

## Review Article

### Effect of prosthetic rehabilitation on health-related quality of life of patients with head and neck cancer-A systematic review

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#### ABSTRACT:

**Aim:** To review the evidence on the oral health-related quality of life (OHRQoL) of head and neck cancer survivors after they have been treated with prosthetic rehabilitation. **Methodology:** Search of literature was done electronically using Medline, Embase, and Cochrane databases. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) were utilized as the framework in designing, implementing and reporting the current review. Intervention component of the patient, intervention, comparison, outcome (PICO) for the current review was the prosthetic rehabilitation performed on the surgically treated head and neck cancer patients (participants); and outcome was the OHRQoL. Methodological index for non-randomized studies was the assessment tool utilized to report on the quality of the included studies. **Results:** The initial search had identified 800 records and the final level of screening included eight articles. Six studies were experimental in design and two were cross-sectional. Cumulative sample of the head and neck cancer cases from the selected studies was 342, with 34.8 (13.7) and 73.5 (7.7) years as the highest and lowest mean age recorded from the included studies. More male cases (67.5%) were reported than female cases (32.5%) and squamous cell carcinoma was the most commonly diagnosed malignancy. Maxillary reconstruction and implant supported prosthesis were the choice of treatment for most of the cases. Different versions of oral health impact profile (OHIP) constructs were preferred by six studies. **Conclusion:** The included studies has very minimal data but it provides substantial evidence to demonstrate the improvement in OHRQoL of head and neck cancer patients after prosthetic rehabilitation. But still more research studies must be done to evaluate the OHRQoL in patients with Head and Neck Cancer.

**Keywords:** Head and neck cancer, oral cancer, oral health-related quality of life (OHRQoL), oral functions, prosthetic rehabilitation.

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#### INTRODUCTION

Treatment of head and neck cancer primarily involves surgery and radiotherapy, which may or may not be combined with chemotherapy, depending on the stage of the disease.<sup>1</sup> The main oral complications caused by these therapies are oral mucositis, radiodermatitis, vascular lesions, tissue atrophy, dysgeusia, fibrosis of tissues and muscles, mucosal edema, soft tissue necrosis, decreased saliva flow, opportunistic infections, radiation caries and osteoradionecrosis.<sup>2-4</sup> The oral condition of head and neck cancer patients deteriorates due to the antitumor treatment and may

compromise the masticatory function as a result of damage to tooth integrity, periodontal structures, mandibular and maxillary support, temporo mandibular joint, masticatory musculature, facial expression and tongue, as well as their tissues, innervation and vascularization.<sup>5,6</sup> The diagnosis of oral conditions and oral health care should therefore, be part of multidisciplinary cancer care, with the aim of providing comprehensive treatment, including physical and emotional support to patients.<sup>5,7</sup> The World Health Organization defines quality of life as "individuals' perception of their position in life in the

context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. This concept is very largely influenced in a complex way by the physical health of the subject, psychological state, level of independence, social relationships as well as relation to the essential elements of his environment “<sup>8</sup>. There are thus many different aspects to quality of life, one of which is oral quality of life. Oral health is an indicator of overall health, well-being and quality of life. It encompasses a range of diseases and conditions that include dental caries, periodontal disease, tooth loss, oral cancer, oral manifestations of HIV infection, oro-dental trauma, noma and birth defects such as cleft lip and palate.<sup>9</sup> In the context of cancer, multidisciplinary teams pay attention to the quality of the remaining lifetime of patients in their care. Head and neck cancers involve a functional crossroads and have a fundamental impact on patients’ perceived quality of life. Because of this, maxillofacial prosthetic dentistry has a place in the multidisciplinary approach.<sup>10,11</sup> Researchers have been developing tools to assess the impact of oral health related to the quality of life of systemically compromised individuals.<sup>12</sup> Within this context, the World Health Organization (WHO) has included this topic among their targets for 2020<sup>13</sup>, to provide routine patient treatment which includes both physical and psychosocial aspects related to oral problems.<sup>14-16</sup>

#### **AIM OF THE PRESENT STUDY**

To review the evidence on the oral health-related quality of life (OHRQoL) of head and neck cancer survivors after they have been treated with prosthetic rehabilitation.

