

# Dental & Oral Health Research Review™

RESEARCH REVIEW

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Issue 4 – 2016

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### Abbreviations used in this issue

ART = atraumatic restorative treatment  
CKD = chronic kidney disease  
MTA = mineral trioxide aggregate  
OR = odds ratio  
RCT = randomised controlled trial  
TMD = temporomandibular disorders

**Welcome** to the fourth combined issue of Dental and Oral Health Research Review. This publication reviews papers from each field, with Colleen Murray providing commentary for Dental Health and Jonathan Leichter for Oral Health.

Research selected for this issue includes a report from across the Tasman on dental hygienists' and oral health therapists' attitudes and practice behaviours regarding the provision of dietary advice, which identified a number of barriers that limit its delivery. We have also included a feature on the future of flossing in the wake of the US decision to remove daily flossing from dental health recommendations, with invited contributions from several experts. An interesting article reveals that significant inaccuracies exist as to the diagnosis and management of temporomandibular disorders on dentist websites. Patients need to be wary of where they seek treatment, and practitioners should be prepared to deal with issues raised by misinformed patients.

We hope you find the papers in this issue useful in your practice and we welcome your comments and feedback.

Kind regards

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## Attitudes and barriers to providing dietary advice: perceptions of dental hygienists and oral health therapists

Authors: Hayes MJ et al.

**Summary:** These researchers mailed questionnaires on the provision of dietary advice to a convenience sample of 987 dental hygienists and oral health therapists based in New South Wales, Australia, of whom 426 responded. The responses suggested that many dental hygienists and oral health therapists believe in the importance of dietary counselling, but many barriers preventing the delivery of such advice were identified, including time, patient compliance, patient knowledge of nutrition topics, personal counselling skills and practitioners' knowledge of nutrition.

**Comment (JL):** What we eat has a significant impact on oral health. Diet affects the integrity of teeth, pH and composition of plaque and saliva; nutrition has a systemic effect on the entire oral cavity; and micronutrient deficiencies can result in an impaired immune status. This cross-sectional questionnaire study investigated the attitudes and practices of Australian hygienists and therapists regarding dietary advice. Although the respondents felt that dietary counselling was part of their role, lack of confidence and experience were reported as barriers, a finding similar to that of a study of Australian medical practitioners. The authors suggested that there is a lack of nutrition workshops and conferences. Perhaps this topic could be kept in mind for a future NZ Dental and Oral Health Therapists Association Conference?

Reference: *Int J Dent Hyg*; Published online Jul 26, 2016

[Abstract](#)



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## Does floss have a future?

**Authors:** Quinlan K

**Summary:** This feature published in the current issue of *Br Dent J* (at the time of reporting) examined the role of flossing in light of recent publicity around the US health department's removal of daily flossing from dental recommendations. Several contributors responded to four questions put forward by the feature's primary author. 1) Is flossing essential to good oral health? 2) Do you floss yourself and if so, how often? 3) Do you recommend that all patients floss? 4) Do you think toothpicks/interdental brushes/other can be used as an alternative to floss? It was concluded that all the contributors agreed interdental cleaning, for which flossing has a role, is essential for good oral health.

**Comment (JL):** Recent articles in the *New York Times* and *The Guardian* have reported on the US government dropping their flossing recommendations, suggesting flossing has not been shown to prevent cavities or 'gum disease'. This feature in the *Br Dent J* reported the views of a range of dental professionals on flossing. It is worth a read, as we will no doubt face a barrage of questions from our patients regarding the advice we have been giving since the 1800s. Although opinions varied slightly, the need for daily disruption of the interdental biofilm remains valid and a cornerstone of preventative dental care. Interdental brushes are recommended for use where they fit, but where there is no loss of interdental papilla or gingival recession, floss has its role to play. On the positive side, the press has brought flossing into the spotlight and will provide us with the opportunity to explain the rationale behind our advice.

