## ORIGINAL ARTICLE

# Quality of Life of Head and Neck Cancer Patients Receiving Cancer Specific Treatments

*Prima Jenevive Jyothi D'Souza[1]\*, Jyothi Chakrabarty[1], Sulochana B[1], James Gonsalves[2]*

[1]*Manipal College of Nursing Manipal, Manipal University, Manipal - 576119, Udupi District, Karnataka, India,*
[2]*Melaka Manipal Medical College Manipal University, Manipal -576119, Udupi District, Karnataka, India*

**Abstract:**

*Background:* Head and neck cancer (HNC) remains a considerable challenge to both patient and health care provider as the disease can have profound effect on Quality of life (QOL). *Aims and Objectives:* To assess the QOL and performance status of HNC patients, to find relation between domains of QOL and to find association between QOL and demographic and disease variables. *Settings and Design:* The study was conducted at Manipal group of hospitals, Manipal and Mangalore, using descriptive survey design. *Material and Methods:* The study comprised of 89 samples with all stages of HNC. Patients primarily diagnosed with HNC and undergoing disease specific treatment were included in the study. Tool on demographic, disease variables and quality of life were developed and content validity was established. Reliability of the tool was established. Karnofsky Performance Status (KPS) scale was used to assess performance status. Co-relational analysis was done to find relation between the domains of QOL. Association was found between the quality of life and demographic and disease variables. *Results:* Majority (83%) of the participants were males, 39% had cancer arising from oral cavity, and 35% each were in cancer stage III and IV. Quality of life was poor among 30% of the subjects and 65% had KPS scores <80 %. There was moderate positive relation between the domains of QOL and a positive correlation between the QOL and performance status. No statistically significant association was found between QOL and disease and demographic variables. *Conclusion:* Physical, psychological, social and spiritual domains of QOL and functional status are affected in patients with HNC. The impact on one domain area of well being, significantly affects the other domain of QOL and there is relationship between the performance status and QOL.

**Key words:** Head and neck cancer, Quality of life, Performance status.

## Introduction:

Quality of life (QOL) is a multidimensional concept that focuses on how disease and its treatment affect the individual. Cancer is a major disease burden worldwide [1]. Incidence and prevalence pattern of head and neck cancer (HNC) is higher in developing countries than in developed countries. Global comparison shows that India has a high incidence rates of cancer of oral cavity, oropharynx and cervix [2]. The increasing number of HNC is a cause of major concern as it is associated with high morbidity and mortality [3]. Data available as per International Agency for Research Center, WHO, ICMR shows that out of 4,81,179 HNC in the world, 1,11,479 (23.17%) cases are reported in India [4]. Patients with HNC have multiple, unique, and challenging symptoms due to their disease and treatment side effects such as xerostomia, taste disturbances, dietary restrictions, dysphagia and pain, fatigue, distortion of physical appearance, permanent disfigurement and infirmity which has an impact on the patient's QOL, thus, the concept of QOL is extremely important for these patients [5, 6].

There is a growing awareness that the treatment burden for patients may increase with the development of new treatment options. Patients are also vulnerable to psychological problems such as anxiety, depression because of hindered social interaction and emotional experiences. Sexuality can be affected by the emotional or physical ramifications of cancer and cancer therapy [11]. Measuring the QOL of cancer patients with valid and reliable self rated questionnaires during and after cancer and its treatment is therefore essential for identifying both transient and long-term effects [6].

**Material and Methods:**

The study adopted descriptive survey design, and was conducted at Manipal group of hospitals at Manipal and Mangalore among 89 head and neck cancer patients between the period of November 2010 to March 2011. Subjects were selected by purposive sampling technique. Patients with age group of 18 years and above, both sexes, diagnosed with cancers arising from oral cavity, oropharynx, hypo pharynx, larynx, nasopharynx and thyroid, who received cancer specific treatment for minimum 3 weeks, were included in the study. Tools on demographic, disease variables, quality of life and Karnofsky Performance Status (KPS) scale were used [7-10]. Tools to collect demographic, disease variables were developed and items on QOL were pooled from the reviews and existing tools and content validity was established by giving it to the experts in the field of oncology. The tool consisted of 45 items with the domains including: physical well-being, psychological well-being, social well-being, spiritual well-being and symptoms specific to head and neck cancer. Four point Likert scale was used to elicit the responses ranging from 1 to 4 (1 = Very much, 2 = Moderate, 3 = A little, 4 = Not at all). A few items were scored in reverse order to make the questionnaire unidirectional and to yield a global QOL score.

