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Assessment of Quality of Life in Oral Squamous Cell Carcinoma Patients of Central India Population: A Cross-Sectional Study

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Abstract

***Objectives*:** Oral Squamous Cell Carcinoma (OSCC) is the most common cancer across the globe. The treatment of OSCC by surgery, chemotherapy, radiotherapy or any combination of these has an adverse effect on the Quality of Life (QOL) of the patients. The main aim of this study was to evaluate the Oral health related Quality of Life (OHRQOL) in OSCC patients after their treatment.

Study Design: A cross sectional questionnaire study.

Results: Data related to their Sociodemographic factors like age, gender, type of habit abuse, TNM stage of the cancer, and socioeconomic status were collected.

After statistical analysis, it was found that patients who had the poorest quality of life were married males in age group of 41-50 years with a habit of tobacco+alcohol abuse. Also they belonged to Stage 4b and were undergoing treatment in form of chemotherapy+radiotherapy and they belonged to upper middle SES class of modified Kuppuswamy scale 2018.

Conclusion: This study considers the significance of interplay of a constellation of factors that have an impact on quality of life in patients undergoing OSCC treatment. Physicians must consider the interplay of all these factors for making decision in treatment plan for the patient.

Keywords: Oral squamous cell carcinoma; Oral cancer; Mouth neoplasm; Quality of life; Central Indian population.

Introduction

Oral squamous cell carcinoma (OSCC) is the most common form of cancer of the oral cavity and is ranked as the 12th most common cancer in the world. Head and neck cancer especially OSCC and the side effects of the treatment have a negative impact on many different aspects of quality of life (QOL) over time. They are different than other head and neck tumors because of the complex tri-dimensional anatomy of the mouth.[1]

"Quality of life (QOL) is an ambiguous concept, with usage across many disciplines from philosophy, geography, and economics to the

medical, dental and social sciences. A plethora of definitions and concepts of quality of life have been put forward. The World Health Organization.

(WHO) defines the quality of life as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (WHO, 1993).[3]

The subjective evaluation of oral health related QOL "(OHRQOL) "reflects people's comfort while eating, sleeping and engaging in social interaction; their self-esteem; and their satisfaction with respect to their oral health.[2] The mainstay conventional therapy for oral cancer remains surgery, chemotherapy, radiotherapy or any combination of these. Despite constant advancements in these treatment modalities, the overall QOL in oral cancer patients remains low.

In this context, the present study is conducted with an aim to evaluate to what extent the treatment of OSCC compromises the QOL in patients and what measures can we take to improve the same.

Methods

A cross-sectional study was conducted at the Regional cancer center, Nagpur.[4] Ethical approval was obtained from the Board of Research Committee (BORS), Maharashtra University of Health Sciences (MUHS), Institutional Ethics Committee(IEC) of Government Dental College and Hospital, Nagpur. (Reference no. IEC/01/06 dated 09/10/19). The sample size was calculated by EPI info sample size calculator online version based on the following parameters:

p= prevalence of oral cancer patients with at least one impact in OHIP-14 questionnaire= 95% d=0.05

The sample size was calculated using the following formula:

$$N = \frac{Z\alpha^2 pq}{d^2}$$

The sample size was calculated to be 73.[5]

- **Inclusion criteria**

Cases of Oral Squamous Cell Carcinoma confirmed histopathologically.[6] Patient undergoing treatment for oral cancer in the form of Surgery, Radiotherapy, Chemotherapy or any combination thereof.

All Subjects were 18 years and above.

Patients who can co-operate with the administration of the questionnaire and recording of oral health status.

Exclusion criteria

Clinically diagnosed cases of Oral Cancer that are not confirmed histopathologically.

Cases of Oral Cancer that are confirmed histopathologically but are not undergoing treatment. Those patients are unwilling to participate and who are not ready to sign the informed consent.

The patients were explained about the study briefly and the ones who consented to participate were enrolled in the study. Consent was obtained from the patients in their local vernacular language (Marathi). This study was held over a period of four months from June 2019 to October 2019.

