

Assessment of Quality of Life in Radically Treated Head and Neck Cancer Patients: A Cross-Sectional Study in a Tertiary Care Setting in Manipal, Udupi

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Abstract

Objectives: 1) To measure the different domains of quality of life in post-treatment head and neck cancer patients and 2) To find associations between the type of treatment and the quality of life in the patients.

Methodology: Descriptive cross-sectional study was conducted from January to June 2015 among 144 radically treated head and neck cancer patients above the age of 18 years using EORTC QLQ-30 and QLQ H&N-35 Questionnaires.

Data analysis: Data analysis was done using SPSS Version 15.

Major results: The main areas affecting the QOL of the patients were Social, Cognitive and Emotional Functioning, financial problems, fatigue, dyspnea, appetite loss, sexual problems, trouble with social contact, and symptoms of dry mouth, problem related to senses, difficulty in mouth opening and speech problems. Three-fourth of the patients used analgesic medication for pain control. Early-stage tumors showed significantly better scores on pain, speech, social eating, teeth problems and dryness of mouth. The groups with combined modalities outscored the Chemotherapy and Radiotherapy groups on almost all scales.

Conclusion: Head and Neck cancer (HNC) has a significant burden of symptoms at presentation. There have not been many studies that have measured the long term QoL outcomes in HNC survivors in developing countries. A simple and explicit questionnaire, as used in this study could help in quickly screening for the symptom burden and QoL in these patients and this would definitely help in delivery of better symptom directed therapies and achieving the holy goal of palliative care.

Keywords: Head and Neck; Quality of Life

Introduction

The head and neck is an area which is high in unpredictability regarding its life structures and physiology. HNC and their treatment thereof can essentially influence both the structure and capacity of this range. This may prompt a huge lessening in the QOL, and present difficulties to both patients and their caregivers [1].

Cancer of mouth and other oral regions is of huge significance of public health in India. It is analyzed at later stages which bring about low treatment results and extensive expenses to the patients who normally can't manage the cost of this kind of treatment [2]. Besides, the underdeveloped and developing countries do not have sufficient access to the health care services. Thus, delay has likewise been generally connected with cutting edge phases of oral malignancy [3]. Detection of cancer in early stages offers the most obvious opportunity to enhance treatment results and make social insurance moderate [4]. Also, oral cancer is most commonly is seen in those belonging to the

lower strata of the society, who are more prone to exposure to risk factors such as tobacco consumption [5]. In conclusion, despite the fact that clinical analysis happens by means of diagnostic tests, the greater part of patients are diagnosed at later phases of tumor subtypes, in this manner lessening possibilities of survival because of delays in finding [6].

The WHO characterizes QOL as "an individual's perception of their position in life, in the context of the culture and value systems in their life and in relation to their goals, expectations, standards and concerns" [7,8]. Regardless of the significant advances found in growth science and therapeutics, malignancy and its treatment keep on bringing about terrible pain and suffering, not only for patients who cannot survive, but at the same time for the individuals that are effectively treated. This is particularly valid for HNC that causes excessively extreme effect on the QOL of the patients [9]. Patients with HNC are helpless against extreme psychosocial issues in light of the fact that social communications and emotional expression depends, all things considered, on the integrity of the function of neck and head district [10].

QOL scales can help HNC patients to impart the issues related to their disease adequately to their doctors in an occupied setting by attracting consideration regarding the seriousness of their issues and, accordingly, concentrate on the principle problems and issues [9,10]. As QOL measures and records data on an extensive variety of issues, the doctor can distinguish which issues need highest priority [11]. There are different cancer bodies like the National Cancer Institute (NCI), American Cancer Society (ACS), etc. which have done their research using QOL data [12,13]. The QOL and performance assessment of the HNC 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 [14].

Rationale

Public health authorities, private healing centers, and scholastic medical centers in India have perceived oral cancer as a grave issue. Endeavors to build the literature on the information of the disease etiology and regional distribution of risk factors have started picking up force. Oral cancer will remain a significant health issue and efforts towards early detection, and prevention will lessen this weight. In light of this, the objective of this study was to evaluate the quality of life among radically treated head and neck cancer patients in a tertiary care center [15].

Objectives

To measure the diverse domains of quality of life in post-treatment head and neck cancer patients.

To discover the relationship between the type of treatment and the quality of life in the patients.

Materials and Methods

Study setting

The study was conducted in a tertiary care setting of Udupi taluk and the study population comprised of radically treated head and neck cancer patients above 18 years of age attending the oncology OPD in the tertiary care setting in Manipal, Udupi.

Study design

The present study adopted a descriptive cross-sectional study design

Study duration

The study was carried out between January and June 2015.

Inclusion criteria

1. Patients who suffered from various forms of head and neck cancer. 2. Consented males and females above the age of 18 years. 3. Patients who had been radically treated for any cancer of the head and neck; and were attending the oncology OPD for a follow-up treatment, for not more than 5 years.

