

PSYCHOLOGICAL IMPACT ON PATIENTS WITH ORAL CANCER BEFORE UNDERGOING RECONSTRUCTION IN JPMC

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Abstract

Objective: This objective of the study is to assess the psychological impact, levels of distress using standardized tools among patients after oral cancer diagnosis before undergoing for reconstructive surgery at Jinnah Postgraduate Medical Centre (JPMC), Karachi.

Background: Oral cancer represents a major public health concern and is frequently associated with significant psychological distress. In addition to the burden of diagnosis, anticipation of reconstructive surgery introduces unique emotional challenges related to fear of disfigurement, functional impairment, and uncertainty about treatment outcomes.

Methodology: A cross-sectional study was conducted from March 20th 2025 to January 15th 2026 involving 100 adult patients diagnosed with oral cancer and scheduled for reconstructive surgery through convenience sampling technique. Quantitative assessment of anxiety, depression, and psychological distress was performed using HADS and the Distress Thermometer. Data were analyzed using SPSS version 26.0.

Results: The majority of participants were female (67%), while males accounted for 33%. Most patients were married (65%), and 47% belonged to the lower socioeconomic class. The most common type of oral cancer was Squamous Cell Carcinoma (63%) mostly (25%) reported on buccal mucosa. Anxiety scores differed significantly across socioeconomic classes, with patients from lower socioeconomic groups reporting higher anxiety ($p = 0.040$).

Conclusion: Patients with oral cancer experience significant psychological distress following diagnosis and before reconstructive surgery. Routine psychological screening and early psychosocial interventions should be integrated into oral cancer care to improve overall patient outcomes.

INTRODUCTION

All over the world, oral cancer is a major public health concern since, for those who are affected, receiving a diagnosis can change their entire life.¹ A distinct set of psychological pressures is presented by the possibility of reconstructive surgery, one of the many obstacles confronted by patients with oral cancer.² The incidence and mortality of head and neck and oral cancers have been progressively increasing over the last three decades, making them a major worldwide health burden. According to a recent worldwide review, between 1990 and 2021, the age-standardized incidence of oral cancer rose from 3.26 to 5.34 cases per 100,000, and this increase was accompanied by increases in mortality and disability-adjusted life years (DALYs). Widespread exposure to tobacco, betel quid, and areca nut makes the issue more worrisome in many low- and middle-income nations, including Pakistan.³ A cancer diagnosis, particularly oral cancer, was known to have a substantial psychological impact.⁴ Patients frequently experienced fear, uncertainty, anxiety, and depression. After receiving a diagnosis, patients usually struggle with a wide range of feelings, including dread, uncertainty, melancholy, and worry.⁵ Nevertheless, little consideration has been paid in the literature to the psychological effects of reconstruction surgery, which is an important part of treatment for many patients with oral cancer. The psychological impact of oral cancer is particularly severe because it is a potentially fatal condition that impairs vital abilities like speech, swallowing, facial expression, and attractiveness. The burden of anxiety, sadness, and emotional discomfort among oncology populations is among the greatest among patients with head and neck cancers worldwide. It frequently starts at the time of diagnosis and gets worse in the days before surgery. Psychological needs are often overshadowed by the urgency of tumour control, limited resources, and cultural stigma surrounding mental health in low- and middle-income countries (LMICs) like Pakistan.⁶ It is essential to comprehend these psychological factors in order to give patients comprehensive care and enhance their general wellbeing.⁷

Despite the essential role of reconstructive surgery in restoring function and appearance, limited research had addressed the psychological effects associated with anticipating these procedures. Understanding these factors was considered crucial for providing holistic care and improving overall patient well-being. This study is important because it may clarify the particular psychological difficulties that oral cancer patients encounter prior to reconstructive surgery.^{8,9} Healthcare professionals can learn a great deal about how to help this vulnerable population throughout treatment by looking at the psychological discomfort these patients experience, the reasons that lead to it, and the coping methods they use.⁹ The results of this study can also be used to guide the creation of focused interventions meant to reduce psychological discomfort and raise the standard of care given to patients having reconstructive surgery. This study has the ability to aid in the creation of evidence-based therapies that can be applied in a variety of healthcare contexts to better assist patients with oral cancer by clarifying the psychological effects of reconstruction surgery.¹⁰ In general, by investigating the psychological effects on patients with oral cancer before undergoing reconstruction surgery, this study aims to fill a major vacuum in the literature. This study is to raise the standard of care given to those suffering from oral cancer by clarifying the psychological issues that this population faces and proposing solutions, therefore improving the patients' general health and prognosis.

