

INPLASY

The impact of the shelf-life and storage conditions on the accuracy and performance of Additional Silicone impression materials: A Systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - Completed but not published.

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 09 February 2024 and was last updated on 09 February 2024.

INTRODUCTION

Review question / Objective The main aim of this study was to critically appraise the evidence of the impact of shelf-life and storage conditions on the accuracy and performance of addition silicone impression materials.

Rationale How do shelf-life and storage conditions impact the accuracy and performance of additional silicone impression materials?

Condition being studied Recently, silicone-based impressions have been continuously adopted due to their excellent elastomeric properties associated with accuracy and detail in reproducing oral structures. The dimensional stability of impression materials is essential in maintaining the accuracy of impressions obtained. Therefore, it is essential to understand the influence of the shelf life and different storage conditions on the impression's dimensional stability.

METHODS

Search strategy A comprehensive search for potential articles was conducted via four databases: PubMed, Scopus, Cochrane Library, and ScienceDirect. The search terms were used in different combinations and search strings in the different databases.

Participant or population Dental patients or dental models requiring silicone impressions.

Intervention Additional silicone impression materials with different shelf life and storage conditions.

Comparator Different storage conditions, including temperature, humidity, light exposure, and shelf-life durations of silicone impression materials.

Study designs to be included This study included peer-reviewed journal articles reporting on how

shelf-life and storage conditions impact the accuracy and performance of additional silicone impression materials. Additionally, this study included studies with access to the full text available in the English language.

Eligibility criteria This research included studies on the impact of shelf-life and storage conditions on the accuracy and performance of additional silicone impression materials. Published literature fulfilling the modified PICO criteria was included.

Information sources A comprehensive search for potential articles was conducted via four databases: PubMed, Scopus, Cochrane Library, and ScienceDirect.

Main outcome(s) The results show different dimensional, chemical, and physical properties changes in silicone with storage. In addition, storage conditions like temperature significantly affect silicone impressions' dimensional stability and performance. However, more recent empirical research should be carried out on the long-term effects of different storage conditions for a more comprehensive understanding of silicones' response to extended storage durations. Accuracy and performance of silicone impression materials regarding dimensional stability, detail reproduction, tear resistance, and material properties.

Quality assessment / Risk of bias analysis The included experimental in vitro studies were assessed for methodological quality using The Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Quasi-Experimental Studies (non-randomized experimental studies).

Strategy of data synthesis Potential articles were screened by title and abstract, followed by full-text screening using prespecified eligibility criteria. In addition, data from the eligible studies were systematically extracted and tabulated in an Excel Workbook using the Microsoft Excel version 2021. The extracted data included the author, study design, sample characteristics, purpose of the study, and the findings.

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.

Sensitivity analysis Not applicable.

Language restriction Only articles in English.

Country(ies) involved Saudi Arabia.

Keywords Addition Silicone, Impression Materials, Accuracy, Dimensional Stability, performance.

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

Contributions of each author

Author 1 - Ravinder Saini - Describe contributions of each author). Example: "Author 1 drafted the manuscript.

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Author 2 - Altafuddin Syed - The author provided statistical expertise.

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