Exclusion criteria

1. Patients unable to provide information or unable to answer. 2. Patients who suffered from cancers, other than head and neck cancers.

3. Patients diagnosed with cancer of any other organ along with head and neck cancer. 4. Patients who followed-up the treatment for more than 5 years.

Sampling technique

A consecutive sampling approach was used till the desired sample size was achieved, and till the data collection period. Sampling was done with replacement for non-response.

Sample size

The calculated sample size for the study was 144 HNC patients.

A preliminary discussion with the Oncology department gave us the proportion of approximately 70-80 follow-up head and neck cancer cases in a month.

So assuming around $n=225$ H&N patients might visit in 3 months. And assuming a precision level of $d=5\%$ on relevant indicators (QOL), using the sample size formula for proportions, the sample size is calculated as-

$$S = n(1 + n \times d^2) \\ = 144.$$

Ethical considerations

Ethical clearance for the study was procured from the Institutional Ethics Committee, Kasturba Medical College, a tertiary care center in Manipal. (IEC 85/2015). Patient participation was according to their free will and informed consent was procured from the eligible respondents after the reason behind the study was revealed to them using a predefined information sheet.

Study tools/Survey instruments

An interviewer administered, standard questionnaire was used in the study. The questionnaire was compiled from two validated source questionnaires to collect data using interview technique. The source questionnaires are-

The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core-30 (EORTC QLQ-30), and

The Quality of Life Questionnaire Head and Neck Cancer Module (QLQ-H&N).

The EORTC QLQ-30 is a 30-item instrument that comprises of:

One Global Health Scale

Five Functional Scales

Three Symptom Scales and

Various other Single-item Scales

The EORTC QLQ H&N-35 comprised of 35 questions concerning issues that are ascribed to HNC and its treatment-related symptoms. The patients had to mark all the questions on a scale of 1 to 4. The 4 points denoted:

1=Not at all

2=Very little

3=Quite a bit

4=Very much

These interviews were conducted by the interviewer and the translator. The translator was not included in the clinical consideration of these patients, in any way. The tumor staging was done according to the American Joint Committee on Cancer (AJCC) rules by utilizing the TNM staging framework.

Data collection methods

The data collection period for the quantitative review kept going three and half months (February to end of May 2015). The information was gathered six days a week amid OPD working hours i.e., between 9 am and 1 pm. The meetings were led with the assistance of an interpreter. The meeting constantly began with a brief presentation on the study theme, pertinence and how their commitment may help to advise arrangement advancement over the long haul. In the wake of taking assent from every member the meeting kept going around 10-15 minutes each. The non-response rate was low and the quantity of non-response differed from 8 to 10 patients amid the whole information gathering period.

Data analysis

The data was analyzed using statistical software SPSS version 15. Socio-demographic information and Cancer details were categorized and reported using frequencies and proportions. The various item-scale correlations were calculated by using Pearson correlation coefficient. Tests of differences between groups were performed using Independent t-test.

The scoring was done as per the EORTC scoring manual as described below:

Raw score (RS) was calculated by average of the items in a particular scale (for example, physical functioning includes 3 points and the raw score for PF was calculated as sum of score for point 1-3 divided by 3).

Score (S) was obtained by applying a linear transformation to 0-100:

Functional Scales (PF, EF): $S = [1 - \{(RS-1)/range\}] \times 100$ Symptom scale: $S = \{(RS-1)/range\} \times 100$ Global health status/QOL: $S = \{(RS-1)/range\} \times 100$
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Range is the difference between the maximum possible value of RS and the minimum possible value. Most items were scored 1-4, giving range 3. The global health status/QOL questions were scored 1-7, giving range 6. Mean, median, and standard deviation of the scores thus obtained were calculated.

Results

Socio-demographic characteristics

A total of 144 qualified head and neck tumor patients took part in the study. Various visits to the study setting to pick up certainty of the study populace and eye to eye communication by the analyst for every meeting added to the high response rate.

As observed from Table 1, majority of the respondents (54.9%) were in the age group of 41 to 60 years and only 14.5% of the patients were between 18 to 40 years of age. The mean age of the participants was 53.88 years (SD ± 11.20 years).

Characteristic	Frequency n (%)
Age	
Mean (± SD)=53.88 (± 11.20) years	
21-40 years	21(14.5)
41-60 years	79(54.9)
61-80 years	44(30.6)
Gender	
Male	83(57.6)
Female	61(42.4)
Occupation	
Farmer	46(31.9)
Housewife	30(20.9)
Business	14(9.7)
Daily-wage workers	45(31.3)
Salary-based worker	9(6.2)
Education	
No education	37(25.7)
Up to 4 th standard	15(10.4)
5 th -10 th standard	70(48.6)
Above 10 th standard	22(15.3)
Place of residence	
Udupi district	63(43.8)
Other neighboring areas/states	81(56.2)

Table 1: Distribution of the respondents according to the socio-demographic characteristics (N=144).

