Is the Evidence Supporting Dental Procedures Strong? A Survey of Cochrane Systematic Reviews in Oral Health

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Background: Every day a large number and variety of dental procedures are performed in clinical dental practice. There is, however, no information on the overall quality of evidence supporting these procedures. The objective of this study was to assess whether several common dental procedures are based on sound evidence.
Methods: All Cochrane systematic reviews (CSR) published in dentistry were surveyed. The authors' conclusions about the quality of evidence supporting a specific clinical treatment were used as the measure of outcome. The evidence was considered adequate if the authors did not clearly state the evidence was weak in the conclusions while also suggesting some evidence of the effectiveness of the therapy.
Results: Of 120 CSRs assessed, in only 26 (22.0% of the reviews) was the quality of evidence regarded as adequate for supporting clinical decisions, although some methodological limitations were identified in the full text of these reviews. Moreover, the authors of most reviews reported weak or unavailable evidence.
Conclusions: On the basis of CSRs, the overall quality of evidence can be regarded as low or nonexistent for most of the dental procedures assessed. The information reported may guide future research.

Keywords: Systematic review, Cochrane, Quality of evidence, Evidence-based dentistry, Decision making.

INTRODUCTION

Many systematic reviews have been published in the dental literature during the past 2 decades. These reviews are important for providing detailed information about the current level of evidence regarding specific subjects. Many consider systematic reviews the best evidence for supporting clinical decisions.[1] On many occasions, however, the authors of these reviews are unable to reach firm conclusions on the therapy assessed because of several failings of the primary studies included; the information provided may, therefore, be of limited use.

Cochrane systematic reviews are regarded as being conducted with clear and robust methodology and these reviews may provide less inflated estimates of the effects of treatment than paper-based reviews.[2] It is not known, however, whether these reviews do, in fact, provide useful information for use in dentistry. Sound methodology should not be confused with good or reliable evidence. Reviews performed to a high methodological standard can generate weak evidence because the primary studies included may be at high risk of bias.[3] Sound evidence is therefore needed for development of evidence-based clinical recommendations.

The objective of this work was to assess Cochrane systematic reviews (CSRs) published in dentistry in relation

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to the conclusions of their authors about the quality of evidence (adequate or inadequate).

MATERIALS AND METHODS

Focused Question

Can Cochrane systematic reviews provide sound evidence for the development of clinical dental guidelines?

Literature Search

Between November 11 and 14, 2011, the Cochrane Library database was searched (http://www.thecochranelibrary.com) to identify systematic reviews published in oral health. Reviews were selected from the "dentistry and oral health" section (only published reviews included; the most updated PubMed version was assessed). Only systematic reviews of randomized controlled trials (RCTs) or controlled trials were included; moreover, study protocols were excluded.

Data Extraction and Rationale for Assessment

Data were extracted directly into tables. A second assessment was performed on December 2, 2011, to increase the precision of data extraction. Reviews were grouped into different dental specialties: cariology and restorative dentistry, endodontics, dental implantology, oral and maxillofacial surgery, orthodontics, periodontics, prosthetic dentistry, and others. Cariology involved any measures to control dental caries, and restorative dentistry was related both to direct restorations (composite and amalgam) and to indirect adhesive restorations (for example, inlays and onlays).

The "authors' conclusions" regarding the quality of evidence in support of the prevention or treatment of oral health conditions were used as the measure of outcome. The quality of evidence was considered *adequate* when authors stated their confidence in this quality, reporting words such as *sound*, *high*, or *good* quality of evidence. Furthermore, when the authors did not clearly state that the evidence was weak, and reported that some evidence suggests the effectiveness of the proposed therapy, the evidence was also considered adequate. In this case, nevertheless, to improve the transparency of the assessment, a footnote in the tables was used to explain the rationale for assessing the methodological quality of primary studies included in the systematic review. The evidence was considered *inadequate* when authors described *weak* or *insufficient* evidence or when no studies were selected for the review.

RESULTS

Selection of Systematic Reviews and Level of Evidence

Figure 1 depicts the process used to search the reviews in the Cochrane database. The search generated 120 systematic reviews on 20 dental specialties/topics.

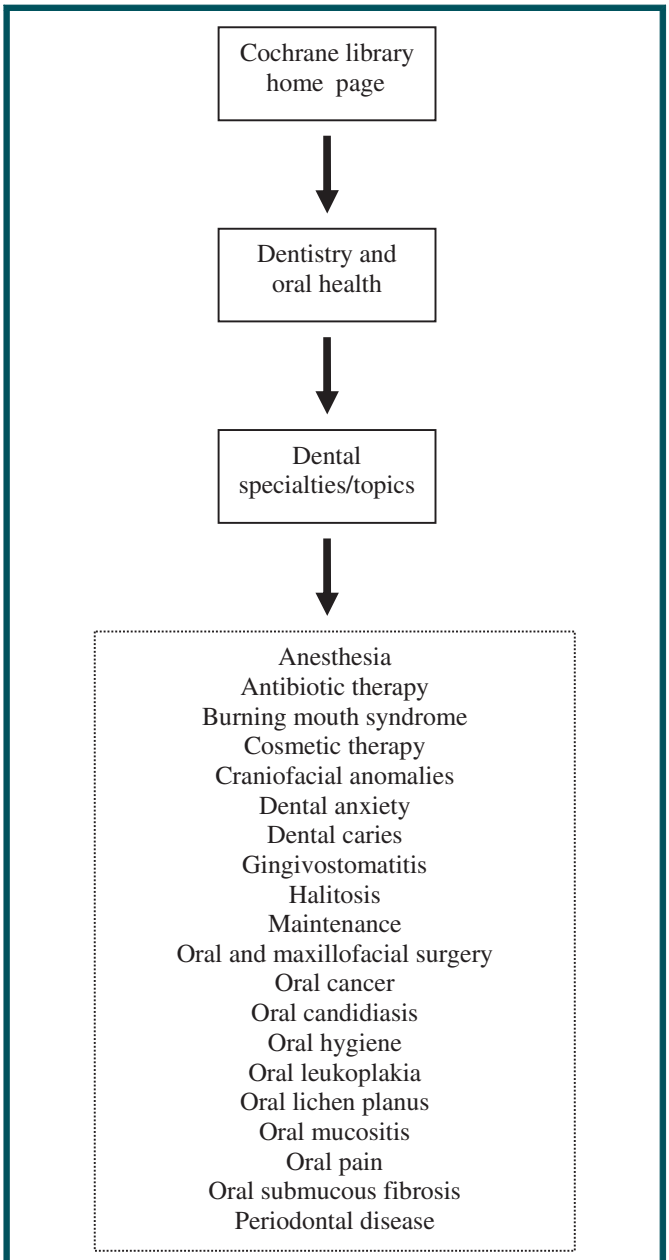

Figure 1. Flowchart of the survey of the Cochrane database for systematic reviews published in dentistry.

Table 1 depicts the number of reviews believed to provide adequate evidence in different dental specialties. The dental specialties/topics reported in Figure 1 were rearranged into 8 groups in Table 1 for clearer presentation of the results. The proportion of adequate conclusions was highest for the cariology/restorative dentistry group (31% of the assessed sample). The proportion was second highest for the group "Others," with 28% of reviews regarded as adequate evidence. In contrast, for the specialties "Endodontics" and "Prosthetic Dentistry" only inadequate evidence was available, with a total of 5 and

TABLE 1. Distribution of systematic reviews in different dental specialties

Specialty	No. of reviews	No. of reviews reporting adequate evidence	Percentage of reviews reporting adequate evidence
Cariology/Restorative dentistry	26	8	31
Endodontics	5	0	0
Implantology	14	2	14
Periodontics	10	3	30
Oral and maxillofacial surgery	19	3	16
Orthodontics	15	3	20
Prosthetic dentistry	6	0	0
Others	25	7	28

6 assessed reviews, respectively. Full assessment of the reviews (with extra information in the footnotes) is reported in the supplementary data (Supplementary Tables 1-4).

DISCUSSION

Assessment of Cochrane reviews in dentistry furnished disappointing results regarding the quality of evidence in the different fields of dentistry. The authors used clearly positive adjectives for the quality of evidence, for example "clear evidence,"[4,5] "sizeable body of evidence,"[6] "strong evidence,"[7] in a few systematic reviews only, and the full text of these reviews reported some methodological limitations. In most reviews, however, the authors stated conclusions were that there was "insufficient," "unreliable," or "lack of" evidence on the topic assessed.

