

# CJDH



# JCHD

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CDHA national conference proceedings  
Dental fear and avoidance scale  
Auditory sensory impairments and oral healthcare  
Orthodontic treatment and self confidence

*Laine Lowe and Dominique Berard, Vernon, North Okanagan region, British Columbia, 198*

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## What is a presidency?

*What is a presidency?* is my last message as president that I presented at the CDHA national conference in Halifax, Nova Scotia on 10 June 2011, to you, the owners of CDHA.

As we collectively open our first national conference in over five years, it is heartening to see a room full of faces, with commitment to our profession and with the mission to serve. It is this sense of community that has been with me through out my presidency at CDHA; and I am so very grateful to all for your tremendous support, encouragement, and inspiration.

Just what is a president of a national organization? Really, what a presidency is ... is a gift of time. The presidency at CDHA is the pinnacle of leadership within a professional association—a face and a name. Quite simply, a « go to » person in the organization.

***First and foremost, a president is a volunteer.***

We all volunteer in many ways. As you know, volunteering starts out small—a gesture of time, energy and commitment. It can consume you and take you on an adventure you never dreamed. It is through this gift of time that leadership opportunities are rooted, and are propelled along with enthusiasm and drive. We all, as volunteers, make things happen, and like to make a difference in what ever occupies our interest.

***A president is an administrator.***

The presidency is an administrative role where, with our fellow Board Directors, we seek to improve the governance and management practices of the association. We are constantly looking at membership value. We work in membership currency! Just how many memberships does it take to provide a conference such as this, or to develop national documents, or pursue advocacy initiatives? How many memberships does it take to raise public awareness of the profession? Who benefits, and what is the impact from membership expenditures. *Each* individual membership makes a difference.

***A president is a leader.***

The presidency is a leadership role where, as volunteers, we give our time to improve and pursue CDHA's mission effectively and creatively through visioning. I never ever lose site of this mission. It is this mission that engages; this mission invites pride in our profession. It has been my privilege as president to speak on your behalf on Parliament Hill twice in our efforts to prevent disease, improve health and promote wellness for all Canadians through advocacy. Gandhi said it best when he said, "Be the change you want to see in the world."

***A president is a collaborator.***

*Collaboration*; a very important word in the language of our profession. The presidency is a collaborative role. One that involves reaching and communicating with others locally, nationally, and globally with one voice. A voice with passion that comes from your collective energy in *your* communities. We are 22,000 strong in Canada with



Palmer Nelson,  
BA(Bio.), DDH, RDH

16,000 committed to the vision and voice of CDHA. It is through this collaboration that we will advance the profession in alliance with like minded professionals and organizations. We are bringing a Board Director from the North to the CDHA table this Fall to reflect the diversity of our profession in its entirety in Canada.

***A president is a builder.***

The presidency is a builder role where we, as owners of the association, together build and engage strong communities, and strengthen connections that contribute to a more just and democratic world. It is when we step outside our comfortable status quo lives, and dare to build—based on strong professional values, research and body of knowledge—that we build a better tomorrow. Tom Brokaw, the NBC news anchor, who reported on many events in the world aptly said, "It's easy to make a buck. It's a lot tougher to make a difference."

***A president is a connector.***

Sharing information and feeling connected is how the world turns these days. The president is a networker. Be it through Facebook, Twitter, community forums, or getting the word out in local and national media, being a face of an association is paramount in establishing transparency and honesty of dialogue. Connecting with members, in clinical offices, with industry representatives helps us break out of what professional communicators call « echo chambers » where we just talk amongst ourselves. Indeed we will be connected from coast to coast with CDHA 's national team in the CIBC *Run for the Cure*. An idea cultivated out of listening and connecting with members.

***A president is a role model.***

One doesn't set out to be a role model; one is inspired by others to step outside a comfort zone, and in turn this inspires others to do the same. We, as a profession, are very fortunate to have so many role models in all areas of practice. As I gaze about the room I have no doubt you are sitting next to a role model—each and every one of you. Role models quite simply, model professional behavior through imprinting and empowering. They break down stereotypes, eliminate barriers through honest interaction. You really do not have to look beyond your arms length to find a role model in any facet of life.

***A president is a mentor.***

One of my personal joys is engaging others to make a difference through mentoring. I have spoken with many students, colleagues, organizations and groups about our profession and our social responsibility to client centred or needs based care. Within a presidency, mentoring takes place within a sense of belonging to a community of ideas and inspiration. We all act as mentors through our gestures, kind words of acknowledgement, sharing of knowledge for the collective good. Interestingly, in a Board discussion many years ago, we all acknowledged we were

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## We're listening

In my first *CJDH* article in May, I told members that we would be seeking their input and direction on the current and potential future CDHA programs and services. In this second article, I would like to thank you, our members, for your feedback. Over 2,200 members responded to the recent membership survey. This is an excellent response rate, and you have provided us with valuable information and input that will help shape CDHA's strategic plan.

Whereas the survey just closed at time of writing—I'm pleased to share some preliminary results with you.

The products and services deemed most relevant to CDHA members include: professional liability insurance, code of ethics, position papers and clinical practice guidelines, and information and news on dental industry partners. We are starting the process of updating and revising the existing *Code of Ethics* for members to ensure this valued product remains current and relevant. In addition, I am pleased to share that we have renegotiated the professional liability insurance program offered by CDHA, and the basic program for next year has been improved—with no additional premium costs to members. Also, we are launching an "enhanced CDHA membership" for those professionals who require professional liability at \$2 million per claim/\$4 million aggregate.

CDHA is a recognized leader in providing members with high quality professional development. Members have told us they prefer online courses, conferences, and webinars. CDHA continues to develop courses and webinars; the next half day workshop will be in Winnipeg on 1 October 2011. We just hosted a hugely successful conference in Halifax; our next national conference will be in the Fall of 2013 in Toronto, Ontario. The overwhelming choice for professional development topics is new technologies in dental hygiene. Other important topics identified by members include dental hygiene process of care, infection prevention, quality assurance, employment issues...and over 500 other suggestions.

Members were clear in indicating that they want CDHA to increase our efforts in public awareness. Top areas of focus identified include improvements to the oral health of Canadians, awareness of the role of the dental hygienist and advancement of the dental hygiene profession. We will continue working to enhance our efforts in this important area. Not only have you provided us with input on current programs and services, you have given us hundreds of suggestions and ideas for new programs and services that will enhance your member value.

We're listening to your feedback...and are going to use the data and comments to help form a strategic plan to guide the association over the next three years. We will continue to engage our members, and listen to feedback as we turn your ideas and suggestions into valuable member

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CDHA welcomes your feedback: [info@cdha.ca](mailto:info@cdha.ca)



▲ Ondina Love, CAE

## Nous sommes à l'écoute

Dans mon premier article du JCHD du mois de mai, j'ai sollicité la participation et l'orientation des membres sur les possibilités actuelles et futures des programmes et services de l'ACHD. Dans ce deuxième article, je vous remercie de votre réaction. Plus de 2 200 membres ont répondu à notre récent sondage. Ce fut un excellent taux de réaction. Vous avez fourni une information précieuse et votre participation nous aidera à mettre au point le plan stratégique de l'ACHD.

Comme le sondage s'est terminé au moment d'aller sous presse, il me fait plaisir d'en partager quelques résultats préliminaires avec vous.

