International Journal of Community Medicine and Public Health
Singh V et al. Int J Community Med Public Health. 2019 Nov;6(11):4804-4809
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20195059

Original Research Article

Evaluation of quality of life and the nutritional status of oral cancer treated patients as compared with the control group in Varanasi district: a cross sectional study

Vishal Singh[1]*, Ashok Kumar Singh[2], Kumar Durga Dutta[3], Neeraj Kumar[3], Anu Kumari[4]

[1]Department of Dentistry, Heritage Institute of Medical Sciences, Varanasi, Uttar Pradesh, India
[2]Department of Oral Medicine and Maxillofacial Radiology, Budha Institute of Dental Sciences, Patna, Bihar, India
[3]Department of Prosthodontics, Vananchal Dental College and Hospital, Garhwa, Jharkhand, India
[4]Dental Surgeon, Dutta Orodental Hazipur, Bihar, India

Received: 26 August 2019
Revised: 03 October 2019
Accepted: 04 October 2019

***Correspondence:**
Dr. Vishal Singh,
E-mail: vishalsinghmds@gmail.com

ABSTRACT

Background: The modern day oral oncotherapy is now concerned on the oral quality of life after treatment of the patient. There is need to evaluate final outcome following the different combination of treatment modalities available to make better therapeutic treatment decisions. Oral health-related quality of life (QHRQOL) and their nutritional status is gaining importance as a valuable outcome measure in oral cancer area and compare with the other control group. The aim of the study was to examine the nutritional status among the oral cancer patients and compare the QHRQoL of two groups (i.e., oral cancer group and control group) in Varanasi district.
Methods: The prospective study was conducted from January 2018 to August 2018. 124 oral cancer patients and 124 control people from the Varanasi district participated in this study. Nutritional status of oral cancer treated patients was assessed. QHRQoL of the oral cancer patients were compared with the control group.
Results: Among the 124 oral cancer patient, 67.74% were malnourished or at risk of malnutrition. Patients had worse QHRQoL among oral cancer group. There were highly statistically significant differences found in the oral health impact profile and oral impacts on daily performances on comparing the oral cancer patients with the control group.
Conclusions: This study indicated that oral cancer patients with malnutrition or risk of malnutrition have significantly worse OHRQoL than with the control population group.

Keywords: Oral cancer, Malnutrition, Quality of life

INTRODUCTION

Cancer is related to a deterioration of nutritional status and quality of life (QoL).[1] Oral cancer was the third most common cancer in the Indian subcontinent. Patients who have been diagnosed with cancer of oral and maxillofacial region, have an impact on QOL because they can affect physical and psychological well-being.[2] They are also associated with economic, social and psychological impacts that impinge on oral function, appearance, and social interactions, leading to the disruption of the daily routines.[3]

Quality of life is multidimensional and it is based mainly on the individual functional health status, level of pain, self-attribution, self-perception and quality of interaction

with their surrounding environment. Despite recent advances in diagnosis and treatment, oral cancer, patients is associated with disfigurement and dysfunctions that affect essential domains of life. Large number of oral health related quality of life indices have been developed to assist with The subjective evaluation of oral health-related QoL (OHRQoL).[4] These considerations account for the importance of OHRQOL assessments for patients treated for oral cancer.[5] It measures the impact of oral cancer conditions of daily life. These instruments may be questioned for their tendency to overestimate oral health needs and inability to reflect the emotional effects (e.g., pain or discomfort) of oral concerns.[6,7] According to the National Cancer Control Programme in India, the total cancer burden for all sites will increase from 7 lakhs new cases per year to 14 lakhs by 2026.[8] The most common scales used in relation to quality of life are generic scales and disease or dimension specific scales. The two generic OHRQoL measures most widely used are the oral health impact profile (OHIP-14) and the oral impacts on daily performances (OIDP).[9]

Among oral cancer patients, dysphagia and treatment-related problems, such as mucositis and nausea, are common. Due to these problems, food intake is often diminished, leading to unintentional weight loss, and malnutrition.[10] This was important and neglected consequences of the oral cancer patients. Malnutrition has a negative effect on the morbidity and mortality of patients. A systemic review demonstrated a strong association between nutritional status and health related quality of life in the cancer population (Karawaci Hospital).[11] Thereby the aim of our study was to examine and compare the two groups (i.e., oral cancer group and control group) and their association between OHRQol in Varanasi district.