Subscale scores were added to derive total QOL score. Total scores ranged from 45 to 180 and interpreted as higher the scores better the quality of life**.** Reliability of the tool was established by administering the QOL questionnaire to 20 patients with HNC and calculated Cronbach's alpha (reliability coefficient 0.92). Performance status was assessed using Karnofsky Performance Status scale (KPS)**.** KPS is a single item, one dimensional functional status scale used to obtain a global measure of level of activity, especially for patients undergoing cancer treatment. Level of functionality is rated by a health care provider as a percentage ranging from 100% (normal) down to 0%(dead).It has 11 items and is graded by factors of 10, i.e.; 0, 10, 20….100. Acceptable reliability and validity have been established in research and clinical practice. The inter-rater reliability was found to be 0.97 and construct validity of KPS was analyzed and was found to be strongly related ($p< 0.001$) to two other independent measures of patient functioning.

The study was approved by the institutional ethics committee. Written informed consent was obtained from all the participants. The QOL and demographic characteristics were assessed by self-administered structured questionnaire, while the disease and treatment variables were extracted from the case records. Functional status was assessed objectively using KPS. Demographic and disease variables were analyzed with frequency and percentage; Based on the percentiles, the norms for the quality of life scale were established. Total quality of life scores of 115 and below represented poor QOL, scores of 116 to 128 represented average QOL and above 129 scores represented high QOL. To find the relation between the physical well-being, psychological well-being, social well-being, spiritual well-being and symptom domains of QOL, Pearson's correlation coefficient was computed. The performance status

was assessed using Karnofsky Performance Status scale. The scores of 80- 100 indicated that individual was able to care for self and scores less than 80 indicated need for assistance and functional impairment. To find the relationship between the QOL and performance status, Spearman's rank correlation was computed as data on performance status scale was not following normalcy. Parametric and non-parametric tests (independent t-test, one way ANOVA, Kruskal-Wallis) were used to find association between quality of life and demographic and disease variables.

**Results:**

A total of 89 patients with HNC were assessed. Most (54%) of the participants belonged to the age group of 45-64 years. Majority (83%) of them were males and 99% were married. Most (49%) of the participants had completed primary education, 67% were unskilled workers and 66% of them belonged to the income group of Rs. 3000 to 6000 per month. Majority (82%) of the participants belonged to rural area and were non-vegetarians (93%). Majority (84%)

**Table 1 - Description of Disease Variables of Head and Neck Cancer Patients   (n=89)**

| Variable | Frequency | Percentage |
|---|---|---|
| **Site of cancer** | | |
| Oral cavity | 35 | 40 |
| Oropharynx | 14 | 15 |
| Hypopharynx | 17 | 19 |
| Larynx | 18 | 18 |
| Others ( Nasopharynx, thyroid) | 08 | 09 |
| **Stage at diagnosis** | | |
| Stage I | 07 | 07 |
| Stage II | 20 | 23 |
| Stage III | 31 | 35 |
| Stage IV | 31 | 35 |
| **Duration of illness from diagnosis in months** | | |
| 1– 6 | 77 | 87 |
| 7– 12 | 10 | 11 |
| Above 12 | 02 | 02 |
| **Type of treatment** | | |
| Surgery alone | 06 | 07 |
| Radiation alone | 14 | 16 |
| Combination of chemo radiation | 37 | 42 |
| Combination of surgery & radiation | 10 | 11 |
| Combination-surgery, chemotherapy & radiation | 22 | 24 |
| **Duration of treatment in weeks** | | |
| 3-4 | 37 | 42 |
| 4 – 6 | 24 | 27 |
| 6– 8 | 22 | 25 |
| Above 8 | 06 | 07 |
| **Co-morbidity** | | |
| Yes | 17 | 19 |
| No | 72 | 81 |

of them had the habits of smoking, drinking alcohol & chewing tobacco, among which 62 % of the participants had habits of smoking, 45 % were chewing tobacco and 57% had alcoholism. The duration of smoking was for more than 10 years in 80% of the participants and 84% of them smoked Beedi and 80% of them smoked more than 10 Beedies per day. The description of disease variables are shown in the Table1. Description of quality of life scores of patients with head and neck cancer in various domains such as physical, psychological, social, spiritual and symptoms are presented in the Table 2 in terms of minimum, maximum, mean scores and standard deviation.

In order to find relationship between the QOL domains, Pearson's correlation coefficient was computed as the data was following normalcy which are shown in Table 3.

**Table 2 - Description of Domain Scores and Total Scores of QOL of Head and Neck Cancer Patients ( n = 89)**

| Quality of life domains | Minimum score | Maximum score | Mean | $\pm$SD |
|---|---|---|---|---|
| Physical (10 – 40) | 14 | 37 | 25.15 | 5.16 |
| Psychological (10 – 40) | 16 | 39 | 30.91 | 5.04 |
| Social (10 – 40) | 18 | 38 | 26.78 | 4.27 |
| Spiritual (5 – 20) | 9 | 20 | 16.19 | 2.45 |
| Symptoms (10 – 40) | 11 | 38 | 22.84 | 5.19 |
| Total QOL (45 – 180) | 81 | 162 | 122 | 16.52 |

Description of total quality of life score is shown in the Table 3.

