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A systematic review of the longevity of posterior resin composite restorations

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The purpose of this review is to examine the most appropriate material used and treatment for the longevity of posterior resin composite restoration in adult permanent teeth. A comprehensive search spanning September 2008 to June 2018 was performed in PubMed, LILACS, Scopus and SIGLE without restrictions. The search terms were “resin”, “restoration”, “composite”, “longevity”, “follow-up” and “posterior teeth”. The reference list of selected papers on the subject were included. After the removal of duplicates and the reading of title and abstracts, a total of 28 articles were included in analysis. Analysis only included randomized clinical trials of posterior resin composites related to restoration longevity in patients 25-50 years old which had a follow-up of at least 18 months. The PRISMA guidelines were used. Analysis included the usage of base/liner for resin composite restorations, rates of failure and survival according to caries-risk status, and the reasons for failure. The Cochrane Collaboration's tool was used for assessing risk of bias. 1,613 cases of posterior Resin composite restorations were included in this study, of which 270 cases failed during the period of observation. Posterior resin composite restorations show a high survival, with failure rates of 0.8% at 18 months. A significantly higher risk of failure was reported for restorations in patients with fractures and caries. There was no statistical difference found in the retention of various adhesives and resin composites. A higher performance was seen in two-step self-etch and adhesives with two and three step etch-and- rinse. A lower performance was seen in adhesive with one-step self-etch, marginal discoloration and caries. The overall longevity of resin composite restorations is high. There was no significant difference in the restoration longevity regardless of the resin and adhesive composite type. The main reasons for failure are caries and fractures, which emphasize the importance of adequate follow-up care.