This work assessed only Cochrane reviews and it obviously did not cover all dental procedures. This assessment is, nevertheless, still comprehensive, covering all the main dental specialties. Furthermore, CSRs seem to be more methodologically rigorous than reviews published in paper-based journals,[8,9] and meta-analyses from CSRs seem to report methodological limitations and more conservative recommendations more transparently than industry-supported meta-analyses.[2] Therefore, for these reasons, CSRs may be regarded as a good source for general assessment of evidence in oral health.

Some reviews were regarded as providing adequate evidence, even if the authors did not report them as such, for example, by using the words "strong" or "definitive" evidence. The rationale was that the authors, in their conclusions, did not explicitly describe lack of or weak evidence or methodological pitfalls of the primary studies, and also reported that the therapy might be effective. The full text of articles was, however, scrutinized to assess the risk of bias of included primary studies; methodological issues, such as allocation concealment and blinding, were usually not reported or were performed in a part of the primary studies sample (supplementary material). Some can argue that using stricter criteria would probably categorize almost all systematic reviews as providers of inadequate evidence. In other words, for some reviews, the attitude when scoring evidence as adequate was optimistic.

The focus of this work was to assess the usefulness of the information from the systematic reviews for making proper clinical decisions. More than this, the objective of the work was to provide information on the current quality of evidence in the different fields of dentistry. Some reviews, for example, did not select any primary study to answer the clinical question. Nevertheless, "absence of evidence is not evidence of absence,"[10] and, therefore, the importance of this survey in identifying dental specialties where no evidence is available is crucial for improvement of the information in these areas.

It is important to mention that some reviews could be categorized in different specialties. For example, a review dealing with treatment approaches for temporomandibular disorders (TMDs) might be categorized in both the prosthetic dentistry and oral-maxillofacial specialties. The decision to include reviews was based on the therapeutic approach. For instance, if the review considered different types of surgical approaches for treating TMDs, it would be categorized as a review from the oral and maxillofacial field. In contrast, if the review assessed conservative approaches for dealing with TMDs, for example occlusal splints, it was regarded as from prosthetic dentistry. Other reviews that were deemed unsuitable for inclusion in those prespecified fields were included in the group "Others."

Over the years, many Cochrane and paper-based systematic reviews have been published in the dental literature. The conclusions of this work reveal the sad reality of the lack of reliable information for clinical decision making. For most fields, it is not clear whether therapy that is widely performed throughout the world is, in fact, effective. This might explain the current lack of evidence-based guidelines for most dental procedures.[11] Patients, however, need preventive and active dental therapy for their oral conditions and/or problems, and dentists cannot wait until "strong" and reliable evidence is

available before making decisions. It is important, however, to use a transparent and systematic approach when making decisions, mainly in circumstances where the evidence is weak or unavailable. The maintenance of unproved clinical treatments based only on the previous experience of the clinician with regard to effectiveness is far from acceptable. Systematic approaches for assessing the overall body of evidence, for example the GRADE system,[12,13] should be considered in the development of clinical recommendations in dentistry. Because GRADE takes into account variables other than quality of evidence, it may be a good basis for more transparent and systematic decision making.[14,15]

In summary, this work has revealed that, currently, the overall quality of evidence in dentistry is low. Researchers, clinicians, and all involved with dental treatment should combine efforts to improve the quality of evidence in the several disciplines of dentistry. Information on the level of current evidence should, moreover, be made systematically available to patients, to enable more transparent and ethical decision making.

Supplementary data

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.jebdp.2012.05.003

REFERENCES

1. Cook DJ, Mulrow CD, Haynes RB. Systematic reviews: synthesis of best evidence for clinical decisions. Ann Intern Med 1997;126:376-80.
2. Jørgensen AW, Hilden J, Gøtzsche PC. Cochrane reviews compared with industry supported meta-analyses and other meta-analyses of the same drugs: systematic review. BMJ 2006;333:782.
3. Higgins JP, Altman D. Assessing the risk of bias in included studies. In: Higgins J, Green S, editors. Cochrane handbook for systematic reviews of interventions 5.0.1. Chichester, UK: John Wiley & Sons; 2008.
4. Marinho VC, Higgins JP, Logan S, Sheiham A. Fluoride gels for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2002;(2):CD002280.
5. Marinho VC, Higgins JP, Sheiham A, Logan S. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2003;(1):CD002278.
6. Marinho VC, Higgins JP, Sheiham A, Logan S. Combinations of topical fluoride (toothpastes, mouthrinses, gels, varnishes) versus single topical fluoride for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2004;(1):CD002781.
7. Clarkson JE, Worthington HV, Eden OB. Interventions for preventing oral candidiasis for patients with cancer receiving treatment. Cochrane Database Syst Rev 2007;(1):CD003807.
8. Jadad AR, Cook DJ, Jones A, Klassen TP, Tugwell P, Moher M, et al. Methodology and reports of systematic reviews and meta-analyses: a comparison of Cochrane reviews with articles published in paper-based journals. JAMA 1998;280:278-80.
9. Delaney A, Bagshaw SM, Ferland A, Laupland K, Manns B, Doig C. The quality of reports of critical care meta-analyses in the Cochrane Database of Systematic Reviews: an independent appraisal. Crit Care Med 2007;35:589-94.
10. Altman DG, Bland JM. Absence of evidence is not evidence of absence. BMJ 1995;311:485.
11. Faggion CM Jr. Clinician assessment of guidelines that support common dental procedures. J Evid Based Dent Pract 2008;8:1-7.
12. Guyatt GH, Oxman AD, Kunz R, Vist GE, Falck-Ytter Y, Schünemann HJ, GRADE Working Group. What is "quality of evidence" and why is it important to clinicians? BMJ 2008;336:995-8.
13. Guyatt GH, Oxman AD, Kunz R, Falck-Ytter Y, Vist GE, Liberati A, et al. Going from evidence to recommendations. BMJ 2008;336:1049-51.
14. Faggion CM Jr, Giannakopoulos NN, Listl S. How strong is the evidence for the need to restore posterior bounded edentulous spaces in adults? Grading the quality of evidence and the strength of recommendations. J Dent 2011;39:108-16.
15. Faggion CM Jr. The shortened dental arch revisited: from evidence to recommendations by the use of the GRADE approach. J Oral Rehabil 2011;38:940-9.

REFERENCES OF COCHRANE REVIEWS

Aggarwal VR, Lovell K, Peters S, et al. Psychosocial interventions for the management of chronic orofacial pain. Cochrane Database Syst Rev 2011;11:CD008456.

Ahangari Z, Nasser M, Mahdian M, et al. Interventions for the management of external root resorption. Cochrane Database Syst Rev 2010;(6):CD008003.

Ahovuo-Saloranta A, Hiiri A, Nordblad A, et al. Pit and fissure sealants for preventing dental decay in the permanent teeth of children and adolescents. Cochrane Database Syst Rev 2008;(4):CD001830.

Al-Ani MZ, Davies SJ, Gray RJ, et al. Stabilisation splint therapy for temporomandibular pain dysfunction syndrome. Cochrane Database Syst Rev 2004;(1):CD002778.

Al-Harasi S, Ashley PF, Moles DR, et al. Hypnosis for children undergoing dental treatment. Cochrane Database Syst Rev 2010;(8):CD007154.

Ashley PF, Williams CE, Moles DR, et al. Sedation versus general anaesthesia for provision of dental treatment in under 18 year olds. Cochrane Database Syst Rev 2009;(1):CD006334.

Beirne P, Worthington HV, Clarkson JE. Routine scale and polish for periodontal health in adults. Cochrane Database Syst Rev 2007a;(4):CD004625.

Beirne P, Clarkson JE, Worthington HV. Recall intervals for oral health in primary care patients. Cochrane Database Syst Rev. 2007b;(4):CD004346.

Benson PE, Parkin N, Millett DT, et al. Fluorides for the prevention of white spots on teeth during fixed brace treatment. Cochrane Database Syst Rev 2004;(3):CD003809.

Bessell A, Glenny AM, Furness S, et al. Interventions for the treatment of oral and oropharyngeal cancers: surgical treatment. Cochrane Database Syst Rev 2011a;9:CD006205.

Bessell A, Hooper L, Shaw WC, et al. Feeding interventions for growth and development in infants with cleft lip, cleft palate or cleft lip and palate. Cochrane Database Syst Rev 2011b;(2):CD003315.

Brocklehurst P, Kujan O, Glenny AM, et al. Screening programmes for the early detection and prevention of oral cancer. Cochrane Database Syst Rev 2010;(11):CD004150.

Bolla M, Muller-Bolla M, Borg C, et al. Root canal posts for the restoration of root filled teeth. Cochrane Database Syst Rev 2007;(1):CD004623.

Bonner BC, Clarkson JE, Dobbyn L, et al. Slow-release fluoride devices for the control of dental decay. Cochrane Database Syst Rev 2006;(4):CD005101.

