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Original Research Article

Psychological Assessment in Patients With Head and Neck Tumors

Sana Aziz[1*], Ayesha Pervaiz[2], Fatima Siddiqui[2], Shaista Iqbal[3], Aqsa Jawed[4], Shahzad Maqbool[2]

[1]Department of ENT, PNS Shifa Hospital and BUHSCK, Pakistan
[2]Department of ENT, PNS Shifa Hospital, Karachi, Pakistan
[3]Department of ENT, CHK, DUHS, Karachi, Pakistan
[4]Department of ENT, DUHS, Karachi, Pakistan
**Corresponding author`s email address:* Sanaazizkhan18@gmail.com

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Abstract: *Patients with head and neck tumors frequently experience significant psychological distress due to functional impairment, disfigurement, and the complex nature of treatment. Timely identification of anxiety, depression, and quality-of-life issues is essential for holistic cancer care.* ***Objective:*** *To assess the prevalence and severity of anxiety, depression, and quality-of-life impairments in patients diagnosed with head and neck tumors.* ***Methods:*** *This cross-sectional study included 384 patients with histologically confirmed head and neck tumors. Psychological status was assessed using the Hospital Anxiety and Depression Scale (HADS) and the Patient Health Questionnaire-9 (PHQ-9). Functional and symptom-specific quality of life was evaluated using the EORTC QLQ-H&N35 module. Data were analyzed to determine the prevalence and severity of psychological distress and domain-specific impairments.* ***Results:*** *Among 384 participants, 68.0% were male and the majority were aged between 46–60 years. The most common tumor site was the oral cavity (33.9%), and over half (54.4%) received combined modality therapy. According to HADS, 49.2% of patients had clinical anxiety, while 58.3% showed clinical depression. PHQ-9 results indicated that 36.7% had moderate and 17.2% had severe depression. High mean scores in EORTC domains were observed in dry mouth (71.6), social eating (67.4), and pain (65.2), indicating substantial symptom burden.* ***Conclusion:*** *A significant proportion of patients with head and neck tumors experience clinical levels of anxiety and depression along with considerable functional and social impairments. These findings emphasize the importance of routine psychological assessment and multidisciplinary supportive interventions as part of comprehensive oncological care.*

Keywords: Head and neck cancer, Anxiety, Depression, Quality of life, Psychological assessment

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Introduction

Cancer remains one of the leading causes of mortality worldwide. In 2017, it was the second most common cause of death after cardiovascular disease, accounting for 10.08 million out of 56 million global deaths, according to WHO data. In 2022, the Spanish Register Cancer Net (Red Española de Registro de Cáncer) reported 7,779 cases of head and neck cancer (HNC) among 280,100 new malignancies. Like other chronic illnesses, HNC profoundly disrupts patients' lives, introducing both biological and biographical challenges that alter their perceptions of current and future identity and wellbeing (1, 2). Stark and House emphasize that anxiety is prevalent among cancer patients and that early identification and management are essential for comprehensive care. Healthcare providers, including those outside the field of mental health, must understand the manifestations of anxiety to differentiate between normal and pathological responses and develop communication strategies that alleviate psychological distress (3). Among all cancer types, HNC is considered particularly emotionally burdensome due to the high rate of facial disfigurement and functional impairment associated with its treatment (4). Compared to other ENT patients, individuals with HNC demonstrate significantly higher rates of psychiatric comorbidities. According to Lydiatt et al., the risk of anxiety and depression in HNC patients is 15–50% higher than in patients with other forms of cancer (5). Treatment for HNC can impair essential functions such as speech, swallowing, breathing, taste, and smell. As the disease progresses, social interaction often becomes difficult (6). Tracheostomy and cannula placement, while medically necessary, can result in visible disfigurement of the anterior neck and negatively influence body image perception (BIP), compounding physical and emotional strain (7). Given that the face plays a central role in self-concept, communication, and interpersonal relationships, changes to facial appearance are especially distressing (8). These surgical and therapeutic consequences necessitate targeted strategies for long-term psychological and functional rehabilitation (9).