More than half (57.6%) of the respondents were males while the rest were females. Out of 144 respondents, majority were farmers (31.9%), 31.3% were daily-wage workers and 20.9% were housewives. The remaining subjects were distributed across other occupations. About 48.6% had an education qualification between 5th standard to 10th standard whereas only 15.3% had studied post 10th standard. A higher percentage of the patients (56.2%) came for treatment from the neighboring districts, where the major part of the patients belonged to Chikmagalur (n=21), Shimoga (n=13), Hassan (n=12) and states like Kerala, Goa, etc. (n=4).

From Table 2, among 10 different cancer sites seen across the subjects, the major cancer sites seen were Oral (29.2%) and Tongue (20.8%). Majority (34%) of subjects had stage 3 cancer and 47.9% of the subjects had been treated with a combination of Surgery and Radiation. Majority (72.2%) of the subjects had completed their treatment before 1 to 6 months of the interview.

In Table 3, the various scores were categorized into two categories: (a) those with score as 0 and (b) those with score >0.

Characteristics	Frequency n (%)
Cancer site	
Buccal	12 (8.3)
Hypo pharynx	10 (6.9)
Lip	14 (9.7)
Neck	5 (3.5)
Oral	42 (29.2)
Pharynx	7 (4.9)
Supraglottis	8 (5.6)
Throat	13 (9.0)
Thyroid	3 (2.1)
Tongue	30 (20.8)
Cancer stage	
Stage 1	28 (19.4)
Stage 2	40 (27.8)
Stage 3	49 (34.0)
Stage 4	27 (18.8)
Treatment type	
CT	7 (4.9)
RT	22 (15.3)
CT+RT	18 (12.5)
Surgery+RT	69 (47.9)
Surgery+CT	10 (6.9)
Surgery+CT+RT	18 (12.5)
Time gap between completion of treatment and researcher's interview	
<1 month	21 (14.6)
1-6 months	104 (72.2)
6-12 months	18 (12.5)
>12 months	1 (0.7)

Table 2: Distribution of Cancer patients according to Cancer site, Stage, type of treatment and Time point of interview (N=144).

The mean score of each variable was later calculated from the patients with non 0 scores. As seen in Table 3, none of the respondents had a score of 0 on the functional and global health scale, except two of them on the social functioning scale. The table showed that almost all the respondents had some health problem with respect to various functional domains since everybody had scored more than 0. On the other hand, quite a few domains on the symptom scale showed patients as having a score of more than 0, indicating the presence of the symptoms that could affect the QOL of these patients.

	Scales	Non 0 Score Frequency n (%)	Mean**
QLQ-C30			
	Global Quality of Life	144 (100%)	37.3
	Physical functioning	144 (100%)	85.8
	Role functioning	144 (100%)	89.1
	Emotional functioning	144 (100%)	75.1
	Cognitive functioning	144 (100%)	72.1
	Social functioning	142 (98.6%)	50.4
	Fatigue	88 (61.1%)	28.9
	Nausea	23 (16%)	31.1
	Pain	74 (51.4%)	27.2
	Dyspnea	34 (23.6%)	54.9
	Insomnia	58 (40.3%)	52.8
	Appetite loss	31 (2.5%)	41.9
	Constipation	11 (7.6%)	45.4
	Diarrhea	47 (32.6%)	38.2
	Financial difficulty	137 (95.1%)	56.9
H&N35			
	Pain	123 (85.4%)	26.1
	Swallowing	112 (77.8%)	29.4
	Senses	110 (76.4%)	44.8
	Speech	112 (77.8%)	38.8
	Social eating	125 (86.8%)	26.6
	Social contact	131 (91%)	51.3
	Sexuality	134 (93.1%)	83.9
	Teeth	35 (24.3%)	66.6
	Opening mouth	73 (50.7%)	71.6
	Dry mouth	88 (61.1%)	73.8
	Sticky saliva	28 (19.4%)	75
	Coughing	31 (21.5%)	61.2
	Illness	17 (11.8%)	50.9
	Painkillers	102 (70.8%)	100.0#
	Nutritional supplements	29 (20.1%)	100.0#
	Feeding tube	47 (32.6%)	100.0#
	Weight loss	42 (29.2%)	100.0#

	Weight gain	34 (23.6%)	100.0#
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Table 3: Frequency and mean scores of Patients with scores >0 on EORTC QLQ-30 and H&N-35 (N=144). ** Mean Score of the patients with non 0 Scores; # domains where the answer options were “YES” or “NO”.