Carvalho FR, Lentini-Oliveira D, Machado MA, et al. Oral appliances and functional orthopaedic appliances for obstructive sleep apnoea in children. Cochrane Database Syst Rev 2007;(2):CD005520.

Chambrone L, Sukekava F, Araújo MG, et al. Root coverage procedures for the treatment of localised recession-type defects. Cochrane Database Syst Rev 2009;(2):CD007161.

Clarkson JE, Worthington HV, Eden OB. Interventions for preventing oral candidiasis for patients with cancer receiving treatment. Cochrane Database Syst Rev 2007;(1):CD003807.

Clarkson JE, Worthington HV, Furness S, et al. Interventions for treating oral mucositis for patients with cancer receiving treatment. Cochrane Database Syst Rev 2010;(8):CD001973.

Coulthard P, Esposito M, Worthington HV, et al. Interventions for replacing missing teeth: preprosthetic surgery versus dental implants. Cochrane Database Syst Rev 2002;(4):CD003604.

Coulthard P, Esposito M, Jokstad A, et al. Interventions for replacing missing teeth: bone augmentation techniques for dental implant treatment. Cochrane Database Syst Rev 2003;(3):CD003607.

Coulthard P, Yong SL, Adamson L, et al. Domestic violence screening and intervention programmes for adults with dental or facial injury. Cochrane Database Syst Rev 2010;(12):CD004486.

Day P, Duggal M. Interventions for treating traumatised permanent front teeth: avulsed (knocked out) and replanted. Cochrane Database Syst Rev 2010;(1):CD006542.

de Souza RF, de Freitas Oliveira Paranhos H, Lovato da Silva CH, et al. Interventions for cleaning dentures in adults. Cochrane Database Syst Rev 2009;(4):CD007395.

de Souza RF, Travess H, Newton T, et al. Interventions for treating traumatised ankylosed permanent front teeth. Cochrane Database Syst Rev 2010;(1):CD007820.

Deacon SA, Glenny AM, Deery C, et al. Different powered toothbrushes for plaque control and gingival health. Cochrane Database Syst Rev 2010;(12):CD004971.

Del Fabbro M, Taschieri S, Testori T, et al. Surgical versus non-surgical endodontic re-treatment for periradicular lesions. Cochrane Database Syst Rev 2007;(3):CD005511.

Del Fabbro M, Taschieri S, Lodi G, et al. Magnification devices for endodontic therapy. Cochrane Database Syst Rev 2009;(3):CD005969.

Dorri M, Nasser M, Oliver R. Resorbable versus titanium plates for facial fractures. Cochrane Database Syst Rev 2009;(1):CD007158.

Eberhard J, Jepsen S, Jervøe-Storm PM, Needleman I, et al. Full-mouth disinfection for the treatment of adult chronic periodontitis. Cochrane Database Syst Rev 2008;(1):CD004622.

Esposito M, Worthington HV, Coulthard P, et al. Interventions for replacing missing teeth: dental implants in zygomatic bone for the rehabilitation of the severely deficient edentulous maxilla. Cochrane Database Syst Rev 2005;(4):CD004151.

Esposito M, Murray-Curtis L, Grusovin MG, et al. Interventions for replacing missing teeth: different types of dental implants. Cochrane Database Syst Rev 2007a;(4):CD003815.

Esposito M, Grusovin MG, Maghaireh H, et al. Interventions for replacing missing teeth: management of soft tissues for dental implants. Cochrane Database Syst Rev 2007b;(3):CD006697.

Esposito M, Grusovin MG, Patel S, et al. Interventions for replacing missing teeth: hyperbaric oxygen therapy for irradiated patients who require dental implants. Cochrane Database Syst Rev 2008;(1):CD003603.

Esposito M, Grusovin MG, Chew YS, et al. Interventions for replacing missing teeth: 1- versus 2-stage implant placement. Cochrane Database Syst Rev 2009a;(3):CD006698.

Esposito M, Grusovin MG, Achille H, et al. Interventions for replacing missing teeth: different times for loading dental implants. Cochrane Database Syst Rev 2009b;(1):CD003878.

Esposito M, Grusovin MG, Felice P, et al. Interventions for replacing missing teeth: horizontal and vertical bone augmentation techniques for dental implant treatment. Cochrane Database Syst Rev 2009c;(4):CD003607.

Esposito M, Grusovin MG, Papanikolaou N, et al. Enamel matrix derivative (Emdogain(R)) for periodontal tissue regeneration in intrabony defects. Cochrane Database Syst Rev 2009d;(4):CD003875.

Esposito M, Grusovin MG, Polyzos IP, et al. Interventions for replacing missing teeth: dental implants in fresh extraction sockets (immediate, immediate-delayed and delayed implants). Cochrane Database Syst Rev 2010a;(9):CD005968.

Esposito M, Grusovin MG, Tzanetea E, et al. Interventions for replacing missing teeth: treatment of perimplantitis. Cochrane Database Syst Rev 2010b;(6):CD004970.

Esposito M, Grusovin MG, Rees J, et al. Interventions for replacing missing teeth: augmentation procedures of the maxillary sinus. Cochrane Database Syst Rev 2010c;(3):CD008397.

Esposito M, Worthington HV, Loli V, et al. Interventions for replacing missing teeth: antibiotics at dental implant placement to prevent complications. Cochrane Database Syst Rev 2010d;(7):CD004152.

Fedorowicz Z, Nasser M, Newton JT, et al. Resorbable versus titanium plates for orthognathic surgery. Cochrane Database Syst Rev 2007;(2):CD006204.

Fedorowicz Z, Aljufairi H, Nasser M, et al. Mouthrinses for the treatment of halitosis. Cochrane Database Syst Rev 2008a;(4):CD006701.

Fedorowicz Z, Chan Shih-Yen E, Dorri M, et al. Interventions for the management of oral submucous fibrosis. Cochrane Database Syst Rev 2008b;(4):CD007156.