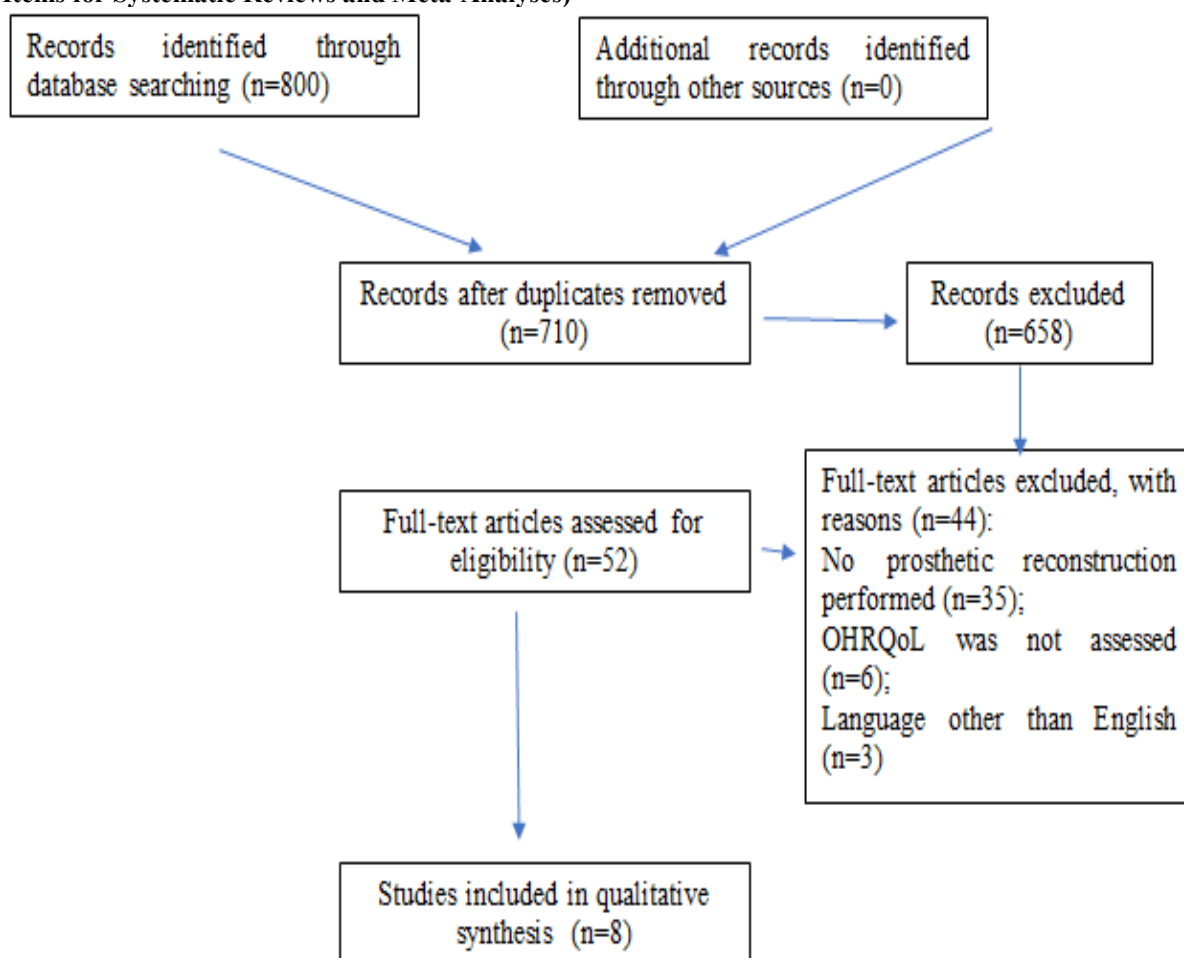
#### **METHODOLOGY**

Guidelines provided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) were utilized as the framework in designing, implementing and reporting the current review. The search was performed during the month of March 2023 and the all published studies until the date were subjected to the selection criteria. Publications in English language that use OHRQoL or oral functions as prognostic measure after performing a surgical reconstruction with a prosthetic appliance to treat the patients suffering from head and neck cancer were included. Abstract presentations, opinion-based

commentaries, and dissertations were excluded. Search of literature was done electronically using Medline, Embase, and Cochrane databases. Methodological index for non-randomized studies (MINORS) was the assessment tool utilized to report on the quality of the included studies. It has a total of 12 questions assessing the various aspects of published researches, specifically focusing on their methodologies.