	Scales	Frequency n (%)
Cases with function score >30	Physical functioning	26 (18.1)
	Role functioning	27 (18.8)
	Emotional functioning	58 (40.3)
	Cognitive functioning	81 (56.2)
	Social functioning	137 (95.1)
	Global QoL	144 (100)
Cases with symptom score >30	Fatigue	36 (25.0)
	Nausea	14 (9.7)
	Pain	26 (18.1)
	Dyspnea	34 (23.6)
	Insomnia	58 (40.3)
	Appetite loss	31 (21.5)
	Constipation	11 (7.6)
	Diarrhea	47 (32.6)
	Financial difficulties	137 (95.1)
Cases with symptom score >30 (Head and Neck)	Pain	39 (27.1)
	Swallowing	38 (26.4)
	Senses	79 (54.9)
	Speech	61 (42.4)
	Social eating	38 (26.4)
	Social contact	90 (62.5)
	Sexuality	132 (91.7)
	Teeth	35 (24.3)
	Opening Mouth	73 (50.7)
	Dry mouth	88 (61.1)
	Sticky saliva	28 (19.4)
	Coughing	31 (21.5)
	Felt ill	17 (11.8)
	Pain Killers	102 (70.8)

	Nutrition supplement	29 (20.1)
	Feeding tube	47 (32.6)
	Weight loss	42 (29.2)
	Weight gain	34 (23.6)

Table 4: Patients with scores <70 on the functional scale and >30 on the symptom scale (N=144).

The highest symptomatic complaints were seen in the domains of financial difficulty, pain, swallowing, senses, speech, social eating, social contact, sexual problems, dry mouth, and use of analgesic medicines. On an average, about 75% of respondents have complained of the presence above mentioned symptoms.

The overall global QOL rating was not so satisfactory (Mean=37.3). According to EORTC scoring the domain of social functioning showed a relatively poor mean score of 50.4 as compared to other functional domains. On the symptom scale, the domain with a poor mean score was financial difficulty (Mean=56.9). According to QLQ H&N-35, the main complaints were sexuality, teeth problems, opening mouth, dry mouth, sticky saliva, social contact and coughing. Also, about 71% of the respondents were on analgesics post treatment (n=102).

In Table 4, we had listed the patients who had poor rating on the QOL inquiries had a score of <70 on the functional scale or >30 on the symptom scale. Since there are no standard reference QOL scores; we considered a score of <70 on the functional scale and >30 on the symptom scale to show a poor rating on the QOL review. Analysis of the EORTC QLQC-30 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 diarrhea (32.6%).

Scales	I/II Mean (SD)	III/IV Mean (SD)	Chi-sq p-value (95% CI)
Physical functioning	87.1(16.4)	84.6(20.1)	0.417
Role functioning	37.9(17.7)	90.1(18.8)	0.486
Emotional functioning	75.7(15.2)	74.5(21.0)	0.7
Cognitive functioning	73.7(21.2)	70.6(21.5)	0.378
Social functioning	48.5(20.3)	52.1(19.6)	0.274
Global QoL	38.7(11.7)	36.1(11.2)	0.169
Fatigue	21.7(19.1)	14.6(17.2)	0.035
Nausea	6.8(15.0)	3.2(9.8)	0.098
Pain	16.4(19.8)	11.8(16.7)	0.135
Dyspnea	19.1(33.7)	7.4(16.8)	0.011
Insomnia	25.0(35.2)	17.9(24.6)	0.173
Appetite loss	13.2(25.1)	5.2(12.2)	0.02
Constipation	3.4(14.2)	3.5(13.9)	0.974

Diarrhea	9.3(17.1)	15.3(20.6)	0.058
Financial difficulties	57.8(28.5)	50.8(22.7)	0.106

Table 5.1: Early stage tumors versus Late-stage tumors (N=144) QLQ C-30.

The problematic domains identified by QLQ H&N-35 scale were sexual problems (91.7%), trouble with social contact (62.5%), symptoms of dry mouth (61.1%), problem related to senses (54.9%), difficulty in mouth opening (50.7%) and speech problems (42.4%). About 70.8% of the respondents said that they used painkillers for their pain management.

From Tables 5.1 and 5.2, we see that the overall QOL showed no significant difference between the two groups: early-staged tumors (stages I and II) and late-staged tumors (stages III and IV; p=0.169), on the EORTC QLQC-30 scale. However, on the symptom scale there was a significant difference seen in the domains of fatigue (p=0.035), dyspnea (p=0.011) and appetite loss (p=0.020) on the EORTC QLQC-30 scale, between these 2 groups (Table 5.1). On the QLQ H&N-35, early-stage tumors had significantly better scores on pain, speech, social eating, teeth problems and dryness of mouth (Table 5.2).

Scales	I/II Mean (SD)	III/IV Mean (SD)	Chi-sq p-value (95% CI)
Pain	19.5(15.7)	26.1(19.8)	0.031
Swallowing	23.6(18.5)	22.2(16.7)	0.637
Senses	33.8(28.7)	34.6(25.9)	0.857
Speech	13.7(25.5)	21.4(35.8)	0.006
Social eating	19.9(14.2)	26.5(24.6)	0.047
Social contact	43.3(28.9)	49.7(30.2)	0.198
Sexuality	76.7(35.1)	79.3(27.7)	0.612
Teeth	16.6(35.4)	26.6(28.1)	0.024
Opening Mouth	34.3(38.6)	38.1(42.7)	0.574
Dry mouth	24.6(39.5)	35.6(42.8)	0.008
Sticky saliva	14.7(31.2)	14.4(32.3)	0.965
Coughing	14.7(30.1)	11.8(27.1)	0.549
Felt ill	5.8(17.2)	6.1(17.8)	0.93
Pain Killers	70.5(45.9)	73.6(52.5)	0.709
Nutrition supplement	17.6(38.4)	22.3(41.9)	0.484

Table 5.2: Early-stage tumors versus Late-stage tumors (N=144) H&N35.

