

## Screening for malnutrition in oral cavity cancer patients prior to treatment: A cross-sectional study

Haissan Iftikhar<sup>1</sup>, Anwar Suhail<sup>2</sup>, Amna Urooba<sup>3</sup>, Karim Rizwan Nathani<sup>4</sup>, Zeeshan Shaikh<sup>5</sup>, Muhammad Wasif<sup>6</sup>

### Abstract

This study was conducted to assess the frequency of pre-operative malnourishment in patients being treated for oral cavity squamous cell carcinoma. A retrospective chart review was carried out at the Aga Khan University Hospital, Karachi, on 62 patients. Patients were screened pre-operatively through a standard nutritional assessment tool at the time of admission to assess for malnutrition. Mean age of presentation was  $48.34 \pm 13.11$  years, mean height was  $165 \pm 8.62$  cm, weight  $66.09 \pm 14.98$  kg and BMI of  $24.09 \pm 4.84$ . Males were 82.3% and 17.7% were females. At the time of admission, a significant number of patients, 12 (19.4%) were prone to malnourishment, while 3 (4.8%) patients were malnourished: Assessment was done by using a standardised nutritional assessment tool.

**Keywords:** Malnutrition, Squamous cell Carcinoma, Radiotherapy

**DOI:** <https://doi.org/10.47391/JPMA.243>

### Introduction

Squamous cell carcinomas are mostly observed in patients in the region of the head and neck.<sup>1</sup> Due to the malignancy itself 52% of the patients are malnourished at the time of diagnosis. Malnutrition in these patients has been defined as BMI of  $<18.5$ - $20 \text{ kg/m}^2$  and unintended weight loss in one to six months. The oral intake is poor leading to a compromised functional ability, increased length of hospital stay resulting in a greater financial cost. Mc. Racken et al reported that patients with a BMI of 25 or less had a survival of 24.6 months and patients with a BMI of 25 had survival rate of 28.3 months.<sup>2</sup> Cachexia is commonly seen in patients with cancer which is due to decreased intake and increased catabolic activity caused by the tumour, including TNF- $\alpha$ , interleukins, gamma interferon and recently detected cancer cachectic factor 24K.<sup>3</sup>

Poor dietary habits and addiction to alcohol and smoking are frequently seen in such patients. Adding to this, the site of the tumour itself causes dysphagia and odynophagia.<sup>4,5</sup> Malnutrition prior to the start of treatment in head and

<sup>1,2,5,6</sup>Department of Surgery, Aga Khan University Hospital, Karachi, Pakistan;

<sup>3,4</sup>Final Year Student, Aga Khan University Hospital, Karachi, Pakistan.

**Correspondence:** Haissan Iftikhar e-mail: haissaniftikhar@gmail.com

neck cancer patients coupled with the extensive treatment these patients undergo, including surgery and radiotherapy, leads to a vicious cycle of decreased skeletal mass and function, malnourishment followed by various complications such as wound dehiscence and delayed healing.<sup>6,7</sup> A significant proportion of patients with head and neck cancer die due to the outcomes of malnutrition rather than malignancy itself.<sup>8</sup>

Different screening tools have, over the time, been validated such as Nutritional Risk Screening Tool 2002 (NRS 2002), Malnutrition Universal Screening Tool, Nutritional Risk Index, etc. Over the time these tools have aided the health professionals to identify the risk of malnutrition in cancer patients. We aimed to assess pre-operative malnutrition in our cohort for the treatment of oral cavity squamous cell carcinoma based on a validated nutritional screening tool.

### Methods and Results

A descriptive cross sectional study was conducted from January 2014 to December 2014. Prior to the start of the study, exemption from the institutional ethical review committee was obtained. The study site was a tertiary care hospital, where initial nutritional assessment was done. Data was collected via purposive sampling.

Eligibility criteria included patients with confirmed diagnosis of squamous cell carcinoma of oral cavity above the age of 18 years. Exclusion criteria were all patients with histological findings other than squamous cell carcinoma, distant metastasis before the commencement of treatment and patients treated primarily outside the ENT department or treated outside AKUH. Patients with missing data, who did not complete their treatment and who were lost to follow up were excluded from the study.

