

## ORIGINAL ARTICLE

## A Comparative Assessment of Clinical and Pathological Staging in Patients Undergoing Surgery for Oral Squamous Cell Carcinoma in Pakistan

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### ABSTRACT

**Objective:** To compare the radiological and histopathological staging of Oral Squamous cell carcinoma and to measure the concordance between clinical and histopathological staging in patients visiting a tertiary care hospital in Pakistan.

**Study Design:** Retrospective cross-sectional study.

**Place and Duration of Study:** Foundation University College of Dentistry, September 2019–November 2023.

**Materials and Methods:** Thirty-two histopathologically confirmed cases of OSCC who underwent tumor resection with neck dissection were included. Clinical and radiological records were reviewed for clinical staging (cT, cN), and histopathological reports for pathological staging (pT, pN). Concordance was assessed using Chi-square, Kendall's tau-b, Cohen's Kappa, and Cramer's V, with  $p < 0.05$  considered significant.

**Results:** Concordance between clinical tumor size (cT) and pathological tumor size (pT) was 46.9%, The Chi-square test was not significant ( $p = .232$ ), but Kendall's tau-b showed a significant positive correlation, Cramer's V indicated a moderate effect size ( $V = 0.349$ ), and Cohen's Kappa demonstrated fair agreement ( $\kappa = 0.271$ ,  $p = .005$ ). Nodal staging showed marked discordance (84.4%) between cN and pN, with no significant association ( $p > 0.05$ ), weak correlation ( $\tau_b = 0.124$ ,  $p = .433$ ), moderate but non-significant effect size ( $V = 0.408$ ,  $p = .192$ ), and negligible agreement ( $\kappa = 0.002$ ,  $p = .968$ ).

**Conclusion:** Assessment of OSCC staging showed fair agreement for tumor size but negligible correlation for nodal status. These findings highlight the limitations of clinical staging and stress the role of pathological confirmation in guiding treatment.

**Key Words:** *Concordance, Lymph Node, OSCC, Pathological Staging.*

### Introduction

Oral squamous cell carcinoma (OSCC) represents a significant burden of disease globally, with most patients reported in South East Asia<sup>1</sup>. Among the various factors influencing the prognosis and treatment outcomes in OSCC, lymph node metastasis plays a pivotal role. Lymph node involvement is a critical determinant of disease staging, treatment planning, and overall survival in OSCC patients<sup>2</sup>.

Accurate evaluation of lymph nodes is essential for guiding therapeutic decisions and predicting patient

outcomes in OSCC. Traditionally, clinical examination reinforced with radiological imaging were utilized for preoperative lymph node assessment. Clinical examination involves palpation of cervical lymph nodes to detect any enlargement or abnormality. However, its sensitivity and specificity are limited, particularly for subclinical nodal disease.<sup>3</sup>

Radiological imaging modalities, including ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), offer non-invasive means to assess lymph node status in OSCC patients<sup>4</sup>. These imaging techniques provide detailed anatomical information and enable visualization of nodal size, morphology, and the presence of necrosis or extracapsular spread. Based on CT scan findings and the presence or absence of lymph node metastasis, critical decisions regarding the type and extent of neck dissection are made. The primary objective, along with wide local excision of the tumor, is to clear the lymphatic channels in order to reduce the risk of recurrence and improve the survival rate of patients undergoing treatment<sup>2</sup>.

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Histopathological analysis of resected lymph nodes remains the gold standard for diagnosing metastatic disease in OSCC<sup>5</sup>. It provides definitive information on tumor burden, extracapsular spread, and lymph node ratio, which are crucial for determining disease stage and informing further treatment decisions like post op radiotherapy/chemotherapy<sup>6</sup>.

It has been reported that the tumor size clinically, radiologically and histopathologically doesn't show much variation but lymph node involvement despite using the sensitive radiological tools may show discrepancy when compared with histopathological results. Clinical staging encompasses both clinical and radiological data. There is a trend of clinical overstaging of the disease which may lead to extensive surgery resulting in increased morbidity in the patient<sup>7</sup>. Keeping in mind in OSCC complete eradication of diseases and potential channels are the hallmarks of treatment planning.

