Supplementary Table 1. Detailed characteristics of included studies.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Article | | Participants | | Intervention | | Comparison | | Outcome | | |
| Area of dentistry | Level of Evidence\* - | Number | Age | Type of intervention | Software | Type of intervention | Software | Outcome measure | Results | Conclusions given by study writers |
| Al-Rawi et al. 2015 [12] | Education and Communication | 3b | 61 | - | Evaluation of students’ perception and utilisation of an electronic repetition oral pathology-radiology system in dental education | Anki | - | - | Acceptance of presented technology with respect  to educational usefulness | Median of educational assessment was 5 on a five-point scale. | Electronic repetition system can be used to facilitate clinical diagnostic skill development |
| Chen et al. 2010 [13] | Oral implantology | 3b | 4 | - | The use of bone-tooth-combined-supported surgical guide for dental implant placement | ITK-Snap | The use of conventional bone-supported surgical guides | - | 1. Distance deviation at the coronal point;  2. Distance deviation at the apical point;  3. Average long axis angle deviation; | Combined-supported surgical guides were more accurate:  1. 0.25 mm  2. 0.29 mm  3. 0.47o | The combined-supported templates are superior to the conventional ones |
| De-Deus et al. 2014 [14] | Endodontics | 3b | 3 teeth | - | 3D measurements of hard-tissue debris after 5.25% NaOCl and 17% EDTA irrigation | Seg3D | 3D measurements of hard-tissue debris after bi-distilled water irrigation | Seg3D | Percentage of root canals volume filled with hard-tissue debris | 5.25% NaOCl + 17% EDTA irrigation reduces debris to 16%; bi-distilled water reduces debris to 11.3% | Seg3D allow for calculation of hard-tissue volume debris in root canal system |
| El Tantawi et al. 2015 [15] | Education and Communication | 3b | 170 | 18-38 | Evaluation of the experience of a limited-resources dental school with e-assessment provided through an open-source learning management system | LMS (Moodle) | - | - | - | - | Moodle provides forma­tive e-assessment not available otherwise. |
| Erickson et al. 2005 [7] | Radiology | 5 | - | - | - | ITK-Snap, ImageJ | - | - | - | - | - |
| Kossioni et al. 2013 [16] | Education and Communication | 5 | - | - | - | DentCPD | - | - | - | - | - |
| McDonald et al. 2003 [17] | General overview article | 5 | - | - | - | OSCAR, GEHR, OpenEMed, GALEN | - | - | - | - | - |
| Ratib et al. 2011 [4] | General overview article | 5 | - | - | - | ITK-Snap, OsiriX, Xebra | - | - | - | - | - |
| Ruellas et al. 2016 [18] | Orthodontics | 2b | 30 | 9-13 | Evaluation how head orientation interferes with the amounts of directional change in 3-dimensional | ITK-Snap,  Slicer | - | - | The longitudinal changes in each plane of 3D space. | The longitudinal changes in each plane of 3D space were < 0.5 mm. | The amount of directional change in each plane of 3D space is strongly influenced by head orientation |
| Sa et al. 2003 [19] | Education and Communication | 5 | - | - | - | Supercourse | - | - | - | - | - |
| Santos et al. 2013 [20] | Radiology | 3b | 3 | - | Detection of additional mental foramen in cone-beam computed tomography | OsiriX | - | - | Area of additional mental foramen; distance between mental foramen and additional mental foramen | Mean area of additional mental foramen was 0.5 cm2; mean distance was 0,2 cm | OsiriX is recommended for surgery planning in the area of mental foramen |
| Scarsbrook 2007 [5] | Radiology | 5 | - | - | - | Mozilla Thunderbird, GIMP, Open-office, InfranView | - | - | - | - | - |
