Assessment of Quality of Life of Patients 1–5 Years after Treatment for Oral Cancer

Abstract

Purpose: The study aims to assess the quality of life (QOL) of oral cancer survivors, 1–5 years after the treatment. Materials and Methods: The data of fifty patients concerning their QOL were gained from the Outpatient Department of K.L.E.’s Dr. Prabhakar Kore Hospital and Medical Research Institute, Belagavi, and Karnataka Cancer Therapy and Research Institute, Navanagar, Hubli, Karnataka, India. All the patients suffered from oral cancer (stage T2–T4) and underwent surgery with reconstruction followed by chemotherapy or radiotherapy or both. The patients completed the standard European Organization for Research and Treatment of Cancer (EORTC) Quality of Life Questionnaire (QLQ) C-30 (version 3.0) and QLQ Head and Neck Cancer Specific (QLQ H and N-35) (version 1.0). Scoring was done according to the EORTC scoring manual. Results: The mean age at the time of diagnosis was 45.0 (±9.0). The study population had a mean global health status (GHS) for overall QOL of 55.5 ± 13.4. The mean functional scale (FS) was 87.5 (±9.6). The mean QLQ C-30 symptom scale (SS) was 16.3 (±11.9) and the mean QLQ H and N-35 SS (H and NSS) was 26.9 ± 11.5. Location, gender, age, and time after the treatment showed very less discrepancy in the group comparisons of GHS, FS, SS, and H and NSS whereas comparison based on T-stage showed significant difference in scores. Conclusion: Oral cancer has a significant impact on the QOL of the patients. Assessment of QOL should receive adequate attention in treatment planning and rehabilitation. This would definitely help in delivery of better symptom directed therapies and improve the QOL of the patients.

Keywords: Oral cancer, oral cancer survivor, quality of life

The number of cases of oral cancer is increasing day by day in India. Oral cancer and its management are associated with tremendous physiological, emotional, and psychological disruption. This affects patients’ quality of life (QOL) and has a profound impact not only on them but also their careers and family members. As a consequence of improved disease-specific survival,[1] more patients than ever before are living with the aftermath of the treatment.

The term “QOL” was first used by Hecksher[2] and in 1977 was adopted as a “keyword” by the United States National Library of Medicine.[3] QOL is a broad multidimensional concept encompassing many aspects of an individuals’ life. It is difficult to define as it is a perceived subjective outcome.[4] The WHO has defined QOL as “individuals perceptions of their position in context of the culture and value systems in which they live and in relation to their goal, expectations, standards, and concerns.”[5]

The success of oral cancer therapy is primarily determined by recurrence-free survival. However, a study on death certification in oral cancer patients showed that 30% of the patients succumbing 3 years after treatment had died of other causes than of their primary disease.[6] Freedom of recurrence, therefore, should not be the only factor determining successful therapy, and the patients QOL has to be taken into account.

The increase in survival rates of cancer patients following multimodal therapy is meaningless, if not at least moderate QOL can be sustained. Functional, esthetic, emotional, and social factors determine QOL and should, therefore, receive adequate attention in treatment planning and rehabilitation.

During 1990s, the focus of many surgeons was directed toward QOL in cancer patients, and therefore, many new and generally applicable methods of evaluation were introduced like the European Organization for Research and Treatment

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self-completed questionnaires as mentioned showed to be adequate tool for evaluation of QOL in head and neck cancer patients and are favored over interview-style questionnaires due to practicability and increased objectiveness. At K.L.E’s Dr. Prabhakar Kore Hospital and Medical Research Institute, Belagavi, and Karnataka Cancer Therapy and Research Institute, Nawanagar, Hubli, patients with oral cancer are treated with multimodal therapy that includes surgery which may be followed by chemotherapy or radiotherapy or both. In all cases, reconstruction is performed with microsurgically revascularized free flaps.

The present study assesses the QOL of oral cancer survivors 1–5 years after the treatment. The questionnaires used were the EORTC Questionnaires (QLQ C-30 and QLQ H and N-35), both psychometrically validated instruments that allow international comparison of results.

Materials and Methods

The present study was cross-sectional in design that included fifty patients who have been treated for oral cancer at K.L.E’s Dr. Prabhakar Kore Hospital and Medical Research Institute, Belagavi, and Karnataka Cancer Therapy and Research Institute, Nawanagar, Hubli, from January 2008 to January 2013. The study was conducted from August 2014 to September 2014. All the patients suffered from oral cancer stage (T2–T4) and had undergone primary surgery which might or might not have been followed by chemotherapy or radiotherapy or both. All the patients had received microsurgically revascularized free flaps. The patients with oropharyngeal cancer were not included in the study sample. The study was approved by the Institutional Ethics Committee. The purpose of the study was explained, and a duly filled informed consent was obtained from all the patients participating in the study.

