### Abstract

**Introduction/Purpose:** Today, resin-based restorative materials are the most frequently used restorative material in both pediatric dentistry and general practice. The polymerization shrinkage is known to be the main cause of marginal gap formation, subsequent microleakage and pulpal necrosis. Despite numerous improvements within modern dentin adhesive systems, the bond strength and marginal adaptation of resin-based restorative materials to dentin remain less predictable than those to enamel. The aim of this review is to evaluate and compare the polymerization shrinkage and the microleakage of direct resin-based restorative materials commonly used in pediatric dentistry.

**Method and Materials:** A literature search included journal databases, existing systematic reviews, and studies identified by content experts. Studies meeting inclusion criteria were assessed for quality.

**Results:** Regarding polymerization shrinkage, the P60 demonstrate the lowest value, whereas FLC presents the highest shrinkage. Margin location (enamel or cementum) has a significant effect on microleakage. Significant differences in the microleakage observed between various restorative materials.

**Conclusion:** The microleakage was significantly lower at the enamel margins than at the cementum margins for the most of restorative materials. The ormocer and the packable resin composite exhibited the best sealing ability, as well as the lowest polymerization shrinkage.

**Microleakage, Dental Composites**

**Presentation:** Oral