Flexural behavior of post cured composites at oral-simulating temperatures.

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Abstract

Post-curing treatments have been known to improve the mechanical stability of visible light-cured composites. After individual post-curing treatment, the flexural strength (FS) of four commercial direct/indirect placement composite materials which differ greatly in composition [oligocarbonate dimethacrylate (OCDMA)-based Conquest C & B (CQT), Bisphenol-A glycidyl dimethacrylate (BisGMA)-based Charisma, urethane dimethacrylate (UDMA)-based Concept (CCT), and BisGMA/UDMA-based Dentacolor] was evaluated underwater in the temperature range of 12-50 degrees C. A control series was tested in air at room temperature (25 +/- 1 degrees C). Data were analysed using ANOVA and Duncan's test. Flexural strengths overall decreased (20-40% , P < 0.01) with increasing temperatures except with Conquest C & B. Surprisingly, higher FS values were found in wet conditions than in dry conditions at 25 degrees C. UDMA-based materials much more easily undergo softening in water and by temperature change than do BisGMA- or OCDMA-based materials. Post-cured composites can be significantly affected by exposure to oral environments. Different composition determines the degree of influence.