We used the standard EORTC Questionnaires QLQ C-30 (version 3.0) and QLQ H and N-35 (version 1.0). Patients received them while waiting for routine check-ups in the outpatient department of both the hospitals. For the convenience of the patients and for their better understanding of the questions, the questionnaires were made available in Kannada, Marathi, Hindi, and English. The patients chose the questionnaire in the language which they were comfortable with. Upon completion, the questionnaires were handed directly to the examiner, who had the opportunity to clarify misunderstandings or address seemingly very high or very low ratings. Great importance was laid on the point that no influence whatsoever should be exerted unto the patient. The impression emerged that the patient’s answers and objective evaluation of his condition were roughly similar.

The analysis of the questionnaires was done in accordance with the EORTC guidelines.[16] The QLQ C-30 is composed of both multi-item scales and single-item measures. These include five functional scales (FSs), three SSs, a global health status (GHS)/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 FS represents a high/healthy level of functioning; a high score for the GHS/QOL represents a high QOL, but a high score for a SS/item represents a high level of symptomatology/problems. The head and neck cancer module incorporates seven multi-item scales that assess pain, swallowing, senses (taste and smell), speech, social eating, sexual 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 and N-35 is identical in principle to that for the SSs/single items of the QLQ C-30.

Raw score (RS) is calculated by average of the items in a particular scale (for example, physical functioning includes three items, and the RS for it is calculated as sum of score for items 1–3 divided by 3).

Score (S) is obtained by applying a linear transformation to 0–100:

FSs: \[ S = (1 - [(RS - 1)/range]) \times 100 \]

SS: \[ S = ([RS - 1]/range) \times 100 \]

GHS/QOL: \[ S = (1 - ([RS - 1]/range)) \times 100 \]

Range is the difference between the maximum possible value of RS and the minimum possible value. Most items are scored 1–4, giving range 3. The GHS/QOL question is scored 1–7, giving range 6.

Mean and standard deviation of the scores thus obtained were calculated.

The following clinical parameters were registered:
1. Age
2. Gender
3. Time after treatment (in years)
4. Location of tumor (anterior floor of mouth, sublingual sulcus, retromolar region, tonsillar fossa, and tongue)
5. T-stage (T2–T4).
Results

A total of 50 patients (males = 38, females = 12) with a mean age of 45.0 ± 9.0 were enrolled in the study. Twenty-five patients presented with T4-, 15 with T3-, and 10 with T2-stage of oral cancer. The most common location of the tumor was in the retromolar region followed by tongue and the floor of mouth. The distribution of the study participants based on location, T-stage, and time after the treatment is shown in Table 1.

The study population had a mean GHS (GHS parameter for overall QOL) of 55.5 ± 13.4, which is just beneath the top fourth. The mean FS was 87.5 ± 9.6, with 100 standing for uncompromised functioning. The mean QLQ C-30 SS was 16.3 ± 11.9 and the mean QLQ H and N-35 SS (H and NSS) was 26.9 ± 11.5, both on a scale of 100, 0 indicating no and 100 indicating most symptoms. Tables 2-4 shows QLQ C-30, QLQ H and N-35, and EORTC H and N QLQ 35, respectively.

Patients who had tumors located in the anterior regions of the mouth (anterior floor of the mouth, sublingual sulcus) did not show significant differences in their perceived QOL from patients with tumors located in the posterior regions (retromolar region, tonsillar fossa, and tongue). Males and females did not show any significant differences in their perceived QOL. Surprisingly, age seemed to bear very little impact on the resulting patient perceived QOL.

When the comparison was made on the basis of T-stage, there was a significant difference in the scores in GHS, FS, SS, and H and NSS. The scores for GHS and FS followed the sequence T2 > T3 > T4 and the scores for SS and H and NSS followed the sequence T2 < T3 < T4.

As the last group comparison, patients whose treatment dates back 1–2 years were compared with those whose treatment dates back 3–5 years. These two groups did not significantly differ in QOL parameters.