First, data pertaining to the sociodemographic details consisting of age, gender, marital status, education, was obtained and the socioeconomic status (SES) was recorded througha modified Kuppusamy scale, 2018.[7]

Secondly, the OHRQOL was assessed using the oral health impact profile (OHIP) questionnaire.[8]

Data regarding the primary site involved, tumor, node, metastasis (TNM) staging[9], and type of treatment were obtained from the patient's record. Hospital OPD was visited by the investigator many times, till all small details were taken care of.

The OHIP-14 (OHIP) consists of 14 items that explored seven dimensions of impact: i.e. functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap.[2]

The participants when interviewed 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.[2]

The total OHIP score will be obtained by adding all the scores.

Patients with a higher OHIP score will be considered to have a poorer Quality of Life.

Results

Data that was collected in the study were entered into Microsoft Excel spreadsheet, and a master table was prepared.

Score	Inference
0	Never
1	Hardly Never
2	Occasionally
3	Fairly often
4	Very often

The data was analyzed using the IBM Statistical Package for the Social Sciences for windows version 16.0 software (IBM Corp., Armonk. NY). Analysis of socio-demographic variables and comparison of OHIP-14 scores using Chi-square test and comparison of mean OHIP score between different groups was assessed using independent t-test for comparing two groups or one way-ANOVA for more than two groups. For all analysis. The P-value less than 0.05 was considered to be statistically significant.

The given study was done to assess the QOL of patients with oral squamous cell carcinoma who had undergone various treatment modalities at the Regional Cancer Center. All 73 patients who were approached completed the study.

Table 1. shows the distribution of demographic variables among the study participants. Among the 73 participants enrolled, 62 (85%) were male, and 11 (15%) were female. 71 (97%) were married and 2 (3%) were unmarried. The maximum number of participants belonged to the age group of 41-50 years (30%) and the least number to the age group of 21-30 years 2 (2.7%).

The most common habit abuse was chewing tobacco 22 (30.13%) and among the clinical staging, Stage IV 23 (31.5%) oral cancer was more prevalent among the study population.

In accordance with the modified Kuppuswamy scale 2018, the majority of the participants belonged to the Upper lower SES class 38 (52%) and minimum to the Upper middle SES class 4 (5.9%) Table 2 shows the comparison of the highest and lowest Mean OHIP score among each domain.

Discussion

It is a known fact that a million of people are diagnosed with Oral Cancer annually. Despite the advancements, the Quality of life in cancer patients remains affected well past the treatment.[10]

As defined by "WHO: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".[11] But we as physicians often tend to evaluate the success of the treatment of Oral cancer by using physical well-being as a parameter that is highly objective. We overlook the mental and social well-being component of health which has an equal impact

Table 1: Distribution of demographic variables and Mean OHIP score among the study participants:

Variable	Distribution (n=73)	Mean OHIP score	Std Deviation	p-value
Gender				
Male	62(85%)	29.0161	9.40612	<0.001*
Female	11(15%)	25.0000	6.76757	
Marital Status				
Married	71(97%)	28.6056	9.18614	<0.01*
Unmarried	2(3%)	21.5000	0.70711	
Age group (in years)				
20-30	2(2.7%)	21.0000	4.24264	
31-40	20(27%)	28.2500	7.66314	
41-50	22(30%)	30.8182	9.24088	0.44
51-60	19(26%)	28.0000	10.34408	
61-70	10(13.6%)	25.7000	9.64999	
Type of habit abuse				

0- no habit	2(2.7%)	25.0000	5.65685	
1-kharra	13(17.8%)	24.4615	8.68538	
2-tobacco	22(30.13%)	36.0000	7.66902	
3-arecanut	2(2.73%)	23.5000	2.12132	0.32
4-alcohol	1(1.36%)	29.3636	-	
5-cigarrete	9(12.3%)	29.0000	7.93725	
Any combination	19(17.8%)	28.4110	9.13302	
Type of treatment				
Radiotherapy	3(4.01%)	28.3333	10.69268	
Surgery	2(2.73%)	22.5000	7.77817	0.62
Surgery & Radiotherapy	36(49.3%)	28.2778	7.31187	
Chemotherapy & Radiotherapy	9(12.3%)	27.6087	11.56696	
Surgery, Chemotherapy &Radiotherapy	23(31.5%)	32.3333	9.20598	
TNM Staging				
Stage 0	1(1.36%)	29.7778	9.13302	
Stage I	5(6.8%)	27.8000	4.38178	
Stage II	18(24.6%)	29.6111	8.87255	
Stage III	17(23.2%)	25.1176	8.50649	
Stage IVa	23(31.5%)	29.0000	10.23808	0.49
Stage IVb	9(12.3%)	40.000	9.71825	
Socioeconomic Status				
Upper Middle	4(5.97%)	32.7500	12.86792	
Lower Middle	23(31.5%)	29.0870	9.61492	
Upper Lower	38(52.%)	28.0000	9.12674	0.67
Lower	8(10.09%)	26.2500	6.13538	