Scales	CT Mean	RT Mean	CT +RT Mean	S+RT Mean	S+CT Mean	S+CT +RT Mean
(a)						
Physical functioning	72.4	83.1	89.2	87.3	76	90.7

Role functioning	81.1	90.9	88	90.8	76.7	91.7
Cognitive functioning	75	78.1	86.6	71.4	83.3	69.9
Social functioning	81	73.4	82.4	68.8	75	67.6
Fatigue	40.5	49.2	50	54.6	40	46.3
Sexuality	41.3	15.1	26.5	11.3	26.7	22.2
Nausea	0	12.8	10.2	2.2	6.7	1.9
Pain	28.6	21.2	25.9	8	16.7	9.3
Dyspnea	33.3	16.6	22.2	9.7	16.7	1.9
Insomnia	47.6	13.6	44.4	11.1	36.7	27.8
Appetite loss	4.8	12.1	25.9	2.4	10	14.8
Constipation	14.3	0	9.3	3.4	0	0
Diarrhea	19	4.5	18.5	11.1	16.7	16.7
Financial difficulty	57.1	51.5	68.5	52.2	53.3	50
Global QOL	29.8	32.1	39.8	38	36.7	41.7
(b)						
HN-Pain	51.2	23.4	34.7	14.1	33.3	25
Swallowing	28.6	37.1	28.7	18	24.2	15.7
Senses	33.3	34.1	53.7	31.4	25	31.5
Speech	25.4	27.2	29.6	30.3	33.3	34.6
Social eating	10.7	26.8	38	20.9	20.8	18.1
Social contact	42.9	50.3	41.1	45	46.7	55.9
Sexuality	100	83	85.2	71	71.7	87
Teeth	42.9	0	25.9	12.6	20	27.8
Opening mouth	61.9	25.7	48.1	30.4	56.7	38.9
Dry mouth	42.9	60.6	55.6	34.8	53.3	51.9
Sticky saliva	9.5	24.2	16.7	9.2	23.3	18.5
Coughing	33.3	27.2	14.8	6.3	20	9.3
Felt ill	4.8	7.5	13	2.9	10	7.4
Pain killers	85.7	59.1	66.7	76.8	100	55.6
Nutritional supplements	42.9	9.1	5.6	23.2	40	16.7
Feeding tube	57.1	31.8	55.6	24.6	40	27.8
Weight loss	42.9	40.9	16.7	30.4	30	16.7
Weight gain	0	27.2	11.1	30.4	0	27.8

Table 6: Impact of type of treatment on QOL scores with (a) EORTC QLQ-30 and (b) QLQ H&N-35 questionnaires.

In Table 6, the patients who were treated with chemotherapy and radiotherapy alone were compared with patients treated with three different combination therapies. On EORTC QLQ-30 Scale, patients

treated with the different combination therapies fared significantly better on most scales than patients receiving chemotherapy or radiotherapy alone (predominantly S+RT & S+CT+RT). However, those on Chemotherapy alone fared better in the domains of nausea and global QOL, whereas those on Radiotherapy alone scored better in the domain of diarrhea and constipation (along with other combination modalities). But this difference however, could be attributed to most of the patients being treated with combined modality (n=115). On the QLQ H&N-35 symptom scales, the group with combined modalities outscored the Chemotherapy and Radiotherapy groups on almost all scales. However, the Chemotherapy group showed better scores in the areas of speech problems, problems related to social eating and weight gain, whereas the Radiotherapy group showed better scores in the domains of teeth problems and mouth opening.

Sticky Saliva**	20.9	6
Coughing	16.9	8.2
Illness	7.6	3.8
Painkillers	71.1	73.8
Nutrition Supplements	24.1	14.8
Feeding Tube	32.5	32.8
Wt. Loss	28.9	29.5
Wt. Gain*	16.9	32.8

Table 7: Mean Scores distributed across different categories of Gender (N=144). *p<0.05, **p<0.01, ***p<0.001.

