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Evaluating the Impact of Site of Oral Cancer on Quality of Life of Patients

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ABSTRACT

The Oral Health Impact Profile-14 was created to evaluate how oral health disorders affect the life of the patient, though it is widely utilized in patients with cancer, still, there is limited information regarding its measurement specifically related to the impact of cancer sites in a patient. **Objectives:** To evaluate the site of oral cancer and its impact on patients' oral Health-related quality of life. **Methods:** Diagnosed oral cancer patients were employed from the dental college of Peshawar, and 134 individuals were recruited. Patients of oral cancer, aged 20-59 of both genders were interviewed by using a convenience sampling technique. The Patients were asked about age gender, dental visit, site of cancer, treatment modalities, and various questions related to oral health impact profile. Data analysis was performed using SPSS version 26.0. **Results:** The study revealed that the majority of patients were aged 20-29 and predominantly male (67.9%), and most frequently occurs in the buccal mucosa (35.1%). The results revealed significant challenges among participants, with 30.6% experiencing difficulties in speech and 28.4% with a reduced sense of taste. Physical pain was reported by 38.8%, with 54.5% having eating uncomfortably. **Conclusions:** It was concluded that the study emphasized how patients' quality of life regarding oral health is greatly impacted by the location of cancer.

INTRODUCTION

Oral cancer is the general term for any cancer of the mucosa of the lip, palate, gums, floor of the oral cavity, and tongue [1]. Globally, 9.6 million people died due to cancer, and 18.1 million newly reported worldwide [2]. Pakistan is one of the top nations with the highest incidence of mouth cancer. It is the second most common cause of death, which accounted for 11.27% of deaths in 2020 [3]. Research highlights that cancer has become the leading cause of death in 91 out of 172 countries worldwide [4]. Oral cancer affects the tongue, floor of the mouth, buccal mucosa, gingiva, lips, retromolar trigone, and hard palate. Oropharyngeal cancer involves the base of the tongue, soft palate, tonsils, and pharyngeal wall. [5], Human papillomavirus (HPV), socioeconomic factors, tobacco use, and genetics significantly increase the risk of cancer [1]. Furthermore, risky behaviours include the use of betel nuts, tobacco, alcohol, and exposure to viral infections [6]. There are several treatment options for oral cavity cancers including pharmacologic cancer therapy, radiation therapy (RT), and surgery, either used separately or in combination. Early-stage cancers have high cure rates with surgery or radiation therapy, although radiation therapy better maintains function [7]. In the past decade, greater attention has been given to patients' quality of life (QoL) following cancer treatment. Assessing a patient's QoL provides valuable insights into the wide range of health

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challenges faced by the patient [8]. The oral health impact profile (OHIP), initially 49 items, was shortened to Oral Health Impact Profile-14 (OHIP-14), this updated version is a reliable tool for assessing how patients' lives are affected by their oral health since it preserves accuracy, sensitivity, and cross-cultural reliability [9]. Head and neck cancer (HNC) affects various regions of the head and neck, leading to significant physical changes such as alterations in appearance and pain, as well as functional impairments, including difficulties with chewing, swallowing, and speaking. Beyond these physical and functional challenges, HNC also has profound psychosocial consequences, such as anxiety, depression, and reduced social functioning. Treatments like surgery, chemotherapy, and radiotherapy often result in additional adverse effects and long-term complications [10]. Despite the substantial burden of oral cancer in the population, there is limited data on the prevalence of oral cancers at specific sites and their association with patients' overall well-being.

This study aims to assess the location of oral cancer and its effect on patients' oral health-related quality of life (OHRQoL) by using OHIP-14 as a measurement tool.