Table 2: Comparision of highest and lowest Mean OHIP score among each domain:

Variable assessed	Group with highest OHIP score	MeanOHIP score	Group with lowest OHIP score	Mean OHIP score
Gender	Male	29	Female	25
Marital status	Married	28	Unmarried	21
Age group	41-50 years	30	21-30	21
Type of habit	Tobacco	36	Arecanut	22
Type of treatment	Chemotherapy+ Radiotherapy	32	Chemotherapy	22
TNM Stage	Stage 4b	40	Stage 3	23
Socioeconomic status	Upper Middle	32	Lower	26

on the QOL in the patients. Unfortunately, only a few articles comparing the QOL after surgery, chemotherapy and radiotherapy for OSCC patients are available in the literature.[2]

The standard treatment protocol for OSCC is in the form of either surgery, chemotherapy, radiotherapy or any combination of these depending on the stage of cancer. However, these treatment modalities are associated with a plethora of complications.[12] Surgery which is the mainstay of treatment in OSCC leads to severe morbidity and other complications like superadded infections, hematoma, necrosis of the overlying skin, flap failure and improper wound healing. Bone resorption, osteomyelitis, and salivary fistula is also seen. Resection of facial structures can compromise the cosmetic appearance and oro-facial functions such as speech, swallowing and airway.[13] Common oral complications of radiation therapy and chemotherapy are mucositis, infections, xerostomia, sensory disturbances, dental caries, periodontal disease, and osteoradionecrosis.[14,15] Hence it can be ascertained that the treatment of oral cancer instigates the other problems hence further worsening the QOL of individuals. The physician should consider these problems and make decisions about treatment accordingly.[2]

A tool that can measure the QOL in OSCC patients is hence required. "A number of questionnaires are formulated for assessing QOL in OSCC patients like Oral Health Impact Profile (OHIP), Oral Impact on Daily Performances, Geriatric Oral Health assessment Index, Dental Impact Profile, etc."[16]. The OHIP-14, in spite of being a short questionnaire with 14-items, has been shown to be very reliable, sensitive, and has adequate consistency and aimed to measure the discomfort, and disability attributed to oral conditions.[17]

Most of the participants in our study were married males in the age range of 41-50 years and were tobacco chewers. Similar reports were produced by Gupta et al.[18]

Most of the subjects in our present study belonged to lower and upper lower socioeconomic scales.

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.[19] In the present study among the 73 participants, 23 (31.5%) patients presented with Stage IVa cancer followed by Stage II (24.6%). Khandekaret al. reported that although the oral cavity is a site where the clinical examination is easily possible and amendable to diagnosis by current diagnostic tools, the crux of the problem for the diagnosis of oral cancer was due to ignorance and delayed reporting to the healthcare facility.[19] This is also evident from the present study where the study participants had reported Stage II, III and Stage IV of oral cancer.

From the table 2 results, it can be ascertained that the groups with the highest OHIP score and hence a poor quality of life were: married males in the age group of 41-50 years with a habit of tobacco and alcohol abuse. Also, they belonged to Stage 4b and were undergoing treatment in the form of chemotherapy+radiotherapy and they belonged to the upper middle SES class of modified Kuppuswamy scale 2018. Data pertaining to gender and marital status is statistically significant.