Les produits et services estimés les plus pertinents pour les membres comprennent ce qui suit : l'assurance responsabilité des membres, le code d'éthique, les exposés de principe et guides d'exercice clinique ainsi que l'information et nouvelles de nos partenaires de l'industrie privée. Nous entreprenons la révision et la mise à jour de l'actuel Code d'éthique des membres pour en assurer l'actualité et la pertinence. En outre, il me fait plaisir de vous informer que nous avons renégocié le programme d'assurance responsabilité qu'offre l'ACHD et y avons apporté des améliorations pour l'an prochain sans frais supplémentaires pour les membres. Nous lançons aussi une « adhésion améliorée à l'ACHD » pour les professionnelles qui ont besoin d'une couverture de responsabilité professionnelle de 2 millions de dollars par réclamation, avec un total de 4 millions.

L'ACHD occupe une des premières places en matière de perfectionnement professionnel haut de gamme de ses membres. Ceux-ci nous ont dit préférer les cours en ligne, les conférences et les webinaires. L'ACHD continue d'élaborer des cours et webinaires; le prochain atelier d'une demi-journée aura lieu le 1<sup>er</sup> octobre 2011, à Winnipeg. Nous venons de tenir une conférence fort réussie à Halifax; notre prochaine conférence nationale

...suite page 151

L'ACHD accueille vos commentaires : [info@cdha.ca](mailto:info@cdha.ca)

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## Air polishing: Overview

### Dear editor:

The mouth is the door to the body; therefore it is vital that the oral cavity be kept as healthy as possible not only for teeth but also for overall general health. We know there are two types of dental diseases: decay and periodontal disease.

Scientists have shown us that plaque is actually biofilm;<sup>1,2</sup> a complex living environment of various species of bacteria existing in a harmonious world. We know that biofilm is located everywhere in our mouth, and that it is difficult to remove in such areas as under restorative margins, around implant interfaces, and deep in periodontal pockets. Studies continue to support the connection between oral bacteria and systemic complications.<sup>3</sup>

Treatment protocols begin with general debridement of hard deposits (tarter/calculus), and biofilm removal.

- Assessment of disease and diagnosis
- Ultrasonic removal of subgingival calculus
- Hand instrumentation (scaling and curettage)
- Polishing (air and manual)
- Homecare instructions and optimization
- Individual maintenance intervals

Once hard deposits are eliminated, the focus is to remove soft plaque and biofilm from all surfaces. The client's needs are individually assessed to determine the system and product to be used. For fast and effective stain and biofilm removal, air polishing is the procedure of choice.<sup>4,5</sup>

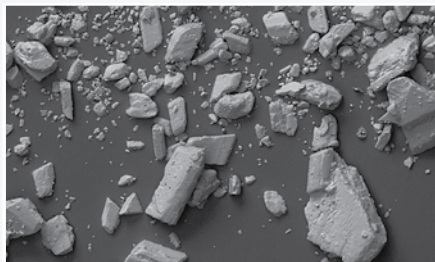
At the time of writing this, there are five different air polishing powders (Figure 1) on the market, each having a different effect on tooth and root surfaces, restorative materials and biofilm.<sup>6–10</sup>

Figure 1. Overview of air polishing powders.

#### 1. Sodium bicarbonate

For heavy stain removal with potential to harm enamel and root surfaces.

Particle size of 65–250µm  
MOH hardness of 2.8



Sodium bicarbonate



Angulation of 110°  
away from gingiva

#### 2. Aluminum trihydroxide

Highly abrasive and mostly used for air abrasion treatments. Studies recommend avoiding use on restorative materials.

Particle size of 80–325µm  
MOH hardness of 4

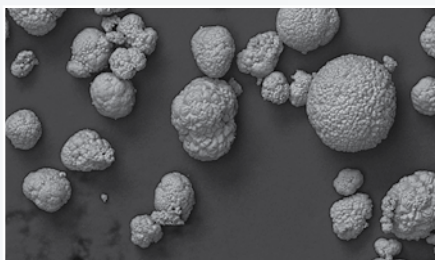
**Figure 1.** Overview of air polishing powders – *continued*.

**3. Calcium carbonate (pearls)**

Best alternative to sodium bicarbonate.

Particle size of 40–90µm

MOH hardness of 2.5



Calcium carbonate (pearls)



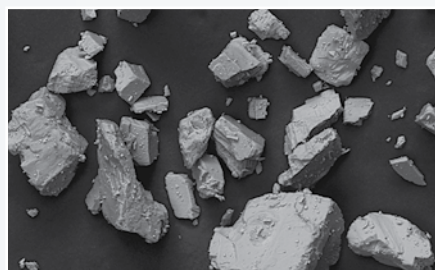
Angulation of 60° to 90°  
towards tooth surface

**4. Glycine—3 different particle sizes**

For subgingival Biofilm removal and  
supragingival light stain removal.

Particle size of 25–60µm

MOH hardness of 2



Glycine particles



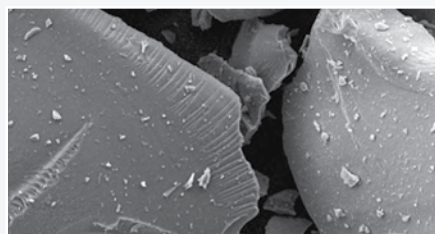
Angulation of 45° into sulcus

**5. Calcium phosphosilicate (Sylc)**

Used to desensitize root surface and  
promote remineralisation of dentinal  
tissues.

Particle size of 20–100µm

MOH hardness of 4+



Calcium phosphosilicate



Angulation of 90° to 110°  
towards root surface

The first air polishing equipment was introduced in the late 1970s using sodium bicarbonate as the most common air polishing powder.<sup>4</sup> Other powders (Chart 1) entered the market early 2000, proving to be more effective, less damaging, easier to use and more suitable for most clients.

Understanding air polishing is key to a successful treatment. I hope that sharing this overview will help in that understanding.

Yours sincerely,  
Tracey Lennemann, RDH, BA  
E-mail: [tl@in2motion.net](mailto:tl@in2motion.net)



*'Letters to the editor' is a forum for expressing individual opinions and experiences of interest that relate to the dental hygiene profession and that would benefit our dental hygiene readership. These letters are not any reflection or endorsement of CDHA or of the journal's policies. Send your letters to: [journal@cdha.ca](mailto:journal@cdha.ca)*