METHODS

The cross-sectional study was performed from August, 2023 to March, 2024, at the Khyber College of Dentistry in the Oral Maxillofacial Department. The Gandhara University's Ethical Review Board granted ethical permission (No. GU/Ethical Committee/2023/198) for the study. The study population comprised 134 diagnosed oral cancer patients. The inclusion criteria for this study required that participants be diagnosed and treated for oral cancer. Participants needed to be aged 20-59, of any gender and must have provided written consent at the time of data collection. Those who did not fit the requirements for inclusion were eliminated from the research. Utilizing the Open Epi calculator (version 3.01), the sample size was estimated to be 110 individuals, based on a 95% confidence level, 5% precision, and 7.7 % prevalence rate of oral cancer [11]. However, it was increased to 134 to account for the possible absence of answers and dropouts. Convenience sampling was used to recruit patients. The goals, methods, and confidentiality of the study were fully disclosed to the participants. They were encouraged to ask questions for clarification. Data were collected through patient interviews, where questions related to age, gender, dental visits, types of treatment, and sites of oral cancers were asked. The questionnaire assesses seven aspects of quality of life functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap using a 5-point Likert scale (0=never, 4=always). The total score, calculated using the additive method, indicates that higher scores reflect a poorer oral health-related quality of life, which was administered in person by the researcher to ensure accuracy. The scoring system classified impact into three categories based on the score. A score between 0 and 9 indicated a poor impact, suggesting a minimal or negligible effect on health. Scores ranging from 10 to 18 represented as average impact and a score greater than 18 denoted as strong impact, highlighting a pronounced effect on health. Interviews were conducted privately to guarantee participant comfort and confidentiality. A pre-validated questionnaire was used and Cronbach's value was 0.98 and corrected item-total correlations ranged from 0.77-0.93 [10]. For data analysis, SPSS version 26.0 was used. Descriptive statistics summarized the data, and the Kolmogorov-Smirnov test assessed normality. The Kruskal-Wallis test was applied to examine the relationship between OHIP-14 scores and oral cancer site, with a p-value of 0.05 or less indicating statistical significance.

RESULTS

Most respondents were aged 20-29 years and were predominantly male (67.9%). The buccal mucosa comprised 35.1% of cases, followed by the floor of the mouth at 21.6% and the hard palate at 17.9%. The majority of patients received surgery, radiation therapy, and chemotherapy, accounting for 26.9% of the treatments (Table 1).

Table 1: Detailed Overview of Patient Demographics

Variables	Categories	Frequency (%)
Age	20-29 Years	49 (36.6%)
	30-39 Years	19 (14.2%)
	40-49 Years	42 (31.3%)
	50-59 Years	24 (17.9%)
Gender	Male	91 (67.9%)
	Female	43 (32.1%)
Site of Oral Cancer	Tongue	21 (15.7%)
	Hard Palate	24 (17.9%)
	Buccal Mucosa	47 (35.1%)
	Floor of Mouth	29 (21.6%)
	Lip	13 (9.7%)
Treatment of the Patient	Chemotherapy	27 (20.1%)
	Surgery	24 (17.9%)
	Surgery+ RT	23 (17.2%)
	Surgery+ RT+ Chemo	36 (26.9%)
	RT + Chemo	24 (17.9%)
Dental Visit	Within 6 Months	11 (8.2%)
	Once in A Year	44 (32.8%)
	Never	79 (59.0%)

The results indicated significant challenges across multiple domains like the participants faced functional limitations, with 30.6% having trouble pronouncing words and 28.4% reporting a worsened sense of taste (Table 2).

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Table 2: Frequency of Responses to the OHIP-14 Scale

Characteristics	0 = never	1 = Rarely	2 = Occasionally	3 = Often	4=Very Often
Functional Limitations					
Trouble Pronouncing Any Words	36 (26.9%)	12 (9.0%)	41 (30.6%)	22 (16.4%)	23 (17.2%)
Felt A Sense of Taste Worsened	38 (28.4%)	31 (23.1%)	25 (18.7%)	22 (16.4%)	18 (13.4%)
Physical Pain					
Had A Painful Aching	17 (12.7%)	19 (14.2%)	33 (24.6%)	13 (9.7%)	52 (38.8%)
Uncomfortable to Eat	7 (5.2%)	9 (6.7%)	32 (23.9%)	13 (9.7%)	73 (54.5%)
Psychological Discomfort					
Have Been Self-Conscious	22 (16.4%)	17 (12.7%)	17 (12.7%)	39 (29.1%)	39 (29.1%)
Felt Tense	22 (16.4%)	15 (11.2%)	7 (5.2%)	46 (34.3%)	44 (32.8%)
Physical Disability					
Unsatisfactory to Diet	5 (3.7%)	13 (9.7%)	12 (9.0%)	29 (21.6%)	75 (56.0%)
Had to Interrupt Meals	46 (34.3%)	30 (22.4%)	28 (20.9%)	16 (11.9%)	14 (10.4%)
Psychological Disability					
Difficult to Relax	81 (60.4%)	15 (11.2%)	10 (7.5%)	17 (12.7%)	11 (8.2%)
Embarrassed	86 (64.2%)	28 (20.9%)	9 (6.7%)	3 (2.2%)	8 (6.0%)
Social Disability					
Irritable with Other People	65 (48.5%)	24 (17.9%)	11 (8.2%)	18 (13.4%)	16 (11.9%)
Difficulty Doing Usual Jobs	64 (47.8%)	23 (17.2%)	13 (9.7%)	22 (16.4%)	12 (9.0%)
Handicap					
Life Was Less Satisfying	96 (71.6%)	19 14.2%)	8 (6.0%)	4 (3.0%)	7 (5.2%)
Unable to Function	59 (44.0%)	27 (20.1%)	17 (12.7%)	16 (11.9%)	15 (11.2%)

