

## **Analysis of Factors Influencing Weight Loss in Patients Undergoing Head and Neck Radiotherapy**

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Weight loss is a prevalent and critical issue in patients undergoing head and neck radiotherapy, often leading to treatment interruptions, reduced efficacy, and poor clinical outcomes. Addressing this challenge is vital in improving patient care and treatment efficacy. This study aimed to analyze factors associated with weight loss during head and neck radiotherapy, to assess the extent of weight loss with clinical and treatment-related influences and to compare the effects of treatment modalities (Intensity Modulated Radiotherapy and 3-D Conformal Radiotherapy). A prospective analysis was conducted at the Department of Radiotherapy and Oncology, National Cancer Institute Maharagama, between October and November in 2024. A total of 61 patients who received head and neck radiotherapy were included. Data on weight changes, treatment modalities, tumor characteristics, and chemotherapy regimens were collected and analyzed using descriptive statistics, group comparisons, correlation analysis, and regression modeling to identify significant predictors of weight loss. In this study, 91.8% of patients experienced weight loss, with a mean reduction of 4.03 kg ( $\pm$  2.14). Males lost more weight than females, and those receiving concurrent chemoradiotherapy showed the greatest weight loss. Tumor location significantly impacted outcomes; patients with soft palate tumors lost the most due to impaired speech and swallowing. IMRT was linked to greater weight loss than 3D-CRT, likely from increased toxicities in nutritional areas. Higher radiation doses ( $\geq$  60 Gy) were also associated with greater loss. Regression analysis identified concurrent chemoradiotherapy, sex, and tumor location as significant predictors, while age, tumor stage, and dose were having weaker associations. The study demonstrates that radiotherapy-related weight loss is dose- and modality-dependent, reinforcing the importance of early, individualized nutritional interventions. Effective nutritional management is crucial for improving outcomes in head and neck cancer. Future studies should include larger, multi-center cohorts and assess baseline nutrition, psychosocial factors, and long-term weight patterns.

**Keywords:** Head and neck cancer, radiotherapy, weight loss, nutritional management