

# Vocation and Mobility as Significant Modifiable Determinants for Quality of Life Among Oral and Throat Cancer Patients - A Hospital Based Study from Southern India

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## ABSTRACT

**Background:** Quality of Life (QOL) is an important indicator of treatment outcome for cancer therapies. QOL researches help us to explore about the impairment caused by treatment and disease on one's social life, day to day activities and psychological conditions. The objective is to assess the health related QOL in patients suffering from oral cavity and throat cancer and to find out factors associated with QOL.

**Methodology:** Facility based cross sectional study design with consecutive sampling was used to achieve a sample size of 90 patients with oral cavity and throat cancer.

**Result:** 71(78.88%) of study participants were independent and 19(21.11%) were partially dependent, none were completely dependent. Majority of the study population perceived a poor overall QOL as revealed by the findings that only 24.4% had best scoring in overall QOL domain. Weak Positive Correlation ( $R^2=0.224$ ) was seen between physical and socio- emotional component of QOL (p value <0.001). Education and cancer site were significantly associated with physical component while employment and Activity of Daily Living were associated with social component of QOL.

**Conclusion:** There is a need to focus on ambulatory and vocational rehabilitation along with pain management for oral & throat CA patients as the study show an association of these factors with social component of QOL.

**Key Words:** Quality of life, Cancer, activity of daily living

## ARTICLE INFO

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## INTRODUCTION

The Quality of Life (QOL) of an individual at a given time is the product of person's inherent personality and the effect of transient factors such as disease and treatment. The quality-of-life researches help us to explore about the impairment caused by the treatment and disease on one's social life, day to day activities, and psychological conditions. Oral & head and neck cancer is one of the major cancer with high prevalence among both men and women.<sup>1</sup> The treatment of head and neck cancers include surgery, chemotherapy and radiotherapy which causes various symptoms like pain, discomfort, dysphagia, difficulty in chewing, speaking etc. along with disfigurement of face affecting the psychological, physical, social and emotional well-being and the QOL of patients.<sup>1,2</sup> Quality Of Life (QOL) is also considered as an important indicator of treatment outcome for cancer therapies.<sup>3,4</sup> Despite constantly advancing treatment protocols, improvement in Quality of life of head and neck cancer patients is still a challenge in most circumstances. In developing countries like India there are very few studies on the QOL in head and neck cancer. There is a need for systematic research in this field and evaluation of impact of our treatment and interventions. Hence, this study was conducted with the objectives to assess the health-related quality of life in patients suffering from oral cavity and throat cancer and to find out factors associated with quality of life.

## METHODOLOGY

A cross sectional study was conducted among patients from the Department of medical Oncology and Radiotherapy in a tertiary care Hospital of Chennai. We included adult patients with oral and throat malignancies confirmed by histopathological investigations and on treatment for at least 1 month; radiotherapy or surgery or chemotherapy or combinations of three. Sample size was calculated using formula for single proportion assuming  $Z_{\alpha} = 1.96$  (for CI of 95%), with mean ( $\mu$ ) and Standard Deviation ( $\sigma$ ) of 29 and 23 respectively and 6 as the Margin of Error (E).<sup>5</sup>

Sample size,  $n = (z_{\alpha}^2 \sigma^2) / E^2 = 89.74 \approx 90$

The total sample size was approximated to 90.

Data was collected from the patients attending the outpatient clinic of radiotherapy and oncology department on the review day (Tuesday in oncology department and Friday in radiotherapy department). The patients meeting the inclusion criteria of the study on the mentioned days were enrolled consecutively till the required sample size was reached.

The questionnaire Section A containing sociodemographic details, current illness and primary caretaker details, the assessment of daily activities through Katz index of independence.<sup>6</sup> The activities being as-

sessed were; bathing, toileting, transferring, continence, dressing, feeding. If the patient could perform it without supervision, it was scored 1 else 0; if the total score was 6- independent, 3 to 5 - partially dependent, less than 2- completely dependent.<sup>7</sup> Section B contained quality of life assessment using University of Washington – Quality of life questionnaire version 4 (UW-QOL).<sup>8</sup> It consists of 12 domains pain, appearance, activity, recreation, swallowing, chewing, taste, speech, saliva, mood, anxiety. The domains were scored between 0 and 100 (0 being the worst and 100 the best) based on patients experience over last 7 days. It also assesses the issues which were significantly important to the patients (3 most important issues as felt by the patients) over last 7 days. There are three global questions; first addresses the quality of life of the patient compared to one month before diagnosis, and the other two assesses the health related and overall quality of life patients over seven days. They are scored between 0 and 100 (0 being worst and 100 being best). The questionnaire was translated into Tamil, the local vernacular language by language experts and was back-translated to English to check for any discrepancy.