**Chart 1.** Air polishing powders—comparisons.

	Sodium bicarbonate	Aluminum tri hydroxide	Calcium carbonate (Pearls)	Glycine		Sylc
Physical	<ul style="list-style-type: none"><li>Sharp angular ‘hard particles’</li><li>Salt crystal substance</li><li>Biocompatible</li><li>Salty taste covered by various flavourings</li></ul>	<ul style="list-style-type: none"><li>Rounded ‘very hard particles’</li><li>Sodium free</li><li>Similar to antacid tablets</li><li>Feeling of sand when sprayed onto teeth</li></ul>	<ul style="list-style-type: none"><li>Spherical shape ‘soft particles’</li><li>Sodium free</li><li>No salty taste</li><li>Food grade approved carbonate</li></ul>	<ul style="list-style-type: none"><li>Small angular particles</li><li>Water soluble amino acid glycine</li><li>Sodium free</li><li>No salty taste, comfortable</li><li>Water rinse feeling</li></ul>		<ul style="list-style-type: none"><li>Hard spherical particles</li><li>Calcium, sodium, phosphosilicate minerals</li><li>No salty taste</li></ul>
Name/ Company	<ul style="list-style-type: none"><li>All</li></ul>	<ul style="list-style-type: none"><li>Jet-Fresh / Dentsply Cavitron</li></ul>	<ul style="list-style-type: none"><li>Germiphene (Pixiepearls)</li></ul>	<ul style="list-style-type: none"><li>EMS, 3M ESPE, Acteon</li></ul>	<ul style="list-style-type: none"><li>Soft / EMS</li><li>(Larger particles)</li></ul>	<ul style="list-style-type: none"><li>OSsray</li></ul>
Where	<ul style="list-style-type: none"><li>Supragingival only</li></ul>	<ul style="list-style-type: none"><li>Supragingival only</li></ul>	<ul style="list-style-type: none"><li>Supragingival only</li></ul>	<ul style="list-style-type: none"><li>Subgingival</li></ul>	<ul style="list-style-type: none"><li>Supragingival only</li></ul>	<ul style="list-style-type: none"><li>Supragingival only</li><li>Natural teeth only</li></ul>
Which surfaces	<ul style="list-style-type: none"><li>Enamel</li><li>Some restorative materials</li></ul>	<ul style="list-style-type: none"><li>Enamel only</li></ul>	<ul style="list-style-type: none"><li>Enamel</li><li>Limited use on root surfaces</li><li>Most restoratives materials except gold</li><li>Implants crowns except zircon ceramics</li></ul>	<ul style="list-style-type: none"><li>All surfaces</li></ul>	<ul style="list-style-type: none"><li>Enamel</li><li>Root surfaces</li><li>Restorative materials</li></ul>	<ul style="list-style-type: none"><li>Enamel</li><li>Root surfaces</li></ul>
Used for	<ul style="list-style-type: none"><li>Heavy stain removal</li><li>(effective, like a sand blaster)</li></ul>	<ul style="list-style-type: none"><li>Stain removal</li></ul>	<ul style="list-style-type: none"><li>Heavy to light stain removal</li><li>Effective biofilm removal</li><li>Safer than sodium biocarbonate</li></ul>	<ul style="list-style-type: none"><li>Subgingival Biofilm removal</li></ul>	<ul style="list-style-type: none"><li>Light stain removal</li></ul>	<ul style="list-style-type: none"><li>Stain removal</li><li>Desensitizing</li><li>Remineralization</li></ul>
Do not use	<ul style="list-style-type: none"><li>Subgingival</li><li>Implants</li><li>Root surfaces</li><li>Veneers</li><li>Ceramics</li><li>Patient with restricted sodium diets</li></ul>	<ul style="list-style-type: none"><li>Subgingival</li><li>Implants</li><li>Root surfaces</li><li>Veneers</li><li>Ceramics</li><li>Restorative materials (will pit and matt)</li></ul>	<ul style="list-style-type: none"><li>Subgingival</li></ul>	<ul style="list-style-type: none"><li>Not for stain removal</li></ul>	<ul style="list-style-type: none"><li>Subgingival</li></ul>	<ul style="list-style-type: none"><li>Subgingival</li><li>Implants</li><li>Restorative materials (will pit and matt)</li></ul>
Treatment	<ul style="list-style-type: none"><li>Technique sensitive, 110° away from gingival margins</li><li>Must polish manually with prophy cup and paste after usage</li></ul>	<ul style="list-style-type: none"><li>Technique sensitive, 110° away from gingival margins</li><li>Must polish manually with prophy cup and paste after usage</li></ul>	<ul style="list-style-type: none"><li>Technique, 60–90° towards tooth</li><li>Better suction angle</li><li>Easier to apply</li><li>No clogging</li><li>Recommend manual polish after usage</li></ul>	<ul style="list-style-type: none"><li>Technique, 45° direction into tissue</li><li>Easier suction</li><li>No manual polishing necessary</li></ul>	<ul style="list-style-type: none"><li>Technique 60–90° toward surface area</li><li>Light manual polishing recommended</li></ul>	<ul style="list-style-type: none"><li>Technique, 90° towards tooth and root surface careful to avoid gingival margins</li><li>Calcium phosphate precipitate converts to (HCA) hydroxyl carbonate apatite over a period of 12 hour</li><li>Do not polish after application</li></ul>

Chart 1. Air polishing powders—comparisons – *continued*.

	Sodium bicarbonate	Aluminum tri hydroxide	Calcium carbonate (Pearls)	Glycine		Sylc
<b>Other effects</b>	<ul style="list-style-type: none"> <li>• Abrasive to root surfaces (cementum)</li> <li>• Aggressive on restorative materials, root surfaces and gingiva</li> <li>• Can cause gingival irritation if used incorrectly</li> <li>• Can cause emphysema in tissues if used incorrectly (particles are hard/sharp/angular)</li> </ul>	<ul style="list-style-type: none"> <li>• Abrasive to root surfaces (cementum)</li> <li>• Aggressive on restorative materials, root surfaces and gingiva</li> <li>• Can cause gingival irritation if used incorrectly</li> <li>• Can cause emphysema in tissues if used incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>• Decreased gingival irritation</li> <li>• Easy to apply</li> <li>• Can clog amalgam separators, must clean out regularly</li> </ul>	<ul style="list-style-type: none"> <li>• No emphysema risk</li> <li>• Reduces biofilm up to 5mm pocket depths, 10mm with EMS perio nozzle</li> <li>• Ideal for implant maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Light stain removal, ideal for implant-suprastructures and restorative materials</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent desensitization</li> <li>• Use only on natural teeth</li> <li>• Sylc minerals react with saliva/water releasing sodium ions increasing PH</li> <li>• Removes surface debris prior to treatment for better remineralization and desensitization effect</li> <li>• Some healing properties when close to gingival margins</li> </ul>
<b>Comments</b>	<ul style="list-style-type: none"> <li>• Water soluble</li> <li>• Most studies have been done on this product in the 1980–1990</li> <li>• Used for peri-implantitis treatment in open surgical cases</li> <li>• Studies approving limited usage on implant suprastructures and crowns</li> </ul>	<ul style="list-style-type: none"> <li>• Non water soluble</li> <li>• Implant usage only for peri-implantitis open surgical cases</li> <li>• Research recommends avoiding usage on restorative materials</li> </ul>	<ul style="list-style-type: none"> <li>• Dissolvable after time</li> <li>• Introduced in 2004</li> <li>• Best and safer alternative to sodium bicarbonate</li> <li>• Very effective for general stain removal</li> <li>• Better patient acceptance</li> <li>• Neutral taste</li> </ul>	<ul style="list-style-type: none"> <li>• Water soluble</li> <li>• Slightly sweet taste</li> </ul>		<ul style="list-style-type: none"> <li>• Treatment of hypersensitivity, desensitizes root surfaces filling dentin tubules during the application with immediate results</li> <li>• Desensitization can last up to 6 months</li> <li>• Dissolvable after one day</li> </ul>
<b>Units</b>	<ul style="list-style-type: none"> <li>• All</li> </ul>	<ul style="list-style-type: none"> <li>• Designed for Cavitron Prophyjets</li> </ul>	<ul style="list-style-type: none"> <li>• All</li> </ul>	<ul style="list-style-type: none"> <li>• EMS, Acteon</li> </ul>		<ul style="list-style-type: none"> <li>• NSK Prophymate</li> <li>• KAVO ProphyFlex</li> <li>• Sylc SmartTip</li> </ul>

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programs and services.

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■ Le coin 2011 de la DG, *Nous sommes à l'écoute...*suite 143

aura lieu à l'automne de 2013, à Toronto (Ontario). Le choix écrasant des sujets de perfectionnement professionnel porte sur les nouvelles technologies en hygiène dentaire. Parmi les autres sujets importants soulignés par les membres, notons la procédure des soins d'hygiène dentaire, la prévention de l'infection, l'assurance de la qualité, les problèmes d'emploi... et plus de 500 autres suggestions.