METHODS

A cross-sectional study was conducted to assess and compare the QHRQoL and nutritional status of oral cancer treated patients with the control group. In this study, the controls were selected from different settings in Varanasi (social centers and companions of hospital patients). The study protocol was approved, and the ethical clearance was obtained from the institutional review board, Heritage Institute of Medical Sciences Varanasi. The written permission to conduct the study was obtained from the private institutions and hospitals at Varanasi district. The study was conducted among ninety two patients between the period of January 2018 to August 2018 in the outpatient department in private institutions and hospitals at Varanasi district. Informed consent was obtained from the participants before the study.

A sex and age group frequency matching study was conducted from January 2018 to June 2018. The study base was from the different settings in Varanasi. All people diagnosed with oral cancer in outpatient department in private institutions and hospitals. Inclusion criteria for the participation in the study were patient treated for oral cancer, at least 6 months have completed their assigned protocol of treatment of oral malignancies and the patient were free from recurrence of the disease. Other inclusion criteria were non-edentulous patients, and patients with a Karnofsky index of equal to or greater than 50%. However those patients who were treated for other type of cancer or patients with inability to complete or respond to questionnaires and those who were not ambulatory and required assisted feeding were excluded from the study.

A total of 127 cases fulfilled the inclusion/exclusion criteria and were initially selected. Of them, 3 cases did not accept to participate in the study, giving 124 cases (97.63% acceptance rate) for the analysis. Cases and control were grouped into sex and age group strata only in the same frequency to avoid any impractical condition.

Measurement of OHRQoL

There were different approaches to measure OHRQOL; the most popular one is multiple item questionnaires. It was assessed the two widely used relevant and generic measures, oral health impact profile (OHIP-14) and oral impacts on daily performances (OIDP). To assess the impact of oral health status on health related quality of life, we used the Hindi version of the OHIP-14 index. The oral health impact profile (OHIP-14) comprises 14 items that explore seven dimensions of impact: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. OHIP-14 scores were calculated by the total OHIP-14 by summing responses over all fourteen items, with possible scores ranging from 0 to 56.

The oral impacts on daily performances (OIDP) is another important socio dental index which assesses the impact of oral conditions on eight daily performances: eating, speaking, cleaning teeth, carrying out major work or role, social contact, relaxing or sleeping, smiling, and emotional state. It evaluates the frequency and the severity of these impacts by adding scores for eight frequency items.

For measuring the OHIP and OIDP, the participants respond to each item according to the frequency of impact on a 5‑point Likert scale ranging from 0 to 4; never, hardly ever, occasionally, fairly often, and very often. The QoL was considered to be poorer with higher scores.

Measurement of nutritional status

Generally, malnutrition is common among cancer patients but its impact on the quality of life of patients has not been adequately studied, particularly within a local oncology setting. European Society for Clinical Nutrition and Metabolism recommended short form of

mini nutritional assessment (MNA) for the assessment of nutritional status of cancer patients. The short form consists of six questions about weight loss or recent appetite, mobility, psychological stress or acute disease, neuropsychological problems, and body mass index. Satisfactory nutritional scores were between 12 and 14 (maximum score) and if it was at or below 11 suggest possible state of malnutrition and the need to complete the full version of the MNA. In full version maximum contains additional 12 questions with score of 16 points, therefore the overall maximum MNA score is 30. The MNA score (maximum score=30 points) distinguishes between three categories of oral cancer patients as those with adequate nutrition (score ≥24), those at risk of malnutrition (score of 17 to 23.5), and those who were with malnourished (score <17). Higher scores indicate a more satisfactory state of nutrition.[9]

Statistical analysis

Analysis of sociodemographic variables and comparison of OHIP-14 and OIDP scores among the two groups were performed using unpaired t test. For all analysis, $p<0.05$ was considered to be statistically significant.

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 for windows version 20.0 software (IBM Corp, Armonk. NY).

RESULTS

Table 1 summary about the demographic variable among oral cancer group. Among the study, total 248 participants in which 124 participants in oral cancer group and 124 participants in control group were enrolled. Table 1 shows the distribution of demographic variables among the oral cancer group participants. The majority of the participants belonged to the lower class (36.29%) and lower middle class (29.83%). The most frequent location for oral cancer was found to be buccal mucosa, alveolus and floor (32.25%) and among the clinical staging, Stage IV (33.06%) oral cancer was more prevalent among the study population. Among the population, 35.48% of the patients were found to be smokeless tobacco chewers. There existed a statistically significant difference found among the groups with respect to the sociodemographic data of gender, age group occupation, social class and site of the tumor.

Table 1: Sample demographic variables description of oral cancer patients and control.

