# International Platform of Registered Systematic Review and Meta-analysis Protocols

# INPLASY

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# Effectiveness of polyetheretherketone (PEEK) Framework in comparison to Zirconia Framework for Fixed Dental Prostheses: 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 3 May 2025 and was last updated on 3 May 2025.

### **INTRODUCTION**

R eview question / Objective Compare the effectiveness and clinical performance of PEEK frameworks to zirconia frameworks.

**Rationale** To clarify the superiority of PEEK or zirconia in FDPs for durability, success rates, aesthetics, and patient satisfaction.

**Condition being studied** Mechanical and clinical outcomes of PEEK and zirconia frameworks in FDPs.

## **METHODS**

**Search strategy** Searched in electronic databases - PubMed, ScienceDirect, Scopus, Cochrane Library, and Google Scholar using PRISMA guidelines.

**Participant or population** Patients receiving FDPs, though all included studies were in vitro.

Intervention PEEK frameworks used in FDPs.

Comparator Zirconia frameworks used in FDPs.

**Study designs to be included** In vitro studies; eligibility criteria allowed RCTs, observational.

**Eligibility criteria** Included studies comparing PEEK and zirconia for FDPs with clinical/ mechanical outcomes; excluded non-English articles.

Information sources PubMed, ScienceDirect, Scopus, Cochrane Library, Google Scholar.

Main outcome(s) Fracture strength, marginal gaps, shear-bond strength.

Additional outcome(s) Flexural strength, stress distribution, surface roughness, load-bearing capacity, color stability, and thermal cycling effects.

**Data management** Two reviewers extracted data using a predefined Excel sheet; disagreements were resolved by a senior reviewer.

Quality assessment / Risk of bias analysis QUIN tool assessment done.

**Strategy of data synthesis** Used RevMan 5.4 for Meta-analysis; Heterogeneity assessment done.

**Subgroup analysis** Shear bond strength analyzed with/without thermocycling.

**Sensitivity analysis** Meta-regression evaluated covariates for Heterogeneity.

Language restriction Only articles published in English.

Country(ies) involved Saudi Arabia, India.

**Other relevant information** High heterogeneity and publication bias reduced.

**Keywords** Ceramic zirconia, PEEK, PEEK polymer, FDP, fracture strength, shear-bond strength, marginal gaps, marginal fits.

**Dissemination plans** Will be published in peer reviewed academic journals.

#### **Contributions of each author**

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