Scales	Male (n=83) Mean	Female (n=61)
Global QOL	37.6	37
PF	85.9	85.8
RF	87.6	91.3
EF	76.5	73.2
CF	74.3	69.1
SF	49.8	51.4
Fatigue*	20.9	13.3
Nausea	4.6	5.5
Pain**	18.1	8.5
Dyspnea	14.5	10.9
Insomnia**	26.9	13.7
Appetite Loss**	12.9	3.8
Constipation	4.4	2.2
Diarrhea	12.4	12.6
Financial Difficulty**	59.4	47
H&N		
Pain***	27.7	15.7
Swallowing*	25.8	19
Senses	37.6	29.8
Speech	31.2	29
Social Eating*	26.2	18.9
Social Contact	47.3	45.9
Sexuality*	82.9	71.6
Teeth	18.5	13.1
Opening Mouth	37.3	35
Dry Mouth*	52.2	35.5

From Table 7, we can see that the mean scores across quite a few symptom scale variables, varied significantly across the gender categories. The significantly highlighted domains were pain, fatigue, insomnia, appetite loss, financial difficulty, pain pertaining to head and neck, swallowing problem, trouble with social eating, dry mouth, sticky saliva, weight gain and sexual problems.

As seen in Table 8, the Global QOL was significantly poor in the age group of 21-40 years as compare to other age groups. The respondents belonging to the age group of 41-60 years had fared comparatively poor in the domains of emotional and cognitive functioning. Also, on the symptom scale, the patients in the age group of 21-40 years had fared significantly poor in the categories of dry mouth, coughing, use of analgesics, feeding tube and weight gain.

From Table 9, we could conclude that there was no significant difference between the scores of respondents scattered across different interview timings, with the exception being the dyspnea score, which seemed to be significantly poor in the group where the interview was conducted for those who had completed their treatment 12 months back or more. But this score could also be because only 1 patient was in the category of >12 months.

Scales	Age 21-40 years (n=21) Mean	Age 41-60 years (n=79) Mean	Age 21-40 years (n=21) Mean
Global QOL*	31.7	38.7	37.5
PF	83.2	85.3	88
RF	90.5	89.9	87.1
EF***	84.9	69.5	80.5
CF*	79.4	67.5	76.9
SF	58.7	48.3	50.4
Fatigue	14.3	16.9	20.7
Nausea	7.1	3.2	7.2
Pain	7.1	13.5	18.2
Dyspnea	12.7	14.3	10.6
Insomnia	15.9	17.7	30.3

Appetite Loss	3.2	9.7	10.6
Constipation	6.3	3.4	2.3
Diarrhea	14.3	13.9	9.1
Financial Difficulty	52.4	54	55.3
H&N			
Pain	14.3	24.2	23.9
Swallowing	17.9	23.2	24.8
Senses	29.4	32.9	39
Speech	22.8	30.1	34.1
Social Eating	14.3	24.3	25.2
Social Contact	35.2	47.9	50
Sexuality	64.3	78.3	84.5
Teeth	11.1	16.5	18.2
Opening Mouth	17.5	37.6	43.2
Dry Mouth**	20.6	45.6	56.1
Sticky Saliva	9.5	12.2	21.2
Coughing†	4.8	10.5	22
Illness	7.9	4.2	8.3
Painkillers**	1.1	64.6	68.2
Nutritional Supplements	28.6	15.2	25
Feeding Tube**	14.3	27.8	50
Wt. Loss	38.1	26.6	29.5
Wt. Gain**	33.3	31.6	4.5

Table 8: Mean Scores distributed across different categories of Age (N=144). *p<0.05; **p<0.01; ***p<0.001.

Scales	<1 month (n=21) Mean	1-6 months (n=104) Mean	6-12 months (n=18) Mean	>12 months (n=1) Mean
Global QOL	35.7	37.5	38.9	25
PF	87.3	87.3	76.3	73.3
RF*	80.2	91.5	85.2	100
EF	73	74.7	80.1	75
CF	73.8	71.2	75.9	66.7
SF	42.9	51.3	54.6	50
Fatigue	19	17.1	20.4	0
Nausea	8.7	4.2	5.6	0
Pain	17.5	13.5	13.9	0
Dyspnea**	19	9.9	18.5	100

Insomnia	30.2	20.2	18.5	0
Appetite Loss	15.9	7.7	9.3	0
Constipation	1.6	4.5	0	0
Diarrhea	7.9	13.1	14.8	0
Financial Prob	65.1	52.2	51.9	66.7
H&N				
Pain	31.7	21.4	19.9	8.3
Swallowing	22.6	23	24.1	0
Senses	22.2	36.7	33.3	50
Speech	32.8	30.9	22.2	55.6
Social Eating	23.4	23.9	18.1	25
Social Contact	41.9	49.6	35.6	46.7
Sexuality	73.8	80.1	73.1	50
Teeth	20.6	16.7	9.3	0
Opening Mouth	44.4	35.9	25.9	100
Dry Mouth	39.7	44.6	55.6	33.3
Sticky Saliva	17.5	13.8	16.7	0
Coughing	25.4	11.5	9.3	0
Illness	3.2	5.4	13	0
Painkillers	85.7	73.1	50	100
Nutrition Supp.	33.3	19.2	11.1	0
Feeding Tube	23.8	36.5	22.2	0
Wt. Loss	33.3	26	44.4	0
Wt. Gain	19	21.2	38.9	100

Table 9: Mean Scores distributed across different categories of interview time (N=144). *p<0.05; **p<0.01.