This study was carried out to compare the clinical and histopathological staging of OSCC and to measure the concordance between clinical and histopathological staging. Clinical staging encompasses both clinical and radiological data. Numerous research on the link between the clinical and histological findings of neck nodes in OSCC patients have recently been reported in worldwide literature<sup>8,9</sup>. To the best of our knowledge, Pakistan has not yet made any such comparisons, though. Thus, this study's goal is to assess the aforementioned contrast at a Pakistani tertiary care facility.

## Materials and Methods

The retrospective analysis involved 32 newly diagnosed patients with biopsy-confirmed Oral Squamous Cell Carcinoma (OSCC), all managed with curative intent at the Department of Oral and Maxillofacial Surgery, Foundation University College of Dentistry and Hospital (FUCD&H), between 2019 and 2023. Sample size of 32 was calculated using Raosoft online calculator, keeping confidence level at 95%, anticipated population proportion was kept at 4.17 with margin of error at 7%.<sup>10</sup> Ethical review was obtained from institute review committee letter no. FF/FUMC/215-265 Phy22. Patients included in this study were those who had complete clinical, radiological, and histopathological records and had undergone surgical management for oral squamous

cell carcinoma with wide local excision and neck dissection. Patients were excluded if they had surgery for tumors other than oral squamous cell carcinoma, had recurrent disease, distant metastasis, or incomplete clinical and radiological information. Initially, 38 cases were reviewed; however, 6 cases were excluded due to incomplete documentation, resulting in a final sample of 32 patients. Follow-up information was not available for this retrospective dataset and, therefore, was not evaluated in the present study.

Clinical and histopathologic staging was conducted according to the 7th edition of the American Joint Committee on Cancer (AJCC) for oral squamous cell carcinoma. Although the 8th edition incorporates additional parameters such as depth of invasion and extranodal extension, these variables were inconsistently reported in the retrieved archival histopathological records. As this was a retrospective study based on pre-existing pathology reports, several essential components required for accurate 8th edition staging were unavailable. Therefore, the use of the 7th edition AJCC staging system was methodologically justified to ensure consistency, completeness, and accuracy of staging within the constraints of the available data<sup>10</sup>.

## Preoperative Variables

Initial assessment of biopsy proven OSCC cases was done at OMFS Department, FUCD&H. where clinical findings along with demographic details were recorded followed by referral to Radiology Department, Fauji Foundation Hospital (FFH) for preoperative radiological assessment. CT-scan with contrast of the head and neck region was performed on all patients using Puffed-cheek technique, Toshiba Aquilon 16 slice. Axial, coronal and sagittal sections of 5mm thickness along with neck sections of 2mm thickness were obtained. Overall Ct head and neck effective dose was 1.2mSv. For a more comprehensive assessment, findings across different imaging planes were also correlated. To rule out distant metastasis, ultrasound abdomen and chest x-ray were also done. All the CT scans were reviewed by a consultant Radiologist ensuring uniformity and minimizing variability.

Based on CT scan reports the clinical variables considered were; tumor site, clinical tumor size (cT), clinical node stage (cN), bone and submandibular

gland involvement. Positive indicators for clinical node stage (cN) were node size (lymph nodes diameter > 1cm), round shape, central necrosis, perinodal stranding and laterality.<sup>11</sup>

#### **Operative Variable**

After initial assessment, all cases were discussed in Multi-disciplinary team meeting comprising of OMFS surgeons, radiation oncologists, medical oncologists, radiologists, pathologists and plastic surgeons to determine the detailed treatment plan for each case including the indications for adjuvant treatment individually. All individuals underwent treatment through radical surgical intervention, the type of neck dissection was decided considering radiological assessment. Modified radical neck dissection or supra omohyoid neck dissection either ipsilateral or bilateral was done keeping in mind the nodal and clinical staging.