Patients with HNC frequently contend with anxiety, depression, health-related fears, financial concerns, and familial stress. The stigma associated with cancer and visible disfigurement may further isolate them socially and emotionally (10). Mutilating injuries to the head and neck, more than other regions, are linked to reactive psychological disorders, often due to drastic changes in appearance and body image. These effects can cascade into challenges in sexual and social functioning, partner relationships, and overall quality of life (QOL), particularly in cases involving permanent stomas from laryngeal cancer treatment (7-11).

Moreover, conflict with caregivers or family members, if unaddressed, may worsen psychological outcomes (11). Although studies underscore the value of psychological support, many patients prefer to receive this information directly from their surgeons rather than through indirect methods like brochures or videos (12). Shiraz et al. noted that patients with higher levels of psychological distress report lower quality of life, and around 40% expressed willingness to receive psychological support (13). Despite general satisfaction with surgical care, key concerns remain: unresolved emotional needs, dissatisfaction with appearance even after reconstructive procedures, and employment disruptions due to HNC treatment.

Understanding the type of anxiety experienced by patients is crucial for tailoring psychological interventions. State anxiety refers to a temporary emotional condition characterized by nervousness, increased heart rate, and situation-specific worry (14). In contrast, trait anxiety reflects a more stable personality tendency toward experiencing negative emotions like fear and apprehension, often rooted in genetic and developmental factors (15). Given the significant psychological impact of HNC and its treatments, a focused assessment is necessary to identify, address, and manage the emotional and cognitive burdens these patients face. This study aims to evaluate the psychological profile of patients with head and neck tumors, with particular emphasis on anxiety, depression, and quality of life, to inform strategies for integrated psychosocial care.

Methodology

This study titled "Psychological Assessment in Patients with Head and Neck Tumors" was conducted at the Oncology and Psychiatry Departments of Pakistan Navy Station (PNS) Shifa Hospital, Karachi. The research aimed to comprehensively evaluate the psychological status of patients diagnosed with head and neck tumors, considering parameters such as depression, anxiety, and quality of life during different phases of disease management. The study duration spanned seven months, from January 2024 to July 2024.

This was a descriptive, cross-sectional study employing a quantitative research design. The sample size was calculated using the OpenEpi sample size calculator, considering a 95% confidence level, a 5% margin of error, and an assumed prevalence of psychological distress in oncology patients to be approximately 50%, based on previously published local and international data. The estimated sample size was 384 patients.

A non-probability consecutive sampling technique was used to recruit participants who met the inclusion criteria. All patients aged 18 years and above, of either gender, diagnosed with primary head and neck tumors, and receiving treatment (surgery, radiotherapy, chemotherapy, or combined modalities) at PNS Shifa Hospital were included in the study. Patients with a previously diagnosed psychiatric illness before tumor diagnosis, those with recurrent or metastatic disease, patients on psychotropic medications unrelated to cancer therapy, and those unwilling to participate were excluded to ensure a focused assessment of psychological impact due to cancer diagnosis and treatment.

Participants were approached during their routine visits to the oncology outpatient department or while admitted in the oncology and ENT wards. After obtaining informed consent, each participant underwent a structured psychological assessment performed by trained clinical psychologists. Three key standardized tools were employed for data collection:

1. Hospital Anxiety and Depression Scale (HADS) was used to assess levels of anxiety and depression. It comprises 14 items—seven for anxiety and seven for depression—scored on a four-point Likert scale. A score of 0–7 was considered normal, 8–10 borderline, and 11–21 indicative of clinical anxiety or depression. The HADS has been previously validated in cancer populations and is suitable for use in outpatient and inpatient settings.
2. Patient Health Questionnaire-9 (PHQ-9) was used specifically to assess the severity of depressive symptoms. This nine-item instrument reflects DSM-IV criteria for depression and assigns scores between 0 and 27. Cut-off scores of 5, 10, 15, and 20 correspond to mild, moderate, moderately severe, and severe depression, respectively.
3. European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire - Head and Neck Module (EORTC QLQ-H&N35) was administered to evaluate cancer-specific quality of life. This tool includes 35 items covering multiple domains, such as pain, swallowing, senses, speech, and social eating. Each response was scored and converted into a linear scale from 0 to 100, with higher scores on symptom scales indicating worse symptoms and higher scores on functioning scales indicating better functioning.

All assessments were conducted in a confidential environment to ensure participant comfort and honest responses. If needed, questionnaires were translated into Urdu using standard forward-backward translation methods, and assistance was provided for illiterate participants by trained staff without leading their responses.

Demographic and clinical data, including age, gender, tumor site, stage, treatment modality, and duration since diagnosis, were also recorded using a structured proforma. Data entry was performed using IBM SPSS Statistics Version 26.0. Descriptive statistics such as means and standard deviations were calculated for continuous variables, while frequencies and percentages were computed for categorical variables. The association between psychological parameters and clinical variables was evaluated using chi-square tests for categorical variables and independent-sample t-tests or ANOVA for continuous variables. A p-value of less than 0.05 was considered statistically significant.

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of PNS Shifa Hospital, Karachi, prior to the commencement of data collection. All procedures followed the ethical principles outlined in the Declaration of Helsinki. Participants were informed about the purpose of the study, assured of confidentiality, and informed consent was obtained before enrollment.

Results

A total of 384 patients diagnosed with head and neck tumors were included in this study, with a mean age of 51.8 ± 13.6 years. The majority of the participants were male (n = 261, 68%) and female patients accounted for 32% (n = 123). The most commonly affected site was the oral cavity (33.9%), followed by the larynx (21.1%), oropharynx (17.7%), hypopharynx (11.7%), nasopharynx (9.6%), and others (6.0%). Table 1 summarizes the baseline demographic and clinical characteristics of the study population.

Table 1. Demographic and Clinical Characteristics of the Participants (n = 384)

Variable	n (%)
Gender	
Male	261 (68.0%)
Female	123 (32.0%)
Age Group (years)	
18–30	34 (8.9%)
31–45	91 (23.7%)
46–60	160 (41.7%)
>60	99 (25.8%)
Tumor Site	
Oral cavity	130 (33.9%)
Larynx	81 (21.1%)
Oropharynx	68 (17.7%)
Hypopharynx	45 (11.7%)
Nasopharynx	37 (9.6%)
Other	23 (6.0%)
Treatment Modality	

Surgery only	74 (19.3%)
Radiotherapy only	59 (15.4%)
Chemotherapy only	42 (10.9%)
Combined therapy	209 (54.4%)
Time Since Diagnosis	
≤6 months	178 (46.4%)
>6–12 months	127 (33.1%)
>12 months	79 (20.5%)

The Hospital Anxiety and Depression Scale (HADS) was used to assess psychological distress. The mean anxiety score was 9.6 ± 4.5, while the mean depression score was 10.4 ± 4.3. Based on the HADS scoring system, 58.3% of the participants had clinically significant depression (score ≥ 11), and 49.2% had clinically significant anxiety. Table 2 presents the distribution of HADS scores.

Table 2. Anxiety and Depression Status Assessed via HADS (n = 384)

Score Category	Anxiety n (%)	Depression n (%)
Normal (0–7)	112 (29.2%)	97 (25.3%)
Borderline (8–10)	83 (21.6%)	63 (16.4%)
Clinical (11–21)	189 (49.2%)	224 (58.3%)
Mean ± SD	9.6 ± 4.5	10.4 ± 4.3

A statistically significant difference in anxiety and depression scores was observed across different tumor sites and treatment modalities using ANOVA ($p < 0.05$). Patients undergoing combined therapy had the highest levels of psychological distress.