Fedorowicz Z, Nasser M, Wilson N. Adhesively bonded versus non-bonded amalgam restorations for dental caries. Cochrane Database Syst Rev 2009a;(4):CD007517.
Fedorowicz Z, Keenan JV, Farman AG, et al. Antibiotic use for irreversible pulpitis. Cochrane Database Syst Rev 2009. not cited in PubMed.
Figini L, Lodi G, Gorni F, et al. Single versus multiple visits for endodontic treatment of permanent teeth. Cochrane Database Syst Rev 2007;(4):CD005296.
Furness S, Glenny AM, Worthington HV, et al. Interventions for the treatment of oral cavity and oropharyngeal cancer: chemotherapy. Cochrane Database Syst Rev 2011;(4):CD006386.
Glenny AM, Fernandez Mauleffinch LM, Pavitt S, et al. Interventions for the prevention and treatment of herpes simplex virus in patients being treated for cancer. Cochrane Database Syst Rev 2009;(1):CD006706.
Glenny AM, Furness S, Worthington HV, et al. Interventions for the treatment of oral cavity and oropharyngeal cancer: radiotherapy. Cochrane Database Syst Rev 2010;(12):CD006387.
Grusovin MG, Coulthard P, Worthington HV, et al. Interventions for replacing missing teeth: maintaining and recovering soft tissue health around dental implants. Cochrane Database Syst Rev 2010;(8):CD003069.
Goh HH, Mauleffinch LF. Interspace/interdental brushes for oral hygiene in orthodontic patients with fixed appliances. Cochrane Database Syst Rev 2007;(3):CD005410.
Guo C, Shi Z, Revington P. Arthrocentesis and lavage for treating temporomandibular joint disorders. Cochrane Database Syst Rev 2009;(4):CD004973.
Guo J, Li C, Zhang Q, Wu G, et al. Secondary bone grafting for alveolar cleft in children with cleft lip or cleft lip and palate. Cochrane Database Syst Rev 2011;(6):CD008050.
Harrison JE, Ashby D. Orthodontic treatment for posterior crossbites. Cochrane Database Syst Rev 2001;(1):CD000979.
Harrison JE, O'Brien KD, Worthington HV. Orthodontic treatment for prominent upper front teeth in children. Cochrane Database Syst Rev 2007;(3):CD003452.
Hasson H, Ismail AI, Neiva G. Home-based chemically-induced whitening of teeth in adults. Cochrane Database Syst Rev 2006;CD006202.
Hayashi M, Yeung CA. Ceramic inlays for restoring posterior teeth. Cochrane Database Syst Rev 2003;(1):CD003450.
Hiiri A, Ahovuo-Saloranta A, Nordblad A, et al. Pit and fissure sealants versus fluoride varnishes for preventing dental decay in children and adolescents. Cochrane Database Syst Rev 2010;(3):CD003067.
Innes NP, Ricketts DN, Evans DJ. Preformed metal crowns for decayed primary molar teeth. Cochrane Database Syst Rev 2007;(1):CD005512.
Khokhar WA, Clifton A, Jones H, et al. Oral health advice for people with serious mental illness. Cochrane Database Syst Rev 2011;11:CD008802.
Koh H, Robinson PG. Occlusal adjustment for treating and preventing temporomandibular joint disorders. Cochrane Database Syst Rev 2003;(1):CD003812.
Lentini-Oliveira D, Carvalho FR, Qingsong Y, et al. Orthodontic and orthopaedic treatment for anterior open bite in children. Cochrane Database Syst Rev 2007;(2):CD005515.
Littlewood SJ, Millett DT, Doubleday B, et al. Retention procedures for stabilising tooth position after treatment with orthodontic braces. Cochrane Database Syst Rev 2006;(1):CD002283.
Lodi G, Sardella A, Bez C, et al. Interventions for treating oral leukoplakia. Cochrane Database Syst Rev 2006;(4):CD001829.
Luther F, Layton S, McDonald F. Orthodontics for treating temporomandibular joint (TMJ) disorders. Cochrane Database Syst Rev 2010;(7):CD006541.
Macedo CR, Silva AB, Machado MA, et al. Occlusal splints for treating sleep bruxism (tooth grinding). Cochrane Database Syst Rev 2007;(4):CD005514.
Mandall NA, Millett DT, Mattick CR, et al. Adhesives for fixed orthodontic brackets. Cochrane Database Syst Rev 2003;(2):CD002282.
Marinho VC, Higgins JP, Logan S, et al. Fluoride gels for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2002a;(2):CD002280.
Marinho VC, Higgins JP, Logan S, et al. Fluoride varnishes for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2002b;(3):CD002279.
Marinho VC, Higgins JP, Logan S, et al. Fluoride mouthrinses for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2003a;(3):CD002284.
Marinho VC, Higgins JP, Sheiham A, et al. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2003b;(1):CD002278.
Marinho VC, Higgins JP, Sheiham A, ET AL. Combinations of topical fluoride (toothpastes, mouthrinses, gels, varnishes) versus single topical fluoride for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2004a;(1):CD002781.
Marinho VC, Higgins JP, Sheiham A, et al. One topical fluoride (toothpastes, or mouthrinses, or gels, or varnishes) versus another for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2004b;(1):CD002780.
Matharu L, Ashley PF. Sedation of anxious children undergoing dental treatment. Cochrane Database Syst Rev 2006;(1):CD003877.
Mettes TG, Nienhuijs ME, van der Sanden WJ, et al. Interventions for treating asymptomatic impacted wisdom teeth in adolescents and adults. Cochrane Database Syst Rev 2005;(2):CD003879.
Millett DT, Cunningham SJ, O'Brien KD. Orthodontic treatment for deep bite and retroclined upper front teeth in children. Cochrane Database Syst Rev 2006;(4):CD005972.
Millett DT, Glenny AM, Mattick CR, et al. Adhesives for fixed orthodontic bands. Cochrane Database Syst Rev 2007;(2):CD004485.
Millett DT, Mandall NA, Mattick RC, et al. Adhesives for bonded molar tubes during fixed brace treatment. Cochrane Database Syst Rev 2011;(6):CD008236.
Miyashita H, Worthington HV, Qualtrough A, et al. Pulp management for caries in adults: maintaining pulp vitality. Cochrane Database Syst Rev 2007;(2):CD004484.
Mujakperuo HR, Watson M, Morrison R, et al. Pharmacological interventions for pain in patients with temporomandibular disorders. Cochrane Database Syst Rev 2010;(10):CD004715.
Nadin G, Goel BR, Yeung CA, et al. Pulp treatment for extensive decay in primary teeth. Cochrane Database Syst Rev 2003;(1):CD003220.
Nasser M, Fedorowicz Z, Ebadifar A. Management of the fractured edentulous atrophic mandible. Cochrane Database Syst Rev 2007;(1):CD006087.
Nasser M, Fedorowicz Z, Newton JT, et al. Interventions for the management of submucous cleft palate. Cochrane Database Syst Rev 2008a;(1):CD006703.
Nasser M, Fedorowicz Z, Khoshnevisan MH, et al. Acyclovir for treating primary herpetic gingivostomatitis. Cochrane Database Syst Rev 2008b;(4):CD006700.
Needleman IG, Worthington HV, Giedrys-Leeper E, et al. Guided tissue regeneration for periodontal infra-bony defects. Cochrane Database Syst Rev 2006;(2):CD001724.
Oliver R, Roberts GJ, Hooper L, et al. Antibiotics for the prophylaxis of bacterial endocarditis in dentistry. Cochrane Database Syst Rev 2008;(4):CD003813.
Outhouse TL, Al-Alawi R, Fedorowicz Z, et al. Tongue scraping for treating halitosis. Cochrane Database Syst Rev 2006;(2):CD005519.
Parkin N, Benson PE, Thind B, et al. Open versus closed surgical exposure of canine teeth that are displaced in the roof of the mouth. Cochrane Database Syst Rev 2008;(4):CD006966.
Parkin N, Benson PE, Shah A, et al. Extraction of primary (baby) teeth for unerupted palatally displaced permanent canine teeth in children. Cochrane Database Syst Rev 2009;(2):CD004621.
Pedrazzi V, Oliveira-Neto JM, Sequeira P, et al. Hand and ultrasonic instrumentation for orthograde root canal treatment of permanent teeth. Cochrane Database Syst Rev 2008;(4):CD006384.

Pereira-Cenci T, Cenci MS, Fedorowicz Z, et al. Antibacterial agents in composite restorations for the prevention of dental caries. Cochrane Database Syst Rev 2009;(3):CD007819.
Poulsen S, Errboe M, Lescay Mevil Y, et al. Potassium containing toothpastes for dentine hypersensitivity. Cochrane Database Syst Rev 2006;(3):CD001476.
Renz A, Ide M, Newton T, et al. Psychological interventions to improve adherence to oral hygiene instructions in adults with periodontal diseases. Cochrane Database Syst Rev 2007;(2):CD005097.
Rickard GD, Richardson R, Johnson T, et al. Ozone therapy for the treatment of dental caries. Cochrane Database Syst Rev 2004;(3):CD004153.
Ricketts DN, Kidd EA, Innes N, et al. Complete or ultraconservative removal of decayed tissue in unfilled teeth. Cochrane Database Syst Rev 2006;(3):CD003808.
Rigon M, Pereira LM, Bortoluzzi MC, et al. Arthroscopy for temporomandibular disorders. Cochrane Database Syst Rev 2011;(5):CD006385.
Robinson PG, Deacon SA, Deery C, et al. Manual versus powered toothbrushing for oral health. Cochrane Database Syst Rev 2005;(2):CD002281.
Suárez-Roa Mde L, Reveiz L, Ruíz-Godoy Rivera LM, et al. Interventions for central giant cell granuloma (CGCG) of the jaws. Cochrane Database Syst Rev 2009;(4):CD007404.
Sharif MO, Merry A, Catleugh M, et al. Replacement versus repair of defective restorations in adults: amalgam. Cochrane Database Syst Rev 2010a;(2):CD005970.
Sharif MO, Catleugh M, Merry A, et al. Replacement versus repair of defective restorations in adults: resin composite. Cochrane Database Syst Rev 2010b;(2):CD005971.
Sharif MO, Fedorowicz Z, Drews P, et al. Interventions for the treatment of fractures of the mandibular condyle. Cochrane Database Syst Rev 2010c;(4):CD006538.
Sharif FNJ, Oliver R, Sweet C, Sharif MO. Interventions for the treatment of keratocystic odontogenic tumours (KCOT, odontogenic keratocysts (OKC)). Cochrane Database Syst Rev 2010d;(9):CD008464.
Shi Z, Guo C, Awad M. Hyaluronate for temporomandibular joint disorders. Cochrane Database Syst Rev 2003;(1):CD002970.
Simpson TC, Needleman I, Wild SH, et al. Treatment of periodontal disease for glycaemic control in people with diabetes. Cochrane Database Syst Rev 2010;(5):CD004714.
Skeggs RM, Benson PE, Dyer F. Reinforcement of anchorage during orthodontic brace treatment with implants or other surgical methods. Cochrane Database Syst Rev 2007;(3):CD005098.
Suárez-Roa Mde L, Reveiz L, Ruíz-Godoy Rivera LM, et al. Interventions for central giant cell granuloma (CGCG) of the jaws. Cochrane Database Syst Rev 2009;(4):CD007404.
Sutton AF, Glenny AM, McCord JF. Interventions for replacing missing teeth: denture chewing surface designs in edentulous people. Cochrane Database Syst Rev 2005;(1):CD004941.
Thongprasom K, Carrozzo M, Furness S, Lodi G. Interventions for treating oral lichen planus. Cochrane Database Syst Rev 2011;(7):CD001168.
Wakiaga J, Brunton P, Silikas N, et al. Direct versus indirect veneer restorations for intrinsic dental stains. Cochrane Database Syst Rev 2004;(1):CD004347.
Walsh T, Worthington HV, Glenny AM, et al. Fluoride toothpastes of different concentrations for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2010;(1):CD007868.
Wang Y, Jian F, Lai W, et al. Initial arch wires for alignment of crooked teeth with fixed orthodontic braces. Cochrane Database Syst Rev 2010;(4):CD007859.
Weil K, Hooper L, Afzal Z, et al. Paracetamol for pain relief after surgical removal of lower wisdom teeth. Cochrane Database Syst Rev 2007;(3):CD004487.
Weston P, Yaziz YA, Moles DR, et al. Occlusal interventions for periodontitis in adults. Cochrane Database Syst Rev 2008;(3):CD004968.
Wong MC, Glenny AM, Tsang BW, et al. Topical fluoride as a cause of dental fluorosis in children. Cochrane Database Syst Rev 2010;(1):CD007693.
Worthington HV, Clarkson JE, Khalid T, et al. Interventions for treating oral candidiasis for patients with cancer receiving treatment. Cochrane Database Syst Rev 2010;(7):CD001972.
Worthington HV, Clarkson JE, Bryan G, et al. Interventions for preventing oral mucositis for patients with cancer receiving treatment. Cochrane Database Syst Rev 2011;(4):CD000978.
Yengopal V, Harneker SY, Patel N, et al. Dental fillings for the treatment of caries in the primary dentition. Cochrane Database Syst Rev 2009;(2):CD004483.
Yeung CA, Hitchings JL, Macfarlane TV, et al. Fluoridated milk for preventing dental caries. Cochrane Database Syst Rev 2005;(3):CD003876.
Zakrzewska JM, Forssell H, Glenny AM. Interventions for the treatment of burning mouth syndrome. Cochrane Database Syst Rev 2005;(1):CD002779.