#### **Post op Variables**

Pathological staging data was gathered from post-operative histopathology reports taken from Histopathology Department, Foundation University Medical College. The pathological variables considered were tumor grade, tumor size (pT), tumor margins, pathological node stage (pN), submandibular gland in addition bone invasion. Pathological node stage (pN) was based on presence of metastatic deposits, extra nodal extension and laterality of positive neck nodes. The patients with positive neck nodes, positive margins and perineural/ perivascular invasion were referred to Oncology department FFH for further adjuvant treatment.

Data were analyzed using SPSS version 24. Normality was assessed using the Shapiro–Wilk test. Continuous variables were expressed as mean  $\pm$  standard deviation, while categorical variables were presented as frequencies and percentages. Concordance between clinical and pathological staging of T and N classifications was determined. The Chi-square test was applied for categorical variables, while Kendall's tau-b was used to evaluate correlations between cT/pT and cN/pN. A p-value < 0.05 was considered statistically significant.

Cohen's Kappa was used to assess agreement (<0.20 = slight, 0.21–0.40 = fair, 0.41–0.60 = moderate, >0.60 = strong). Cramer's V was applied to estimate effect size (0.10 = small, 0.30 = moderate,  $\geq$ 0.50 =

large).

#### **Results**

Thirty-two cases, who underwent neck dissection for oral squamous cell carcinoma. Mean age of patients was 60.57 years (Age range 39-79) with 90.6% females. Rest of our data characteristics are shown in Table I Tests of normality indicated that age was normally distributed with p-value of greater 0.05.

On correlating the location with pT and pN, lesions on lower alveolar ridge showed comparatively advanced stage. (Figure 1)

Concordance between clinical tumor size (cT) and pathological tumor size (pT) was found to be 46.9%. 53.1% cases showed discordance primarily due to clinical over staging.

However, clinical (cN) and pathological (pN) nodal staging showed huge discordance of 84.4%. Figure 2

According to AJCC 7th edition staging criteria for OSCC, 10 of 32 neck dissection specimens showed regional lymph node metastasis. Only three cases showed concordant clinical (cN) and pathological (pN) stage and were labelled as true positive. Similarly, three cases were clinically under staged and were marked false negative and two cases were true negatives as both were cN0 and pN0. However, 24 cases were clinically over staged and were labelled as false positive. While correlating cN & pN using chi-square, P-value was found to be  $p > 0.05$  and was considered insignificant as shown in table 2. Measures of association further supported these findings. Cramer's V suggested a moderate effect size ( $V = 0.408$ ), but this association was not statistically significant ( $p = .192$ ). Kendall's tau-b indicated only a weak positive relationship ( $\tau_b = 0.124$ ,  $p = .433$ ), and Cohen's Kappa demonstrated almost no agreement between the variables ( $\kappa = 0.002$ ,  $p = .968$ ).

Taken together, these results suggest/demonstrated that there is no statistically significant relationship between the two ordinal variables under study, despite a moderate effect size indicated by Cramer's V.

Similarly, the discordance between clinical tumor size (cT) and pathological tumor size (pT) was 53%. There were 15 true positives, zero true negatives, 15 false positives (that were clinically over staged) and 2 false negatives (clinically under staged). The Chi-Square test did not show a statistically significant

association between cT and pT ( $p = .232$ ), Similarly, Cramer's V suggested a moderate effect size ( $V = 0.349$ ), though this was not statistically significant. Kendall's Tau-b revealed a significant positive relationship. Additionally, Cohen's Kappa indicated a fair but significant level of agreement ( $\kappa = 0.271, p = .005$ ). Table III. While the overall Chi-Square test was not significant, that no association between the two

variables while the specific tests demonstrate a meaningful, moderate, and statistically significant positive association and agreement between cT and pT.

We also correlated clinical tumor size (cT) with pathological node stage (pN) and statistically insignificant relationship ( $p=0.804$ ) was found as shown in table IV.