The PHQ-9 was used to evaluate depression severity. The results indicated that the majority of patients (n = 141, 36.7%) had moderate depression, while 17.2% suffered from severe depression. Table 3 displays PHQ-9 results.

Table 3. Severity of Depression Measured by PHQ-9 (n = 384)

PHQ-9 Score Range	Category	n (%)
0–4	Minimal/None	41 (10.7%)
5–9	Mild Depression	85 (22.1%)
10–14	Moderate Depression	141 (36.7%)
15–19	Moderately Severe	49 (12.8%)
20–27	Severe Depression	66 (17.2%)
Mean ± SD		11.8 ± 5.2

A significant association was found between PHQ-9 scores and gender ($p = 0.021$), with female patients reporting higher levels of depression.

The quality of life assessment revealed the most distressing domains were dry mouth (mean = 71.6 ± 18.3), trouble with social eating (67.4 ± 20.1), and pain (65.2 ± 19.6). Functional scores were notably lower in patients receiving combined modality treatment. Table 4 provides the average domain scores from EORTC QLQ-H&N35.

Table 4. Selected Domains from EORTC QLQ-H&N35 (n = 384)

Domain	Mean Score ± SD
Pain	65.2 ± 19.6
Swallowing	58.3 ± 20.7
Senses (taste/smell)	62.4 ± 22.5
Speech	54.1 ± 18.4
Social Eating	67.4 ± 20.1
Social Contact	60.7 ± 19.9
Dry Mouth	71.6 ± 18.3
Sticky Saliva	59.3 ± 17.5
Trouble with Opening Mouth	55.2 ± 16.9
Weight Loss	48.8 ± 14.2

Significant differences in quality of life scores were observed across treatment modalities using ANOVA ($p < 0.001$), with combined therapy being associated with worse symptom scores, especially in the domains of swallowing, speech, and dry mouth.

Pearson correlation analysis showed a significant positive correlation between PHQ-9 scores and HADS depression scores ($r = 0.76$, $p < 0.001$), indicating consistency between instruments. There was also a moderate correlation between anxiety levels and symptom burden from the QLQ-

H&N35 domains of pain, social eating, and speech (r = 0.43–0.57, p < 0.01).

Discussion

The current study aimed to evaluate the psychological status and quality of life in patients diagnosed with head and neck tumors, focusing on anxiety, depression, and domain-specific challenges using validated instruments (HADS, PHQ-9, and EORTC QLQ-H&N35). The findings of our study reinforce the growing body of evidence indicating a substantial burden of psychological distress among this patient population.

In terms of demographic distribution, the male predominance (68%) in our sample aligns with the global epidemiological pattern of head and neck cancers (HNC), which are more common in men, likely due to higher exposure to risk factors such as tobacco and alcohol use (16, 17). The majority of participants were aged between 46 and 60 years (41.7%), consistent with peak incidence ages reported in other regional and international studies (17).

The tumor distribution revealed that the oral cavity (33.9%) was the most frequent site, followed by larynx (21.1%) and oropharynx (17.7%). This pattern matches the regional HNC profiles previously described by Farnebo et al. and Schliephake, who highlighted a higher prevalence of oral and laryngeal cancers due to cultural and environmental factors (18, 19).

Regarding treatment modalities, over half of the patients (54.4%) underwent combined therapy, which includes a mixture of surgery, radiotherapy, and/or chemotherapy. Literature indicates that combination therapies, while often essential for disease control, tend to exacerbate physical and psychological morbidity due to cumulative toxicities and body image changes (17).

Our findings showed that nearly half of the participants (49.2%) had clinical anxiety and an even higher proportion (58.3%) had clinical depression as per HADS. These rates are significantly elevated when compared to the general population and are consistent with the findings of other studies on HNC patients, such as Shiraz et al. (16), who reported that up to 40% of patients experience clinically significant distress.