**Reference:** *Br Dent J* 2016;221(4):152-3

[Abstract](#)

## A study on the survival of primary molars with intact and with defective restorations

**Authors:** Hilgert LA et al.

**Summary:** Primary molar survival rates were compared between intact and defective amalgam and ART (atraumatic restorative treatment) restorations in this research. Of 649 restored primary molars included from a cluster RCT, 162 were assessed as defective restorations for mechanical reasons. Compared with primary molars with defective restorations, those with intact restorations had a longer 3-year survival rate (96.3% vs. 75.9% [ $p < 0.0001$ ]). Neither the effect of treatment protocol (amalgam versus ART;  $p = 0.05$ ) nor the type of surface (single versus multiple;  $p = 0.73$ ) was observed with respect to restored primary molar survival rate.

**Comment (JL):** Making treatment decisions for primary molars with defective restorations is a common occurrence in the life of a dental therapist. This study followed 649 restored primary molars over a period of 3.5 years. The teeth had been restored with either a conventional amalgam restoration or using the ART protocol with high-viscosity glass ionomer. A total of 162 restorations were assessed as defective during the follow-up period. Of these, 75.9% survived in this condition compared with the 94.3% of the teeth with intact restorations. The majority of teeth with defective restorations had lost most or all of a multiple surface restoration, resulting in these surfaces being relatively easier to clean than small-size cavities. The decision to re-restore or not will depend on many factors – the child's oral care protocol, their exposure to fluoride toothpaste and fluoridated water, the type of restorative failure, and the age of the child. Although the study results showed that re-restoring primary molars with defective restorations may not always be necessary, a universal clinical recommendation cannot be made.

**Reference:** *Int J Paediatr Dent* 2016;26(5):383-90

[Abstract](#)



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Dental & Oral Health Research Review is also made available to Dental Hygienists through the kind support of the New Zealand Dental Hygienists' Association

## Sealants for preventing and arresting pit-and-fissure occlusal caries in primary and permanent molars

**Authors:** Wright JT et al.

**Summary:** This was a report from the *American Dental Association* and the *American Academy of Pediatric Dentistry* on a systematic review of 24 papers representing 23 RCTs investigating dental sealants for preventing and managing pit-and-fissure occlusal carious lesions in primary and permanent molars. There was moderate-quality evidence that compared with sealant nonrecipients, sealant recipients were less likely to develop carious lesions in occlusal surfaces of permanent molars after  $\geq 7$  years of follow-up (OR 0.15 [95% CI 0.08, 0.27]), with low-quality evidence of reduced risk when compared with fluoride varnishes (0.19 [0.07, 0.51]). No hierarchy of effectiveness could be made for studies investigating head-to-head comparisons. No adverse events were reported by the two RCTs that reported such data.

**Comment (JL):** This systematic review of RCTs included 24 articles from 23 studies. Both parallel (9) and split-mouth (14) RCTs with at least 2 years of follow-up were included. The results suggested that children and adolescents who receive sealants in sound occlusal surfaces or noncavitated pit-and-fissure carious lesions in their primary or permanent molars (compared with a control without sealants) experienced a 76% reduction in the risk of developing new carious lesions after 2-year follow-up. Even after 7 or more years of follow-up, teeth with sealants had a caries incidence of 29%, compared with 74% in those without. Although I am sure we are all aware of the preventive effect relating to sealants, it is always good to have some solid facts and figures when parents ask us if placing sealants on their child's teeth is really necessary. This paper provides us with the evidence to state with conviction that sealants compared with no sealants, or with fluoride varnishes, prove superior in preventing new lesions and arresting the progression of noncavitated existing lesions.