Methodology:

A cross-sectional study was conducted in the Department of Oral and Maxillofacial Surgery at Jinnah Postgraduate Medical Centre (JPMC), Karachi, Pakistan, from March 20, 2025, to January 15, 2026. Ethical approval was obtained from the Institutional Review Board of JPMC (NO.F.2-81/2025-GENL/249/JPMC). The Sample size was calculated using OpenEpi taking the prevalence of psychological distress among oral cancer patients as 50%¹⁰ with a 95%

confidence level and 10% margin of error, the tuned-out sample was 100. The study included 100 patients diagnosed with oral cancer and scheduled for reconstructive surgery, recruited through convenience sampling. Written informed consent was obtained from all participants after explaining objective and purpose of the study and confidentiality of patient information was strictly maintained. Patients aged above 18 years with histopathologically confirmed oral cancer were included. Patients with a history of psychiatric illness or cognitive impairment, those unable to communicate effectively, and those undergoing emergency reconstructive surgery were excluded. Quantitative and qualitative data were collected using a structured questionnaire specifically developed for patients with oral cancer undergoing reconstructive surgery. Demographic data included age, gender, marital status, education level, employment status, and socioeconomic status. Clinical information included type and stage of oral cancer, psychological assessment was done through using HADS¹¹ scale and NCCS distress thermometer^{12,13}. The HADS scale contained fourteen questions, seven for anxiety and seven for depression assessment. Each question which has four points and score >8 is considered as positive anxiety and depression. It is known for its minimal fatigue and burden on study participants to response and this scale is to assess the cognitive aspects of anxiety and depression.¹¹ Standardized procedures were followed to minimize bias. Data was collected by primary researcher under the direct supervision of

consultant in accordance to ethical guidelines. Data were analyzed using SPSS version 26. Descriptive statistics, including mean, standard deviation, frequency, and percentage, were calculated for demographic and clinical characteristics. Associations between categorical variables were assessed using Chi-square or Fisher's exact tests. Logistic regression analysis was conducted to examine the relationship between psychological distress and treatment-related variables, controlling for potential confounders such as age, gender, and cancer stage. The primary study variables included psychological distress, Anxiety and depression as per HADS scale.

Results:

A total of 100 patients with Histopathological confirmed oral cancer having mean age of 15.15±13.35 were included at Jinnah Postgraduate Medical Centre (JPMC), Karachi. The majority of participants were female (67%), while males accounted for 33%. Most patients were married (65%), and 47% belonged to the lower socioeconomic class. Regarding education, 30% had completed primary school, 24% secondary school, 23% high school, 14% college, and 9% university. Employment status showed that 45% were employed, 32% unemployed, and 23% retired. The most common type of oral cancer was Squamous Cell Carcinoma (63%), followed by Verrucous Carcinoma (22%), Carcinoma Cuniculatum (7%), Minor Salivary Gland Carcinomas (4%), and other types (4%). Majority (41%) of the patients reported in stage III of cancer as shown in table no.I.

Table 1. Demographic and Clinical Characteristics of Study Participants (n=100)

Variable	Frequency (%)	Mean Age
Gender	Male	33 (33.0%)
	Female	67 (67.0%)
Marital Status	Single	16 (16.0%)
	Married	65 (65.0%)
	Divorced	14 (14.0%)
	Widowed	5 (5.0%)
Socioeconomic Status	Lower Class	47 (47.0%)
	Middle Class	32 (32.0%)