Les membres ont indiqué clairement qu'elles souhaitent voir l'ACHD accroître ses efforts de sensibilisation publique. Les principales préoccupations comportent les améliorations de la santé buccale de la population canadienne, la sensibilisation au rôle de l'hygiéniste dentaire et à la progression de la profession de l'hygiène dentaire. Nous continuerons de travailler à l'amélioration de cet important secteur. Vous ne nous avez pas seulement fourni un apport sur les programmes et services, vous nous avez aussi transmis des centaines de suggestions et d'idées pour de nouveaux programmes et services qui augmenteront la valeur de votre adhésion.

Nous sommes à l'écoute de vos réactions... et utiliserons ces données et commentaires pour soutenir l'élaboration d'un plan stratégique qui guidera l'association au cours des trois prochaines années. Nous continuerons d'inciter nos membres et d'écouter leurs réactions en transformant vos idées et suggestions en programmes et services précieux pour eux.

Merci de faire entendre votre voix... Nous sommes à l'écoute.  ©ACHD



Executive Director/Directrice générale

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## Book review

***Get sharp: Non surgical periodontal instrument sharpening.***

Roncatti M. ISBN 978-88-7492-153-9. Milan: Quintessence, 2011.

The purpose of this new textbook is to review the principles and techniques for periodontal instrument sharpening and their application in daily dental hygiene practice. The content will be of benefit to educators, dental hygiene students who are attempting to master the skills of instrument maintenance, and to practising professionals who wish to increase the efficiency and success of periodontal therapy. The author reminds us that the time dedicated to instrument sharpening is always a good investment. The book is well illustrated with images, charts, and diagrams that guide the reader through the features of instrument design fundamental to effective sharpening procedures. The instructions are concise and easy to follow, and take the clinician step-by-step through the selection of methods and armamentaria. The ergonomic characteristics and correct usage of the various scalers are reviewed, utilizing illustrations to complement the written text. Emphasis is placed on the importance of asepsis and safety during all aspects of instrument care. Included with the text are a series of four convenient laminated chair side resource cards with directions for sharpening area specific and universal curettes, and sickle scalers.

This text is as an excellent addition to the bookshelf of all dental hygienists wishing to improve their knowledge of this essential component of dental hygiene practice.

Brenda Leggett, RDH, DipDH, BA  
Information Coordinator, CDHA



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*Our May 2011 issue featured Ladies in Red on the journal's front cover. The oral health project they helped sponsor this year was a success, and this letter is a thoughtful testament. Read on ...*

## Thank you!

### Dear editor:

Initially when I was debating how to express gratitude on behalf of Dr. Lloyd Evans, Tamara and myself, I wanted to send a card to everyone the instant we received so many generous donations. On further thought, I think sharing a bit of what we have experienced is the best way to express the gratitude from us, the volunteers, as well as the citizens of El Pinal and the surrounding communities.

Although we returned home with many brightly coloured souvenirs, the most valuable ones were matters of the heart. Each year when we leave the community of El Pinal, we carry with us stories of kindness, compassion, endurance, survival, faith, and optimism in the midst of adversity.

Our clinic was a tremendous success this year; we saw close to 150 individuals, and we were able to complete roughly 300 extractions, over 100 fillings and, for the first time, 30 dental cleanings. In the previous years, there was simply no time to clean teeth. This year while Dr. Evans worked on fillings, I was able to scale until my hands could scale no more! Our translator told us that word of the cleanings had spread like wildfire. It warms my heart to see that the attitude toward dental treatment is inching towards prevention and care rather than just treatment of disease. I can't wait to get back next year to keep the dental education and awareness moving forward.

My heart strings were tugged hardest when our clinic was visited by a couple over 70 years old. The husband was so grateful we were able to treat him early on the third day of our clinic as he had already missed the previous two days of work while waiting in line. He knew he could not afford to lose another day of wages. His wife came in barefoot, her feet calloused and scarred from years of hard work. Both of them were suffering with several abscessed teeth, the pain of which would be excruciating. I found it impossible to visualize a life at 71 years, toiling in the fields six days a week for less than 4 dollars a day and all the while in constant pain. Yet this couple came in smiling, they were generous with their hugs, and made sure to thank God for their good fortune.

Each time we leave Guatemala, it is with a heightened sense of gratitude. I am so thankful to live in a country where healthcare, education, and shelter are a right and not a privilege. And I know I speak on behalf of everyone involved in this project when I say how wonderful it is to live amidst a community of kind hearted people who share compassion towards those less fortunate than we are.

If you would like to see more pictures, please visit the following link on flickr: <http://www.flickr.com/photos/61601980@N03/sets/72157626346224953>

Many thanks for your generosity!

Yours sincerely,

Arleah, Tamara, and Lloyd

E-mail: [arleah.bloxam@gmail.com](mailto:arleah.bloxam@gmail.com) ©CDHA



▲ Tamara, Arleah and Dr. Lloyd Evans.



*'Letters to the editor' is a forum for expressing individual opinions and experiences of interest that relate to the dental hygiene profession and that would benefit our dental hygiene readership. These letters are not any reflection or endorsement of CDHA or of the journal's policies. Send your letters to: [journal@cdha.ca](mailto:journal@cdha.ca)*

## Qu'est-ce qu'une présidence ?

**Q**u'est-ce qu'une présidence ? Voici le dernier message que je vous adresse, à vous les propriétaires de l'ACHD, et que j'ai présenté à la conférence nationale de notre association, à Halifax, le 10 juin 2011.

Alors que nous ouvrons ensemble notre première conférence nationale depuis plus de cinq ans, c'est encourageant de voir une salle remplie de figures exprimant un engagement commun envers notre profession et la mission à accomplir. C'est le sens de la communauté qui m'a inspirée pendant ma présidence à l'ACHD et je vous suis fort reconnaissante à toutes, de votre énorme soutien, votre encouragement et votre inspiration. Qu'est-ce, au juste, une présidente d'une organisation nationale ? De fait, une présidence... c'est un don de temps. À l'ACHD, la présidence est un pinacle du leadership au sein d'une association professionnelle – une figure et un nom. Bref, une « personne à qui s'adresser » dans une organisation.

### ***D'abord et avant tout, une présidente est une bénévole.***

Nous faisons toutes du volontariat de plusieurs façons. Comme vous le savez, cela commence par des petites choses; un geste du moment, d'énergie et d'engagement. Cela peut vous absorber et vous entraîner dans une aventure dont vous n'auriez jamais rêvé. C'est grâce à ce don de temps que les opportunités de leadership s'enracinent et sont propulsées avec enthousiasme et dynamisme. Comme volontaires, nous faisons bouger les choses et aimons les faire avancer dans tout ce qui nous intéresse.

### ***Une présidente est une administratrice.***

La présidence comporte un rôle administratif où, avec les membres du Conseil, nous cherchons à améliorer les pratiques de gouverne et de gestion de l'association. Nous veillons constamment à la valeur de l'adhésion. Nous surveillons la capacité actuelle des adhésions. Combien de membres faut-il pour tenir une conférence comme celle-ci, élaborer des documents à l'échelle nationale ou poursuivre des initiatives de soutien ? Combien d'adhésions faut-il pour informer le public sur notre profession ? Qui profite des dépenses de nos membres et quel en est l'impact ? Individuellement, chacune de nos adhésions compte.

### ***Une présidente est une leadeuse.***

La présidence comporte un rôle de leadership où, à titre de bénévoles, nous donnons notre temps pour améliorer et poursuivre la mission de l'ACHD avec efficacité et créativité grâce à la vision. Je n'ai jamais perdu de vue cette mission. C'est cette mission qui suscite notre engagement, qui éveille la fierté de notre profession. À titre de présidente, j'ai eu le privilège d'intervenir deux fois en votre nom sur la Colline parlementaire dans nos efforts pour prévenir la maladie, améliorer la santé et promouvoir par nos plaidoyers le bien-être de tous les Canadiens et Canadiennes.



