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Measurement accuracy of space analysis by smart phone applications for orthodontic purposes: a comparison study with conventional plaster dental models

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Introduction: Our objective is to assess how accurate and valid the measurement estimates made by smartphone apps programs are on photos taken by smartphone digital camera when compared to those obtained from plaster models.

Method: A set of several alginate impressions was taken from siblings with different types of occlusion. A written consent form were taken from all of the participants. Each impression was made into a plaster cast and photos were taken by smartphone digital camera. Direct photos were also taken of siblings' dentition. Different mobile apps software programs that are currently available for both Iphone and Android OS smartphones were then used to measure the photos of the tooth widths at their greatest mesiodistal dimension and arch length. Tooth and arch widths were again physically measured on the plaster models with a divider and a millimeter ruler.

Result: When comparing measurements estimated from the smartphone photos, obtained through different measuring smartphone apps, with those of the conventional plaster dental study models, we found that there was no significant difference in space analysis between them. For the photos taken directly from the patients' mouths, there was a slight significant difference (0.1mm) in the spacing and crowding estimates.

Conclusion: The measurement accuracy obtained through smartphone apps and photos for dental space analysis evaluation is clinically acceptable. Their measurement estimates are virtually identical to their counterparts in the traditional plaster study models. Overall, smartphone apps digital photo measurements are as reliable as traditional plaster models measurement in accuracy.

Biography

Deena M. Barakah has a Master of Science degree in Health Informatics, from King Saud bin Abdulaziz University for Health Sciences, Riyadh , Saudi Arabia, and a Bachelor of Science degree in Dental Medicine, from the Dentistry College, Damascus University, Syria. Previously the head of the Dental Department at the Children's Hospital in King Fahd Medical City and at Sulimina Children Hospital, Riyadh, Saudi Arabia, the author is currently working as a Dentist and Dental Informatics Specialist at King Saud Medical City (KSMC), Riyadh, Saudi Arabia. Dr. Barakah is the author of several journal and conference articles on Health Informatics and co-author of a chapter in the book "Handbook of Medical and Healthcare Technologies", published by Springer. Dr. Barakah is a licensed registered dentist, a Health Information Specialist, with the Saudi Commission for Health Specialties, and a member of the Saudi Health Informatics Society.

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