**Table I: Patients and Tumor Characteristic of Study Participants (n= 32)**

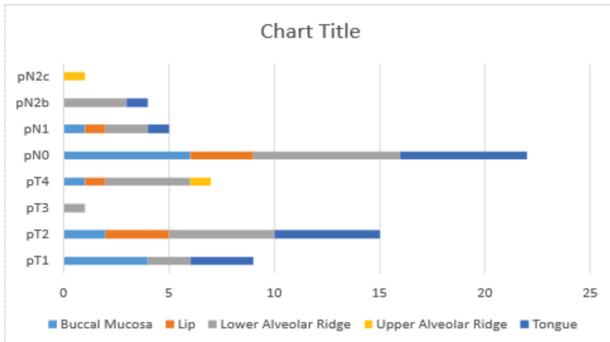
Age		Localization		Age
Younger half of median	16 (50%)	Buccal Mucosa	7 (21.9%)	Younger half of median
Older half of median	16 (50%)	Lip	4 (12.5%)	Older half of median
Sex		Lower Alveolar Ridge	12 (37.5%)	Sex
Male	3 (9.4%)	Upper Alveolar Ridge	1 (13.1)	Male
Female	29 (90.6%)	Tongue	8 (25%)	Female
Neck Dissection Type		Treatment		Neck Dissection Type
		Surgery	11 (34.4%)	
Supra omohyoid	3 (9.4%)	Surgery + RT	13 (40.6%)	Supra omohyoid
Modified Radical	25 (78.1%)	Surgery + CT	1 (3.1%)	Modified Radical
Bilateral	4 (12.5 %)	Surgery + RT + CT	3 (9.4%)	Bilateral
Histological Grade		Histological Positive Margin		Histological Grade
Well Differentiated	28 (87.5%)	Yes	8 (25%)	Well Differentiated
Moderate	3 (9.4%)	No	24 (75%)	Moderate
Poor	1 (3.1%)			Poor
Clinical Tumor Size (cT)		Pathological Tumor Size (pT)		Clinical Tumor Size (cT)
cT1	5 (15.6%)	pT1	9 (28.1%)	cT1
cT2	7 (21.9%)	pT2	15 (46.9%)	cT2
cT3	2 (6.3%)	pT3	1 (3.1%)	cT3
cT4	18 (56.3%)	pT4	7 (21.9%)	cT4
Clinical Node Stage (cN)		Histological Node Stage (pN)		Clinical Node Stage (cN)
cN0	3 (9.4%)	pN0	22 (68.8%)	cN0
cN1	4 (12.5%)	pN1	5 (15.6%)	cN1
cN2a	4 (12.5%)	pN2a	0 (0%)	cN2a
cN2b	17 (53.1%)	pN2b	4 (12.5%)	cN2b
cN2c	4 (12.5%)	pN2c	1 (3.1%)	cN2c

**Table II: Concordance of cN and pN staging**

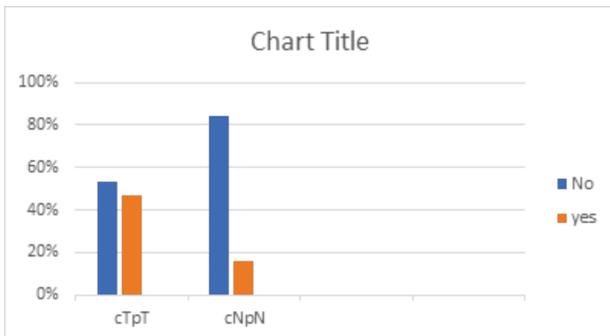
		Histological Node Stage					Total	Chi-square P – value	Kendall 's tau - b	Cramers ' V	Kappa (K)
		pN0	pN1	pN2a	pN2b	pN2c					
Clinical Node stage	cN0	2	1	0	0	0	3	0.192	r=0.124 p=0.433	V= 0.408	0.002 P=0.968
	cN1	4	0	0	0	0	4				
	cN2a	2	0	0	2	0	4				
	cN2b	12	3	0	2	0	17				
	cN2c	2	1	0	0	1	4				
Total		22	5	0	4	1	32				