Variables	Oral cancer group			P value
	Total	Normal patients	Malnutrition/risk	
	(n=124)	N (%)	N (%)	
Sex				
Male	60	26 (20.96)	34 (27.41)	
Female	64	14 (11.29)	50 (40.32)	0.012*
Age (in years)				
<55	33	12 (09.67)	21 (16.93)	
55-64	40	16 (12.90)	24 (19.35)	
65-74	27	10 (8.06)	17 (13.70)	0.047*
>75	24	2 (1.61)	22 (17.74)	
Education				
Illiterate	16	6 (4.83)	10 (8.06)	
Primary school	20	6 (4.83)	14 (11.29)	
Middle School	26	7 (5.64)	19 (15.32)	0.78
High School	23	5 (4.03)	18 (14.51)	
Post high school	19	7 (5.64)	12 (9.67)	
Occupation				
Professional	20	9 (7.25)	11 (8.87)	
Unemployed	33	8 (6.45)	25 (20.16)	
Unskilled	13	6 (4.83)	7 (5.55)	
semiskilled	28	6 (4.83)	22 (17.46)	0.077*
Skilled	27	7 (5.64)	20 (15.87)	
Clerical etc	13	7 (5.64)	6 (4.83)	
Professional	10	6 (4.83)	4 (3.22)	
Social class				
I (Lower)	37	8 (6.34)	29 (24.60)	
II (Lower Middle)	45	10 (8.06)	35 (28.22)	0.008*
III (upper Middle)	28	15 (12.09)	13 (10.48)	
IV (Upper)	14	7 (5.64)	7 (5.64)	

Continued.

Variables	Oral cancer group			P value
	Total	Normal patients	Malnutrition/risk	
	(n=124)	N (%)	N (%)	
Tumor site				
Buccal mucosa	31	10 (8.06)	21 (16.93)	0.052*
Buccal mucosa and alveolus	30	12 (9.67)	18 (14.51)	
Buccal mucosa and alveolus and floor	40	8 (6.45)	32 (25.80)	
Tongue	8	0 (0)	5 (4.03)	
Retromolar region	12	6 (4.83)	6 (4.83)	
Others	6	4 (3.22)	2 (1.61)	
TNM Staging				
I	36	14 (11.29)	22 (17.74)	0.201
II	25	10 (8.06)	15 (12.09)	
III	22	8 (6.45)	14 (11.29)	
IV	41	8 (6.45)	33 (26.61)	
Habits				
Smoking	10	4 (3.22)	6 (4.83)	0.084
Smoking and pan	18	8 (6.45)	10 (8.06)	
Smoking and pan and alcohol	31	12 (9.67)	19 (15.32)	
Smoking and pan and other	13	0 (0)	13 (10.48)	
Smoking and other	18	4 (3.22)	14 (11.29)	
Pan and betelnut chewing	31	12 (9.67)	19 (15.32)	
Pan and others	3	0 (0)	3 (2.41)	

Significance level at p≤0.05.

Table 2: Comparison of oral health related quality of life (OHIP-14) between oral cancer patients (n=124) and control (n=124).

Variable	Cancer patient	Control	P value
Functional limitation	6.45±1.39	1.09±1.24	<0.00001*
Physical pain	4.69±1.52	0.50±0.93	<0.00001*
Psychological discomfort	3.51±1.31	0.4±0.87	<0.00001*
Physical disability	3.94±1.42	0.14±0.56	0.004*
Mental disability	2.44±0.89	0.39±0.79	0.03*
Social disability	2.38±0.86	0.37±0.77	0.05*
handicap	1.94±0.71	0.62±0.89	0.03*
Overall	25.36±4.73	3.51±3.20	0.001*

Significance level at p≤0.05.

Table 3: Comparison of oral health related quality of life (OIDP) between oral cancer patients (n=124) and control (n=124).

Variable	Cancer patient	Control	P value
Eating	3.03±0.90	0.58±0.80	<0.0001*
speaking	2.13±0.94	0.22±0.46	<0.0001*
Cleaning teeth	1.72±0.84	0.19±0.45	<0.0001*
Physical activity	1.48±0.95	0.04±0.21	<0.0001*
Social contact	1.77±0.69	0.17±0.40	<0.0001*
Sleeping	1.29±0.69	0.18±0.38	<0.0001*
Smiling	0.98±0.69	0.35±0.51	<0.0001*
Emotional status	2.36±0.90	0.38±0.59	<0.0001*
Overall	14.26 ±3.47	2.12±2.21	<0.0001*

Significance level at p≤0.05.

