

Oral Health Research Review

Making Education Easy

Issue 15 – 2013

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Abbreviations used in this issue

ED = erectile dysfunction
MSD = musculoskeletal disorder
OLP = oral lichen planus



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

Welcome to the fifteenth issue of Oral Health Research Review.

This issue begins with a meta-analysis reassuring us of no statistically significant evidence of an association between mouthwash use and oral cancer. Researchers from Australia identified factors associated with the development of MSDs among dental hygienists, and suggested a few options for their management. A Turkish study found an association between chronic periodontitis and ED in men, while an American study explored the feasibility of screening for diabetes in the dental clinic.

I hope you enjoy reading this issue, and I look forward to receiving your comments and feedback, as well as any suggestions on what you would like to see in future issues.

Kind regards,

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Mouthwash and oral cancer risk

Authors: Gandini S et al

Summary: This was a quantitative meta-analysis of 18 epidemiological studies reporting data on the risk of oral cancer associated with the use of mouthwash. Regular use of mouthwash was not associated with a significantly increased risk of oral cancer (relative risk 1.13 [95% CI 0.95, 1.35]), nor was mouthwash specifically containing alcohol (1.16 [0.44, 3.08]). Furthermore, no significant trend was seen for oral cancer risk with increased daily mouthwash usage ($p=0.11$).

Comment: It has been estimated that half a million cases of cancer of the oral cavity and pharynx occur annually, resulting in a quarter-of-a-million deaths. Around 70% of these cancers can be explained by exposure to tobacco and alcohol, with alcohol increasing the permeability of the oral mucosa to tobacco-specific nitrosamines (and potentially other carcinogens), even after short-term exposure. Ethanol, in a concentration of 18–27%, is used in some mouthwash formulae as a solubiliser, stabiliser, preservative, sensory cue and antiplaque efficacy enhancer. As a result, the potential association between mouthwash use and an increased risk of oral cancer has been a source of controversy for several decades. The authors of this paper carried out a comprehensive literature review and meta-analysis of epidemiological studies of mouthwash and oral cancer, with 18 articles found. Only 16 were included as two studies were not independent. The results showed no statistically significant association between regular mouthwash use and risk of oral cancer, and no significant trend in the risk of oral cancer associated with increased daily usage of mouthwash. Unfortunately there was limited information available in the studies regarding the reason for mouthwash use. Smokers may be using mouthwash to cover the tobacco smell, or it may be used in cases of poor oral health. As we know, both smoking and poor oral health are, themselves, risk factors for oral cancer. The authors suggested further evaluation of already published data, particularly in older studies when current statistical methods were not widely available.

Reference: *Ann Agric Environ Med* 2012;19(2):173–80

<http://aaem.pl/fulltxt.php?ICID=1002006>

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The role of chlorhexidine in non-surgical periodontal therapy

Author: Stokes L

Summary: The author reviewed the literature on the use of chlorhexidine once daily for 1 week on interdental aids to promote healing and reattachment after root surface debridement. She found that although the literature in general supported such use of chlorhexidine, studies have not followed participants sufficiently to determine if there is any long-term benefit. It was concluded that chlorhexidine after root surface debridement is likely to benefit regular users of interdental aids who had deep subgingival pocketing with inflammation and substantial bleeding on instrumentation.

Comment: It is always a pleasure to stumble on an interesting review article as it saves the time taken to read through multiple papers, reminds us of what we already know and invariably introduces us to some new information. Chlorhexidine, the gold-standard antibacterial agent, is used extensively in dentistry and is available in various forms. The author of this paper conducted a literature review to investigate the benefits of chlorhexidine in its various forms after nonsurgical periodontal therapy. A variety of studies looking at chlorhexidine used as a mouthwash, as an irrigant combined with ultrasonic scaling, and for full mouth disinfection in a combination of gel, mouthwash and spray forms are discussed by the author. A brief summary of methods, results and shortcomings of the studies are presented in an easy to read manner. The conclusion drawn was that chlorhexidine clearly has a place in periodontal treatment, with all modes of application having some degree of efficacy. The author did note that the studies reviewed did not have 2-year follow-up, and therefore the long-term benefits of chlorhexidine are unknown. The suggestion was made that as the benefits of chlorhexidine application on interdental aids have not yet been reported, further research on this topic is needed. Patients already using interdental aids on a regular basis who have deep pockets with inflammation and bleeding may benefit from the application of chlorhexidine on their dental aids following root surface debridement.

