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Microhardness of resin-based materials polymerized with LED and halogen curing units

Abdulaziz Khaled Alnwaihel

Al-Farabi College for Dentistry and Nursing, Saudi Arabia

The purpose of this study was to evaluate the microhardness of resin-based materials polymerized with a LED (light-emitting diode) light-curing unit (LCU) and a halogen LCU. Twenty cylindrical specimens (3.0 mm in diameter and 2.0 mm high) were prepared for each tested material (Z100, Definite and Dyract). Specimens were light-cured with two LCUs (Ultra LED and Curing Light 2500) for either 40 or 60 s on their top surfaces. Hardness was measured on top and bottom surfaces of each specimen. Statistical analysis was done by ANOVA and Turkey's test ($p < 0.05$). There was no significant difference in hardness between LED LCU and halogen LCU for Z100 and Dyract on top surface. Conversely, lower hardness was recorded when Definite was light-cured with the LED LCU than with the halogen lamp. On bottom surface, hardness was significantly lower for all materials light-cured with LED LCU. Z100 was harder than Dyract and Definite regardless of the light curing unit. There was no significant difference in hardness between the exposure times on top surface. Higher hardness was obtained when the materials were light-cured for 60 s on bottom surface. The tested LED was not able to produce the same microhardness of resin-based materials as the halogen LCU.

Biography

Abdulaziz Khaled Alnwaihel completed his Bachelor degree at Alfarabi College in Riyadh. He was an organizer of more than one conference. Currently he is doing his internship at Al-Farabi College for Dentistry and Nursing, Riyadh, Saudi Arabia.

abdulazizkhalid656@gmail.com

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