**Table I: Patients and Tumor Characteristic of Study Participants (n= 32)**

		Pathological Tumor Size (pT)				Total	Chi-square p- value	Kendall's tau b	Cramer' V	Kappa (K)
		pT1	pT2	pT3	pT4					
<b>Clinical Tumor Size (cT)</b>	cT1	3	2	0	0	5	0.232	r=0.394 p= 0.006	0.349	K=0.271 P=0.005
	cT2	2	5	0	0	7				
	cT3	0	2	0	0	2				
	cT4	4	6	1	7	18				
<b>Total</b>		9	15	1	7	32				



**Figure 1: Occult Metastasis in Oral Subsites**



**Figure 2: Bar Graph Showing Concordance Of cT/pT and cN/pN**

**Discussion**

The assessment of primary tumor characteristics and lymph node involvement in Head and Neck Cancer holds significant importance. Variations may arise in the clinical and pathological T and N stages of Head and Neck Cancer<sup>12</sup>. This discrepancy is primarily attributed to inaccuracies in interpreting preoperative imaging, the diverse methods employed for identifying finding, and the impact of malignant lymph node biology on contrast agent uptake<sup>13</sup>.

The present retrospective study showed a strikingly high percentage (90%) of female patients, reason being administrative policy as till the time of data collection FFH use to cater for private patients (both male and female) and only the families of retired army personnels spouse and children under 10yrs).

Thus this contrasting finding does not require any comparison with local or worldwide studies.

The most common sub site of oral cavity cancer observed was lower alveolar ridge. Similar finding is observed in multiple national studies reporting buccal mucosa and lower alveolar ridge to be most frequent sites for OSCC<sup>14, 15</sup>. This is particularly attributed to a common habit in South Asian population particularly Indians and Pakistani who not only chew but also place the known etiological agents of OSCC like tobacco, pan (beetle quid), gutka (areca nut), naswar (powdered tobacco) in the buccal vestibule area<sup>16</sup>. Interestingly, in our study occult metastasis (pN+) in relation to oral subsites showed lower alveolar ridge to be the most frequent site. The finding was in accordance to a study held in South Korea who also reported the mandibular and maxillary posterior areas as the predominant subsites<sup>17</sup>. Another study however reported that tongue cancer metastasizes more often than alveolar ridge and floor-of-the-mouth cancer<sup>18</sup>.

Accurate preoperative prediction of lymph node (LN) status via contrast enhanced CT scan plays a pivotal role in determining the extension of neck dissection required for patients with OSCC<sup>18</sup>. As per the guidelines for OSCC management, three supraomohyoid neck dissection were carried out for patients with cN0 as a prophylactic neck dissection<sup>19</sup>, rest were treated with radical neck dissection unilateral or bilateral.

Since 87% of our cases were well differentiated, out of these 64% cases had pN0, running comparison between histological grade and nodal metastasis didn't produce statistically significant results. However, comparing our results with a Korean study somewhat similar findings were seen who observed 67% cases of well differentiated OSCC also had pN0 status<sup>17</sup>. While comparing relation between neck node metastasis and clinical tumor size in present study, a statistically insignificant relation was found

( $p=0.804$ ). This in contrast to a study held in South Korea who found a statistically significant relationship ( $p=0.04$ ) among clinical tumor size, neck node metastasis<sup>17</sup>.

In order to make comparison of cT/pT and cN/pN results of our study with worldwide studies comparable results were seen. In a prospective multicenter study encompassing a substantial patient cohort of 560 patients diagnosed with oral squamous cell carcinoma, the agreement rate between clinical and pathological staging was found to be 52.2% for T staging, which is better than our concordance rate of 47%. For N staging they reported 53.5%, however a strikingly huge discrepancy as seen in our study with a value of 84%<sup>20</sup>.