Reference: *Dent Health* 2013;52:9-13

Oral hygiene in patients with oral lichen planus

Authors: Casula I et al

Summary: These authors began this paper with a review of the different types of OLP, and then reported the findings of a research study, in which 43 patients with OLP were enrolled in a 'prevention and oral hygiene' programme, and an additional 43 patients were assigned to a control group without the intervention. Plaque index scores decreased from baseline in the intervention group but not the control group, with the prevalence of a plaque index score of 2 decreasing from 57% to 0% in the intervention group and remaining unchanged (56% to 60%) in the control group. Participants treated by dental hygienists also had improvements in quality of life and the positive effects of treatment.

Comment: This paper starts with a review of OLP, with discussion of the various types (reticulated, atrophic, erosive and papular) as well as the symptoms, treatment and epidemiology of this condition. The authors then discussed their trial, which aimed to perfect operative protocols to improve the oral hygiene in patients with OLP. Eighty-six patients with histopathologically diagnosed OLP were included in the study. The test group were included in a 'prevention and oral hygiene' programme, while the control group were not. Test group patients were treated with an operative protocol (OHL, soft deposit removal with dry pellets of antiseptic and an extra soft toothbrush, and mineralised deposit removal with manual/mechanical instrumentation) and dental support therapy (observing and recording home plaque control measures, active pathology and actual/new pharmacological treatments). The results showed that as patients with OLP often have difficulty maintaining a good standard of oral hygiene, good oral hygiene protocols are essential so that their condition can be monitored and secondary infection avoided. Dental hygienists play a pivotal role in the care of these patients. The elimination of irritants such as plaque and calculus and the use of appropriate protocols can positively contribute to improved quality of life in these patients. Hygienists can also be instrumental in the early detection of precancerous and cancerous lesions.

Reference: *Dent Health* 2013;52:14-8

Measuring oral health self perceptions as part of a concise patient survey

Authors: Busby M et al

Summary: These researchers reviewed data from 42,794 participants of a voluntary accreditation programme patient survey, which included oral health impact questions regarding comfort (pain), function and dental appearance. For each of the three oral health impact questions, there was a decline in the percentage of respondents reporting 'ideal' health as age increased, but the percentage of respondents reporting 'unacceptable' health was <3% for each question, with little variation with age.

Comment: Knowledge regarding patient-perceived oral health can enable practitioners to assess their current perceived performance, support efficient practice management and focus on the issues most important to the patients. A concise questionnaire, which included ten core questions, was developed by Busby et al in 2012, and was used in this study to investigate the measurement of oral health self-perceptions and to consider the potential value of including this aspect in survey instruments. These questions cover the issues of greatest importance to patients, and include questions related to pain, function and appearance, in addition to questions related to the practitioner/practice, such as attitude, competence and standard of cleanliness. Two hundred and seventy-six practices participated in the patient survey, with a particular emphasis on the three oral health impact questions. Questionnaires were distributed over a 1-month period and reports provided to the practices after data analysis. It was found that differences existed when results were broken down by age group. Unsurprisingly, older dentate patients experience more negative oral health impacts than younger patients. For any practice considering introducing a patient survey, this paper is worth a read, as the ten core questions would be well worth including. Not only does a survey highlight areas that may need improvement, it can also demonstrate to the patients a commitment to their wellbeing.

Reference: *Br Dent J* 2012;213(12):611-5

<http://tinyurl.com/BDJ-213-611>

Predictors of work-related musculoskeletal disorders among dental hygienists

Authors: Hayes MJ et al

Summary: This analysis of data from responses to a modified Standardised Nordic questionnaire completed by Australian dental hygienists identified several work-related and psychosocial factors (e.g. scaling tasks, type of practice and work interference at home) that correlated with reported MSDs, and wearing loupes, ergonomics education and wage satisfaction were significant predictors for nonreporting of MSDs. Moreover, the presence of MSDs was associated with considering reductions in work hours or changing careers.

Comment: Dental professionals are at an increased risk of MSDs, with a reported prevalence rate of between 64% and 93%. In dental hygienists, the repetitive scaling tasks and awkward positioning are the main contributing factors. Psychosocial factors have also been suggested as contributing to MSDs in health professionals. The aim of this exploratory, descriptive study was to investigate which risk factors may help predict MSDs among Australian dental hygienists. After exclusions, 560 questionnaires were used in the final analysis. As has been previously reported, handscaling and ultrasonic scaling were predictive of reported MSDs, with a correlation between increasing work hours and wrist pain. Working in a periodontal practice performing a narrower range of tasks was predictive of forearm pain, while a protective effect was seen in those hygienists in orthodontic practices with a greater range of duties and less repetitive scaling tasks. Hygienists who perceived that work interfered in their home life, who were not involved in decision making or felt unsupported by staff members were more likely to report an MSD. For those hygienists who suffer MSDs, a few options were suggested. These included seeking an alternative career option within the profession (such as teaching or research), wearing loupes as these have a protective effect by improve posture, and receiving ergonomics education. Perhaps changes to work-life balance may also need to be made, as well as dynamics within the work environment.