The findings showed a significant association ($p<0.001$) between the cancer site and OHIP-14 scores. Poor OHIP impact was prevalent in tongue and hard palate cancers, while strong impact was most common in the buccal mucosa (52.9%) and floor of mouth (30.6%) cancers (Table 3).

Table 3: Association Between the Site of Cancer and OHIP-14

OHIP-14	Site of Oral Cancer					
	Tongue	Hard Palate	Buccal Mucosa	Floor of Mouth	LIP	p-value
Poor Impact: 0≤ to≤9	7 (50.0%)	6 (42.9%)	0	0	1 (7.1%)	<0.001*
Average Impact: 10≤ to ≤18	7 (20.0%)	11 (31.4%)	2 (5.7%)	3 (8.6%)	12 (34.3%)	
Strong Impact: score>18	7 (8.2%)	7 (8.2%)	45 (52.9%)	26 (30.6%)	0	

*Fishers Exact Value: <0.001 Shows Significant Associations

DISCUSSION

A study on oral cancer reported that age or sex variations were not significantly different at any of the sites and the most common tumors were located on the anterior tongue, followed by the buccal mucosa [12]. Based on other research, the tongue was the place most frequently afflicted, then the gingiva [13]. In another study, the head and neck cancer group had a mean age of 49.75 ± 13.44 years and the most common cancer cases were aged 35-64 years. Males predominated in both groups (66% in the cancer group, and 70% in controls). Cancer was most common on the tongue (36%) [14]. The OHIP-14 responses showed that most patients reported difficulty with daily tasks (21%), tension (21%), irritability (22%), worry about dental issues (32%), discomfort while eating (33%), and unsatisfactory diet (35%). After treatment, these responses improved, except for tension [15]. A study conducted on oral cancer revealed the mean index value was 4.64 before treatment which then declined to 4.25 post-treatment, highlighting the impact of treatment on patients' well-being [16]. A cross-sectional study with 133 oral cancer patients using OHIP-14 found over 95% reporting negative impacts on oral health-related quality of life. The highest impacts were on eating (83.5%), speaking (77.4%), and emotional status (64.7%), with physical pain, functional limitations, and disability being the most affected dimensions [17]. The findings of the current study showed a significant association ($p<0.001$) between cancer sites and OHIP-14 scores. Poor OHIP impact was observed in tongue and hard palate cancers, while the strong impact was most frequent in the buccal mucosa (52.9%) and floor of mouth (30.6%) cancers. Studies that were previously conducted reported the mean OHIP-14 scores for various tumor sites. Patients with mandibular tumors had the highest mean score (31.60 ± 15.73), indicating the greatest oral health impact, followed by those with loco-regional metastasis (30.33 ± 10.70) while the lip cancers had the

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lowest mean score (16.00 ± 14.99), suggesting a lesser impact [18]. According to a study conducted, the OHIP scores for various cancers consistently indicated worse outcomes, reflecting significant disturbances in oral health. These disturbances adversely affected patients' quality of life, highlighting the widespread impact of oral complications across different cancer types [19]. Patients with buccal mucosa cancer exhibited a lower quality of life, highlighting the need for regular follow-ups and supportive therapy. Preoperative psychological reassurance was essential for enhancing postoperative adaptation to psychosocial challenges [20].

CONCLUSIONS

It was concluded that the location of oral cancer significantly impacts patients' quality of life. Policymakers should enhance outcomes by improving access to specialized dental care, and psychosocial support, and integrating routine quality-of-life assessments into cancer care protocols.

Authors Contribution

Conceptualization: SGSS
Methodology: SGSS, SLSS, AH, ZURK, AM, FJS
Formal analysis: SLSS
Writing review and editing: ZURK

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

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