Palmer Nelson,  
BA(Bio.), DDH, RDH

Gandhi ne pouvait mieux dire quand il lança : « Vous devez être le changement que vous voulez voir dans ce monde. »

### ***Une présidente est une collaboratrice.***

**Collaboration.** Mot très important dans le langage de notre profession. La présidence a un rôle collaboratif qui implique la recherche et la communication avec les autres sur les plans local, national et global, et d'une seule voix.

Une voix passionnée émanant de votre énergie collective dans vos communautés. Nous avons l'énergie de 22 000 professionnelles dont 16 000 présentent la vision et la voix de l'ACHD. C'est grâce à cette collaboration que nous ferons progresser la profession de concert avec les autres professions et organisations qui partagent nos préoccupations. Cet automne, nous ajouterons un membre venant du Nord au Conseil d'administration de l'ACHD pour refléter entièrement la diversité de notre profession au Canada.

### ***Une présidente est une bâtisseuse.***

La présidence comporte un rôle de bâtisseuse car, à titre de propriétaires de l'association, nous construisons et engageons de fortes communautés et renforçons des liens qui contribuent à l'avènement d'un monde plus juste et plus démocratique. C'est en quittant le statu quo confortable de nos vies et en bâtissant sur la force de nos valeurs professionnelles, de notre recherche et de l'ensemble de nos connaissances que nous construirons un meilleur avenir. Tom Brokaw, présentateur des actualités télévisées à la NBC, qui a traité de nombreuses activités dans le monde, a dit avec justesse : « C'est facile de faire du fric. C'est beaucoup plus difficile de changer les choses. »

### ***Une présidente est une relationniste.***

Partager l'information et se sentir branchée, voilà vers quoi le monde évolue ces jours-ci. La présidente travaille en réseaux. Que ce soit par Facebook, Twitter, les forums communautaires ou par le biais des médias locaux ou nationaux, la représentante d'une association joue un rôle primordial pour assurer la transparence et l'honnêteté du dialogue. Établir la relation avec les membres des cliniques et les représentants des industries nous aide à déclencher ce que les communicateurs professionnels appellent les « chambres de réverbération » où nous ne faisons que parler entre nous. En effet, nous serons reliées d'une rive à l'autre avec l'équipe nationale de l'ACHD dans la *Course à la vie* de la CIBC. Une idée issue de l'écoute et de la relation avec les membres.

### ***Une présidente est un modèle.***

On ne cherche pas à devenir modèle; ce sont les autres qui incitent quelqu'un à se retirer d'une zone de confort et, en retour, cela inspire les autres à en faire autant. Dans notre profession, nous sommes très chanceuses d'avoir autant de modèles dans tous les champs d'exercice. En regardant dans la salle, je ne doute pas que vous soyez assises à côté d'un modèle, chacune d'entre vous. Les modèles se développent assez simplement, par l'empreinte que laissent les comportements professionnels et l'habilitation des membres. Ils mettent fin aux stéréotypes, éliminent

les barrières, grâce à une interaction honnête. Vous n'avez vraiment pas besoin de regarder au-delà de vos bras pour trouver un modèle sous quelque facette de vie que ce soit.

***Une présidente est un mentor.***

J'ai personnellement grand plaisir à engager les autres à changer les choses par le mentorat. J'ai parlé à plusieurs étudiantes, collègues, organisations et groupes au sujet de notre profession et de notre responsabilité sociale concernant les soins axés sur la clientèle ou les besoins fondamentaux. Dans le cadre de la présidence, le mentorat se situe dans un sens d'appartenance à la communauté d'idées et d'inspiration. Nous agissons comme conseillères avisées, par nos gestes, nos bonnes paroles de reconnaissance, notre partage des connaissances dans l'intérêt commun. Il est intéressant de noter que, lors d'une discussion du Conseil, il y a plusieurs années, nous avons toutes reconnu que nous nous retrouvions à la table de l'ACHD à cause d'un mentor. Personnellement, j'ai bénéficié de deux mentors en hygiène dentaire. Récemment, j'ai rendu visite à la Dr<sup>e</sup> Marnie Forgay, ancienne directrice des écoles d'hygiène dentaire du Manitoba et Dalhousie; et mon second mentor, Sue Macintosh, est ici aujourd'hui. Deux présidentes de l'ACHD. Quel impact, en effet!

***Enfin, mais non le moindre, une présidente est une cultivatrice.***

À ce titre, nous pensons toujours. Que pouvons-nous faire, individuellement et collectivement comme association,

pour combler les manques de services de santé buccale chez une population vulnérable, pour rechercher l'excellence dans notre exercice clinique ou faire progresser notre profession? Nous semons, des germes apparaissent, certains fleurissent; parfois cela prend beaucoup de temps, parfois le tout bondit en une nuit.

Ayant vécu et exercé l'hygiène dentaire à Terre-Neuve pendant vingt ans, je peux vous parler de cette culture – ce qui croît en une nuit à Terre-Neuve, c'est le gazon. Nous formons toutes l'élément de base de notre profession et nous avons une force collective, car nous créons un impact et changeons des choses dans la vie des autres à tous les jours. Je n'oublierai jamais ce que m'avait dit ma mère alors que j'étais jeune fille: « Cultive un jardin de gratitude! » Je veux donc remercier toutes les Présidentes qui m'ont précédée. Ce fut vraiment un honneur de suivre vos pas. Merci à tous les membres de l'ACHD, à notre directrice générale et au personnel de l'ACHD. Ce fut vraiment une joie de dialoguer et d'écouter, de travailler, d'apprendre et de grandir avec vous. Je m'enorgueillis d'avoir servi à titre de présidente cette année.

Merci à toutes! 🌱©ACHD



■ **President's message, *What is a presidency?...continued from 139***

at the CDHA table because of a mentor. Personally I have been blessed with two dental hygiene mentors. I recently visited Dr. Marnie Forgay, the former director of both the Manitoba and Dalhousie Schools of Dental Hygiene; and my other mentor, Sue Macintosh, is here with us today. Both presidents of CDHA. Very powerful indeed!

***And last but not the least, a president is a cultivator.***

As cultivators, we are always thinking. What can we do individually and collectively as an association to address the gaps in oral health services for vulnerable populations, to strive for excellence in our clinical practice, or to move the profession forward? We plant the seeds; some grow in to plants, some flower; sometimes it takes a long time, and sometimes plants just spring up over night.

Having lived and practised dental hygiene in Newfoundland for twenty years, I can tell you this about cultivation—the one thing that grows in Newfoundland is grass. We all are the grassroots of our profession, and

we are strong collectively as we make an impact and make a difference in others' lives each and every day. As a young girl I will never forget my mom saying we have to « ...cultivate a garden of gratitude ». Therefore, I want to thank all the Presidents who have gone before me. It has been truly an honour to follow in your footsteps. To all the members of CDHA, our Executive Director and staff at CDHA, it has been a true joy to participate in dialogue and listen, to work, to learn and grow. I take great pride in having served in the capacity of president this year.

Thank you all! 🌱©CDHA



La version en français suit à la page 156.



## A vacation, a vocation, and a mission

### Dear editor:

Everyone has dreams of their ultimate vacation; it was always my wish to visit isolated villages and deliver oral healthcare. When the opportunity presented itself through *Remote Area Medical Volunteers*, I didn't hesitate. Along with five friends from Cape Breton Island, Nova Scotia—Dr. Ian Doyle, Anne Doyle, Dr. Colleen LaPierre, Cheryl Card, and our accomplished leader, Dr. Gary Samson—we met our fellow team members at the Toronto airport. Rounding out our team were ophthalmologist, Dr. Victor Spears; physicians, Dr. Kathy Simpson and Dr. Basia Farnell, their respective daughters Kiri and Lydia; and nurse, Susie Ostrowski—from different parts of Ontario. Leaving the cold February winter behind, we boarded a plane for Guyana, South America, to follow our collective dream.

