Comparative Analysis of Denture Cleanser Effects on Surface Roughness: Traditional vs. 3D-Printed Resin Bases – A Systematic Review

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INTRODUCTION

Digital advances have streamlined dentistry and denture creation. 3D printed denture bases may pose challenges in oral health due to surface roughness, which is conducive to bacterial adhesion. Denture cleansers are commonly employed for surface disinfection.

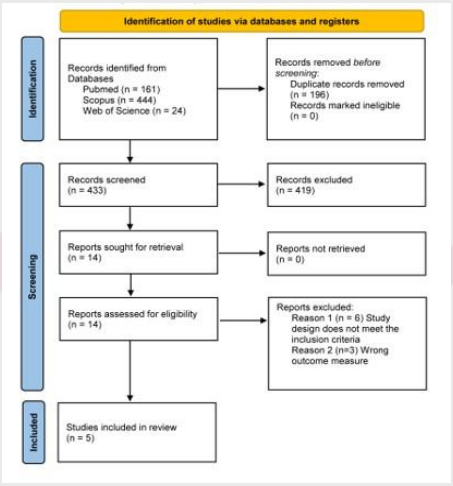
OBJECTIVE

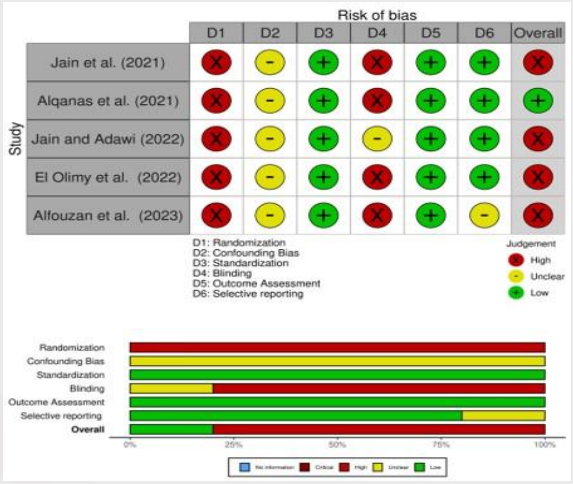
This systematic review aimed to assess the effect of denture cleansers on the surface roughness of 3D-printed denture base resins in comparison to conventionally manufactured counterparts.

RESULTS

- **Heterogeneity** in results of the five studies. **4 out of 5** reported **immersion** of 3D printed denture base resins in denture cleansers significantly **increases the surface roughness**.
- **Two studies** state that most produced alteration in the surface topography: **Additively manufactured > heat polymerized > subtractively manufactured denture base**.
- **One study** state that the elevation in surface roughness of denture base resins was contingent upon the **duration of immersion**.
- **Incremental escalation**, upon **extended immersion**, spanning 360 days in **denture cleaning solution vs. distilled water**.

METHODS & MATERIALS





CLINICAL IMPLICATIONS AND CONCLUSION

Based on the limited evidence available, the use of denture cleansers on 3D-printed denture base resins results in a noticeable increase in surface roughness compared to conventionally fabricated denture bases. Dental practitioners should exercise caution when selecting resin materials and recommending denture cleansers to ensure optimal denture hygiene and longevity. Heterogeneous methodologies and high risk of bias preclude definitive conclusions. Further investigations with standardized methodologies are warranted.

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Full list of references available upon request

ACKNOWLEDGEMENT

1. Dr. Shankargouda Patil
2. Roseman University College of Dental Medicine
Clinical Outcomes Research and Education

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