**Reference:** *J Am Dent Assoc* 2016;147(8):631–45

[Abstract](#)

## Clinical and radiographic comparison of various medicaments used for pulpotomy in primary molars

**Authors:** Goyal P et al.

**Summary:** Ninety molar teeth from 42 children aged 4–8 years requiring pulpotomy were randomised 1:1:1 for intended treatment with ferric sulphate, buffered glutaraldehyde or MTA (mineral trioxide aggregate) in this trial. No clinical findings were observed in any group at 1 month. At 3 months, mobility was evident in 13.3% and 12.5% of teeth treated with ferric sulphate and buffered glutaraldehyde, respectively. By 6 months, 9.1% of teeth treated with ferric sulphate exhibited pain and sinus formation, and periodontal ligament widening was evident in 66.7% and 85.7% of teeth treated with ferric sulphate and buffered glutaraldehyde, respectively.

**Comment (JL):** As natural teeth are the best form of space maintenance, their preservation is an important goal with a pulpotomy recommended where caries removal has resulted in pulp exposure. Although formocresol was considered the gold standard, substitutes are now used due to its potential toxicity, mutagenicity and carcinogenicity. Ferric sulphate, glutaraldehyde and MTA were compared in this perspective RCT, which involved 90 molars from 42 children aged 4–8 years. Clinical and radiographic evaluations were conducted at 24 hours, 1 month, 3 months and 6 months. While the primary molars treated with MTA showed 100% success, pain after 6 months was reported in 57.1% of children treated with glutaraldehyde and 9.1% of those treated with ferric sulphate. MTA-treated teeth showed no tooth mobility, periodontal ligament widening, internal or external resorption, and no periapical or furcation radiolucency, exhibiting the best overall results as a pulpotomy agent. Regardless of these findings, we are limited by what is available to us for use in our clinics. The authors suggest that a further larger sample size study with a longer observational period is needed. With further published research, our available options may change.

**Reference:** *Eur J Dent* 2016;10(3):315–20

[Abstract](#)

## Comparison of treatment choices among endodontists, postgraduate students, undergraduate students and general dentists for endodontically treated teeth

**Authors:** Çiçek E et al.

**Summary:** This Turkish study compared the difference in decision-making regarding retreatment of endodontically treated teeth among undergraduate students (n=20), general dentists (n=20), endodontic postgraduate students (n=20) and endodontists (n=20). Eighty endodontically treated teeth were placed into 4 groups (20 teeth in each group): symptom/periapical lesion (group 1); symptom/no periapical lesion (group 2); no symptom/periapical lesion (group 3); no symptom/no periapical lesion (group 4). Participants were provided with a scanned periapical radiograph of each tooth and a leaflet containing relevant information. They also received five different treatment alternatives: no treatment, wait and see; non-surgical root canal treatment; only apical surgery (apical resection and retrofilling or only apical curettage); retreatment and apical surgery; or extraction. Only one option could be selected for each tooth. For groups 1, 2 and 3, the postgraduate students and endodontists preferred non-surgical retreatment more frequently than did the undergraduate students and general dentists ( $p < 0.05$ ). However, in group 4, all participants suggested the first treatment option, 'no treatment, wait and see' more frequently than the other treatment options ( $p < 0.05$ ).

**Comment (CM):** While a root canal treated tooth may "survive" and be functional in the mouth, this does not equate with a successful outcome, as a persistent periapical lesion postoperatively (with or without clinical symptoms) is regarded as an unsuccessful outcome. Success rates of endodontically treated teeth are reported to be 80–95%, while survival rates are higher at 94–95%, making retreatment the preferred first option in many cases. Participants in this study were provided with a hypothetical scenario and radiographs for 80 endodontically treated teeth where the initial treatment was completed at least 2 years previously. They were given the choice of five treatment alternatives. In cases with either symptoms, a periapical lesion, or both, postgraduate students and endodontists were shown to prefer non-surgical retreatment more frequently than undergraduate students and general dentists, the latter preferring extraction rather than any form of retreatment. While this may be due to recent advances in implant treatment, both endodontic retreatment and implants have associated risks, and it is important that our patients are fully informed regarding their treatment options. In cases with no symptoms or periapical lesions, the first treatment option of all participant groups was the "no treatment, wait and see" approach.