Education Level	Upper Class	21 (21.0%)	51.15±13.35
	Primary School	30 (30.0%)	
	Secondary School	24 (24.0%)	
	High School	23 (23.0%)	
	College	14 (14.0%)	
Employment Status	University	9 (9.0%)	
	Unemployed	32 (32.0%)	
	Employed	45 (45.0%)	
Type of Oral Cancer	Retired	23 (23.0%)	
	Squamous Cell Carcinoma	63 (63.0%)	
	Verrucous Carcinoma	22 (22.0%)	
	Carcinoma Cuniculatum	7 (7.0%)	
	Minor Salivary Gland Carcinomas	4 (4.0%)	
Stage Of Cancer	Others	4 (4.0%)	
	Stage I	12 (12.0%)	
	Stage II	12 (12.0%)	
	Stage III	41 (41.0%)	
	Stage IV	35 (35.0%)	
HADS Anxiety status	Yes	38 (38.0%)	
	No	62 (62.0%)	
	Total	100 (100.0%)	
HADS Depression status	Yes	53 (53.0%)	
	No	47 (47.0%)	
	Total	100 (100.0%)	
NCCS Distress	Mild	25(25.0%)	
	Moderate to Sever	75 (75.0%)	
Total		100(100.0%)	

The fig no I show that the most commonly (25%) reported site of oral cancer was buccal mucosa followed by 16% cancer at anterior two

third of tongue, 15% at floor of mouth, 15% at the mandibular alveolar ridge/gingiva.

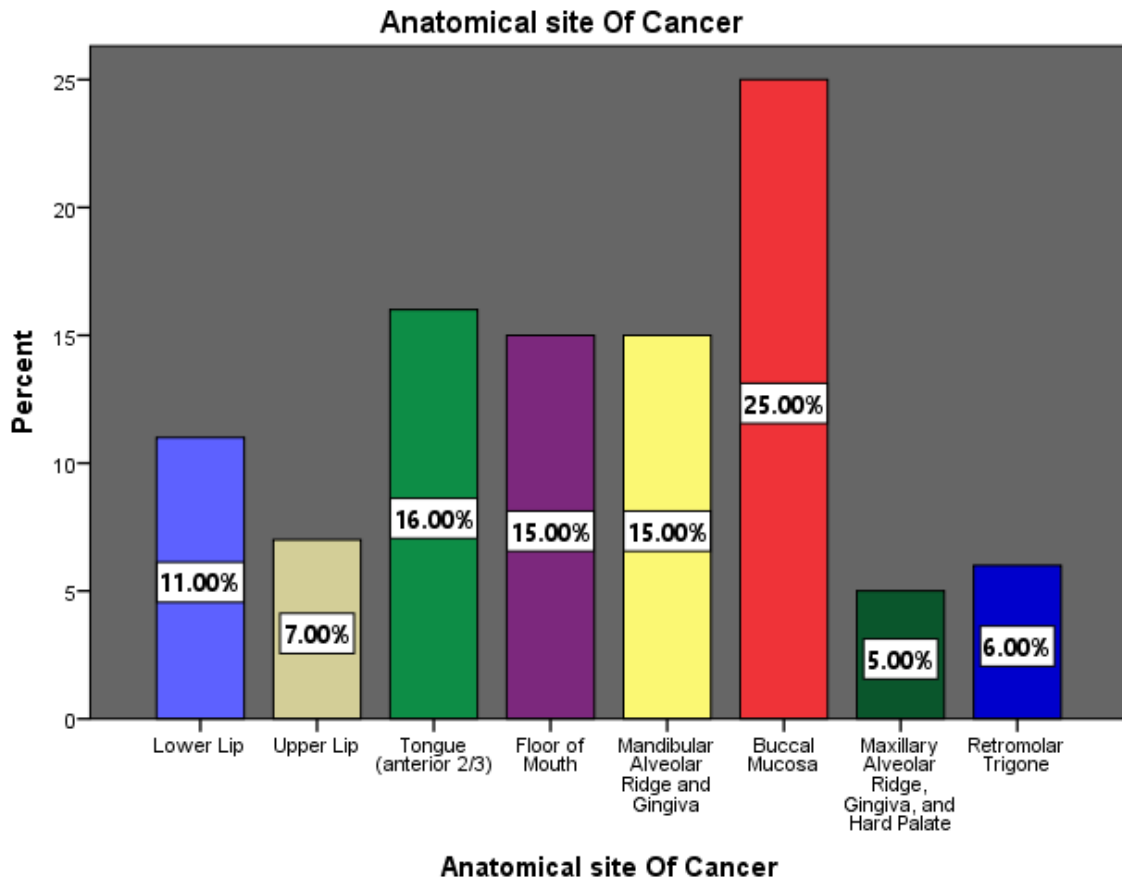


Fig No I. Shows the type of Oral cancer based on anatomical site involved.