Table 5 illustrates the group comparisons of clinical variables with GHS, FS, and SS, respectively.

| Table 2: Scores of Quality of Life Questionnaire C-30 |
|------------------|------------------|
| **QLQ C-30**     | **Patients**     | **Mean scales±SD** |
| Global health status/QOL | 50 | 55.5000±13.42760 |
| Functional scales | | |
| Physical functioning | 50 | 86.4000±11.18470 |
| Role functioning | 50 | 86.6667±12.14052 |
| Emotional functioning | 50 | 84.5000±18.28922 |
| Cognitive functioning | 50 | 86.6667±16.49572 |
| Social functioning | 50 | 93.3333±11.66424 |
| Symptom scales | | |
| Fatigue | 50 | 29.5556±17.90347 |
| Nausea and vomiting | 50 | 8.3333±12.25670 |
| Pain | 50 | 27.0000±21.26658 |
| Dyspnea | 50 | 6.6667±13.46870 |
| Insomnia | 50 | 26.6667±22.33531 |
| Appetite loss | 50 | 20.6667±23.22131 |
| Constipation | 50 | 17.3333±6.59829 |
| Diarrhea | 50 | 1.3333±12.14052 |
| Financial difficulties | 50 | 9.3333±17.86825 |

QOL=Quality of Life, SD=Standard deviation, QLQ=Quality of Life Questionnaire

| Table 3: Scores of Quality of Life Questionnaire Head and Neck-35 |
|------------------|------------------|
| **Symptom scales** | **QLQ Head and Neck-35** |
| **Patients** | **Mean scales±SD** |
| Pain | 50 | 23.3333±17.33339 |
| Swallowing | 50 | 24.5000±20.09120 |
| Senses problems | 50 | 23.0000±19.60205 |
| Speech problems | 50 | 19.1111±19.05291 |
| Trouble with social eating | 50 | 32.3333±21.40475 |
| Trouble with social contact | 50 | 9.3333±13.54994 |
| Less sexuality | 50 | 5.3333±12.34427 |
| Teeth | 50 | 18.0000±19.29600 |
| Opening mouth | 50 | 31.3333±19.52962 |
| Dry mouth | 50 | 31.3333±19.52962 |
| Sticky saliva | 50 | 40.0000±30.86066 |
| Coughing | 50 | 8.0000±14.38064 |
| Felt ill | 50 | 17.3333±18.12028 |
| Pain killers | 50 | 68.0000±47.12121 |
| Nutritional supplements | 50 | 34.0000±47.85181 |
| Feeding tube | 50 | 10.0000±30.30458 |
| Weight loss | 50 | 46.0000±50.34574 |
| Weight gain | 50 | 44.0000±50.14265 |

SD=Standard deviation, QLQ=Quality of Life Questionnaire
Discussion

According to GLOBOCAN 2012, head and neck cancer is the most common malignancy among males in India. The overall age-standardized rates of incidence of oral cavity, nasopharynx, and other pharyngeal cancers are 7.2, 0.3, and 3.7, respectively. The distribution of site of involvement is
markedly different from other parts of the world. While oral cavity is the most commonly involved site in India, pharyngeal primaries rank top in the developed countries. Similarly, nasopharyngeal cancer is highly prevalent in the Southeast Asia region.[17]

The incidence from the National Cancer Registry Project (Indian Council of Medical Research) confirmed the fact that oral cancer was indeed a common form of cancer in India.[18] This is basically due to the easy availability of variant smoking and smokeless tobacco products. North Karnataka lying in the tobacco belt of India has a high incidence of oral cancer.

The present study was done to assess the QOL of patients who have been treated for oral cancer 1–5 years back. Majority of the study participants were males indicating higher incidence of the disease among males. This may be due to higher incidence of tobacco-related habits among males than females in India.

Twenty-five out of the 50 patients presented with T4-stage, 15 presented with T3-stage, and only 10 presented with T2-stage. Approximately 80% of the head and neck cancer patients in developing countries present in Stage III and IV disease.[19] This is basically due to lack of awareness about oral cancer among general public.

Numerous validated QOL instruments are available. In the present study, we used the standard EORTC Questionnaires QLQ C-30 and QLQ H and N-35.

Patients tended to report an average to good QOL. Studies have shown that level of QOL improved until the end of the 1st postoperative year.[20]

The mean score for FS was 87.5 and this expresses a good ability to perform daily activities (physical functions, like personal hygiene, as well as cognitive, social, and emotional functions) which was similar to studies conducted by Pierre et al.[21] The SSs (SS and H and NSS) allow an evaluation of complaints. General oncological symptoms such as nausea, dyspnea, diarrhea, constipation, appetite loss, and financial difficulties do not seem to affect patients to a great extent whereas symptoms such as fatigue, pain, and insomnia affected the patients quite a bit.