The physical component of the UW QOL included 6 domains – chewing, swallowing, speech, taste, saliva and appearance while the social emotional component were anxiety, mood, pain, activity, recreation and shoulder function.

Statistical analysis: Data collected in the study were entered into Microsoft Excel spreadsheet, and a master table was prepared. The data were analyzed using IBM Statistical Package for the Social Sciences 16 software. Descriptive statistics are presented as proportion and means while chi square, t test, Mann Whitney U test, Kruskal-Wallis test, person coefficient test were used to test the association.

**Ethical Consideration:** The patients were briefed about the study as well as an information sheet and consent form were provided. Those who consented to participate were only enrolled into the study. Study participants were also informed that participation was voluntary and they had the freedom to withdraw at any point from the study and could choose not to answer any questions if found inappropriate. The study protocol was approved by the Institutional Ethics Committee of Government Stanley Medical College prior to data collection.

## RESULTS

A total of Ninety patients with oral and throat malignancy were included in the study. The mean age of the study participants was 56 years with a standard deviation of 11.34 years. Most of the study participants 76 (82.2%) were male and about half 52 (57.8%) were unemployed. Literates constituted 58(64.4%) of the sample and majority 69(76.7) belonged to lower socioeconomic status (class III or IV)

according to B.G. prasad scale modified 2018. Many 53(58.9%) did not have any independent source of income and were completely dependent on their family for financial assistance. The most common caretaker was spouse (61.1%) followed by Children (22.2%) and almost all (95.5%) lived with their family.

**Type of cancer and treatment in study participants:**

Most of the study participants 81(90%) were diagnosed with squamous cell carcinoma and the rest 10% included adenocarcinoma, basal cell carcinoma, mucoepidermoid carcinoma. The most common site

of cancer was oral cavity 47(52.2%), followed by pharynx 27(30%) and larynx 12(13.3%). Half of the study participants 49(54.4%) were either in stage I or II (initial stages) of cancer and majority 65(72.2%) received combination of radiotherapy, chemotherapy and/or surgery. While 9(10%) had radiotherapy alone, 12(13.3%) had chemotherapy alone and 4(4.4%) had surgery.

**Quality of life among study participants:**

Katz index of independence scale reported 71(78.88%) of study participants to be independent and rest 19(21.11%) as partially dependent, none were completely dependent.

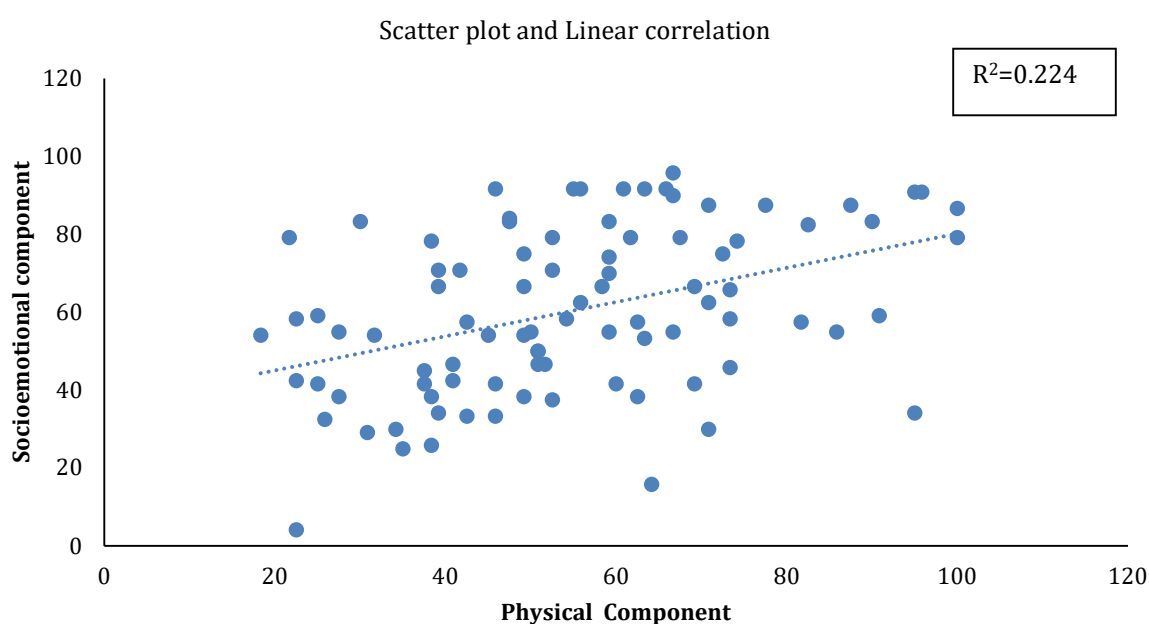
**Table 1: Domain wise mean and best scores based on UW QOL**