Discussion

The study showed that the Quality of Life in the Head and Neck cancer patients is affected in various functional and symptom-related domains. Also their overall health and QOL was perceived as not very satisfactory. The various domains of QOL also show variation in terms of association with the demographic variables and the cancer-specific variables. So, there is an impact on the QOL in the Head and Neck cancer patients to some extent depending on the factors such as Age, Gender, Occupation, Site of Cancer, Type of Treatment etc.

As indicated by GLOBOCAN 2012 [16], HNCa is the most widely recognized threat among men in India. The general age institutionalized rates of frequency of oral depression, nasopharynx, and other pharyngeal malignancies are 7.2, 0.3, and 3.7, separately. Approximately 80% of the H&N Cancer patients in developing nations display in Stage III and IV, and generally around 40% of these patients are suitable just for palliative radiotherapy. The time spent for pretreatment assessment and organizing may be of 49 days [17].

Patient consistency differs according to the plan of treatment: 712/1150 (62%), 406/755 (54%), and 91/262 (35%) in healing, palliative, and support system groups, respectively [17]. A study by Jimenez et al. [18] have demonstrated that a decreased survival was seen for patients included in the neuropsychological (35 days versus 21 days; $p < 0.05$) or gastrointestinal indications (62 days versus 36 days; $p < 0.001$).

Lin et al. [19] surveyed the example of manifestations in patients of cutting edge H&N Cancer in Taiwan. In this single institutional review, the most well-known manifestation experienced was weight reduction, pain, dysphagia, cough, feeding problems, and communication troubles. A measurably huge relationship was found between communication and tracheostomy. The median proportional dosage of morphine at first hospice confirmation and lapse was 70 mg/day (extend 0-1080) and 160 mg/day (go 0-1600), separately. In our study, 71% of the patients used painkillers to overcome pain symptoms.

Greater part of the study members had extensive financial impediments (95.1%). Low pay level and awareness level were connected with lower QOL scores and were connected with lower ability to manage malignancy and its outcomes. These realities must be mulled over before prescribing extensive chemotherapy to poor patients in palliative settings. In this circumstance, QOL evaluations reflecting financial status and social support accessible to the patient would permit doctors to make proper proposals for treatment choice.

Despite the fact that this study was not intended to pose as a viable method of QOL contrasts between tumor stage or kind of treatment, we watched a normal pattern wherein early stage tumors (couple of areas) and patient accepting combination treatment (the majority of the domains) had better QOL scores as contrasted to patients with advanced stage tumor or the patients getting either chemotherapy or radiotherapy alone. Our perceptions were not adequately powered and did not control for confounding variables. Accordingly, our discoveries could absolutely be ascribed to a large portion of the patients being treated with combination modalities (79.8%).

In the present study, the general worldwide QOL was learned to be not really satisfactory. Nonetheless, a few longitudinal studies that have surveyed QOL 3 to 5 years after treatment reported that worldwide HRQOL did show noteworthy change. A critical number of patients in our study populace had treatment-related symptoms, for example, insomnia (40.3%), diarrhea (32.6%), issues related sexual life (91.7%), social contact (62.5%), dry mouth (61.1%), senses (54.9%), mouth opening (50.7%) and speech (42.4%). Hammerlid et al. [20] reported comparable results, where issues with dryness of mouth, teeth problems and mouth opening appeared to be existent even at 3 years post treatment. Around 71% of all patients had reported that regardless they utilize pain relieving medicines for pain control, despite the fact that "pain" was not realized to be an issue. These treatment-related reactions were not preventable and should be talked about with the patients preoperatively. Pre and post-treatment guiding may help patients to adapt better to these long term symptoms and therefore may enhance HRQOL results. The cancer patients were seen to be altogether influenced in the regions of social functioning (95.1%), cognitive functioning (56.2%) and emotional functioning (40.1%). This could be because of absence of family support, absence of awareness furthermore because of high complaints of financial challenges seen in the most of these patients (95.1%). Advising the relatives of the patients and making them aware about the significance of family support could likewise help in enhancing the useful QOL of the patients. The effect of distortion on patients' mental self -portrait and social and sexual working could be critical. In a cross-sectional

investigation of HNC survivor, mental misery was evident in 31% of patients, 7 to 11 years after treatment. Hammerlid et al. indicated depression to be an autonomous prognostic marker of worldwide QOL at 3 years [20]. Psychosocial intervention might be helpful in enhancing QOL results and could be offered to the individuals who show adjustment issues. We didn't regulate a questionnaire to distinguish the mental status of the study participants which could be a limitation of this study. Then again, our findings were predictable with those got by Schag and partners, who inferred that "tumor survivors don't come back to an ordinary condition of wellbeing [21]." Even additionally convincing was the way that HNC patients in their study showed more affected QOL than the lung and colon growth survivors.