**Table-1:** Demographic characteristics.

Variable	Mean + SD (Continuous) n (%) (Categorical)
Age(years)	48.34 ± 13.11
Gender	
Male	51 (82.2)
Female	11 (17.74)
Weight (Kg)	66.09 ± 14.98
Height (cm)	165 ± 8.62
BMI (kg/m <sup>2</sup> )	24.09 ± 4.48

**Table-2:** Tumour and outcome variables.

Variable		n (%) (Categorical)
pT-stage	T1	13 (21)
	T2	17 (27.4)
	T3	19 (14.5)
	T4a	23 (37.1)
	T4b	N/A
Stage	1	11 (17.7)
	2	19 (14.5)
	3	5 (8.1)
	4	37 (59.7)
Oral cavity sub-site	Buccal mucosa	33 (53.2)
	Tongue	17 (30.6)
	Floor of mouth	4 (6.4)
	Alveolus	8 (12.9)
Grade	Well differentiated	19 (30.6)
	Moderately differentiated	32 (51.6)
	Poorly differentiated	11 (17.7)
Nutritional screening tool	Not malnourished (Score < 2)	47 (75.8)
	Prone to malnutrition (Score 2-4)	12 (19.4)
	Malnourished (Score > 4)	3 (4.8)

Identification of malnutrition was done at the time of hospital admission, a night prior to the day of surgery, using NRS 2002. It consists of four questions: whether BMI was < 20.5 kg/m<sup>2</sup>, if the patient had lost weight in the previous three months, whether there was any decreased appetite and if the patient was severely ill? If the screening score resulted in a yes score final screening was performed.<sup>9</sup>

Data analysis was done using Stata version 12. Continuous variables are reported with mean standard deviation and categorical variables were reported with frequencies and percentages.

Data of 74 patients was collected. Patients with incomplete data or lost to follow-up (12) were excluded from the study. The final sample size was 62, majority i.e. 51 (82.2%) were males, while the remaining 11 (17.74%) were females. The mean age was 48.34 ± 13.11 years, mean height was 165 ± 8.62cm, and weight 66.09 ± 14.98 kg and BMI of 24.09 ± 4.84. (Table 1)

At the time of admission 12 (19.4 %) patients were prone to malnutrition, 3 (4.8%) patients were malnourished and the majority of the patients 47 (75.8%) were normal (not malnourished). According to pathological T-staging there was almost equal distribution of early 30 (48.4%) versus late

stage disease 32 (51.6%) patients. On final histopathological report majority of the patients fell in stage 4 (59.7%) followed by stage 1, 2 and 3, most common sub-site in oral cavity was the buccal mucosa in 33 (53.2%) patients followed by tongue in 17 (30.6%). Majority of the patients, i.e. 32 (51.6%), had moderately differentiated squamous cell carcinoma on final histopathology, followed by well-differentiated and poorly differentiated squamous cell carcinoma, respectively. (Table 2)

## Conclusion

Oral cavity carcinoma patients are at an increased risk of malnutrition at the time of presentation as seen in our study. Every effort should be made for correcting the nutritional status of the patients. A prospective study would accurately assess the prevalence of malnutrition in patients presenting with oral carcinoma.

**Disclaimer:** None

**Conflict of interest:** None.

**Funding disclosure:** None.

## References

1. Watkinson J, Gilbert R, "Stell & Maran's textbook of head and neck surgery and oncology 5th edition. In: Watkinson J, Gilbert R, eds. Lip and Oral Cavity Cancer. CRC Press, 2012; pp-549.
2. McRackan TR, Watkins JM, Herrin AE, Garrett-Mayer EM, Sharma AK, Day TA, Gillespie MB. Effect of body mass index on chemoradiation outcomes in head and neck cancer. *Laryngoscope*. 2008; 118:1180-5.
3. Patel HJ, Patel BM. TNF- $\alpha$  and cancer cachexia: Molecular insights and clinical implications. *Life Sci*. 2017; 170:56-63.
4. Schwartz SM, Doody DR, Fitzgibbons ED, Ricks S, Porter PL, Chen C. Oral squamous cell cancer risk in relation to alcohol consumption and alcohol dehydrogenase-3 genotypes. *Cancer Epidemiol Biomarkers Prev*. 2001; 10:1137-44.
5. Raber-Durlacher JE, Brennan MT, Verdonck-de Leeuw IM, Gibson RJ, Eilers JG, Waltimo T, et al. Swallowing dysfunction in cancer patients. *Support Care Cancer*. 2012; 20:433-43.
6. Khanh NT, Iyer NG. Management of post-operative fistula in head and neck surgery: Sweeping it under the carpet? *World J Otorhinolaryngol Head Neck Surg*. 2015; 5:93-104.
7. Mueller SA, Mayer C, Bojxhiu B, Aeberhard C, Schuetz P, Stanga Z, et al. Effect of preoperative immunonutrition on complications after salvage surgery in head and neck cancer. *J Otolaryngol Head Neck Surg*. 2019;48:25.
8. Farnebo L, Malila N, Mäkitie A, Laurell G. Early death among head and neck cancer patients. *Curr Opin Otolaryngol Head Neck Surg*. 2016; 24:115-20.
9. Kondrup JE, Allison SP, Elia M, Vellas B, Plauth M. ESPEN guidelines for nutrition screening 2002. *Clin Nutr*. 2003; 22:415-21.