| Domain     | N  | 0  | 25 | 30 | 50 | 70 | 75 | 100 | Mean (SE of mean) | Best% |
|------------|----|----|----|----|----|----|----|-----|-------------------|-------|
| Pain       | 90 | 8  | 17 |    | 34 |    | 7  | 24  | 56.11 (3.4)       | 26.7  |
| Appearance | 90 | 1  | 11 |    | 12 |    | 47 | 19  | 70.0(2.5)         | 21.1  |
| Activity   | 90 | 8  | 15 |    | 40 |    | 16 | 11  | 51.94 (2.9)       | 12.2  |
| Recreation | 90 | 8  | 29 |    | 7  |    | 23 | 23  | 56.66 (3.6)       | 25.6  |
| Swallow    | 90 | 17 |    | 31 |    | 28 |    | 14  | 47.67 (3.5)       | 15.6  |
| Chew       | 90 | 43 |    |    | 32 |    |    | 15  | 34.44 (3.9)       | 16.7  |
| Speech     | 90 | 8  |    | 21 |    | 34 |    | 27  | 63.44 (3.4)       | 30    |
| Shoulder   | 90 | 3  |    | 21 |    | 18 |    | 48  | 74.3 (3.3)        | 53.3  |
| Taste      | 90 | 28 |    | 19 |    | 10 |    | 33  | 50.78 (4.5)       | 36.7  |
| Saliva     | 90 | 18 |    | 22 |    | 7  |    | 43  | 60.5 (4.4)        | 47.8  |
| Mood       | 90 | 17 | 19 |    |    |    | 28 | 26  | 57.5 (4)          | 28.9  |
| Anxiety    | 90 | 15 |    |    | 34 |    |    | 41  | 64.4 (3.9)        | 45.6  |

Best scores: A: % scoring 50, 75 or 100; B & C: % scoring 60, 80 or 100.<sup>9</sup>

**Table 2: Mean and best score (UW-QOL) before and after diagnosis as perceived by study participants**

| Global questions  | N  | 0  | 20 | 25 | 40 | 50 | 60 | 75 | 80 | 100 | mean  | SEM  | Best% |
|---|----|----|----|----|----|----|----|----|----|-----|-------|------|-------|
| A Health related QOL compared to 1 month before diagnosis | 90 | 58 |    | 18 |    | 3  |    | 10 |    | 1   | 16.11 | 2.77 | 15.55 |
| B Health related QOL during past 7 days                   | 90 | 15 | 21 |    | 39 |    | 13 |    | 2  |     | 32.44 | 2.11 | 16.67 |
| C Overall, Health related QOL                             | 90 | 21 | 20 |    | 26 |    | 15 |    | 8  |     | 33.11 | 2.77 | 25.55 |