TABLE 1. Authors' conclusions on the quality of evidence in Cochrane reviews in dental caries and endodontics

Review	Authors' conclusions	QI
	Cariology and restorative dentistry	
1. Pereira-Cenci et al. 2009	We were unable to identify any RCTs on the effects of antibacterial agents incorporated into composite restorations for the prevention of dental caries. The absence of high-level evidence for the effectiveness of this intervention emphasizes the need for well-designed, adequately powered, randomized controlled clinical trials	I
2. Marinho et al. 2004a	Topical fluorides (mouthrinses, gels, or varnishes) used in addition to fluoride toothpaste achieve a modest reduction in caries compared with toothpaste used alone	A*
3. Yeung et al. 2005	There are insufficient studies with good quality evidence examining the effects of fluoridated milk in preventing dental caries	I
4. Marinho et al. 2002a	There is clear evidence of a caries-inhibiting effect of fluoride gel	A*
5. Marinho et al. 2003a	This review suggests that the supervised regular use of fluoride mouthrinse at 2 main strengths and rinsing frequencies is associated with a clear reduction in caries increment in children	A§
6. Benson et al. 2004‡	There is some evidence that a daily fluoride mouthrinse or a fluoride-containing cement will reduce tooth decay if used during treatment with fixed braces	A†
7. Marinho et al. 2003b	Supported by more than half a century of research, the benefits of fluoride toothpastes are firmly established. Taken together, the trials are of relatively high quality, and provide clear evidence that fluoride toothpastes are efficacious in preventing caries	A*
8. Walsh et al. 2010	This review confirms the benefits of using fluoride toothpaste in preventing caries in children and adolescents when compared with placebo, but only significantly for fluoride concentrations of 1000 ppm and above	A§
9. Marinho et al. 2002b	Given the relatively poor quality of most of the included studies and the wide confidence intervals around the estimates of effect, there remains a need for further trials	I
10. Marinho et al. 2004b	Fluoride toothpastes in comparison with mouthrinses or gels seem to have similar effectiveness for the prevention of dental caries in children.	A‖
11. Ahovuo-Saloranta et al. 2008	The results of the studies comparing different sealant materials were conflicting	I
12. Hiiri et al. 2010	However, current scarce data limit recommendations on whether to apply pit and fissure sealants or fluoride varnishes on occlusal surfaces	I
13. Bonner et al. 2006	This evidence is regarded as weak and unreliable because the results were from participants selected on the basis of bead retention rather than an intention-to-treat analysis	I
14. Wong et al. 2010	There is weak unreliable evidence that starting the use of fluoride toothpaste in children younger than 12 months may be associated with an increased risk of fluorosis	I
15. Marinho et al. 2004a	The benefits of topical fluorides have been firmly established on a sizeable body of evidence from randomized controlled trials. Although many reports lacked important methodological details, the review findings are quite strong, based on a sizeable body of randomized evidence	A
16. Fedorowicz et al. 2009a	There is no evidence to either claim or refute a difference in survival between bonded and nonbonded amalgam restorations	I
17. Hayashi and Yeung 2003	There is no strong evidence available to support any differences in the clinical performance of ceramic inlays and other posterior restorations	I
18. Ricketts et al. 2006	There is a need for further randomized controlled clinical investigation of the need to remove demineralized tissue before restoring the tooth. This	I

(*Continued*)

TABLE 1. Authors' conclusions on the quality of evidence in Cochrane reviews in dental caries and endodontics (*Continued*)

Review	Authors' conclusions	QI
	review found no evidence that incomplete caries removal is deleterious. Only 4 studies with a high risk of bias were included, and there were differences in lesion severity	
19. Yengopal et al. 2009	There was insufficient evidence from the 3 included trials to make any recommendations about which filling material to use for the treatment of caries in the primary dentition	I
20. Wakiaga et al. 2004	There is no reliable evidence to show a benefit of one type of veneer restoration (direct or indirect) over the other with regard to the longevity of the restoration	I
21. Rickard et al. 2004	Given the high risk of bias in the available studies and lack of consistency between different outcome measures, there is no reliable evidence that application of ozone gas to the surface of decayed teeth stops or reverses the decay process	I
22. Innes et al. 2007	No RCTs were available for appraisal. Although preformed metal crowns are recommended for restoring badly broken down primary molar teeth, the evidence to support this is not strong, consisting mainly of case reports and uncontrolled studies	I
23. Miyashita et al. 2007	Further well-designed RCTs are needed to investigate the potential of contemporary materials which may be suitable when used in the management of carious teeth	I
24. Nadin et al. 2003	No conclusions can be made about the optimum treatment or techniques for pulpally involved primary molar teeth because of the scarcity of reliable scientific research	I
25. Sharif et al. 2010a	The review authors did not identify any RCTs suitable for inclusion that compared the effectiveness of managing defective amalgam restorations by replacing them (with amalgam) versus repairing them (with amalgam) in permanent molar and premolar teeth	I
26. Sharif et al. 2010b	This review did not identify any RCTs suitable for inclusion that compared the effectiveness of managing defective resin composite restorations by replacing them (with resin composite) versus repairing them (with resin composite) in permanent molar and premolar teeth	I
	Endodontics	
27. Pedrazzi et al. 2008	This review illustrates the current lack of published or ongoing RCTs and the unavailability of high-level evidence of the effectiveness of ultrasonic instrumentation used alone or as an adjunct to hand instrumentation for orthograde root canal treatment	I
28. Del Fabbro et al. 2009	No objective conclusion can be drawn from the results of this review because no article was identified in the current literature that satisfied the criteria for inclusion. Therefore, it is unknown if and how the type of magnification device affects the treatment outcome, considering the large number of factors that may have a significant effect on the success of endodontic surgical procedures.	I
29. Bolla et al. 2007	There is weak evidence from one trial of 200 people that carbon fiber posts have fewer failures after 4 years than metal-cast posts	I
30. Figini et al. 2007	There is no evidence to suggest that one treatment regimen (single visit or multiple-visit root canal treatment) is better than the other. A well-designed RCT comparing single-visit and multiple-visit root canal	I

(*Continued*)

TABLE 1. Authors' conclusions on the quality of evidence in Cochrane reviews in dental caries and endodontics (*Continued*)