Reference: *Int J Dent Hyg* 2012;10(4):265-9

<http://onlinelibrary.wiley.com/doi/10.1111/j.1601-5037.2011.00536.x/abstract>

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Is there a relationship between chronic periodontitis and erectile dysfunction?

Authors: Oğuz F et al

Summary: This study of men aged 30–40 years with (n=80) and without (n=82) ED reported severe chronic periodontitis rates of 53% and 23%, respectively. A logistic regression analysis revealed that ED was significantly associated with severity of chronic periodontitis (odds ratio 3.29 [95% CI 1.36, 9.55; $p < 0.01$]). Compared with men without ED, those with ED had significantly ($p < 0.05$) greater: i) mean plaque index values; ii) bleeding on probing values; iii) percentage of sites with probing depth > 4 mm (but not probing depth values); iv) percentage of sites with clinical attachment level > 4 mm (but not clinical attachment values); and v) decayed, missing, filled teeth scores.

Comment: Encouraging patients to maintain good oral hygiene and attend regular maintenance appointments can be difficult, and any strategies or motivators that can help in this regard are worth looking into. This single-blinded trial investigated the association of chronic periodontitis with ED in a group of men aged 30–40 years. The 80 study-group patients with ED were statistically compared with 82 control patients without ED according to their plaque index, bleeding on probing, probing depth and clinical attachment levels. The existence of ED was assessed using the International Index of Erectile Function Questionnaire and any patients suffering from a systemic disease that could affect periodontal health or ED were excluded from the study. The findings from this study supported the hypothesis that chronic periodontitis with probing depth > 4 mm, clinical attachment level > 4 mm and an increased percentage of sites with bleeding on probing is associated with an increased risk for ED. Men with severe chronic periodontitis were 3.29 times more likely to present with ED than periodontally healthy men. If passing on this statistic does not dramatically improve oral hygiene practices in at least half of our patients, what hope is there?

Reference: *J Sex Med* 2013;10(3):838–43

<http://onlinelibrary.wiley.com/doi/10.1111/j.1743-6109.2012.02974.x/full>

The integration of diet and nutrition lifestyle management strategies into the dental office visit for diabetes risk reduction and management

Author: Bruno M

Summary: Modest bodyweight loss and regular physical activity are important for managing patients with prediabetes and type 2 diabetes mellitus. Consumption of a carbohydrate-controlled diet that limits fat and cholesterol intake helps such patients achieve normoglycaemia and reduces the risk of diabetes complications. Ways in which oral healthcare professionals can incorporate diet and lifestyle management strategies for their patients with type 2 diabetes or prediabetes were discussed in this paper. The author noted that familiarity with risk factors for type 2 diabetes and recommendations for lifestyle modification strategies for its prevention “may help oral healthcare professionals educate patients and refer them for appropriate treatment and therapy”.

Comment: The author of this paper presented and explored diet and lifestyle management strategies that oral healthcare professionals can provide to prediabetic and type 2 diabetic patients. As the incidence of diabetes is on the increase, not only in the US, but also within our own country, it is important for us to be aware of the role we can play. The risk of developing complications of diabetes increases significantly in those patients with uncontrolled hyperglycaemia. These complications include cardiac and peripheral vascular diseases, neuropathies, increased risk of infection and delayed wound healing. Diet and lifestyle modifications are cornerstones in the management of type 2 diabetes and prediabetes. A useful approach to the diabetic patient is provided in table form in this paper (sourced from the American Diabetes Association). It is presented in four categories – Detect, Inform, Educate and Provide. Although we do not measure our patient’s height, bodyweight and waist circumference in the dental setting, a visual assessment of body size and abdominal girth can provide us with a clue as to a patient’s risk. It has been found that if a prediabetic person loses 5–7% of their bodyweight and increases their physical activity to 150 minutes a week, their chances of developing type 2 diabetes are reduced. Oral healthcare professionals can provide guidance and collaborate with dieticians to reinforce consistent messages and improve outcomes of oral (and systemic) health.

Reference: *J Am Dent Assoc* 2012;143(12):1320–3

<http://jada.ada.org/content/143/12/1320.abstract>



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How much information is remembered by the patients?

Authors: Ekbäck G et al

Summary: These researchers used 68,710 health survey questionnaires posted to men and women aged 18–84 years across five counties in Sweden (response rate 59.2%), and found that older respondents were less likely to receive questions and advice related to dental caries and periodontal disease than younger respondents. Less pronounced differences were also seen between those with disease-related problems and those without. Age, education level and problems with caries or bleeding gums were significantly related to prevalence of questions on eating habits and advice on smoking.