The severity of depression measured using PHQ-9 further confirmed these outcomes, with 36.7% having moderate depression and 17.2% experiencing severe depression. These results are comparable to those of Kazi et al., who reported moderate-to-severe depressive symptoms in over 30% of HNC patients (18). Our study adds to this evidence by showing a higher rate, possibly due to the inclusion of patients early in the treatment timeline (46.4% diagnosed within the last 6 months), a phase often associated with heightened emotional vulnerability.

The high levels of anxiety and depression could be attributed to multiple disease-specific factors including fear of disfigurement, loss of function, and uncertainty regarding prognosis (17). In line with Hammerlid et al. (19), our findings stress the need for routine psychological assessment at diagnosis and throughout the course of treatment.

The mean scores from the EORTC QLQ-H&N35 reflect a substantial compromise in multiple QoL domains. The highest scores—indicative of greater symptom burden—were observed in dry mouth (71.6), social eating (67.4), and pain (65.2). This suggests that oral dysfunction and pain are among the most distressing symptoms experienced by HNC patients.

The dry mouth issue is especially common post-radiation, as documented in previous research, where salivary gland damage leads to persistent xerostomia and negatively affects swallowing and speaking functions (17, 18). Similarly, social eating and social contact difficulties reflect both physical impairment and psychological withdrawal. These findings resonate with Rogers et al. , who emphasize the multidimensional impact of HNC treatment on patients' social lives and emotional well-being.

Notably, trouble with speech (54.1) and mouth opening (55.2) highlight functional challenges that significantly impair communication—an essential component of social interaction and self-expression. Previous research has shown that speech difficulties, especially following laryngectomy or extensive oral resections, contribute to lowered self-esteem and social isolation (16).

Moreover, senses such as taste and smell (62.4) were also significantly affected, leading to reduced appetite and compromised nutritional status. This correlates with our findings on weight loss (48.8), a frequently under-recognized factor that can lead to worsening fatigue and depression.

Compared to the findings by Shiraz et al. (16), who reported that approximately 40% of patients were open to psychological support, our results suggest even greater unmet psychological needs, as indicated by the higher prevalence of both clinical anxiety and depression. Additionally, while prior studies have noted that most patients are satisfied with their medical treatment, they often report persistent dissatisfaction with post-treatment appearance and function, particularly in the context of facial disfigurement (16, 18). This aligns with our data indicating high levels of social and sensory impairment.

Our findings diverge slightly from those of Schliephake (19), who reported slightly lower depression prevalence, possibly due to different patient cohorts, timing of assessments, or variations in healthcare support systems.

The results underscore the urgent need for integrated psychosocial support as part of standard oncological care for HNC patients. Routine screening for depression and anxiety using tools like HADS or PHQ-9 should be implemented, particularly in the early months post-diagnosis. Furthermore, interventions addressing oral function, speech therapy, nutritional counseling, and body image support are critical to enhance overall quality of life.

Our study reinforces the recommendation by Rogers et al. that communication of psychological information is more effective when provided face-to-face by the surgical team, highlighting the value of empathetic, multidisciplinary communication.

Conclusion

This study highlights the high prevalence of anxiety, depression, and quality-of-life impairments among patients with head and neck tumors. The findings underscore the need for routine psychological screening and the integration of mental health support into standard oncological care to improve overall patient well-being and treatment outcomes.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-24)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

SA (Post Graduate Trainee)
Manuscript drafting, Study Design,
AP (Post Graduate Trainee)
Review of Literature, Data entry, Data analysis, and drafting articles.
FS (Assistant Professor)
Conception of Study, Development of Research Methodology Design,
SI (Post Graduate Trainee)
Study Design, manuscript review, critical input.

AJ (Post Graduate Trainee),
Manuscript drafting, Study Design,
SM (HOD ENT & Head and Neck Surgery)
Conception of Study, Development of Research Methodology Design,

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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