In a separate study conducted in Poland, almost 50% cases showed agreement between the pathologic stages and their parallel clinical stages. The accuracy of clinical diagnoses for pN stages varied between 66.67% and nearly 90%, with the greatest consistency seen in severe cases.<sup>21</sup>

Another study involving patients with tongue malignancy, the agreement between clinical and pathological T stage was assessed to be 60.6%, and for the N stage, it was determined to be 54.5%.<sup>22</sup>

Biron et al. emphasized that most T staging discrepancies resulted in upstaging of the disease (from early to advanced stage) in an attempt to ensure that patients were not undertreated<sup>23</sup>. For the same reason somewhat, similar findings were observed in our study where among discordant cases (53%), 46.7% cases were clinically overstaged.

Another study conducted by Choi et al. on oral cancer cases reported a concordance amount of 87.3% among clinical and pathological tumor staging, and 82.5% among clinical and pathological nodal staging<sup>24</sup>. The higher concordance they assumed is due to use of CT along with highly sensitive PET scans for clinical staging. This is in contrast to our study where only CT scans were used as a tool for clinical staging. From a risk benefit perspective, overstaging let the surgeon to adopt a more aggressive therapeutic approach which potentially improves the oncological outcomes by reducing the risk of recurrence or metastasis especially in a third world country like Pakistan.

Kreppel et al. observed a reasonable alignment of 62% for T stage assessment and 59% for N stage

evaluation in a similar patient cohort. In instances where discrepancies occurred, the primary tumors were frequently overestimated. Additionally, they analyzed survival outcomes through univariate analysis, which showed that cT, cN, and pT categories had a notable effect on overall survival. Nevertheless, multivariate analysis identified only the pT and pN classifications as having a significant influence on overall survival.<sup>11</sup>

Another study analyzed 54 patients with oral squamous cell carcinoma (OSCC), focusing on the agreement between clinical and pathological staging, T2 tumors were frequently upstaged, while T4a tumors were often downstaged when comparing clinical to pathological staging. The highest concordance was observed in T4a stage tumors, followed by T2, T3, and T1. In nodal status, N1 showed the most variation, with the highest concordance observed in N0 and N1 stages.<sup>25</sup>

Additional Polish study carried out comparison between overall TNM staging with cT/pT and cN/pN. Approximately one-third of individuals classified as stage pN1 were clinically over staged. Their results indicated that T upstaging occurred frequently during the initial phases of head and neck cancer, whereas underestimating tumor dimensions was more prevalent in advanced stages of the disease (53.3%)<sup>21</sup>. This is in contrast to our study, in which most patients were diagnosed in advanced stage of disease.

Overall, most studies agree that clinical staging often diverges from pathological findings, with T categories commonly overestimated to minimize undertreatment. Concordance for T staging generally falls around 50–65%, improving when advanced imaging such as PET is used. N staging shows greater variability, with both moderate agreement and marked discrepancies reported. Consensus exists on the tendency to upstage early tumors and underestimate advanced ones, though the extent of concordance remains inconsistent across populations and methodologies.

### Limitations

Among the few limitations of the current study, most prominent was a low sample size attributed to the fact that we had to exclude quite a good number of cases because of unavailability of complete data.

Another limitation which may have resulted in over

staging of disease was use of only CT scans as a preoperative radiological assessment tool.

### Conclusion

This study revealed substantial discrepancies between clinical and pathological staging of OSCC, particularly in nodal assessment, where agreement was negligible. In contrast, clinical evaluation of tumor size showed moderate but statistically significant agreement with pathological findings. These results emphasize that reliance on clinical staging alone. Incorporating histopathological confirmation and, where possible, advanced imaging modalities is essential for accurate staging, appropriate treatment decisions, and improved patient outcomes.

### Recommendations

Being a low-income country but wherever applicable, more sensitive radiological techniques like MRI or PET scans could be used for pre-operative clinical staging of OSCC patients in order to reduce the number of false positive cases.