| Sicurezza et al. 2011 [21] | Orthodontics | 2b | 30 | 8-11.4 | Measurement of orbital volume and aperture width after rapid maxillary expansion | OsiriX | - | - | Orbital volume in ml, aperture width in mm | Orbital volume increased 0.7 ml; aperture width increased 1.09 mm | Rapid maxillary expansion produces significant increase in orbital dimensions. |
| Silva et al. 2016 [22] | Endodontics | 2b | 20 root canals in resin blocks | - | The use of the PTG system  for curved root canals preparation | Fiji | The use of the PTU system  for curved root canals preparation | - | 1.  Canal transportation at straight part in mm;  2.  Canal transportation at curved part in mm | PTG:  1. 0.053 mm  2. 0.088 mm  PTU:  1. 0.055 mm  2. 0.99 mm | PTG system  produced less canal transportation in the curved  portion than PTU system |
| Silva et al. 2016 [23] | Endodontics | 2b | 40 root canals in resin blocks | - | The use of the PTN system  for curved root canals preparation | Fiji | The use of the PTU, R and WO systems  for curved root canals preparation | - | 1.  Canal transportation at straight part in mm;  2.  Canal transportation at curved part in mm | PTN:  1. 0.050 mm  2. 0.090 mm  PTU:  1. 0.060 mm  2. 0.100 mm  R:  1. 0.029 mm  2. 0.086 mm  WO:  1. 0.028 mm  2. 0.090 mm | PTN system produced less canal  transportation than PTU and WO systems |
| Truppe et al. 2011 [24] | Oral implantology | 4 | 24 | 31-66 | Teleconsultation during dental implant planning | Artma Virtual Patient | - | - | - | - | Surface-based 3D telenavigation reduce ambiguities in interpreting the accuracy of 3D navigation system. |
| Villoria et al. 2017 [25] | Endodontics | 3b | 2 | 20; 55 | The assessment of periapical lesions development after endodontic treatment in cone-beam computed tomography | ITK-Snap; MeshLab 64-Bit; 3DMesh-Metric | - | - | 1.  The volume of the lesion in mm3  2.  The value of the mean intensity of the segmented image with red (T0) and yellow (T1) colouring | Case I:  1.  493mm3 (T0) 80.8mm3 (T1)  2.  -217.0592 (T0)  -70.7929 (T1)  Case II:  1.  168.7mm3 (T0) 106.1mm3 (T1)  2.  -153.5537 (T0)  -153.1578 (T1) | Open-source software  showed to be a valuable method for comparison and  analysis of periapical lesion images. |
| Webster 2011 [26] | Health records and practice management | 5 | - | - | - | VistA | - | - | - | - | - |
| Weissheimer et al. 2012 [27] | Orthodontics | 2b | 33 | 7.2-14.5 | Measurement of upper airway volume | OsiriX; ITK-Snap | Measurement of upper airway volume | Mimics; Dolphin3D; InVivo Dental; Ondemand3D | Dicfference from gold standard in % | Mimics 0.2%; Dolphin3D 1%; OsiriX 1.3%; ITK-Snap 1.8%; OnDemand3D 6.4% | All imaging softwares were reliable. |
| Wurche et al. 2013 [28] | Education and Communication | 4 | - | - | - | Piwik, Wordpress | - | - | - | - | - |
| Yoo and Metaxas 2005 [29] | General overview article | 5 | - | - | - | Insight Toolkit;  OsirX; ImageJ | - | - | - | - | - |

\* according to Oxford Centre for Evidence-based Medicine – Levels of Evidence Scale [10].

LMS, Learning Management System; DentCPD, Dental Continuing Professional Development; OSCAR, Open Source Cluster Application Resources; GEHR, Good Electronic Health Record; GALEN, Generalized Architecture for Languages, Encyclopaedias and Nomenclatures in medicine; ITK, Insight Segmentation and Registration Toolkit; GIMP, GNU Image Manipulation Program; PTG, ProTaper Gold; PTU, ProTaper Universal; PTN, ProTaper Next; R, Reciproc; WO, WaveOne; T0, scans performed before endodontic treatment; T1, scans performed after endodontic treatment.