**Reference:** *Int Dent J* 2016;66(4):201–7

[Abstract](#)

### Independent commentary by Colleen Murray.

Colleen Murray graduated from the University of Pretoria with a BChD in 1984, followed by an Honours degree in Oral Radiology and Diagnostics in 1987. After a combination of private practice and university teaching, she emigrated to New Zealand in 1992, took a break from dentistry and obtained her BEd degree. She has been in Dunedin since 2003 when the pull back to dentistry resulted in a BDS and return to private practice. This was followed by a change to the academic setting and a PGDipClinDent in Paediatric Dentistry.

For full bio [CLICK HERE](#).



### Independent commentary by Jonathan Leichter DMD, Cert Perio (Harvard).

Dr Leichter is currently Senior Lecturer in the Department of Oral Sciences at the University of Otago. Dr Leichter joined the faculty after 20 years in fulltime private practice in New York and Boston, 18 of which were spent in specialist practice limited to periodontology and implant dentistry. Trained at Tufts University and obtaining his specialist training at Harvard University, he has been actively involved in clinical dental implant practice since 1984. Since 2002, he has supervised and mentored postgraduate students in periodontology, endodontics and prosthodontics.

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## Bidirectional relationship between renal function and periodontal disease in older Japanese women

**Authors:** Yoshihara A et al.

**Summary:** In this study, 332 postmenopausal never-smoking women underwent baseline measurements of serum high-sensitivity C-reactive protein, osteocalcin and cystatin C. They were also evaluated for periodontal disease markers, including clinical attachment level and the periodontal inflamed surface area (PISA). Poor renal function was defined as serum cystatin C >0.91 mg/L. Logistic regression analysis revealed a significant correlation between PISA and serum cystatin C, with an odds ratio of 2.44 for serum cystatin C ( $p=0.011$ ). Poisson regression analysis revealed a significantly positive prevalence rate ratio between serum cystatin C and periodontal disease markers such as number of sites with clinical attachment level  $\geq 6$  mm (3.12;  $p<0.001$ ). Findings were similar for serum osteocalcin levels.

**Comment (CM):** Diabetes mellitus, chronic hypertension and glomerulonephritis are common causes of chronic kidney disease (CKD), where loss of renal function occurs slowly and progressively over months or years. It is often associated with disordered mineral metabolism. As periodontal disease and bone mineral density have been linked, this cross-sectional study evaluated the reciprocal effects of CKD and periodontal disease in 322 postmenopausal women. Women with any conditions that could potentially affect bone metabolism were excluded from the study. A positive relationship was shown between both the periodontally inflamed surface area (a quantitative measure of clinical periodontal inflammation) and the high-sensitivity C-reactive protein levels, and the serum cystatin C levels and serum osteocalcin level, both indicators of renal function. These findings show that participants with decreased bone metabolism and renal function had a higher probability of periodontal disease, and suggest a reciprocal effect between these two conditions. This is something to keep in mind when treating patients with either condition.

**Reference:** *J Clin Periodontol* 2016;43(9):720–6

[Abstract](#)

## Informed consent comprehension and recollection in adult dental patients: A systematic review

**Authors:** Moreira NC et al.

**Summary:** A comprehensive search of the literature up to April 2015 for original studies assessing recollection or comprehension of dental informed consent in adults revealed 19 articles suitable for analysis: 5 randomised clinical trials, 8 cross-sectional studies, 3 qualitative studies, 2 mixed-methods studies, and 1 case series. Conventional informed consent processes yielded comprehension results of 27–85% and recollection of 20–86%. When informed consent processes were enhanced by additional media, comprehension ranged from 44–93% and recollection ranged from 30–94%. Patients' self-reported understanding indicated that most felt that they understood all or almost all the information presented. Qualitative investigations indicated that patients did not always understand explanations, although dentists thought they did. Some patients were convinced that they did not receive any related information. Few patients could remember complications related to their treatment options.