Review	Authors' conclusions	QI
	treatment, both performed with the same instruments, would be an important contribution.	
31. Del Fabbro et al. 2007	There is currently scarce evidence for a sound decision-making process among alternative treatments for re-treatment of a periradicular pathosis	I

RCT, randomized controlled trial; QI, quality of evidence; I, inadequate; A, adequate.
*Although the authors report some methodological failings in the primary studies included, they argue there is clarity in the results.
†The authors also concluded the evidence was " not very strong."
‡Therapy assessed in this review was regarded as belonging to the dental caries field.
§In general the studies can be regarded as largely free from bias in terms of the key domains identified, with the exception of randomization, allocation concealment, and incomplete outcome data, for which most of the studies were judged as "unclear."
‖For some of the trials included, allocation concealment was unclear

TABLE 2. Authors' conclusions and the respective level of evidence for Cochrane reviews in implantology and periodontology

Review	Authors' conclusions	QI
	Implantology	
32. Esposito et al. 2009a	The number of patients included in the trials was too small to draw definitive conclusions about replacing missing teeth by 1-stage or 2-stage implant placement. Four from 5 included studies were judged at high risk of bias	I
33. Esposito et al. 2010a	There is insufficient evidence to determine possible advantages or disadvantages of immediate, immediate-delayed, or delayed implants, therefore these preliminary conclusions are based on few underpowered trials often judged to be at high risk of bias	I
34. Esposito et al. 2005	The review found no trials comparing the outcomes of zygomatic implants with conventional bone grafting.	I
35. Esposito et al. 2009b	The review found some evidence from studies that immediate or early loading of artificial teeth may have a slightly poorer outcome than conventional (after waiting for several months) loading	A*
36. Esposito et al. 2007a	On the other hand, there is no evidence showing that any particular type of dental implant has superior long-term success. These findings are based on a few RCTs, often at high risk of bias, with few participants and relatively short follow-up periods	I
37. Esposito et al. 2009c	These conclusions are based on few trials including few patients, sometimes having short follow-up, and often being judged to be at high risk of bias. Various techniques can augment bone horizontally and vertically, but it is unclear which are the most efficient.	I
38. Esposito et al. 2008	Despite the limited amount of clinical research available, it seems that hyperbaric oxygen therapy (HBO) therapy in irradiated patients requiring dental implants may not offer any appreciable clinical benefits. There is a definite need for more RCTs to ascertain the effectiveness of HBO in irradiated patients requiring dental implants	I
39. Grusovin et al. 2010	There was only low-quality evidence for which are the most effective intervention for maintaining or recovering the health of peri-implant soft tissues	I
40. Esposito et al. 2007b	There is insufficient reliable evidence to provide recommendations on which are the best incision/suture techniques/materials, or whether or not techniques to correct/augment peri-implant soft tissues or to increase the width of keratinized/attached mucosa are beneficial to patients	I
41. Coulthard et al. 2002	There is weak evidence from the results of 1 RCT including 60 subjects that patients are generally less satisfied with preprosthetic surgery and a conventional denture than with an implant-retained denture.	I
42. Coulthard et al. 2003	There is no evidence from available RCTs supporting superior success with one or other of the alternative techniques examined. There was weak evidence that a nonresorbable membrane was better than no membrane for permitting bone growth about dental implants, and that a resorbable membrane over a bone graft may allow healing with fewer infections than a nonresorbable membrane	I
43. Esposito et al. 2010b	There is very little reliable evidence suggesting which could be the most effective intervention for treating peri-implantitis	I
44. Esposito et al. 2010c	Intervention for replacing missing teeth: augmentation procedures of the maxillary sinus. Conclusions are based on few small trials, with short follow-up, and judged to be at high risk of bias; therefore, conclusions should be viewed as preliminary and interpreted with great caution	I
45. Esposito et al. 2010d	There is some evidence suggesting that 2 g amoxicillin given orally 1 hour preoperatively significantly reduces failures of dental implants placed in	A†

(*Continued*)

TABLE 2. Authors' conclusions and the respective level of evidence for Cochrane reviews in implantology and periodontology (*Continued*)

Review	Authors' conclusions	QI
	ordinary conditions. No significant adverse events were reported. It might be sensible to suggest the use of a single dose of 2 g prophylactic amoxicillin before dental implant placement	
	Periodontics	
46. Chambrone et al. 2009	The results of this review have shown that most periodontal plastic surgery procedures led to statistically significant gains in gingival recession depth, clinical attachment level, and width of keratinized tissue, 23/24 studies were however judged to be at high risk of bias	I
47. Deacon et al. 2010	There is evidence from 7 trials of up to 3 months and at unclear/high risk of bias that rotation oscillation brushes reduce plaque and gingivitis more than side-to-side brushes	I
48. Robinson et al. 2005	The review of trials found that only rotation oscillation (where brush heads rotate in one direction and then the other) is better than manual toothbrushes at removing plaque and reducing gum inflammation, and is no more likely to cause injuries to gums. Long-term benefits of this for dental health are unclear.	A‡
49. Renz et al. 2007	There is tentative evidence from low-quality studies that psychological approaches to behavior management can improve oral hygiene–related behavior; however, the overall quality of the included trials was low	I
50. Esposito et al. 2009d	One year after its application, enamel matriy derivative significantly improved periodontal attachment levels (1.1 mm) and probing pocket depth reduction (0.9 mm) compared with a placebo or control; however, the high degree of heterogeneity observed among trials suggests that results have to be interpreted with great caution	I
51. Eberhard et al. 2008	In patients with chronic periodontitis in moderately deep pockets, slightly more favorable outcomes for pocket reduction and gain in probing attachment were found after full-mouth disinfection compared with control	A§
52. Needleman et al. 2006	There is marked variability between studies and the clinical relevance of these changes is unknown. As a result, it is difficult to draw general conclusions about the clinical benefit of guided tissue regeneration	I
53. Weston et al. 2008	Only one randomized trial has addressed this question. The data from this study are inconclusive. We therefore conclude there is no evidence for or against the use of occlusal intervention (for periodontitis in adults) in clinical practice. This question can be addressed only by adequately powered bias-protected RCTs	I
54. Beirne et al. 2007a	The research evidence is of insufficient quality to reach any conclusions regarding the beneficial and adverse effects of routine scaling and polishing for periodontal health and regarding the effects of providing this intervention at different time intervals	I
55. Simpson et al. 2010	The evidence gathered suggested that there may be a small but significant improvement in blood sugar control as a result of treating preexisting gum disease in people with type 2 diabetes mellitus	A‖

RCT, randomized controlled trial; QI, quality of evidence; I, inadequate; A, adequate.
*Twenty-two trials including 1024 participants in total were included and some methodological failings were identified, although the authors did not clearly report weak evidence.
†Of the 4 studies included, 3 and 12 were regarded as at low and high risk of bias, respectively.
‡Forty-two trials, involving 3855 participants, provided data with heterogeneous methodological quality.
§The authors report much heterogeneity among the studies included.
‖The authors suggest further studies to confirm or refute these findings should be regarded as a public health priority, because of the prevalence of both periodontal disease and diabetes.

TABLE 3. Authors' conclusions and the level of evidence for Cochrane reviews in oral and maxillofacial surgery and orthodontics

Review	Authors' conclusions	QI
	Oral and Maxillofacial Surgery (OMS)	
56. Sharif et al. 2010c	There is a lack of high-quality evidence relevant to intervention considered in this review topic and so the effectiveness of the 2 interventions considered in this review cannot be ascertained (treatment of fractures of the mandibular condyle)	I
57. Nasser et al. 2007	This review illustrates that there is currently inadequate evidence of the effectiveness of a single approach, either open or closed, in the management of fractured atrophic edentulous mandibles	I
58. Dorri et al. 2009	There is currently insufficient evidence for the effectiveness of resorbable fixation systems compared with conventional titanium systems for facial fractures	I
59. Fedorowicz et al. 2007	The authors of the review identified a limited number of RCTs that addressed only a few of the preferred outcomes and provided some evidence of the effectiveness of resorbable plating systems for orthognathic surgery	A†
60. Parkin et al. 2008	This review has revealed that, currently, there is no evidence to support one surgical technique over the other in terms of dental health, esthetics, economics, and patient factors (no studies were found that met the inclusion criteria)	I
61. Mettes et al. 2005	This review found no evidence to support or refute routine prophylactic removal of asymptomatic impacted wisdom teeth in adults; no studies of adults met the criteria for inclusion; however, it found some reliable evidence that suggests that the prophylactic removal of impacted third molars in adolescents to reduce or prevent late incisor crowding cannot be justified	A†
62. Coulthard et al. 2010	There is no evidence from RCTs to support or refute claims that screening for domestic violence in adults with dental or facial injury is beneficial nor that it causes harm (no eligible RCTs were identified)	I
63. Ahangari et al. 2010	We were unable to identify any reports of RCTs regarding the efficacy of different intervention for the management of external root resorption	I
64. de Souza et al. 2010	There is no evidence from RCTs about the comparative effectiveness of the different treatment options for ankylosed permanent front teeth. The lack of high-level evidence for the management of this health problem emphasizes the need for well-designed clinical trials	I
65. Day and Duggal 2010	Studies with moderate/high risk of bias indicate that soaking in thymosin alpha 1 and gentamycin sulfate followed by hyperbaric oxygen may be advantageous; however, they have not previously been reported as intervention for avulsed teeth and need further validation. More evidence with low risk of bias is required and, with the low incidence of avulsed teeth, collaborative multicenter trials are indicated	I
66. Suárez-Roa et al. 2009	We did not find RCTs evaluating the effects of primary surgical versus primary nonsurgical intervention for central giant cell granuloma of the jaws. Although a number of nonsurgical therapies have been proposed for treating central giant cell granuloma of the jaws, our review did not identify evidence from RCTs to support their use. More research is needed on this topic	I
67. Guo et al. 2009‡	Two trials, at unclear to high risk of bias, were included in the review. There is insufficient, consistent evidence to either support or refute the use of arthrocentesis and lavage for treating patients with temporomandibular joint disorders	I
68. Shi et al. 2003‡	There is insufficient, consistent evidence to either support or refute the use of hyaluronate for treating patients with TMD	I