The normality of the data was assessed by using Shapiro-Wilk test for continuous variables such as HADS Depression, HADS Anxiety, NCCN Distress Thermometer and were found to be not normally distributed ($p < 0.05$). Therefore, median and interquartile range (IQR) were used to calculate these variables. The psychological assessment showed a median HADS Anxiety score of 6 (IQR: 4-11), a median HADS

Depression score of 9 (IQR: 6-13), and a median NCCN Distress Thermometer score of 6 (IQR: 4.25-7). Based on standard cut-offs, 30% of patients had abnormal anxiety, 32% had abnormal depression, and 42% reported clinically significant distress, indicating a substantial psychological burden after oral cancer diagnosis as shown in table No II.

Table No II. Psychological Variables of Patients after diagnosis with Oral Cancer.

Variable	Median	Interquartile Range (IQR)	Minimum - Maximum	Abnormal n (%)
HADS Anxiety	6.0	7 (4-11)	2-18	30 (30)
HADS Depression	9.0	7(6-13)	4-19	32 (32)
NCCN Distress Thermometer	6.0	6(4.25-7)	1-9	42 (42)

IQR= Interquartile Range

Since the psychological variables were not normally distributed, the Mann-Whitney U test was applied to examine gender differences. Female patients had significantly higher depression scores (Median = 11, IQR: 6-13)

compared to males (Median = 8, IQR: 5-12; U = 702.5, p = 0.003). No significant differences were observed for anxiety or overall distress as shown in table No III.

Table No III . Mann-Whitney U Test for Gender Differences in Psychological Variables (n = 100)

Psychological Variable	Gender	Median (IQR)	Mann-Whitney U	Z	p-value
HADS Anxiety	Male	5 (3-10)	1048.0	-0.428	0.669
	Female	6 (4-11)			
HADS Depression	Male	8 (5-12)	702.5	-2.977	0.003*
	Female	11 (6-13)			
NCCN Distress Thermometer	Male	5 (3-7)	1076.5	-0.214	0.831
	Female	6 (4-7)			

*Statistically Significant

The Kruskal-Walli’s test was applied to compare psychological variables among the categories of socioeconomic status, marital status, education level, employment status, and type of oral cancer. Anxiety scores differed significantly across socioeconomic classes, with patients from lower socioeconomic groups reporting higher anxiety (p = 0.040). Depression scores varied significantly by

marital status and education level, indicating that married patients and those with lower educational attainment experienced higher depression levels. No significant differences were observed for overall distress measured by the NCCN Distress Thermometer across any demographic or clinical variables as shown in table No IV.

Table No IV. Kruskal-Wallis Test for HADS Anxiety, Depression and NCCN Distress Thermometer among the Demographic and Clinical Variables (n = 100)

Grouping Variable	H	Df	p-value
HADS Anxiety			
Socioeconomic Status	6.448	2	0.040*
Marital Status	3.221	2	0.200
Education Level	0.658	2	0.720
Employment Status	3.982	4	0.408
Type of Oral Cancer	1.294	3	0.731
HADS Depression			
Socioeconomic Status	3.221	2	0.200
Marital Status	14.142	3	0.003*
Education Level	9.852	4	0.043*
Employment Status	9.125	4	0.058
Type of Oral Cancer	1.257	3	0.739
NCCN Distress Thermometer			
Socioeconomic Status	3.221	2	0.200

Marital Status	1.257	3	0.739
Education Level	1.294	3	0.731
Employment Status	3.982	4	0.408
Type of Oral Cancer	0.658	2	0.720

*Statistically Significant, H= Kruskal-Walli’s Statistic, Df =Degree of Freedom

Discussion:

In the current research shows an important addition in the local evidence-based data reporting that oral cancer patients diagnosed with oral cancer suffer with a substantial psychological distress throughout the treatment of oral cancer. In the present cohort around 42% screened with clinically significant distress based on NCCS distress thermometer, 32% with depression and 30% with anxiety through HADS scale. Even these evaluations were done right after the diagnosis of oral cancer. Such findings can be compared to reported literature, though slightly less than, pooled estimates from broader cancer patient reporting centers where recent HADS-based studies report anxiety in 46–50% and depression in 30–40% of patients across treatment modalities.¹⁴ Additionally, they align with the worldwide recognition that patients with head and neck cancer, including those with oral cancer, have one of the most significant psychological burdens among oncology groups due to the dangers to speech, swallowing, and appearance.¹⁵

The demographic of our population is slightly different from many reported western studies¹⁶ but these are in **contradiction** with locoregional cancer related epidemiological studies which might be due to deferent rate of exposure to etiological factors, health care facilities and public awareness regarding early diagnosis and single centre-based treatment modalities.¹⁷⁻¹⁸ it is observed that mostly(76%) of the patients presented with advance stage of oral cancer, buccal mucosa being the most common clinical site with high rate (67%) among female patients and 50% patients were from underprivilege population based on socioeconomic status which is the similarly reported studies from Pakistan and South Asia. These high values linked oral cancer with socioeconomically disadvantaged

groups with advanced stages at diagnosis and delayed presentation. Given that advanced stage has been frequently linked to increased distress and symptom load in head and neck cancer survivors, our finding that nearly three quarters of patients were in stage III–IV is very significant.¹⁹⁻²⁰

Based on HADS scale, anxiety (30%) and depression (32%) can be compare to many selective oral cancer related cohort studies as in 2024 Japanese study shows that 1/3 of the patients had anxiety and depression. Study reported that the tongue site and marital status were the independent predictor regarding decreased postoperative scores which in consistent with our findings which highlights the important role of support group and health awareness with literacy in predicting psychological distress and its outcomes on treatment.²¹⁻²²

In the present cohort the reported distress burden (median DT score 6; 42% above the abnormal cut-off) which is also alien with new studies reported on distress thermometers. These are marginally > NCCN’s conventional ≥4 criterion based on a 2023 methodological analysis which reported that distress thermometer cut-off of ≥6 shows clinically substantial distress in advanced cancer which reflect and strengthen clinical relevance of present study.²³ Rowe DG et al²⁴ conducted systematic review and metanalysis in 2025 and reported that around 1/3 shows high distress perioperatively, complex treatment and advanced cancer stage as contributing factor. Our patients’ distress levels were significant and comparable to these more general perioperative findings, which is not surprising considering that they were evaluated following histological confirmation and before to reconstructive surgery.²⁴ Khattak MI et al¹⁸ reported in her qualitative study from Khyber Pakhtunkhwa,

Pakistan that late diagnosis, fear of disease, financial burden of disease and social isolation are the main contributing factors to develop high psychological distress among the patients with recently diagnosed oral cancer which is also align with findings. Rate of reported distress is raising in south Asian region throughout treatment and it is still underrecognized might be due to inadequate screening, limited referral pathways are the reported constrains in head and neck cancer patients. Targeting a tertiary public hospital in Pakistan by using NCCN Distress Thermometer and HADS at the time of diagnosis and sociodemographic are the characteristic for this study which make it a unique contribution in the literature. These results lend credence to the methodical integration of standardized instruments like HADS and DT into regular preoperative evaluation at JPMC and comparable facilities, with focused psychosocial interventions for high-risk subgroups that seem particularly susceptible to psychological morbidity, including women, patients from lower socioeconomic backgrounds, and those with less education.

Limitations and Recommendation

The study was cross sectional, self reported anxiety, depression and psychological distress scale with single time assessment from single centre with small sample size which limits its generalization to other regions and treatment centres. In future, research should be conducted using longitudinal, multicentre to asses these anxiety, depression and psychological distress from diagnosis, surgery, reconstruction and at least 1 year post reconstruction follow up.

Conclusion: The present study concluded that patients reported with oral cancer had high level of psychological distress, anxiety and depression before going for reconstructive surgery. Gender, education, marital status and socioeconomic status have impact on the development of psychosocial well being of patient. With respect to increase Patient treatment related outcomes, these finding suggests the important of regular assessment psychological and all-encompassing supportive care in oral cancer individual through the treatment plan.

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