**Figure 1: Scatter Plot and Linear correlation between Physical and Socioemotional component**

**Table 3: Association between UW QOL score and sociodemographic character**

| Variable                    | N  | Physical component |       | p value | Socio emotional component |       | p value |
|-----------------------------|----|--------------------|-------|---------|---------------------------|-------|---------|
|                             |    | Median             | IQR   |         | Median                    | IQR   |         |
| <b>Age</b>                  |    |                    |       |         |                           |       |         |
| >60                         | 53 | 58.3               | 23.8  | 0.405   | 58.3                      | 35.4  | 0.98    |
| <60                         | 37 | 49.16              | 28.7  |         | 59.16                     | 37.1  |         |
| <b>Gender</b>               |    |                    |       |         |                           |       |         |
| Male                        | 76 | 53.3               | 27.7  | 0.819   | 62.5                      | 36.7  | 0.21    |
| Female                      | 14 | 47.9               | 36.3  |         | 54.6                      | 16.8  |         |
| <b>Employment</b>           |    |                    |       |         |                           |       |         |
| Employed                    | 38 | 54.17              | 30.63 | 0.958   | 66.67                     | 28.5  | .011*   |
| Unemployed                  | 52 | 52.5               | 27.71 |         | 54.17                     | 39.79 |         |
| <b>Education</b>            |    |                    |       |         |                           |       |         |
| Illiterate                  | 32 | 57.5               | 23.36 | .019*   | 62.4                      | 32.9  | 0.271   |
| Literate                    | 58 | 50.4               | 31.4  |         | 56.8                      | 39.79 |         |
| <b>Socioeconomic status</b> |    |                    |       |         |                           |       |         |
| High                        | 21 | 57.08              | 22.25 | 0.811   | 62.5                      | 41.04 | 0.504   |
| Low                         | 69 | 52.5               | 30    |         | 57.9                      | 37.29 |         |
| <b>Cancer site</b>          |    |                    |       |         |                           |       |         |
| Oral cavity                 | 47 | 47.94              | 22.5  | .006*   | 56.84                     | 36.7  | 0.194   |
| Pharynx                     | 27 | 61.02              | 26.87 |         | 60.52                     | 32.7  |         |
| Larynx                      | 12 | 67.36              | 27.5  |         | 72.36                     | 38.5  |         |
| Salivary glands             | 4  | 49.79              | 43.4  |         | 60.21                     | 41.67 |         |
| <b>ADL score</b>            |    |                    |       |         |                           |       |         |
| Partially dependent         | 19 | 55.8               | 25.9  | 0.197   | 59.2                      | 32.5  | .031*   |
| Independent                 | 71 | 47.5               | 33.3  |         | 45                        | 45.83 |         |

\*p value < 0.05, High SES = Social class I and II, Low- Social class III, IV, V according to BG Prasad classification

Table 1 lists the mean and best scores achieved by the study participants based on UW QOL. Activity & Chewing had the least score followed by swallowing and taste. Table 2 shows the mean and best score before and after diagnosis of cancer as perceived by the study participants at the time of data collection. Perceived scores of the participants for global questions are generally very poor with HRQOL compared to 1 month before diagnosis achieving lowest of 16.7%. 24.4% had best scoring in overall QOL domain

#### Importance of domains as perceived by the patients:

It was found that swallowing domain was rated important by maximum (53.30%) study participants followed by chewing (43.30%) saliva, activity and pain (42.20%) domain. The rating of other domains was as follows- Shoulder 14.04%, taste 16.7%, recreation 19.9%, speech 22.05%, anxiety 23.03%, mood 30%. Appearance domain was rated important by least study participants (11.1%)

#### Overall quality of life scores as assessed by UW QOL:

The mean score for Physical component QOL was 54.54 (SD 19.33) and for Socio-emotional component it was 60.17 (SD 21.33). Weak Positive linear Correlation ( $R^2=0.224$ ) (figure1) was noted between physical and socio-emotional component of quality of life with a p value of <0.001.

Table 3 shows the results of association between UW QOL scores based on physical and social components and certain socio-demographic characters and ADL of study participants.

## DISCUSSION

Assessment of daily activities scores showed that 21.11% individuals were partially dependent in this study which is less compared to a study done by Josephine Neo, Lucy Fettes et al. using basic ADL instrument (18 item) among patients of all cancer.<sup>10</sup> This may be due to the fact that limbs or body parts responsible for basic movement and locomotion are generally not affected in head and neck cancer patients, although some partially dependent may be due to fatigue and pain caused by the cancer treatment (mainly radiotherapy).

On assessing the UW QOL questionnaire, mean values of physical health components were obtained and problems related to chewing, swallowing and speech had minimum scores with mean of 34.44, 47.67 and 63.11 respectively. As we are dealing with head and neck cancers, this may be acceptable. In a study by Derek Lowe & Simon N Rogers (2018)<sup>8</sup> the domains which were worst affected are chewing, saliva and taste, which was similar to a study done by Yojana Sharma (2019) which reported maximum change in quality of life under the head and neck domain.<sup>11</sup> Contrary to our study speech domain was least affected. Also, in a study by Dzebo et al.<sup>9</sup> quality of life of oral cancer patients concluded that problems related to swallowing, taste and saliva of physical components had minimum score. In a study done by Judit Kadar-Nagy D. D. S Hungary<sup>12</sup> stated chewing as the greatest problems among physical domains post treatment similar to our study.

For socioemotional component, activity, recreation and pain had minimum mean scores of 51.66, 56.61

and 56.67 respectively. In study by Judit Kadar- Nagy D. D. S (Hungary)<sup>12</sup> activity and recreation were reported as greatest issues among socioemotional domains post treatment. In contrast to our study, a study by Dzebo et al.<sup>9</sup> reported mood and anxiety as biggest problem under this category. In study by Derek Lowe & Simon N Rogers (2018)<sup>8</sup> the socioemotional domain with minimum score were activity, recreation and mood.

