Assessment of convergence angles of tooth preparations for complete crowns among dental students*

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Summary Objectives: Convergence angles for complete crown preparations have been recommended at 4-12°. However, practitioners have difficulty meeting these recommendations. This study measured and compared the convergence angles of tooth preparations for complete crowns prepared at three Colleges of Dentistry: the University of Tanta, Egypt, King Abdulaziz University, Saudi Arabia, and The Ohio State University, Columbus, Ohio

Methods: The convergence angles of 499 tooth preparations for complete crowns were evaluated. These comprised of a random sample of 262 teeth prepared by thirdyear dental students at the University of Tanta on extracted molars under normal preclinical conditions, 37 preparations on molar teeth on typodonts done by firstyear dental students. The Ohio State University and 200 molar typodont complete crown preparations done by fourth-year dental students at King Abdulaziz University, Saudi Arabia. The bucco-lingual and mesio-distal convergence angles of each preparation were measured with a goniometer microscope. Mean convergence angles were calculated, and differences between groups were tested for statistical significance with analysis of variance (ANOVA) at 5% level of confidence.

Results: Convergence angle measurements were significantly different between the groups and the dimensions (P<0.001). The greatest convergence value (19.8 ± 10.0) was for bucco-lingual measurements prepared by Egyptian dental students. The smallest convergence value (14.1 ± 3.8) was for mesio-distal measurements prepared by Saudi dental students.

Conclusions: This study emphasized the difference between what is taught at dental schools (what is theoretically possible) and the school results of actual practice. There was a considerable disparity between the convergent angles recorded in this study and the ideal configurations recommended in fixed prosthodontic textbooks and the dental literature.