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# Comparison of the Antibacterial Properties of Resin Cements with and without the addition of Nanoparticles: 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.

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**Amendments -** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 08 October 2023 and was last updated on 08 October 2023.

## INTRODUCTION

**Review question / Objective** How do resin cements' antibacterial characteristics compare to those of other dental adhesive materials?

**Rationale** The antibacterial characteristics of resin cement with nanoparticles have not been extensively studied. This comprehensive research and meta-analysis assessed resin cement's antibacterial abilities following nanoparticle inclusion.

**Condition being studied** Resin cement's antibacterial abilities following nanoparticle inclusion.

## METHODS

**Search strategy** A comprehensive examination was conducted on the PubMed and Scopus databases.

**Participant or population** None the study is only related to the materials.

**Intervention** Nanoparticles in Resin Cements.

**Comparator** Resin cements without nanoparticles.

**Study designs to be included** We took into account both descriptive (case control and cohort) and interventional (trials) based research that was written in English for this review.

**Eligibility criteria** All in vitro studies with data on the effects of disinfection on PVES were included. Studies were selected based on the following criteria: (1) studies should have comparison data between native and disinfected PVES impressions, (2) methods of disinfection should be chemical disinfectants, and (3) studies published in English.pves.

**Information sources** Google Scholar, Pub-Med via MEDLINE, Springer, and Scopus, EBSCO host (Dentistry & Oral Sciences Source database), Science Direct, and Web of Science.

**Main outcome(s)** Nanoparticles (NPs) in resin cement boost antibacterial characteristics.

**Quality assessment / Risk of bias analysis** Two researchers independently assessed the risk of bias of the included articles using — JBI critical appraisal tools. The potential risk of bias was categorized as low if a study provided detailed information pertaining to 70% or more of the applicable parameters.

**Strategy of data synthesis** Two review authors (RS and SH) used the studies to help select studies and document their decisions. This was done in two stages, with the first stage consisting of a title and abstract screening of all studies against the inclusion criteria, and the second stage being a full text assessment of papers that were deemed potentially relevant based on the initial screening.

**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
• Aim of the stud.

**Sensitivity analysis** NA.

**Language restriction** Articles only in English were Selected.

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

**Keywords** Resin Cements, Nano Particles.

**Dissemination plans** All the data and the article will be share after the publication.

**Contributions of each author**
Author 1 - Ravinder Saini - Conceptualization.
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