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Clinical Effectiveness of Bioactive and Antimicrobial Denture Liners in Diabetic Patients: 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: INPLASY2025100009

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 4 October 2025 and was last updated on 4 October 2025.

INTRODUCTION

Review question / Objective To assess the clinical effectiveness of bioactive and antimicrobial denture liners on tissue healing, microbial load, and patient-reported outcomes in diabetic denture-wearers.

Rationale Diabetic denture-wearers are at higher risk of denture stomatitis and Candida colonization, and innovative liners may improve tissue healing and reduce microbial load.

Condition being studied Denture stomatitis and Candida albicans colonization in adult patients with diabetes mellitus.

METHODS

Search strategy Systematic searches were performed in PubMed, Scopus, Web of Science, and Cochrane Library for English-language studies from January 2015 to September 2025.

Participant or population Adults with type II diabetes who are complete denture wearers, including those with and without active denture stomatitis.

Intervention Bioactive or antimicrobial denture liners, including drug-eluting tissue conditioners and alternative flexible polymeric denture base materials.

Comparator Conventional soft liners without additives, standard topical antifungal therapy, or traditional acrylic denture base material.

Study designs to be included Randomized controlled trials (RCTs) and comparative observational studies.

Eligibility criteria English-language studies published from 2015 onwards, involving diabetic adults, and directly comparing antimicrobial liners against conventional liners.

Information sources Electronic databases like PubMed, Scopus, Web of Science, Cochrane Library.

Main outcome(s) Denture stomatitis healing and Candida load.

Additional outcome(s) Patient-reported outcomes and safety.

Data management Two reviewers independently screened studies, extracted data, and assessed the risk of bias; data were synthesized narratively and via meta-analysis where appropriate.

Quality assessment / Risk of bias analysis Risk of bias was assessed using RoB 2 for RCTs and the Newcastle-Ottawa Scale for observational studies.

Strategy of data synthesis A random-effects meta-analysis was performed for microbial outcomes where possible, and a narrative synthesis was used for all other outcomes due to lack of quantitative data.

Subgroup analysis No subgroup analyses were performed due to the limited number of included studies.

Sensitivity analysis Not feasible given small number of studies.

Language restriction Included only English-language publications.

Country(ies) involved Saudi Arabia, United States of America, India.

Other relevant information The authors declared no conflict of interest.

Keywords Denture stomatitis; Candida albicans; bioactive denture liner; antimicrobial denture liner; diabetes mellitus.

Dissemination plans The findings are presented in this systematic review will be soon published in a peer reviewed journal.

Contributions of each author

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