(*Continued*)

TABLE 3. Authors' conclusions and the level of evidence for Cochrane reviews in oral and maxillofacial surgery and orthodontics (*Continued*)

Review	Authors' conclusions	QI
69. Weil et al. 2007‡	It should be noted that most of the studies were found to have some limitations mainly because of poor reporting of information; however, the review concludes that paracetamol is a safe, effective drug for the treatment of postoperative pain after surgical removal of lower wisdom teeth	A
70. Nasser et al. 2008a‡	The trial provided some weak and unreliable evidence that there was no significant difference in the effectiveness of minimal incision palatopharyngoplasty versus the same procedure performed simultaneously with an individually tailored pharyngeal flap or sphincter pharyngoplasty for correcting velopharyngeal insufficiency associated with submucous cleft palate	I
71. Guo et al. 2011‡	Because of the high risk of bias in the 2 included trials, there is insufficient evidence to conclude that one intervention is superior to another (different secondary bone grafting methods to reconstruct alveolar cleft)	I
72. Rigon et al. 2011‡	Seven randomized controlled trials (n = 349) met the inclusion criteria. All studies were either at high or unclear risk of bias. There are different types of treatments for TMDs. Arthroscopy (a form of surgery) has been used to reduce signs and symptoms of patients with TMD, but the effectiveness has still not been totally explained	I
73. Sharif et al. 2010d‡	There are no published RCTs relevant to the effectiveness of surgical intervention and adjuncts for treatment of keratocystic odontogenic tumors; therefore, no conclusions could be reached about the effectiveness or otherwise of the intervention considered in this review	I
74. Bessell et al. 2011a	The review found weak evidence that elective neck dissection of clinically negative neck nodes at the time of removal of the primary tumor results in reduced locoregional recurrence, but there is insufficient evidence to conclude that elective neck dissection increases overall survival or disease-free survival compared with therapeutic neck dissection. There is very weak evidence from one trial that elective supraomohyoid neck dissection may be associated with increased overall and disease-free survival. There is no evidence that radical neck dissection increases overall survival compared with conservative neck dissection surgery	I
Orthodontics		
75. Bessell et al. 2011b	There is weak evidence that breastfeeding is better than spoon-feeding after surgery for cleft. There was no evidence to suggest that maxillary plates assist growth in babies with clefts of the palate. No evidence was found to assess the use of any types of maternal advice and/or support for these babies	I
76. Millett et al. 2011	From the 2 well-designed and low risk of bias trials included in this review, it was shown that the failure of molar tubes bonded with either a chemically cured or light-cured adhesive was considerably higher than that of molar bands cemented with glass ionomer cement	A§
77. Millett et al. 2007	There is insufficient high-quality evidence with regard to the most effective adhesive for attaching orthodontic bands to molar teeth. Further RCTs are required	I
78. Mandall et al. 2003	It is difficult to draw any conclusions from this review; however, suggestions are made for methods of improving future research involving orthodontic adhesives. There is only weak unreliable evidence that one adhesive may possibly have more failures associated with it and another adhesive may be more protective against early decay	I

(*Continued*)

TABLE 3. Authors' conclusions and the level of evidence for Cochrane reviews in oral and maxillofacial surgery and orthodontics (*Continued*)

Review	Authors' conclusions	QI
79. Parkin et al. 2009‖	There is currently no evidence to support extraction of the deciduous maxillary canine to facilitate the eruption of the palatally ectopic maxillary permanent canine	I
80. Wang et al. 2010	There is some evidence to suggest there is no difference between the speed of tooth alignment or pain experienced by patients when using one initial aligning arch wire over another; however, in view of the general poor quality of the including trials, these results should be viewed with caution. Further research to study initial arch wires is required	I
81. Goh et al. 2007	The current practice of recommending the use of interdental/interspace brushes in addition to standard toothbrushes is not supported by clinical investigations	I
82. Carvalho et al. 2007	At present there is insufficient evidence to state that oral appliances or functional orthopedic appliances are effective in the treatment of obstructive sleep apnea in children	I
83. Lentini-Oliveira et al. 2007	There is weak evidence that the intervention Frankel's function regulator-4 with lip-seal training and palatal crib associated with high-pull chincup are able to correct anterior open bite.	I
84. Luther et al. 2010‖	There are insufficient research data on which to base our clinical practice on the relationship of active orthodontic intervention and TMD. There is an urgent need for high-quality RCTs in this area of orthodontic practice	I
85. Millett et al. 2006¶	No RCTs or CTs were identified that assessed the treatment of Class II division 2 malocclusion in children. It is not possible to provide any evidence-based guidance to recommend or discourage any type of orthodontic treatment to correct Class II division 2 malocclusion in children	I
86. Harrison and Ashby 2001	The evidence from two trials suggests that removal of premature contacts of the baby teeth is effective in preventing a posterior crossbite from being perpetuated to the mixed dentition and adult teeth	A#
87. Harrison et al. 2007	The evidence suggests that providing early orthodontic treatment for children with prominent upper front teeth is no more effective than providing one course of orthodontic treatment when the child is in early adolescence	A**
88. Skeggs et al. 2007	There is limited evidence that osseointegrated palatal implants are an acceptable means of reinforcing anchorage. The review authors were unable to identify trials addressing the secondary objectives of the review relating to patient acceptance, discomfort, and failure rates	I
89. Littlewood et al. 2006	There are, currently, insufficient research data on which to base our clinical practice on retention procedures for stabilizing tooth position after treatment with orthodontic braces. There is an urgent need for high-quality RCTs in this crucial area of orthodontic practice	I

RCT, randomized controlled trial; CT, controlled trial (without randomization); QI, quality of evidence; TMD, temporomandibular disorder; I, inadequate; A, adequate.

*This review included 2 trials, involving 103 participants; one compared titanium with resorbable plates and screws and the other compared titanium with resorbable screws; both provided very limited data for the primary outcomes of this review.

†Two were completed RCTs (in one RCT there was no allocation concealment and the assessor was not blinded).

‡Therapy assessed in this review was regarded as belonging to the OMS field.

§Authors also conclude that "However, given there are limited data for this outcome, further evidence is required to draw more robust conclusions."

‖Therapy assessed in this review was regarded as belonging to the orthodontics field.

¶The PubMed citation is from 2006, but the Cochrane database has an update version from 2008.

#Although the authors do not clearly report whether evidence is strong, these 2 studies have some methodological failings, for example unclear or inadequate allocation concealment.