The global question means score and best score % in our analysis is 25.83 and 16.7%, 32.88 and 17.8%, 33.11 and 24.4% for health related QOL (HR QOL) compared to month before diagnosis of cancer, HR QOL and overall QOL in past 7 days respectively. These scores are much less compared to other studies done by Derek Lowe & Simon N Rogers (updated 2018)<sup>8</sup>, by Syed Abbas et al.<sup>13</sup> Indicating a much poor quality of life in population being studied. This may be due to lack of resources such as health-illiteracy among patients, patient counselling services, palliative care etc.

Top three important domains perceived as important by the patients in our study is swallowing (rank1), chewing (rank2), saliva, activity and pain (rank 3) with 53.30%, 43.30%, 42.20% respectively scoring them as important which is similar to study done by Syed Abbas et al<sup>13</sup>. In the study by Derek Lowe & Simon N Rogers (2018)<sup>8</sup> top 3 domains are saliva, swallowing and speech. However, only 22.50 % participants rated speech as important in our study.

A linear relation is observed between physical and socioemotional components which is in accordance with the observations of the study done by Dzebo et al.<sup>9</sup> Therefore on improving the physical function of quality of life, socioemotional function will also improve.

Scores of quality-of-life physical domain was low for illiterate individuals compared to the literate. This may be due to poor health related awareness among the illiterates which leads to limited access to appropriate care. Similarly, a study done by Carrie A Karvonen et al<sup>14</sup> on survival of head and neck cancers reported education as one of the determinants of survival. Therefore, individualized counselling services for cancer patients would contribute to improved health literacy and thereby better quality of life.

The physical component of quality of life is lower for oral cavity and salivary glands cancer compared to pharyngeal and laryngeal cancers. Laryngeal cancers have better quality of life among the three which is also observed in studies by Derek Lowe & Simon N Rogers (2018)<sup>8</sup>, Ernest A. Weymuller Jr. et al<sup>2</sup> and Renate Andreasen et al<sup>15</sup> However, the quality-of-life outcomes for oral cavity cancer was better than pharyngeal cancers in their study.

The socioemotional component of quality of life is lower for partially dependent individuals compared

to independent individuals (according to Katz index scores). Being dependent on someone for day-to-day activities will develop a sense of being miserable and pitiful adding to the socio-emotional burden.

Most of the unemployed individuals had low socioemotional component of QOL scores. This finding is in agreement with a study done by Li-Jen Liao et al<sup>16</sup> that reported QOL being influenced by Annual income. Among the 52 unemployed individuals 44% had to leave their jobs because of cancer and treatment side effects as it impaired their ability to perform activities and hence their job properly.

This study found that mobility of the cancer patients as measured by independence in Activities of daily living is significantly associated with socioemotional component of quality of life. This finding is analogous to those of van Nieuwenhuizen et al among head and neck cancer survivors who documented that higher physical activity was significantly associated with higher global QoL.<sup>17</sup>

Another notable finding in this study is that perceived overall QOL had better scores (24.4% best score) compared to health related QOL alone (17.8% best scores). This could be because with regard to overall QOL, patients were asked to consider not only physical and mental health but also many other factors such as family spirituality, personal leisure activities that were important to the enjoyment of life. Advising the relatives of the patients and making them aware about the significance of family support could help in enhancing the useful QOL of the patients as concluded by Palan K et al in his assessment of quality of life in radically treated head and neck cancer patients.<sup>18</sup>

Since overall QOL takes into account the social support and other factors like spiritual support it is more amenable for improvement than health related QOL through favourably modifying the psychosocial perception of patients by tailor made counselling and harnessing various support systems available to them. Psychosocial perception acting as an impact modifier among patients is well documented in literature.<sup>19,20</sup> This reiterates the fact that cancer patients should be offered socioemotional and spiritual support as a mandate which could favourably tilt their perception towards better overall QOL.

Hence, this study uncovers that there are a handful of modifiable determinants which could possibly offer scope for improving QOL among head and neck cancer patients viz vocation, greater mobility, and improved health literacy.

## CONCLUSION

The study reflects on the current quality of life led by patients being treated for oral and throat cancers as being lesser than satisfactory, hence there is a strong need for the development of patient counselling ser-

vices and palliative care centres to help cancer patients cope with their daily living with confidence and dignity. These care centres along with pain management need to focus on making the individual ambulatory and vocational rehabilitation as this show a positive association with social component of QOL.

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