Comment: Caries and periodontal disease are both lifestyle-related diseases requiring a lifestyle change in the patient if their health is to improve. Knowledge is an important ingredient in promotive work. Several common theories and models of health-related decision making are available, but no one theory/model has been positively identified as being superior to another. The authors of this Swedish paper investigated the degree to which patients perceived that they had been questioned about, and given advice about, their eating and smoking habits at their last dental visit. Distribution between different age groups and differences in the proportions of questions and advice given to those who perceived they had problems were also investigated. 68,710 questionnaires were sent to both men and women aged 18–84 years. The results showed substantial differences between age groups with older participants perceiving that they had been asked significantly fewer questions and received significantly less advice than younger participants. Similar but less pronounced differences also existed between those with, and those without, disease-related problems. The authors trust that in NZ this is not also the case.

Reference: *Swed Dent J* 2012;36(3):143–8

<http://www.ncbi.nlm.nih.gov/pubmed/23230808>

Diabetes screening at the periodontal visit: patient and provider experiences with two screening approaches

Authors: Rosedale MT & Strauss SM

Summary: These researchers collected and analysed finger stick blood samples taken from 120 US patients and gingival crevicular blood samples from 102 of these patients. Analyses of quantitative and qualitative data collected from the patients along with qualitative data from providers supported the feasibility and acceptability of this approach. The following themes also emerged from interviews with providers and patients: i) 'a good chance to check'; ii) 'patient choice'; iii) finger stick versus gingival crevicular blood testing; and iv) 'a new way of interacting and viewing dental visits'.

Comment: Involvement of dental care providers in activities that support patients' systemic health can facilitate the early diagnosis and treatment of systemic diseases, thus preventing or limiting their complications. It has been well documented that there is a bidirectional relationship between diabetes and periodontal disease. Diabetes is a risk factor for periodontal disease and the severity of periodontal disease has been associated with glycaemic control and the development of complications in diabetic patients. Unfortunately, many patients with periodontal disease have not been screened for diabetes and are unaware of the relationship. This study, carried out at a large urban periodontics and implant clinic, aimed to support timely identification of diabetes in adults with periodontal disease. Finger stick blood and gingival crevicular blood (if sufficient bleeding) samples were collected from the 120 participants, who also provided sociodemographic and health-related descriptive information. Results showed that patients and dental providers found the dental setting a good venue for diabetes screening, with gingival crevicular blood preferred over finger stick blood for collection, as it was simple and less invasive. As the blood was mailed to the laboratory for testing, this approach does not take much time. Collection of gingival crevicular blood did not fall outside of the relevant scopes of practice of the dentist and hygienist. One unknown, and possibly limiting, factor is that of cost to the patient, as it would undoubtedly not be covered by the NZ healthcare system.

Reference: *Int J Dent Hyg* 2012;10(4):250–8

<http://onlinelibrary.wiley.com/doi/10.1111/j.1601-5037.2011.00542.x/abstract>

Parental knowledge and attitudes regarding the emergency treatment of avulsed permanent teeth

Authors: Ozer S et al

Summary: Parents of children aged 6–12 years receiving care at a dental clinic were questioned on their knowledge and attitudes regarding their children's avulsed permanent teeth and their emergency treatment. Most (90.7%) of the 289 respondents reported that they would not replant an avulsed tooth in its socket, and 68.2% knew the optimum time an avulsed tooth should be left out of the mouth before replantation. However, most respondents were not sufficiently informed about cleaning a dirty avulsed tooth or its transportation to the dentist/doctor. Neither demographic characteristics (69.6% of respondents were female and 64.4% were aged 30–39 years) nor training status of the respondents had any significant bearing on correctness of responses regarding appropriate management of avulsions.

Comment: Avulsion, one of the most serious traumatic dental injuries, constitutes 0.5–16% of all traumatic dental injuries to permanent anterior teeth, and occurs most commonly in children aged 8–12 years. As a tooth's prognosis is significantly affected by time between avulsion and replantation, storage medium used, stage of root formation and contamination, it is essential that parents, caregivers and teachers are aware of appropriate management methods. This study used anonymous questionnaires to collect data from 289 parents of children aged 6–12 years about their demographic characteristics, training in dental injury treatment, and knowledge about avulsion and its emergency management. The results showed that, in general, the parents had a low level of knowledge regarding the emergency treatment of tooth avulsion. Over 90% would not replant an avulsed tooth, only 9% chose a physiological medium for storage of the tooth, and <6% were able to identify the correct procedure for cleaning an avulsed tooth. On the positive side, most knew that it was best to seek professional help within a 30-minute timeframe, and 96.5% indicated that they were interested in learning more. As this study was carried out in Turkey, it would be interesting to find out how NZ parents compare.

Reference: *Eur J Dent* 2012;6(4):370–5

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3474550/>

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Oral Health Research Review

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. His research interests and publications are in the field of periodontology, dental trauma and laser applications in dentistry.