On the basis of the OHRQoL, there were statistically significant differences between patients and controls in all the domains or items and in the overall score of both questionnaires. The largest differences were in functional limitation, physical pain and physiological discomfort in the OHIP-14 (table 2) and in all parameters of the OIDP

(table 3). The domains or performances with highest score (worse impact) were similar for both groups (patients and controls); these referred to functional limitation for the OHIP-14 and eating difficulty for the OIDP.

DISCUSSION

QoL is a world widely accepted construct that emerges from several, overlapping aspects, or "domains" of life. In the last thirty years, this has been developed quite extensively in medical research to assess the individual's perception of overall well‑being.[12] Two widely used relevant and generic measures OHIP-14 and OIDP were used in the study. The OHIP‑14 is shorter version of OHIP‑49 original which was often not practical in a clinical setting because of its length and many questions were irrelevant to specific oral health states.[13] Most of the subjects in our present study belonged to lower and lower middle socioeconomic scale. This was in accordance with the study by Khandekar et al, who reported that the low SES may be a risk factor for poor oral hygiene. In the case of tobacco chewer, poor oral hygiene increases the risk of oral cancer.[14]

In the present study, the most commonly affected site was the buccal mucosa, alveolus and floor of the mouth (32.26%). The study by Singhania et al stated that there is a significant variation in the site of occurrence of cancer in the oral cavity which has been attributed to the habit of tobacco consumption in its various forms.[15] Sankaranarayanan et al conducted an extensive study of oral and pharyngeal cancer in Southeast Asia. They concluded that the chewing of tobacco and lime mixture plays an important role in the etiology of oral cancer by causing cancer at the place where the quid is habitually kept, and the probability of developing cancer. Cancer is directly correlated with the duration and intensity of chewing.[16]

On comparing the oral cancer patients with the control group, results indicate that those patients with malnutrition or at risk of malnutrition had considerably worse OHRQoL than those with the general population even after adjusting for the effect of sociodemographic characteristics and oral health. In this sense, the association between OHRQoL and malnutrition risk can have important clinical implications. Patients treated for oral cancer have a very high prevalence of oral impacts on their daily life; more than 96% reported a negative impact on the OHRQoL for both measures used. An earlier study showed also that oral cancer is associated with high levels of oral impacts.[17] The prevalence in our study was higher than those described in a population without oral cancer in Spain (OIDP 68.5%; OHIP 85.0%).[18]

Despite the time elapsed since treatment and in line with the study of Hassel et al, OHRQoL was significantly worse in patients than controls.[17] The most important differences, both in OHIP-14 and OIDP, were found in items associated with eating, a finding similar to that in the study by Linsen et al and speaking.[19] Problems eating could be directly linked to the frequent reports of difficulty chewing and swallowing in patients treated for oral cancer.[20-22] The differences between patients and controls should not be underestimated as the very large effects sizes (both for OHIP and OIDP) highlighted their clinical importance.

The results of the present study have to be interpreted with the following limitations. The design of the study being cross‑sectional in nature, issues related to temporality shall be of concern. Further, the used OHRQoL questionnaires, but their use does not rule out the possibility that the observed impacts in patients may be due to other oral conditions, not just due to oral cancer or its treatment. Second, we also acknowledge that the patients treated with cancer may not be suitable for determining critical time periods for evaluation of quality of life because of the heterogeneity.[23]

Our result of the current study supports the hypothesis that nutritional status is a strong predictor of QoL in cancer patients. It also supports an approach to cancer treatment that takes all aspects of the patient's life into account. Further, the current study indicates that in oral cancer patients with malnutrition or risk of malnutrition have significantly worse OHRQoL than with the control population group, which strongly recommended following the ASPEN guidelines for oncology patients. Correcting malnutrition in cancer patients can have a significant positive impact on their quality of life.

ACKNOWLEDGEMENTS

We immensely thank all the participants for their valuable time.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Lua PL, Salihah NZ, Mazian N. Nutritional status and health related quality of life of breast cancer patients on chemotherapy. Malays J Nutr. 2012;18:173-84.
2. Locker D. Measuring oral health: a conceptual framework. Community Dent Health. 1988;5:3-18.
3. Sankaranarayanan R, Ramadas K, Thomas G, Muwonge R, Thara S, Mathew B, et al. Effect of screening on oral cancer mortality in Kerala, India: a cluster-randomised controlled trial. Lancet. 2005;365:1927-33.
4. Sischo L, Broder HL. Oral health‑related quality of life: what, why, how, and future implications. J Dent Res. 2011;90:1264‑70.