*Remote Area Medical Volunteers Canada* is a volunteer based organization that delivers medical, eye, and dental care to the underserved peoples of the world. Teams are organized through a group of dedicated leaders, who with the help of the host country, contact eager volunteers to bring their talents to those who need it the most.

My adventure took me to the capital city of Georgetown, Guyana, where our group of twelve boarded a small plane to head into the Pakaraima Mountains, and to our first village, Paramakatoi. Over the next two weeks we would also visit Bamboo Creek, Tuseneng, Kato, and Kurukabaru. Although each village has a government sponsored health centre with a medical technician and *possibly* a dental therapist, in some cases the lack of supplies, no access to running water, and limited electricity hinder the delivery of care. The generosity of many Cape Breton dentists allowed us to leave behind instruments, curing lights, restorative materials, and scalers for the dental therapists.

We anticipated challenges to delivering care, and we came equipped with a generator to operate our equipment in three of the villages. The Sydney Sunrise Rotary Club had donated a portable dental unit for our trip; to assist with lighting we wore head lights and lighted loupes while we worked. In villages where the terrain made it impossible to bring our generator, we were limited in our variety of services. Ingenuity being a gift of the adventurous, we seemed to be able to overcome most limitations.

My typical day would start with a visit to the village school, usually one large room divided by chalk boards. There I would present a talk on oral health, and tell the children a little about Canada as well. We had been fortunate to receive donations of toothbrushes, and we would leave a good supply with each teacher. Kiri and Lydia would often accompany me; and the children were keen to meet the Canadian students and play a game of soccer.

Following my school visit, I would head over to our improvised dental clinic and see what was ahead of us. One dental unit couldn't service all three operators; with debridement and oral hygiene education being my goal I would find an area, close to the dentists, with good natural light and set up my "dental hygiene op". I found myself standing most of the time, but operating a mobile long term care practice has helped prepare me for delivering care without the luxury of some ergonomic comforts.

Although the villagers had asked for a "cleaning", at triage, they would often look confused when I began scaling. I would explain the accumulation of calculus and the gingival bleeding and relation to oral health and tooth loss, and they would always eagerly



▲ Team Dental.



continue. The majority of visitors I treated were below the age of 30 years; and calculus accumulation was heavy so without any type of ultrasonic scaling I was left with my hand scaling experience of three decades to get the job done. A thorough brushing with toothpaste, and instruction would conclude each appointment and they would greet our gallery of onlookers with a ready smile. All of my clients expressed surprise at the welcome difference in their mouths immediately after their appointment, and in the villages where we spent two days I would have a lineup of their friends on day two.

*Word of mouth?*

The people of the Pakaraima mountains are the Amerindians of Guyana. They comprise 10 per cent of the country's population and live on reserved lands provided by the government. They live off the land and depend on rain to supply their water. Their staple food is cassava, a tuber, which they process in a number of ways using the starch and the liquid in their diet. Although they don't have the access to sweets that we have in Canada, they do have access to some sugars and complex carbohydrates; in the larger villages with general stores, candy and soft drinks are sold. We did see a difference in oral health in the villages with access to sweets. The decay rate was definitely higher and our team was kept busy with restorations and extractions. The periodontal health of most of the older residents was, as expected, poor due to the bone loss associated with lack of access to professional services. I was happy to have dental therapists Kaji and Dianna, in two of the villages, express interest in scaling and prevention; and although they had both been educated in debridement, they did not have the instruments needed. In each case I was able to provide them with some instruction and donated scalers for their clinics. The trust shown our team was remarkable. We were total strangers but people came from miles to see us for treatment.

▼ When the school office serves as a dental clinic.



▲ Students enjoy Wanda's instruction.

The members of our team worked interprofessionally; we assisted each other whenever the need arose, from eye screening to instrument cleaning, dental assisting, registration, or triage. We came from many different backgrounds but shared a common altruistic desire that defined us. Our times together camping in schools and churches, eating trail mix on a dilapidated bridge, singing Beatles' songs, crossing the savannah, were as much a part of my experience as anything else.

Team leader Gary had definitely told me about the hiking, the camping, bathing in the creeks, and I was not disappointed. We would set out after day break and hike through jungle, over mountains and across streams, some days for over seven hours, and arrive to set up our tents before taking a much needed bath in the closest stream. A waterfall twenty-five minutes from Kato was a luxury, and a two stall latrine in Kurukabaru threatened to spoil us, but there was nothing to compare to the tranquility that comes from strolling along a mountain ridge watching the mist rise between the rolling hills or the feeling of appreciation you get when you look into the eyes of an elder who has walked three hours to access your care.

I wish everyone could experience the deep sense of satisfaction I felt as I packed my knapsack, and with an escort of Kurukabaru residents, headed to the airstrip for my flight back to Georgetown. Mission accomplished.

Yours sincerely,  
Wanda Fedora, RDH  
E-mail: wfedora@syd.eastlink.ca ©CDHA



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# The Dental Fear and Avoidance Scale (DFAS): Validation and application

Laura J. Dempster,\* DipDH, BScD, MSc, PhD; David Locker,\* BDS, PhD; Richard P. Swinson,<sup>^</sup> MD, FRCPC, FRCPSych

## ABSTRACT

**Background:** Dental anxiety is the most common psychological condition encountered in dental practice, yet gaps exist in our understanding of its epidemiology and psychology. The aim of this research was to develop a measure of dental anxiety suitable for clinical practice, and to investigate its reliability and validity in assessing cognitive and behavioural dimensions of dental anxiety. **Methods:** Reliability testing sampled clients presenting for treatment at the University of Toronto Dental Clinic who answered the Dental Fear and Avoidance Scale (DFAS) on two separate occasions (n=41). DFAS validity was tested using a random sample of adults from Etobicoke, Ontario (n=1184) by comparing DFAS fear and avoidance scores with the Dental Anxiety Scale (DAS) and with responses to fear- and avoidance-related questions in a self report questionnaire. **Results:** Test-retest reliability of the DFAS reported a 0.87 intraclass correlation for both fear and avoidance. Significant differences ( $p \leq 0.01$ ) were noted between: mean scores for low and high DFAS fear categories and questions regarding treatment; having a needle in the mouth and various evoking stimuli; and between low and high avoidance DFAS categories and questions about avoidance behaviours, frequency of clinical visits, and when subjects last saw a dentist or dental hygienist. A correlation of 0.60 confirmed fear and avoidance as related but distinct entities. A significant difference ( $p \leq 0.01$ ) was also noted between DAS mean/standard deviation scores for subjects in low and high DFAS fear and avoidance groups. Kappa analysis reported a 0.43 level of agreement between both DAS/DFAS fear and DAS/DFAS avoidance. Greater agreement was also noted between the DAS and DFAS in identifying subjects with no dental anxiety than those with dental anxiety. **Conclusions:** The DFAS is a reliable valid measure of cognitive and behavioural dimensions of dental anxiety, and its simplicity makes it applicable for use in clinical practice.

