

## Efficacy of Oral Rehabilitation Techniques in Patients with Oral Cancer: A Systematic Review and Meta-analysis

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**ADMINISTRATIVE INFORMATION****Support** - King Khalid University.**Review Stage at time of this submission** - Completed but not published.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202450028**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 May 2024 and was last updated on 07 May 2024.**INTRODUCTION**

**Review question / Objective** The main aim of this study is to identify scholarly research articles investigating the impact of oral rehabilitation on the functional outcomes and quality of life of oral cancer patients. Additionally, this study will critically analyze the evidence of the impact of oral rehabilitation on the function or oral structures and quality of life of patients. This study will explore the impact of dental prosthetics, speech therapy, and rehabilitative care on restoring oral function, including chewing, swallowing, and speech. This study will also explore the influence of oral rehabilitation on quality-of-life indicators, including psychosocial well-being, social functioning, and overall patient satisfaction. Moreover, this study will provide evidence-based recommendations for the integration of oral rehabilitation into multifaceted oral cancer

management to optimize patient outcomes and enhance post-treatment recovery.

**Rationale** Oral cancer and its treatments significantly impair oral function and quality of life for patients. Rehabilitation interventions are often used to restore function and quality of life. However, the evidence of their efficacy regarding functional outcomes and quality of life is inconclusive. Therefore, understanding functional outcomes and the impact of oral rehabilitation on the quality of life of oral cancer patients is critical for optimising treatment strategies.

**Condition being studied** The oral cavity is often affected by cancer in the lips, tongue, gums, upper or lower part of the mouth, and the inner lining of the cheeks. Oral cancer typically starts in the squamous cells lining the oral cavity, potentially spreading to other parts of the body if left

unmanaged early. Oral cancer manifests as persistent mouth sores, throat pain or discomfort, chewing difficulty, mouth or neck thickening, persistent bad breath, and voice changes. Nevertheless, proper diagnosis is critical to ascertain the presence of oral cancer since the oral manifestations may arise from other conditions.

Oral cancer is associated with various risk factors, including smoking and smokeless tobacco, heavy alcohol consumption, excessive sun exposure to the lips, and viral infections like human papillomavirus. Early detection through regular dental check-ups and critical examination is essential for optimizing survival rates through successful management. Treatment involves surgery, radiation therapy, chemotherapy, or a combination of these treatments, depending on the cancer severity.

## METHODS

**Search strategy** The following search terms were used in different combinations to optimize different search results for potential articles: oral rehabilitation, dental implants, prostheses, tissue engineering, oral surgery, and oral, lip, palatal, gingival, or buccal mucosa cancer, functional outcomes, quality of life, chewing, and mastication. Tables 1 and 2 show the search strings used for different databases and the results.

**Participant or population** Oral Cancer patients.

**Intervention** Oral rehabilitation, including dental prostheses, implants, and other restorative approaches.

**Comparator** No comparison is applicable.

**Study designs to be included** The reporting of this study adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA).

**Eligibility criteria** This study included research on the functional outcomes and the quality of life of oral cancer patients following oral rehabilitation. Articles fulfilling the modified PICO criteria were selected [21]. The PICOS criteria for eligible studies were defined as follows;

Population (P): Oral cancer patients.

Intervention (I): Oral rehabilitation, including dental prostheses, implants, and other restorative approaches.

Comparison (C): No comparison is applicable.

Primary outcomes (O): Functional outcomes and quality of life.

The potential articles were subjected to the following inclusion and exclusion criteria:

**Inclusion Criteria and Exclusion Criteria** - This study included original research articles published in scholarly journals investigating the functional outcomes and the quality of life of oral cancer patients after oral rehabilitation. In addition, articles with online access to the full text were included. However, reviews, meta-analyses, case reports, editorials, conference abstracts, errata, and opinion pieces were excluded.

**Information sources** A comprehensive literature search was conducted via PubMed, Cochrane Library, Dimensions, ScienceDirect, CINAHL, and Google Scholar to identify scholarly research articles investigating how oral rehabilitation influences functional outcomes and the quality of life of oral cancer patients.

**Main outcome(s)** Functional outcomes and quality of life.

**Data management** Data from the included studies were systematically extracted and tabulated in an Excel workbook using Microsoft Excel software version 2021.

**Quality assessment / Risk of bias analysis** The extracted data were thematically analyzed and reported. Additionally, quantitative data were analyzed using RevMan software version 5.4.1, applying a full-review analysis and an intervention approach. A proportion meta-analysis was carried out using dichotomous data. Additionally, the Maentel-Haenszel statistical method, random effects analysis model, and odds ratio effect measure were applied. Moreover, a 95% confidence interval was used in the analysis.

**Strategy of data synthesis** The literature search yielded 1417 articles, of which 89 duplicates were removed. Further, 1272 were excluded following title and abstract screening. The remaining 56 articles were sought for retrieval, after which 15 studies that met the eligibility criteria were included. The results are presented in Figure 1.

**Subgroup analysis** The data was compiled from a variety of articles:

- Author(s), year of publication, country, study design.
- Total number of patients/datasets.
- Training/validation datasets
- Test datasets.

**Sensitivity analysis** Not applicable.

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**Language restriction** All articles published in English.

**Country(ies) involved** Saudi Arabia.

**Keywords** Oral Cancer, Oral rehabilitation, oral neoplasm, quality of life, mouth cancer.

**Dissemination plans** All the data will be shared after publication of the article.

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