Review Group Membership

MaHTAS Reviewer:
Khor Sok Fang
YBhg. Datin Dr. Rugayah Bakri
Dr. Izzuna Mudla Mohamed Ghazali

External Reviewer:
Dr. Amiruddin bin Hisan
Dr. Christopher Lawrence Tan Soon Lee

For further information please contact:

Health Technology Assessment Section (MaHTAS)
Medical Development Division
Ministry of Health Malaysia
Level 4, Block E1, Precinct 1
Government Office Complex
62590 Putrajaya.

Tel: 603 8883 1246

Fax: 603 8883 1230

Available at the following website:
http://www.moh.gov.my

Introduction

Measuring plaster models by hand is the traditional method of assessing malocclusion. Recent technologic advances now allow the models to be digitalized, measured with software tools, stored electronically, and retrieved with computer. Three dimensional (3D) imaging and modelling have undergone significant advances in recent years, raising the possibility of the development of the 'virtual orthodontic patient', where bone, soft tissue and teeth can be recreated in 3D (Quimby et al, 2004). Seven digital model systems were assessed in these trials: OrthoCAD, emodel, C3D-builder, ConoProbe, Easy3D Scan, Digimodels and Cecile 3.

Orthodontic treatment of adult patients with complex dental problems is done by interdisciplinary teams where different specialist of dental medicine has to manage a vast quality of data. In such complicated cases good diagnostic tools and easy communication are essential. Computer science has an increasing impact in almost every aspect of the orthodontic practice, research and education. Orthodontists use computers for digital photographs, virtual study model, cone beam computed tomography, three-dimensional craniofacial, communication, virtual reality, software for prediction and treatment planning, video imaging, manufacture of orthodontic appliance, web based digital orthodontic records and network attached storage device. Computers have become a necessity rather than an option.

This technology review was conducted following a request from an orthodontist from Klinik Pergigian Jalan Abdul Samad, Johor Bahru.

Objective/Aim

The objective of this study was to assess the accuracy and reproducibility of digital software for orthodontic records keeping.

Results and Conclusions

There were five studies on comparison of computer based digital model and plaster model identified, including a systematic review.

Overall, there was fair level of evidence to show that digital models offer a high degree of validity when compared to direct measurement on plaster models; differences between the approaches are likely to be clinically acceptable/insignificant. Perhaps the most important benefit of using digital models is the ability to share and exchange information effectively, in addition to not having to physically store and manually retrieve the stone models.

These exciting new tools are expected to streamline the orthodontic process even further, elevating orthodontic practices to higher levels of treatment efficacy, efficiency and profitability.

Methods

Literature was searched through electronic databases which included MEDLINE, Cochrane Library via Ovid, EMBASE, PubMed and general databases such as Google Scholar.

The search strategy used these terms either singly or in various combinations: dental record, computer assisted, image processing, and dental model.

| 2015 | The search was limited to human study. The last searched was conducted on 24 March 2015. |