Conclusion

Head and Neck cancer has a significant burden of symptoms at presentation. They lose their global QOL and social functioning almost completely, whereas cognitive and emotional functioning by about 50%, though they maintain their physical functioning at a higher level.

The top symptoms in decreasing order of frequency were reported to be problems related to sexual life, social contact, dry mouth, senses, mouth opening, speech, insomnia and diarrhea.

Other important factor that was highlighted through our findings was the financial difficulties faced by most of the cancer patients.

The quality of life in early-staged tumors was comparatively better than in late-staged tumors. Also, the quality of life scores in different domains varied with the different treatment types.

Recommendations

The study's findings have highlighted a few areas where there are scopes for improvement. So the study recommends the following actions:

Pre and post-treatment counseling can be done for patients and family members. This could help the patients cope better in the social settings with the help from their family members and in turn, could help improve their functional and symptom-related quality of life.

Since, financial problem was the main reported concern in this study, inclusiveness of financial schemes under the National Cancer Control Program could help the patients and their families overcome the financial difficulties.

Psychosocial intervention may prove useful in improving QOL. This might be helpful in enhancing QOL results and could be offered to the individuals who show adjustment issues.

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References

1. Werning JW (2007) Oral cancer: diagnosis, management, and rehabilitation. Thieme Publishers Series, USA, p: 354.
2. Khandekar PS, Bagdey PS, Tiwari RR (2006) Oral cancer and some epidemiological factors: a hospital based study. *Indian Journal of Community Medicine* 31: 157-159.

3. Kumar S, Heller RF (2001) Delay in presentation of oral cancer: a multifactor analytical study. *National Medical Journal of India* 14: 13-17.
4. Fritz A, Percy C, Jack A, Shanmugaratnam K, Sobin L, et al. (2000) *International Classification of Diseases for Oncology*. 3rd edn, World Health Organization, Geneva, Switzerland, p: 240.
5. Conway DI, Petticrew M (2008) Socioeconomic inequalities and oral cancer risk: a systematic review and meta-analysis of case-control studies. *International Journal of Cancer* 122: 2811-2819.
6. Allgar VL, Neal RD (2005) Sociodemographic factors and delays in the diagnosis of six cancers: Analysis of data from the 'National Survey of NHS Patients'. *The British Journal of Cancer* 92: 1971-1975.
7. Farquhar M (1995) Definitions of quality of life: A taxonomy. *Journal of Advance Nursing* 22: 502-508.
8. World Health Organization (1994) *The WHO Health Promotion Glossary 1998*. World Health Organization, Geneva, Switzerland.
9. Morton RP, Izzard ME (2003) Quality-of-life outcomes in head and neck cancer patients. *World J Surg* 27: 884-889.
10. Kazi R, Cordova J (2007) Quality of life following total laryngectomy: Assessment using the UW-QOL scales. *ORL J Otorhinolaryngology Relat Spec* 69: 100-106.
11. Higginson IJ, Carr AJ (2001) Measuring quality of life: Using quality of life measures in the clinical setting. *BMJ* 322: 1297-1300.
12. National Institute for Health and Clinical Excellence. *Guidelines*, United Kingdom.
13. Lipscomb J, Gotay CC, Snyder CF (2007) Patient-reported outcomes in cancer: A review of recent research and policy initiatives. *CA Cancer J Clin* 57: 278-300.
14. Terrell JE, Ronis DL, Fowler KE, Bradford CR, Chepeha DB, et al. (2004) Clinical predictors of quality of life in patients with head and neck cancer. *Arch Otolaryngology Head Neck Surg* 130: 401-408.
15. Lozano R, Naghavi M, Foreman K, Lim S, Shibuya K, et al. (2010) Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study. *Lancet* 15: 2095-2128.
16. World Health Organization (2012) *GLOBOCAN 2012: Estimated Cancer Incidence, Mortality and Prevalence Worldwide*. International Agency for Research on Cancer, France.
17. Mohanti BK, Nachiappan P, Pandey RM, Sharma A, Bahadur S, et al. (2007) Analysis of 2167 head and neck cancer patients' management, treatment compliance and outcomes from a regional cancer center, Delhi, India. *J Laryngol Otol* 121: 49-56.
18. Jimenez A, Madero R, Alonso A, Martínez-Marín V, Vilches Y, et al. (2011) Symptom clusters in advanced cancer. *J Pain Symptom Management* 42: 24-31.
19. Lin YL, Lin IC, Liou JC (2011) Symptom patterns of patients with head and neck cancer in a palliative care unit. *J Palliat Med* 14: 556-559.
20. Hammerlid E, Silander E (2001) Health-related quality of life three years after diagnosis of head and neck cancer-a longitudinal study. *Head Neck* 23: 113-125.
21. Ganz PA, Schag CA, Cheng HL (1990) Assessing the quality of life-A study in newly-diagnosed breast cancer patients. *Journal of Clinical Epidemiology* 43: 75-86.