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Conventional Visual vs Spectrophotometric Shade Taking by "Trained" and "Untrained" Dental Students

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ABSTRACT

Overview: Colour measurement devices may be used commonly to select the shade of a new restoration. Several studies have compared some of these instruments with conventional (visual) methods. However, most of these studies did not consider in their design the different knowledge and training of the examiner on colour science and principles of shade selection.

Objective: The aim of this study was to compare the accuracy of shade selection using a spectrophotometer with a conventional method using a shade guide for "*Trained*" and "*Untrained*" students.

Materials and method: Nine final year dental students (5 males and 4 females) were divided into two groups: A "Trained" group who were given a presentation and training exercise on colour science and principles of shade selection, and an "Untrained" group who were not been given any information or training. Each student was asked to match the shade of the middle third of the maxillary right central incisor for eight test persons using two methods: conventional (visual) method using Vitapan 3D-master shade guide, and spectrophotometric method using Vita Easyshade. A Medical High Technology (MHT) spectrophotometer was used to quantify the colour of the shade guide and the colour of the natural teeth. Differences in colour (ΔE) and value (ΔL) between the natural teeth and each method were calculated for both trained and untrained students.

Results: Overall results indicated that spectrophotometric method was more accurate in shade selection than the visual method. "Trained" students were slightly (but not significantly) more accurate in matching the colour using the visual method, but they were significantly better in matching the value (brightness) visually than using the spectrophotometer. "Untrained"

students, on the other hand, had better results in matching both the colour and the value more accurately when using the spectrophotometer.

Conclusion: Within the limits of this study, selecting the colour of natural teeth using a spectrophotometric device is more accurate than a conventional method using a shade guide. However, knowledge and training on colour science and shade selection significantly affected the results of the study.