**Comment (CM):** This systematic review synthesised available evidence of the effectiveness of the informed consent process in dentistry. It included 19 articles, with a wide array of designs, which had met the inclusion criteria. This provided different insights but meant that not all were suitable for an all-inclusive meta-analysis. The authors found that adult dental patients do not always show adequate levels of understanding and information recollection from their informed consent process. Although it was found that, in general, dental patients demonstrate appropriate levels of comprehension and recall, there is still room for improvement. Clinicians should include adjunct resources such as leaflets, audiovisual material and decision boards, as these improve understanding and recall capabilities. As informed consent is an essential component of the decision-making process, it is helpful for us to consider which areas may need extra attention in our own practices.

**Reference:** *J Am Dent Assoc* 2016;147(8):605–19

[Abstract](#)

## Factors influencing early dental implant failures

**Authors:** Chrcanovic BR et al.

**Summary:** This retrospective investigation sought to determine what factors influence the occurrence of dental implant failures up to the second-stage surgery (abutment connection) in this analysis of data from 2,670 patients treated with 10,096 implants followed by implant-supported prostheses at a single specialist clinic. A total of 642 implants (6.36%) failed; 176 (1.74%) implants in 139 patients were lost up to second-stage surgery. The distribution of implants in sites of different bone quantities and qualities was quite similar between implants lost up to and after abutment connection.

**Comment (CM):** Early implant failure, defined as loss of the implant, occurs prior to abutment connection surgery and results from an inability to establish an intimate bone-to-implant contact. This retrospective study was based on 2,670 patients with 10,096 implants and assessed the influence of local and systemic factors on early implant failure. Overall, 642 (6.36%) of implants failed with 176 of these lost early, a failure rate of 1.74% at implant level and 5.21% at patient level. As this study involved early failure, confounding prosthetic factors were eliminated. The two statistically significant predictors of early failure were smoking and the intake of antidepressants. Biochemical and clinical evidence has suggested a relationship between antidepressants and the impairment of bone metabolism. While the lack of specific information regarding the antidepressants being taken (dosage and class of drug) is a factor, this is still worth keeping in mind when treatment planning for potential implant cases.

**Reference:** *J Dental Res* 2016;95(9):995–1002

[Abstract](#)

## How accurate is information about diagnosis and management of temporomandibular disorders on dentist websites?

**Authors:** Desai B et al.

**Summary:** These US researchers investigated the accuracy of information provided on websites of dental practices about the diagnosis and management of temporomandibular disorders (TMDs). A web search identified 255 dental providers advertising specialist management of TMDs on their websites. Two-thirds of these practitioners were general dentists. Two-thirds (66.7%) of the websites attributed TMDs to occlusal problems or malocclusion, while over one-third (38.8%) labelled TMDs as a single disorder rather than a group of disorders. Over half (54.5%) of the providers offered recommendations to treat occlusal problems or malocclusion to alleviate TMDs.

**Comment (CM):** I'm sure that we have all used Google to search for healthcare information or find out what services are provided by a health care provider. But how accurate is the information that we find? This study looked at the websites of dental providers who describe themselves as "TMD specialists" and analysed the content of their practice websites for accuracy of information and treatments for TMDs. Of the 255 websites evaluated, 173 belonged to general dentists, 39 of whom described themselves as "neuromuscular dentists". Unfortunately, the authors found considerable misinformation regarding the diagnosis and treatment of TMD, with many dentists regarding it as a single condition and treating it as such. No differentiation was made between myofascial pain in the masticatory muscles and problems involving the temporomandibular joint (TMJ). Misconceptions about the role of occlusal problems in the causation of TMD were another area of misinformation. I am sure that TMDs are not the only condition where Internet-based information is unreliable and incorrect. What Mark Twain said about health books is just as valid today: "Be careful about reading health books. You may die of a misprint."

**Reference:** *Oral Surg Oral Med Oral Pathol Oral Radiol* 2016;122(3):306–9

[Abstract](#)

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