## RÉSUMÉ

**Contexte :** L'anxiété dentaire est le problème psychologique le plus commun qui se présente en pratique dentaire. Néanmoins, notre connaissance du problème comporte des brèches sur les plans épidémiologique et psychologique. Cette recherche a pour objet d'élaborer une façon de mesurer l'anxiété dentaire, qui convienne en pratique clinique, et d'en investiguer la fiabilité et la validité pour en évaluer les dimensions cognitives et comportementales. **Méthodes :** Le test de fiabilité repose sur un échantillonnage de clients qui s'étaient présentés pour traitement à la Clinique dentaire de l'université de Toronto et qui avaient répondu au sondage sur l'Échelle de la peur et de l'évitement des soins dentaires (ÉPÉSD) en deux occasions distinctes (n = 41). Le test de validité de l'ÉPÉSD a été effectué chez un échantillonnage de patients adultes choisis au hasard à Etobicoke, Ontario (n=1184), en comparant les résultats de la peur et de l'évitement selon l'ÉPÉSD avec l'échelle d'anxiété dentaire (ÉAD) et avec les réponses individuelles à un questionnaire sur la peur et l'évitement. **Résultats :** La fiabilité du test-retest de l'ÉPÉSD a fait état d'une corrélation intraclass de 0,87 pour les deux, la peur et l'évitement. Des différences significatives ( $p \leq 0,01$ ) ont été notées entre : la moyenne des résultats des catégories élevées et faibles de peur selon l'ÉPÉSD et selon les questions concernant le traitement, la présence d'une aiguille dans la bouche et divers stimulus évocateurs; et entre les catégories élevées et faibles d'évitement selon l'ÉPÉSD concernant les comportements d'évitement, la fréquence des visites à la clinique et chez le dentiste ou l'hygiéniste dentaire selon le cas. Une corrélation de 0,60 a confirmé que la peur et l'évitement étaient reliés mais distincts. Une différence significative ( $p \leq 0,01$ ) a aussi été notée entre les données moyennes ou normales de déviation parmi les sujets des groupes de peur et d'évitement faibles ou élevés selon l'ÉPÉSD. L'analyse Kappa a signalé un niveau 0,43 d'entente entre les deux, la peur ÉAD/EPÉSD et l'évitement ÉAD/EPÉSD. On a aussi noté une plus grande entente entre l'ÉAD et l'EPÉSD dans l'identification des sujets qui n'ont pas d'anxiété dentaire et ceux qui sont anxieux. **Conclusions :** L'EPÉSD est une mesure valide et fiable pour connaître les dimensions cognitives et comportementales de l'anxiété dentaire et sa simplicité la rend applicable pour utilisation en pratique privée.

**Key words:** dental anxiety, dental fear, dental avoidance, reliability, validity

## INTRODUCTION

Dental anxiety affects a significant segment of the population. It is also the most common psychological condition seen in clinical practice with a prevalence range of 4.2%–15.3% reported in the general population.<sup>1–4</sup> This finding is confirmed anecdotally by both clinicians and patients/clients. Despite being a common condition, dental anxiety

is a complex phenomenon, and gaps exist in our understanding of its epidemiology and psychology. In addition, dental anxiety scales used in research do not readily translate into practical measures for clinical practice. There is a need for a simple, easy to use, validated measure of dental anxiety that would assist dental hygienists and dentists

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in identifying clients with pathological levels of dental anxiety.

Dental anxiety is experienced to varying degrees by virtually everyone at one time or another. It is a perfectly normal response to such situations as waiting in anticipation for results of a caries or periodontal exam. However, dental anxiety can also be pathological in nature. In this context, it is a very powerful affective experience that is often debilitating and difficult to control. Dental hygienists and dentists realize that many clients experience this type of anxiety, and interest lies in identifying those individuals with pathological levels of dental anxiety—moderate to severe—since they often delay seeking oral healthcare or avoid treatment.<sup>3,5,6</sup> The consequence of this behaviour may be poor oral health due to untreated periodontal disease or dental caries.<sup>7,8</sup> The sequelae of poor oral health can extend beyond the obvious effects of disease, such as generalized or localized pain, and involve other functional and psychosocial issues such as poor esthetics and difficulty in eating, speaking and socializing. Depending on the individual, dental anxiety can result in reductions in self esteem and socialization, which in turn can compromise general well being. Other dentally anxious clients may attend treatment reluctantly in anticipation of possible traumatic events associated with their appointment.<sup>3,5,9</sup> These individuals may suffer emotionally for days leading to and following their appointment, depending on the extent or intensity of their anxiety.<sup>10</sup> Dentally anxious subjects report more negative thoughts and perceptions about dental and dental hygiene treatment which is undoubtedly of significance to clinicians.<sup>11–14</sup>

They also:

- report more fear of pain or pain during treatment,<sup>15,16</sup>
- recall past treatment as being more painful, and identify little control during treatment,<sup>15</sup> and
- experience frightening or embarrassing clinical experiences and are more reactive to these experiences.<sup>17–19</sup>

Other studies report a strong correlation between dental anxiety and experienced and perceived pain,<sup>5,17,20</sup> and with catastrophizing.<sup>16</sup> Given the impact of pathological dental anxiety on the client's ability to cope and tolerate clinical care, it is essential that dental hygienists and dentists assess their client's level of dental anxiety to effectively manage it during treatment.

Anxiety is a complex mix of responses that occur either simultaneously or sequentially.<sup>21</sup> These responses are commonly categorized into cognitive, behavioural and physiological dimensions of anxiety. The cognitive dimension of anxiety consists of an appraisal of danger with an accompanying sensation of fear. It reflects thinking or thought processes related to fear, and includes anxious predictions, assumptions, beliefs and information processing biases. The behavioural dimension of anxiety involves actions such as agitation, restlessness, avoidance or endurance of feared stimuli. The physiological dimension involves arousal or changes that mobilize the body. Changes in heart rate, skin conductance (measures the electrical conductance of the skin which varies based on its moisture level), blood pressure and forehead muscle tension have been assessed in clinical populations after exposure

to real or virtual dental scenarios. The quality and quantity of change varies greatly among individuals making it difficult to use physical observations or subject self report to confirm pathological levels of dental anxiety.<sup>22</sup> Biochemical changes, as cortisol levels in saliva, have been shown to discriminate between highly anxious and non anxious controls in non dental<sup>23,24</sup> and dental studies.<sup>25,26</sup> This means of assessing dental anxiety is not widely used, and not directly applicable to clinical practice.

Dental anxiety is largely measured using self report questionnaires, with numerous scales currently available for use. It is critical for a dental anxiety scale to measure what it purports to measure (validity), and that it does so in a reproducible manner (reliability); variability exists in the psychometric properties of existing dental anxiety measures. Many studies cite acceptable reliability and validity of the dental anxiety measures they use; reviews of the original literature tend to support claims of reasonable to high reliability but indicate weaknesses with validity.<sup>27,28</sup> The literature also reflects a comprehensive knowledge of dental anxiety from the cognitive perspective regarding what causes people to be fearful; due largely to the predominance of scales that measure this dimension. Data are limited with respect to the behavioural dimension of dental anxiety and scales that measure this aspect of anxiety are needed in order to identify individuals with avoidance tendencies and appreciate the reasons for their avoidance behaviour. An understanding of the relationship between dental fear and avoidance would also facilitate the selection of treatment and management strategies aimed at resolving dental anxiety.

The Dental Anxiety Scale<sup>29</sup> (DAS) is the most frequently cited measure of dental anxiety in the literature. It asks subjects four questions about how they feel in different dental situations. The total score ranges from 4–20 with a score  $\geq 13$  indicating a person who is dentally anxious.<sup>29,30</sup> It is a relatively easy scale to administer, but has limitations including its focus on only the cognitive dimension of anxiety, limited validity, and outdated questions related to the clinician as male and a dentist.

The purpose of this study is to investigate the reliability and validity of the Dental Fear and Avoidance Scale (DFAS) in assessing cognitive and behavioural dimensions of dental anxiety in adults. This involved two projects which were part of a larger project investigating dental anxiety in a general adult population. Interest also lies in the clinical utility of the DFAS as a simple and easy to use measure of dental anxiety in clinical practice.