Performance status scores are presented with pie diagram in figure 1.

**Fig. 1: Pie Diagram Representing Performance Status Score**
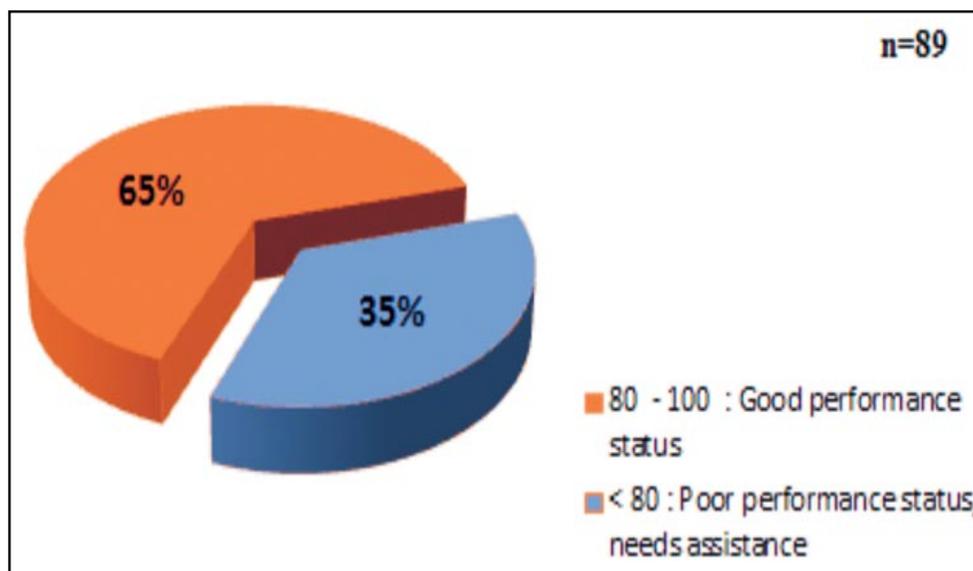
### Table 3 - Description of Quality of Life Among Head and Neck Cancer Patients (n = 89)

| Quality of life (QOL) | Frequency | Percentage |
|---|---|---|
| Poor QOL (115 and below) | 27 | 30 |
| Average QOL (116 – 128) | 34 | 38 |
| High QOL (Above 129) | 28 | 32 |

### Table 4 - Relation Between Domains of Quality of Life in Head & Neck Cancer Patients (n = 89)

| Domains | Psychological | Social | Spiritual | Symptoms |
|---|---|---|---|---|
| **Physical** | r = 0.660<br>p = 0.001 | r = 0.512<br>p = 0.001 | r = 0.263<br>p = 0.013 | r = 0.522<br>p = 0.001 |
| **Psychological** | - | r = 0.392<br>p = 0.001 | r = 0.382<br>p = 0.001 | r = 0.489<br>p = 0.001 |
| **Social** | r = 0.392<br>p = 0.001 | - | r = 0.427<br>p = 0.001 | r = 0.289<br>p = 0.006 |
| **Spiritual** | r = 0.382<br>p = 0.001 | r = 0.427<br>p = 0.001 | - | r = 0.169<br>p = 0.114 |
| **Symptoms** | r = 0.489<br>p = 0.001 | r = 0.289<br>p = 0.006 | r = 0.169<br>p = 0.114 | - |

*p< 0.05 ( Statistically significant)*

Findings on relationship between the QOL and performance status, showed that there was a positive correlation (r = 0.776**,** p = 0.001) between the QOL and performance status of HNC patients. The findings of association between QOL and selected demographic and disease variables showed that there is no association between QOL and demographic and disease variables.

### Discussion:

In this study, the QOL of head and neck cancer patients ranged from poor to higher. There was maximum decrease in mean score of physical well-being with distress symptoms as compared to other domains. There is moderate to weak relationship between the domains of quality of life. There is positive relationship between quality of life and performance status which indicates that as the functional status improves there will be better QOL. This study finding is supported by a study conducted by Goguen LA et al to evaluate the impact of sequential chemo radiation therapy on QOL which has revealed that the mean and SD of QOL score before treatment as 113.9 and 18.9 and 6 months after treatment as 107.3 and 19.1 respectively, where 130 has been the maximum possible scores [11]. Bian X et al have found the impact

