)					
Quality of life	Pre		Post		P Value
	Mean	Std. Deviation	Mean	Std. Deviation	
Cognitive	75.25	16.50	100.00	0.00	.058
swallowing	41.55	16.70	16.65	6.81	.024
trouble contact	0.00	0.00	30.40	5.60	.002
dry mouth	0.00	0.00	66.40	27.35	.017
sticky saliva	0.00	0.00	58.05	16.70	.006
felt ill	33.23	27.19	58.05	16.70	.058

REFERENCES:

- 1) Anupam.M, Rohit M. Head and Neck Cancer: Global Burden and Regional Trends in India. *Asian Pac J Cancer Prev*.2014; 15 (2): 537-550.
- 2) Karnofsky DA, Abelmann WH, Craver LF. The use of nitrogen mustards in the palliative treatment of carcinoma. *Cancer*. 1948;1:634-656.
- 3) Loewe N, Bagherzadeh M, Araya-Castillo L, Thieme C, Batista-Foguet JM. Life domain satisfactions as predictors of overall life satisfaction among workers, evidence from Chile. *Soc Indic Res*. 2014;118:71–86.
- 4) Ware Jr JE, Keller SD, Gandek B, Brazier JE, Sullivan M. Evaluating translations of health status questionnaires. Methods from the IQOLA project. *International Quality of Life Assessment. Int J Technol Assess Health Care*. 1995;11:525–551.
- 5) Morton RP, Izzard ME . Quality-of-life outcomes in head and neck cancer patients. *World J Surg*. 2003; 27: 884-889.
- 6) Connor NP, Cohen SB, Kammer RE, Sullivan PA, Brewer KA, Hong TS, et al. Impact of conventional radiotherapy on health-related quality of life and critical functions of the head and neck. *Int J Radiat Oncol Biol Phys*. 2006;65(4):1051-62.
- 7) Scharloo M, Baatenburg de Jong RJ, Langeveld TP, van Velzen-Verkaik E, Doorn-Op den Akker MM, Kaptein AA et al. Illness cognitions in head and neck squamous cell carcinoma: predicting quality of life outcome. *Support Care Cancer*. 2010;18(9):1137-45.
- 8) Mário RMF, Breno AR, Maria Betânia OP, Emerson SF, Edimilson MF, Herculio MJ, Francis Balduino GS et al. Quality of life of patients with head and neck cancer. *Braz J Otorrinolaryngol*. 2013;79(1):82-8.
- 9) Vartanian JG, Carvalho AL, Yueh B, et al. Longterm quality-of-life evaluation after head and neck cancer treatment in a developing country. *Arch Otolaryngol Head Neck Surg*. 2004;130: 1209-1213.
- 10) Hammerlid E, Silander E, Horneham L, et al. Health-related quality of life three years after diagnosis of head and neck cancer-a longitudinal study. *Head Neck*. 2001;23:113-125.
- 11) Bansal M, Mohanti BK, Shah N, Chaudhry R, Bahadur R, Shukla NK . Radiation related morbidities and their impact on quality of life in head and neck cancer patients receiving radical radiotherapy. *Qual Life Res*. 2004;13(2):481-8.
- 12) Alvarez-Buylla Blanco M, Herranz González-Botas J. Quality of life evolution in patients after surgical treatment of laryngeal, hypopharyngeal or oropharyngeal carcinoma. *Acta Otorrinolaringol Esp*. 2011;62(2):103-12.
- 13) Chaukar DA, Das AK, Deshpande MS,Pai KA,Chaturvedi P,Kakade AC,Hawaladar RW,D'Cruz AK et al,Quality of Life of head and neck cancer patient:validation of the European Organization for research and treatment of cancer QLQ-C30 and European Organization for research and treatment of cancer QLQ-H&N35 in Indian patients.*Indian J of Cancer*.2005;42(4):178-184.