Specific symptoms in the head and neck area (e.g., problems with swallowing and speech) present the most difficulties to patients which was in line with other studies.[9,22-24] Questions related to food and swallowing were generally rated worst. These results are probably due to the fact that complete dental rehabilitation although possible is not available to all patients due to social and financial reasons.

Problems such as sticky saliva and dry mouth had a very high mean score indicating salivary dysfunction as one of the major problems faced by the patients. These problems are due to ill effects of radiation therapy on the salivary glands.[25]

Regarding communication, speech problems had a mean score of 19.11. Considering the severity of the patients’ illness and treatment, these are encouraging results.

Five (10%) patients used feeding tubes (percutaneous endoscopic gastrostomy tubes), their FS and H and N scales showed significantly worse scores accordingly. Their GHS and SS though are not significantly lower than of those patients, who are able to swallow.

The overall QOL (GHS) score of the present study was less compared to the other three studies indicating poorer perceived QOL of the participants. In the present study, the mean scale for GHS was 55.5. In the studies conducted by Klug et al.,[26] Bjordal et al.,[9] and Rogers et al.,[23] the mean scale for GHS was 64, 61, and 70, respectively. The FS scores of the present study were better than the three studies indicating better physical, emotional, cognitive, and social functioning. There was not much difference in the scores of the SSs except for pain, dyspnea, constipation, and diarrhea. The patients were less affected by problems such as pain, dyspnea, and diarrhea compared to the other three studies whereas more number of people complained of constipation compared to the other three studies. The four studies did not differ much in QLQ H and N-35 scores. The specific questions though showed differences in the areas of social contact, weight loss, and weight gain.

When the comparison was made on the basis of T-stage (group comparison no. 3), there was a significant difference in scores in GHS, FS, SS, and H and NSS. Patients with small tumors had significantly better scores (better QOL) than patients with large tumors. Similar results are reported by Schliephake et al.[27] and Vaughan et al.[28] They evaluated QOL in patients with oral and oropharyngeal tumors as well as tumors of salivary glands, who underwent surgical treatment only, using the FLIC.[11] In their study, tumors of all sizes were included (also T1) and different surgical techniques were used. As could be expected, patients with small tumors had significantly better FLIC scores, than patients with large tumors.

Our group comparison looked for differences in QOL dependent on time since the treatment. Our results correlate with those of Rogers et al.,[23] who found no further dynamics in QOL after the 1st year after surgery. An explanation is found in the work of Allison et al.[29] who pointed out the relativity of the patients’ QOL assessment from his or her actual situation that is due to changes. Similarly, Breetvelt and Van Dam[30] explained underreporting of the perceived symptoms in the QOL survey due to coping mechanisms.

There are patients who had a very high overall QOL who gave answers indicating a very poor QOL and the other way round. We assume that other factors may also influence
the QOL, which were not taken into consideration in this study. This could be social factors such as family support, regular occupation, and social integration on the one hand as well as habits such as excessive alcohol consumption and continued smoking with consecutive diseases on the other hand. These factors are obviously difficult to be evaluated by a questionnaire.

Conclusion

Oral cancer has a significant impact on the QOL of the patients. They lose their global QOL by about 44.5% though they maintain their physical, role, emotional, cognitive, and social functioning at a higher level. Fatigue, pain, and insomnia are the top three general oncological symptoms in decreasing order of frequency whereas sticky saliva, trouble with eating, and opening of mouth were the top three symptoms specific to head and neck in our cohort of patients. The use of painkillers and weight loss was also very common among the patients.

The stage of the tumor had a significant impact on the QOL of the patients. Patients with small tumors (initial stage) had significantly better QOL than patients with large tumors (advanced stage). Other parameters such as age, gender, location of the tumor, and time after the 1st year of treatment (1–5 years) did have significant impact on the QOL of the patients.

A simple and explicit questionnaire as used in our study helps in quickly screening for the symptom burden and QOL of the patients. This would definitely help in delivery of better symptom-directed therapies. The EORTC questionnaires QLQ 30 and QLQ H and N-35 proved to be very appropriate instruments to evaluate QOL in patients with oral cancer. Assessment of QOL should receive adequate attention in treatment planning and rehabilitation.

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Conflicts of interest

There are no conflicts of interest.

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