of QOL of HNC patients on their physical well-being, social well-being, emotional well-being and functional well-being (p= 0.0311) [12]. A study conducted by Ribeiro R, et al have shown that estimated percentage of patients in the score of higher quartile have been; for physical wellbeing 31.2%, social wellbeing 37.5%, emotional and functional wellbeing 25% each, and for total QOL 31.2% [13]. Present study has found that majority of the subjects have scored less than 80 on the KPS scale, which shows their inability to perform activities independently and require varying degree of assistance. Study conducted by Chawla S et al have shown that before the start of radiotherapy, performance score has been $91 \pm 10.26$ indicating good performance and functional status. In 3-4 weeks of radiotherapy, performance score has been $71.00 \pm 20.12$ indicating decrease in the performance status [14]. The demographic and disease characteristics have shown that HNC's is common with advanced age, males of lower socioeconomic status, people belonging to rural areas and those who have had the habit of smoking, chewing tobacco and alcoholism for longer duration. Majority of the HNCs are arising from oral cavity and have been diagnosed in the advanced stage III and IV. The study findings suggest that application of interventions should be focused not only on ensuring survival, but also on the quality of life throughout the disease process, surgical experience and/or stages of recovery. Care should be directed beyond preventing complications towards facilitating adequate pain management, maximizing function and offering psychosocial support to patients. QOL assessment offers a patient-centered approach to study the various factors that affect patient-centered outcomes of the individual or population. Assessing QOL can provide new insight into the health care experience and is capable of improving the delivery and satisfaction with care.

## References:

1. Ma X, Yu H. Global Burden of Cancer, Yale. *J Biol Med* 2006; 79(3-4): 85–94.
2. Head and neck cancer in India. Available from www.Veedaoncology.com.
3. Head and neck cancer in India [internet]. 2010 [updates 2010 April 24; cited 2011 Jan]. Available on www.plusinsights.com.
4. Murphy BA, Ridner S, Wells N, Dietrich M. Quality of life research in head and neck cancer: A review of the current state of the science. *Crit Rev Oncol Hematol* 2007; 62(3):251-67.
5. Radiology info.org. The radiology information for patients, current radiology news. http://www.radiologyinfo.org.
6. Pretty J, Whelan J. Nursing patients with head and neck cancer. In: Tiffany R, Borley D, editor. Cancer nursing 2nd ed. London: Herper Collins Academic; 1991.
7. Cella DF, Tulsky DS, Gray G, et al: The Functional Assessment of Cancer Therapy Scale: Development and validation of the generalmeasure. *J ClinOncol* 1993, 11:570-579.

*Prima Jenevive Jyothi D'Souza et al*

8. Chaukar DA, Das AK, Deshpande MS, Pai PS, Pathak KA, Chaturvedi P, et al. Quality of life of head and neck cancer patient: Validation of using European Organisation for Research and Treatment of Cancer (EORTC) QLQ–C30 and the EORTC QLQ-H&N35 in Indian patients. Indian journal of cancer 2005; 42(4):178 – 84.

9. Bjordal K, Ahlner-Elmqvist M, Tollesson E, et al: Development of a European Organization for Research and Treatment of Cancer (EORTC) questionnaire module to be used in quality of life assessments in head and neck cancer patients: EORTC Quality of Life Study Group. *ActaOncol* 1994, 33:879-885.

10. Mor V, Laliberte L, Morris JN, Wiemann M. The Karnofsky performance status scale, an examination of its reliability and validity in a research setting. *Cancer* 1984, 53(9): 2002 – 7.

11. Goguen LA, Posner MR, Norris CM, Tishler RB, Wirth LJ, Annino DJ, Gagne A, Sullivan CA, Sammartino DE, Haddad RI. Dysphagia after sequential chemo radiation therapy for advanced head and neck cancer. *Otolaryngol Head Neck Surg* 2006; 134(6):916-22.

12. Bian X, Xu ZG, Lu CM, Tang PZ, Luo JB. Cancer and surgical treatment impact the quality of life in patients with head and neck cancer. Journal of clinical oncology 2005; 40(8):606-10.

13. Ribeiro R, Meyer TN, Leite IC, Pereira AA, Armond MC. Epidemiologic profile and quality of life of patients treated for oral cancer. *Med Oral Patol Oral Cir Bucal* 2010; 15 (1):20-4.

14. Chawla S, Mohanti BK, Rakshak M, Saxena S, Rath GK, Bahadur S. Temporal assessment of quality of life of head and neck cancer patients receiving radical radiotherapy. Quality of Life Research [serial online] 1999 [cited 2010 Mar12]; 8:73-8.

http://www.springerlink.comcontent.

*\*Author for Correspondence: Prima Jenevive Jyothi D'Souza. Lecturer Manipal College of Nursing Manipal University, Manipal Udupi District, Karnataka, Cell No: 9986244210 Email:primajj@gmail.com*