The OHIP scores of the gender domain showed that males had a poorer QOL as compared to females. And Married group had a poorer quality of life among the marital status group. These results were similar to the study conducted by de Melo et al.[20]

However, the age group with poorer QOL was the age group between 41-50 years in our study but it was 61-69 years' age group in an article by de Melo et al.[20] Barrios et al in their study found that alcoholics and smokers had a poorer QOL. But

in our study, Tobacco chewers and Alcoholics had a poorer QOL. In the review of Sankaranarayanan et al., an extensive study of oral and pharyngeal cancer in Southeast Asia, concluded that chewing a mixture of tobacco and lime plays an important role in the etiology of oral cancer. This is directly related to the site of quid placement and the duration for which it is kept.[21]

The patients with the poorest QOL belonged to Stage 4b and were undergoing treatment in the form of a combination of surgery+chemotherapy +radiotherapy, while those undergoing treatment in the form of surgery had higher QOL index. Similar results were mentioned by Barrios et al.[8]

This states that only surgical treatment had resulted in little damage to the oral structure and function. The results of various studies reported that combined treatment showed many complications. Also, the patients with the highest OHIP score and hence the poorest QOL belongedto the upper-middle SES class. As per our knowledge, there is no study in the literature, measuring OHIP score of various SES classes using modified Kuppuswamy scale.[7] There existed statistically significant difference among the groups with respect to the OHIP scores of gender, and marital status.

The study however has a few limitations. Since it's a cross-sectional study possibility of temporality should be considered.[22] Since it was an interview based questionnaire, possibility of interviewer bias should be considered.[23] This study was conducted in the oral squamous cell carcinoma patients reporting to a tertiary care center of central India population. For generalizability of the study, a larger sample size over wider geographic area should be taken.

Conclusion

The study clearly defines that the groups with the highest OHIP score and hence a poor quality of life were: married males in age group of 41-50 years with a habit of tobacco+alcohol abuse. The patients with poorest QOL belonged to Stage 4b and were undergoing treatment in form of chemotherapy +radiotherapy. Also they belonged to upper middle SES class. Through this we can delineate the high risk group where the physician needs to use clinical judgement in decision making in the treatment protocol of oral cancer patients.

"Call it anything doctor, just don't call it cancer." This is what the mind of a patient awaiting his biopsy reports goes through. Pain, sexuality, coughing, voice, eating, diet, aspiration, astenia, swallowing, hearing, changes in facial appearance, are some biggest concerns for Head and Neck cancer patients. Along with QOL questionnaires, Patient Reported Outcome Measures (PROMs) represent a powerful instrument for comprehensive patient care. It is the report of patient's condition that comes directly from the patient, without interpretation from the clinician.

"Taking care of the carers" is also fundamental in terms of patients' QoL, as data shows that family and carers have a big impact on HR-QoL of H&N cancer sufferers.

Questionnaire

Patient details:

Name	:	Contact no.	:	Age/ Sex:
Marital status	:	Habit history	:	Address:
Treatment done	:	Date	:	Staging of Oral cancer:
Education:		Occupation	:	Income:

Oral-health related quality of life- Ohip-14

Functional Limitation

Q. 1 Have you had trouble pronouncing any words because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Q. 2 Have you felt that your sense of taste has worsened because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Physical pain

Q. 3 Have you had painful aching in your mouth?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Q. 4 Have you found it uncomfortable to eat any foods because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Psychological Discomfort

Q. 5 Have you felt self conscious because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Q. 6 Have you felt tense because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Q. 7 Has your diet been unsatisfactory because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Q. 8 Have you had to interrupt meals because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Psychological Disability

Q. 9 Have you found it difficult to relax because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Q. 10 Have you been a bit embarrassed because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Social Disability

Q. 11 Have you been a bit irritable with other people because of problems with your teeth, mouth or denture?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often Fairly often

Q. 12 Have you had difficulty doing your usual jobs because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Handicap

Q. 13 Have you felt that life in general was less satisfying because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

Q. 14 Have you been totally unable to function because of problems with your teeth, mouth or dentures?

☐ Never ☐ Hardly never ☐ Occasionally ☐ Very often ☐ Fairly often

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Consent to participate: The authors declare that they have no conflict of interest.

Consent to publish: Since identity of patients is not disclosed, informed consent was not necessary.

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