Furthermore, in future studies use of AJCC 8<sup>th</sup> edition for cancer staging should be used allowing inclusion of more advanced histopathological variables like depth of invasion (DOI).

Moreover prospective, Multi center studies with larger cohorts should also be considered.

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**Conflict of Interest:** The authors declare no conflict of interest.

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### REFERENCES

1. Tan Y, Wang Z, Xu M, Li B, Huang Z, Qin S, et al. Oral squamous cell carcinomas: state of the field and emerging directions. *Int J Oral Sci.* 2023;15(1):44. doi:10.1038/s41368-023-00229-9.
2. Arimoto S, Hasegawa T, Takeda D, Saito I, Amano R, Akashi M, et al. Lymphangiogenesis and lymph node metastasis in oral squamous cell carcinoma. *Anticancer Res.* 2018;38(11):615762. <https://doi.org/10.21873/anticancer.12968>.
3. Sharumathy RR. Analysis of Clinical and Diagnostic Methods of Identifying Metastatic Cervical Lymphadenopathy in Tertiary Care Centre. Kilpauk Medical College, Chennai; 2022.
4. Dahal SB, Flores VAA. Evaluation of Diagnostic Imaging Techniques for Early Detection and Accurate Staging of Oral Squamous Cell Carcinoma (OSCC). *J Intell Connect Emerg Technol.* 2023;8(3):2939.
5. Warnakulasuriya S. Global epidemiology of oral and oropharyngeal cancer. *Oral Oncol.* 2020;102:104551. doi:10.1016/j.oraloncology.2019.104551.
6. Mwabaya R. A Retrospective Review of Clinical-Histological Characteristics, Treatment Modalities and Survival of Adult Patients with Oral Cancers Treated at Ocean Road Cancer Institute, Tanzania. Muhimbili University of Health and Allied Sciences; 2021.
7. Gupta P, Migliacci JC, Montero PH, Zanoni DK, Shah JP, Patel SG, et al. Do we need a different staging system for tongue and gingivobuccal complex squamous cell cancers? *Oral Oncol.* 2018;78:6471. doi:10.1016/j.oraloncology.2018.01.022.
8. Eder-Czembirek C, Erlacher B, Thurnher D, Erovic BM, Selzer E, Formanek M. Comparative analysis of clinical and pathological lymph node staging data in head and neck squamous cell carcinoma patients treated at the General Hospital Vienna. *Radiol Oncol.* 2018;52(2):17380. doi:10.2478/raon-2018-0015.
9. Pinto JV, Sousa MM, Silveira H, Vales F, Moura CP. Comparison of Clinical and Pathological Staging in Patients with Head and Neck Cancer After Neck Dissection. *Int Arch Otorhinolaryngol.* 2023;27(04):e5718. doi:10.1055/s-0042-1758248.
10. Narayana ML, Kumarguru BN, Hameed Arafath A, Gaur U, Lakshmi P, Sravani AL. Correlation of clinical, radiological and histopathological cervical lymph node involvement in oral cancer. *Int J Otorhinolaryngol Head Neck Surg.* 2020;6(2):311. doi:10.18203/issn.2454-5929.ijohns20200810.