#### **RESULTS**

The initial search had 800 hits and after removal of duplicates 710 published articles remained. Titles and abstracts of these publications were reviewed for their eligibility and 51 articles were selected. Full texts of these were reviewed and assessed in detail according to the selection criteria. Out of the 51 mentioned earlier, 35 articles had no description of the prosthetic rehabilitation, 6 did not assess the OHRQoL and 3 were published in languages other than English. (Table 1) Cumulative sample of the head and neck cancer cases from the selected studies was 342, with 34.8 (13.7) and 73.5 (7.7) years as the highest and lowest mean age recorded from the included studies. More male cases (67.5%) were reported than female cases (32.5%) and squamous cell carcinoma was the most commonly diagnosed malignancy. Different versions of oral health impact profile (OHIP) constructs were preferred by most of the studies to assess the OHRQoL among the head and neck cancer patients. Overall, the results were inconclusive to demonstrate the improvement in OHRQoL of head and neck cancer patients after prosthetic rehabilitation. Three studies displayed poor OHRQoL among the survivors by comparing them with healthy controls, irrespective of the type and make of the prostheses. Fromm et al. stated that the oral habits like chewing and swallowing, and the overall esthetic score became worse in comparison to the control group post treatment. Sato et al. stated that the QoL scores in the domains like functional limitations, physical discomfort, and physical disability after the placement of implant supported prosthesis had improved. Fierz et al. had shown significant enhancement in the OHRQoL of head and neck cancer patients whose oral functions were attempted to be restored using prosthetic appliances.

**Table 1- PRISMA flow-chart illustrating the study selection process. (PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses)**

## DISCUSSION

Two thirds of head and neck cancer patients have localized or regionally advanced disease, and although there is controversy regarding the best treatment, they are usually treated with surgery, and radiotherapy, which may or may not be combined with chemotherapy (multimodal treatment). These therapies have adverse effects on oral health, especially if oral diseases such as caries and periodontal disease are already present, and invariably compromise quality of life.<sup>17</sup> Among the most frequent complications that compromise patient quality of life are reduction or absence of salivary flow, radiation cavities, periodontitis, odynophagia, dysphagia, pain and speech difficulties<sup>18</sup>, which may compromise the patient's social, nutritional and global health and quality of life as a whole. Arguably, there are various other confounding factors that may influence the success of a prosthetic rehabilitation. For instance, implant support, size of reconstruction site, anatomical structures involved, presence of other debilitating systemic diseases etc.<sup>4</sup> Stellingsma et al. in 2005 reported that implant retained prostheses were more beneficial in comparison to the traditional removable prosthesis.<sup>16</sup> This could be attributed to the difference

in the stability of both the prostheses, and the rehabilitations performed using removable units may lead to functional limitation and physical discomfort thus hampering the OHRQoL.<sup>7</sup> It is to further discuss that the findings derived from the current review also depended on the methodology of the included studies. For instance, the sample sizes were relatively small and not representative. Most of them did not evaluate the OHRQoL of patients before and after the prosthetic rehabilitation. Due to these inconsistencies among the retrieved reports, a meta-analysis was not possible. Experts have also put forth that the patients or their caregivers must be enlightened with the evidence based self-management strategies to overcome the persisting functional and emotional difficulties that the patients may encounter during the first 12 months of their treatment.<sup>9</sup> Studies were not exclusively limited to prosthetic related search terms as there could be several methods of prosthetic rehabilitation. To avoid loss of relevant articles, all the retrieved texts that spoke about QoL in head and neck cancer patients were individually assessed for their eligibility.

## CONCLUSION

The included studies has very minimal data but it provides substantial evidence to demonstrate the improvement in OHRQoL of head and neck cancer patients after prosthetic rehabilitation. But still more research studies must be done to evaluate the OHRQoL in patients with Head and Neck Cancer. The findings are paramount for the clinical decision making and the epidemiological research to enhance patients and public health-related outcomes.

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