

**A Systematic Review/ Meta-Analysis on the Flexural Strength of 3D-printed Provisional Restorations Fabricated with Different Resins**

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**Review question / Objective** To critically analyze and summarize the existing literature on the flexural strength of 3D-printed provisional restorations fabricated using different resins.

**Rationale** With the increasing use of 3D printing technology in dentistry, understanding how different resin materials affect the flexural strength of provisional restorations is crucial for clinicians and researchers.

**Condition being studied** Flexural strength of Temporary restorations made using various resins.

**METHODS**

**Search strategy** (((3D printed) OR (3D printing)) OR (Computer-aided design materials)) OR (CAD

materials)) AND (((Provisional Restorations) OR (Temporary restorations)) OR (Interim restorations) OR (Transitional restorations)) OR (Substitute restorations))) AND (((Resins materials) OR (Polymer resins)) OR (Photopolymers)) OR (Methacrylate-based)) OR (Photopolymerizable) OR (Ionomer)).

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

**Intervention** Flexural strength of temporary restoration using various resins.

**Comparator** Conventional resins.

**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.

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**Eligibility criteria** Studies that provided data on the flexural strength of provisional restorations made using 3D printing techniques employing various resin materials were considered.

**Information sources** Scopus, web of science, Science Direct, Pubmed.

**Main outcome(s)** comprehensive overview of the flexural strength of 3D-printed provisional restorations fabricated using different resins.

**Data management** This systematic review and meta-analysis adhered to the guidelines outlined by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) criteria.

**Quality assessment / Risk of bias analysis** Two researchers independently assessed the risk of bias of the included articles. 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 AK) 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 study.

**Sensitivity analysis** NA.

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

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

**Keywords** 3 Dimensional printing, dental materials, flexure strength, interim restorations.

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

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

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