5. Andrade FP, Antunes JL, Durazzo MD. Evaluation of the quality of life of patients with oral cancer in Brazil. Braz Oral Res. 2006;20:290‑6.
6. Wilson IB, Cleary PD. Linking clinical variables with health-related quality of life .A conceptual model of patient outcomes. J Am Med Assoc. 1995;273:59-65.
7. Tsakos G, Marcenes W, Sheiham A. Evaluation of a modified version of the index of Oral Impacts on Daily performances (OIDP) in elderly populations in two European countries. Gerodont. 2001;18:121-30.
8. Agrawal M, Pandey S, Jain S, Maitin S. Oral cancer awareness of the general public in Gorakhpur city, India. Asian Pac J Cancer Prev. 2012;13:5195‑9.
9. Barrios R, Tsakos G, García-Medina B, Martínez-Lara I, Bravo M. Oral health-related quality of life and malnutrition in patients treated for oral cancer. Support Care Cancer. 22:2927-33.
10. Jager-Wittenaar H, Dijkstra PU, Vissink A, Langendijk JA, van der Laan BF, Pruim J, et al. Changes in nutritional status and dietary intake during and after head and neck cancer treatment. Head Neck. 2011;33:863-70.
11. Mohammadi S, Sulaiman S, Koon PB, Amani R, Hosseini SM. Association of nutritional status with quality of life in breast cancer survivors. Asian Pac J Cancer Prev. 2013;14:7749-55.
12. Indrapriyadharshini K, Madankumar PD, Karthikeyan GR. Oral health‑related quality of life in patients treated for oral malignancy at Kanchipuram district, India: a cross‑sectional study. Indian J Cancer. 2017;54:11-5.
13. Wong AH, Cheung CS, McGrath C. Developing a short form of oral health impact profile (OHIP) for dental aesthetics: OHIP‑aesthetic. Community Dent Oral Epidemiol. 2007;35:64‑72.
14. Khandekar SP, Bagdey PS, Tiwari RR. Oral cancer and some epidemiological factors: A hospital based study. Indian J Community Med. 2006;31:15‑79.
15. Singhania V, Jayade BV, Anehosur V, Gopalkrishnan K, Kumar N. Carcinoma of buccal mucosa: A site specifi c clinical audit. Indian J Cancer. 2015;52:605-10.
16. Sankaranarayanan R. Oral cancer in India: An epidemiologic and clinical review. Oral Surg Oral Med Oral Pathol. 1990;69:325‑30.
17. Hassel AJ, Danner D, Freier K, Hofele C, Becker-Bikowski K, Engel M. Oral health-related quality of life and depression/anxiety in long-term recurrence-free patients after treatment for advanced oral squamous cell cancer. J Craniomaxillofac Surg. 2012;40:99-102.
18. Montero J, Yarte JM, Bravo M, López-Valverde A. Oral health-related quality of life of a consecutive sample of Spanish dental patients. Med Oral Patol Oral Cir Bucal. 2011;16:810-5.
19. Linsen S, Schmidt-Beer U, Fimmers R, Gruner M, Koeck B. Craniomandibular pain, bite force, and oral health-related quality of life in patients with jaw resection. J Pain Symptom Manage. 2009;37:94-106.
20. Torres-Carranza E, Infante-Cossío P, Hernández-Guisado JM, Hens-Aumente E, Gutierrez-Pérez JL. Assessment of quality of life in oral cancer. Med Oral Pat Oral Cir Bucal. 2008;13:735-41.
21. Biazevic MG, Antunes JL, Togni J, de Andrade FP, de Carvalho MB, Wünsch-Filho V. Survival and quality of life of patients with oral and oropharyngeal cancer at 1-year follow-up of tumor resection. J Appl Oral Sci. 2010;18:279-84.
22. Dwivedi RC, Chisholm EJ, Khan AS, Harris NJ, Bhide SA, St Rose S, et al. An exploratory study of the influence of clinical-demographic variables on swallowing and swallowing-related quality of life in a cohort of oral and oropharyngeal cancer patients treated with primary surgery. Eur Arch Otorhinolaryngol. 2012;269:1233-9.
23. Herce-Lopez J, Rollon-Mayordomo A, Lozano-Rosado R, Infante-Cossio P, Salazar-Fernandez CI. Assesment of quality of life of oral cancer survivors compared with Spanish population norms. Int J Oral Maxillofac Surg. 2013;42:446-52.

Cite this article as: Singh V, Singh AK, Dutta KD, Kumar N, Kumari A. Evaluation of quality of life and the nutritional status of oral cancer treated patients as compared with the control group in Varanasi district: a cross sectional study. Int J Community Med Public Health 2019;6:4804-9.