11. Kreppel M, Nazarli P, Grandoch A, Safi A-F, Zirk M, Nickenig H-J, et al. Clinical and histopathological staging in oral squamous cell carcinoma Comparison of the prognostic significance. *Oral Oncol.* 2016;60:6873. doi:10.1016/j.oraloncology.2016.07.002.
12. Glastonbury CM. Critical changes in the staging of head and neck cancer. *Radiol Imaging Cancer.* 2020;2(1):e190022. doi:10.1148/rycan.2020190022.
13. López F, Mäkitie A, de Bree R, Franchi A, de Graaf P, Hernández-Prera JC, et al. Qualitative and quantitative diagnosis in head and neck cancer. *Diagnostics.* 2021;11(9):1526. doi:10.3390/diagnostics11091526.
14. Ansari F, Asif M, Kiani MN, Zareef A, Rashid F, ud Din H, et al. Relationship between Mast Cell Density and Microvessel Density in Oral Squamous Cell Carcinoma and Normal Oral Mucosa: Immunohistochemical Analysis using CD117 and CD34 Antibodies. *Int J Pathol.* 2022;11420. doi:10.31557/APJCP.2020.21.12.3533.
15. Ansari FM, Asif M, Kiani MN, Ara N, Ishaque M, Khan R. Evaluation of Mast Cell Density using CD117 antibody and Microvessel Density Using CD34 Antibody in Different Grades of Oral Squamous Cell Carcinoma. *Asian Pacific J Cancer Prev APJCP.* 2020;21(12):3533. doi:10.31557/APJCP.2020.21.12.3533.
16. Zaib N, Maqsood A, Ghayas S, Ansari F, Kiyani A, Masood R. Analysis of Discrepancy Index between Clinical and Histopathological Diagnosis of Oral Lesions. *Asian Pacific J Cancer Prev APJCP.* 2023;24(9):3207. doi:10.31557/APJCP.2023.24.9.3207.
17. Sharma A, Kim J-W, Paeng J-Y. Clinical analysis of neck node metastasis in oral cavity cancer. *J Korean Assoc Oral Maxillofac Surg.* 2018;44(6):282. doi:10.5125/jkaoms.2018.44.6.282.
18. Jerjes W, Upile T, Petrie A, Riskalla A, Hamdoon Z, Vourvachis M, et al. Clinicopathological parameters, recurrence, locoregional and distant metastasis in 115 T1-T2 oral squamous cell carcinoma patients. *Head Neck Oncol.* 2010;2:121. doi:10.1186/1758-3284-2-9.
19. Rahamthulla SAKU, Priya PV, Hussain SMDJ, Nasyam FA, Akifuddin S, Srinivas VS. Effectiveness of the supraomohyoid neck dissection in clinically N0 neck patients with squamous cell carcinoma of buccal mucosa and gingivobuccal sulcus. *J Int Soc Prev Community Dent.* 2015;5(2):13140. doi:10.4103/2231-0762.155745.
20. Koch WM, Ridge JA, Forastiere A, Manola J. Comparison of clinical and pathological staging in head and neck squamous cell carcinoma: results from Intergroup Study ECOG 4393/RTOG 9614. *Arch Otolaryngol Neck Surg.* 2009;135(9):8518.
21. Chloupek A, Kania J, Jurkiewicz D. Concordance between clinical and pathological T and N stages in polish patients with head and neck cancers. *Diagnostics.* 2023;13(13):2202. doi:10.3390/diagnostics13132202.
22. Türk B, Kaya KS, Ünsal Ö, Tetik F, Çelebi İ, Bozkurt G, et al. What is the consistency between clinical and pathological staging in tongue cancer? *Turkish J Ear Nose Throat.* 2018;28(4):17380.
23. Biron VL, OConnell DA, Seikaly H. The impact of clinical versus pathological staging in oral cavity carcinomaa multi-institutional analysis of survival. *J Otolaryngol Neck Surg.* 2013;42(1):28.
24. Choi N, Noh Y, Lee EK, Chung M, Baek C, Baek K, et al. Discrepancy between cTNM and pTNM staging of oral cavity cancers and its prognostic significance. *J Surg Oncol.* 2017;115(8):10118. doi:10.1002/jso.24610
25. Suresh GM, Koppad R, Prakash BV, Sabitha KS, Dhara PS. Prognostic indicators of oral squamous cell carcinoma. *Ann Maxillofac Surg.* 2019;9(2):364370. doi:10.4103/ams.ams\_253\_18.

**CONFLICT OF INTEREST**

Authors declared no conflicts of Interest.

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**DATA SHARING STATEMENT**

The data that support the findings of this study are available from the corresponding author upon request.

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