**Of 8 trials included, 4 and 4 were regarded as at low and moderate risk of bias, respectively.

TABLE 4. Authors' conclusions and the level of evidence for Cochrane reviews in prosthetic dentistry and other topics

Review	Authors' conclusions	QI
	Prosthetic Dentistry	
90. Sutton et al. 2005	There is weak evidence that it may be advantageous, for dentists providing a complete denture service, to prescribe prosthetic posterior teeth with cusps to improve patient satisfaction compared with providing cuspless teeth	I
91. Koh and Robinson 2003	There is an absence of evidence from RCTs that occlusal adjustment treats or prevents TMD. Occlusal adjustment cannot be recommended for the management or prevention of TMD	I
92. Macedo et al. 2007	There is not sufficient evidence to state that the occlusal splint is effective for treating sleep bruxism	I
93. de Souza et al. 2009	Although 6 RCTs were included in this review, the wide range of different intervention and outcome variables did not enable pooling of data in a meta-analysis. There is a lack of evidence about the comparative effectiveness of the different denture-cleaning methods considered in this review	I
94. Mujakperuo et al. 2010	There is insufficient evidence to support or not support the effectiveness of the reported drugs for the management of pain because of TMD. There is a need for high-quality RCTs to derive evidence of the effectiveness of pharmacological intervention to treat pain associated with TMD	I
95. Al-Ani et al. 2004	There is insufficient evidence either for or against the use of stabilization splint therapy for treatment of temporomandibular pain dysfunction syndrome	I
	Other Issues	
96. Ashley et al. 2009	The purpose of this systematic review was to assess any evidence comparing sedation with general anesthesia for delivery of dental care for children. We identified 15 studies for potential inclusion after searching the available databases and screening the titles and abstracts. We identified a further study through personal contacts. Following full-text retrieval of the studies, we found none to be eligible	I
97. Oliver et al. 2008	There remains no evidence about whether penicillin prophylaxis is effective or ineffective against bacterial endocarditis in people at risk who are about to undergo an invasive dental procedure. There is a lack of evidence to support previously published guidelines in this area. It is not clear whether the potential harm and cost of antibiotic administration outweigh any beneficial effect	I
98. Fedorowicz et al. 2009b	This review which was based on 1 methodologically sound but low-powered small sample trial that provides some evidence that there is no significant difference in pain relief for patients with untreated irreversible pulpitis who did or did not receive antibiotics in addition to analgesics	A
99. Zakrzewska et al. 2005	There is little research evidence that provides clear guidance for those treating patients with BMS. Further trials of high methodological quality must be undertaken to establish effective forms of treatment for patients suffering from BMS	I
100. Hasson et al. 2006	Tooth-whitening products for use at home work over a short period of time but users should be aware of common side effects and note that long-term data on their use are not yet available	I*
101. Al-Harasi et al. 2010	Although there are a many anecdotal accounts indicating the benefits of using hypnosis in pediatric dentistry, on the basis of the 3 studies meeting the inclusion criteria for this review there is not yet enough evidence to suggest its beneficial effects	I

(*Continued*)

TABLE 4. Authors' conclusions and the level of evidence for Cochrane reviews in prosthetic dentistry and other topics (*Continued*)

Review	Authors' conclusions	QI
102. Matharu and Ashley 2006	The review authors were not able to reach any definitive conclusion on which was the most effective drug or method of sedation used for anxious children. Overall quality of studies was found to be disappointing with poor reporting often the main problem	I
103. Nasser et al. 2008b	We found 2 relevant trials for this systematic review, only 1 of these could provide some weak evidence that acyclovir is an effective treatment in reducing the number of oral lesions, preventing the development of new extraoral lesions, reducing the number of individuals who experience difficulties eating and drinking, and reducing hospital admission for children under 6 years of age with primary herpetic gingivostomatitis	I
104. Fedorowicz et al. 2008a	This review, which included 5 trials (293 participants), found there is some evidence that mouthrinses containing antibacterial agents, for example chlorhexidine and cetylpyridinium chloride, or those containing chlorine dioxide and zinc, can to some extent reduce unpleasant odor but the use of mouthrinses containing chlorhexidine resulted in noticeable but temporary staining of the tongue and teeth. Future research should be conducted to provide reliable evidence enabling people to make informed decisions about whether these treatments are effective in reducing and eliminating halitosis	A†
105. Outhouse et al. 2006	There is weak and unreliable evidence of a small but statistically significant difference in reduction of volatile sulfur compound levels when tongue scrapers or cleaners rather than toothbrushes are used to reduce halitosis in adults. We found no high-level evidence comparing mechanical with other forms of tongue cleaning	I
106. Clarkson et al. 2007	There is strong evidence from RCTs that drugs absorbed or partially absorbed from the gastrointestinal (GI) tract prevent oral candidiasis in patients receiving treatment for cancer. There is also evidence that these drugs are significantly better at preventing oral candidiasis than drugs not absorbed from the GI tract	A
107. Worthington et al. 2011	A total of 131 studies with 10,514 randomized participants are now included. Overall only 8% of these studies were assessed as being at low risk of bias. Ten interventions were found to have some benefit with regard to preventing or reducing the severity of mucositis associated with cancer treatment. The strength of the evidence was variable and implications for practice include consideration that benefits may be specific for certain cancer types and treatment	A
108. Glenny et al. 2009	There is evidence that acyclovir is efficacious in the prevention and treatment of herpes simplex virus infections. There is no evidence that valacyclovir is more efficacious than acyclovir, or that a high dose of valacyclovir is better than a low dose of valacyclovir. There is evidence that placebo is more efficacious than prostaglandin E as prophylaxis. However, in all included trials, risk of bias is unclear	A‡
109. Worthington et al. 2010	There is insufficient evidence to claim or refute a benefit of any antifungal agent in treating candidiasis	I
110. Brocklehurst et al. 2010	Although there is evidence that visual examination as part of a population-based screening program reduced mortality from oral cancer in high-risk individuals, while producing a stage shift and improvement in survival across the population as a whole, the evidence is limited to 1 study and is associated with a high risk of bias. Furthermore, no robust evidence was identified to support the use of other adjunctive technology, for example	I

(*Continued*)

TABLE 4. Authors' conclusions and the level of evidence for Cochrane reviews in prosthetic dentistry and other topics (*Continued*)

Review	Authors' conclusions	QI
	toluidine blue, brush biopsy, or fluorescence imaging within a primary care environment	
111. Furness et al. 2011	Treatment with chemotherapy (drugs that kill cancer cells), in addition to radiotherapy (and surgery where possible) results in prolonged survival. Improvement in overall survival with the use of chemotherapy is estimated to be between 8% and 22%.	A[§]
112. Glenny et al. 2010	Altered fractionation radiotherapy is associated with improved overall survival and locoregional control for patients with oral cavity and oropharyngeal cancers	A[‖]
113. Khokhar et al. 2011	We did not identify any studies that met our inclusion criteria	I
114. Beirne et al. 2007b	There is insufficient evidence from RCTs to draw any conclusions regarding the potential beneficial and harmful effects of altering the recall interval between dental checkups	I
115. Lodi et al. 2006	To date there is no evidence of effective treatment in preventing malignant transformation of leukoplakia	I
116. Thongprasom et al. 2011	Although topical steroids are regarded as first-line treatment, we identified no RCTs that compared steroids with placebo in patients with symptomatic oral lichen planus (OLP). From the trials in this review there is no evidence that one steroid is any more effective than another. There is weak evidence that aloe vera may reduce the pain of OLP and improve the clinical signs of the disease compared with placebo. There is weak and unreliable evidence that cyclosporin may reduce pain and clinical signs of OLP. There is no evidence that other calcineurin inhibitors reduce pain compared with either steroids or placebo.	I
117. Clarkson et al. 2010	There is limited evidence that low-level laser treatment is beneficial in reducing the severity of mucositis. There is no evidence that patient-controlled analgesia is better than continuous infusion for controlling pain. However there is unreliable evidence that less opiate is used per hour, and the duration of pain is slightly reduced with patient-controlled analgesia	I
118. Poulsen et al. 2006	The evidence generated by this review is based on a small number of individuals. Furthermore, the effect varies with the methods used to assess the sensitivity. Thus no clear evidence is available to support the use of potassium-containing toothpastes for dentine hypersensitivity	I
119. Aggarwal et al. 2011	There is weak evidence to support the use of psychosocial intervention for chronic orofacial pain	I
120. Fedorowicz et al. 2008b	The lack of reliable evidence for the effectiveness of any specific intervention for the management of oral submucous fibrosis is illustrated by the paucity, and poor methodological quality, of trials retrieved for this review	I

BMS, burning mouth syndrome; RCT, randomized controlled trial; QI, quality of evidence; TMD, temporomandibular disorder; I, inadequate; A, adequate.

*Although the authors do not clearly report the evidence is weak, 21 of the 25 studies included were regarded as at high risk of bias (the other 4 were regarded as at moderate risk of bias).

†The authors report some methodological problems in the studies for example randomization and concealment (unclear in 3 of 5 studies).

‡The authors concluded that "Although 17 trials were included, methodological assessment indicated that the overall risk of bias was unclear in all the studies."

[§]With regard to tooth mortality, the authors considered 5 and 6 of the studies included as at low and moderate risk of bias, respectively.

[‖]Authors used the GRADE approach to report moderate level for studies at low risk of bias.