### Defining and measuring dental anxiety

Dental anxiety is defined as self reported anxiety occurring in response to some aspect of oral healthcare. The DFAS (Figure 1) was designed to assess both cognitive and behavioural dimensions of dental anxiety, and to distinguish individuals with normal anxiety from those with a pathological or clinically significant level of dental anxiety. The DFAS consists of two questions, and is a simple, easy to administer screening tool that asks subjects to separately rate their degree of fear and avoidance related to dental treatment on a scale of 1–10. Descriptors

**Figure 1.** The Dental Fear and Avoidance Scale (DFAS).

How would you rate your fear of dental treatment on the following scale?									
1	2	3	4	5	6	7	8	9	10
no fear				moderate fear				extreme fear	
Rate the degree to which you avoid (for whatever reason) going to the dentist or dental hygienist?									
1	2	3	4	5	6	7	8	9	10
do not avoid				moderate avoidance				extreme avoidance	

are provided: 1 (no fear/avoidance), 5 (moderate fear/avoidance) and 10 (extreme fear/avoidance). Subjects who scored 4 or less out of 10 on the DFAS were considered to have a low or normal level of fear or avoidance. Scores of 5 or higher reflected individuals with moderate to extreme anxiety, corresponding to a clinically significant level of dental anxiety. The terms low and high are used when presenting these data, and are intended to correspond to normal and clinically significant levels of dental anxiety respectively.

## PROJECT 1 – DFAS RELIABILITY

### Methods

#### *Study population and sampling procedures*

The target population was adult clients attending the Faculty of Dentistry dental clinic at the University of Toronto. The DFAS questionnaire and other study information were in an envelope, which was distributed by the clinic receptionists to clients when they first arrived for their new patient screening appointment at the dental clinic. Inclusion criteria included individuals who were 18 years of age or older. Clients were informed that they were under no obligation to participate in the study, and refusal to complete the DFAS questionnaire would not affect their treatment at the dental clinic. Those subjects interested in participating, completed the DFAS questionnaire in the patient reception area, and a second DFAS questionnaire—identical to the first—was mailed to their home two weeks later, prior to receiving any dental treatment. This was returned in the self addressed stamped envelope provided. Both projects in the study received ethics approval from the University of Toronto Research Ethics Committee, in accordance with the Tri-Council Policy Statement for Ethical Conduct for Research 1998.

#### *Measuring reliability*

The reliability of the DFAS was investigated using a test-retest study to determine the stability of scores obtained by the same subjects answering the DFAS on two separate occasions.

#### *Data analysis*

Reliability analysis was performed using SPSS version 16 to calculate the two-way repeated measures intraclass correlation (ICC) between fear and avoidance scores at

time one (t1) and time two (t2).

## Results

Fifty-six people volunteered to participate in the study, with 41 completing the DFAS questionnaire on two separate occasions (73.2% response rate). Females were overrepresented with 63.4% female (n=26) and 36.6% male (n=15) participants. Of the 15 non responders (did not complete the DFAS at t2), 11 (73.3%) were female and 4 (26.7%) male.

Analysis showed no significant difference between mean (standard deviation {sd}) DFAS fear scores reported by clients at time 1 (4.5 {2.8}) and time 2 (4.2 {3.1}). Similarly, there was no significant difference between mean (sd) DFAS avoidance scores by clients between time 1 (3.8 {3.0}) and 2 (3.9 {3.1}). There was no significant difference between fear and avoidance responses for male and female subjects. Intraclass correlations of 0.87 were found for both fear and avoidance scales in the DFAS along with a 95% confidence interval of 0.76–0.93 and 0.77–0.87 respectively.

## PROJECT 2 – DFAS VALIDITY

### Methods

#### *Study population and sampling procedures*

The target population was persons aged 18 years of age and older living in the City of Etobicoke, an urban community in the Greater Toronto Area (GTA) in Ontario, Canada, with a total population of approximately 300,000. The subject sample was randomly selected from electoral listings, which identified an estimated 97% of all eligible voters in Etobicoke. Inclusion criteria included individuals who were Canadian citizens, aged 18 years and over, living in private households, and who could read the study questionnaire, which was written to be understood by subjects with English reading skills at the Grade 6 level.

Sample size calculations were made for the purposes of the larger descriptive study,<sup>31</sup> and were based on estimates of expected response rate and prevalence. A sample size of 4500 was calculated to yield about 280 people with moderate to high dental anxiety.

Data were collected using a 2-wave mailed package. This involved a first mailing of the questionnaire and information regarding the study, followed up two and one-half weeks with a second mailing (same package) to

non respondents. Both packages included a self addressed return envelope.

### Study questionnaire

The study questionnaire was entitled “*Going to the Dentist ...Your Thoughts and Feelings About Treatment by Dentists and Dental Hygienists*” (GTD).<sup>30</sup> It included the Dental Fear and Avoidance Scale (DFAS), the Dental Anxiety Scale (DAS), and additional questions regarding demographic information, evoking stimuli associated with dental anxiety, and dental and other variables contributing to dental anxiety. Data used to validate the DFAS were based on comparing:

- the fear question in the DFAS with cognitive (fear) based questions in the GDT questionnaire,
- the avoidance question in the DFAS with behaviour (avoidance) base questions in the GDT questionnaire, and
- the people identified by both the DFAS and DAS.

### Measuring validity

The fear question in the DFAS was compared with the following three fear related questions in the GTD questionnaire:

- Fear related to clinical treatment
- Fear related to having a needle in the mouth
- Evoking stimuli (things or situations) in the dental office that are fearful.

Similarly, the avoidance question in the DFAS was compared to the following three avoidance related questions:

- Specific avoidance behaviours related to clinical visits
- Frequency of clinical visits
- Last visit to a dental office.

### Data analysis

Analysis was conducted using SPSS version 16. Inferential statistics were calculated for categorical data using Chi Square, and for continuous data using t-tests or ANOVA (as appropriate). Post hoc analysis for significance identified by ANOVA was performed using Tukey’s *Honestly Significant Difference* (HSD). To protect against a Type I error while conducting a post hoc analysis for non parametric data, a Bonferroni correction was used to establish a revised significance level of 0.0125 (original significance level = 0.05/4 fear/avoidance categories) with categories compared using the *Mann Whitney U test*. Exploratory factor analysis examined the 21 evoking stimuli in the GTD questionnaire. The principal axes were rotated orthogonally (varimax) with Kaiser Normalization, and factors were identified with eigenvalues greater than 1.0. Agreement between DAS and DFAS fear and avoidance scores was analyzed using Pearson correlation coefficient (continuous data) and Kappa (categorical data) as interest lie in whether the measures identify the same individuals as being dentally anxious.

### Results

Eligible subjects returned 1184 of the GTD questionnaires, representing a 34.4% response rate. The study

sample was compared to Statistics Canada data that identified participating subjects as representative of those living in Etobicoke with the following exceptions: fewer males participated in the study than found in the target population, and study subjects reported higher levels of education. This finding is consistent with other Canadian studies that use volunteer subjects to participate in their studies.<sup>1,17</sup> Female study subjects comprised 57.9% of the sample; males 42.1% and subject’s mean age was 52.1 years (sd 16.3 years) with a range from 18–82 years.

### Cognitive (fear) dimension

#### Fear related to treatment

Table 1 illustrates the degree of fear about dental treatment reported by individuals reporting low and high DFAS scores. The vast majority of DFAS low fear subjects (95.0%) rated their feelings about having dental treatment as generating little or no fear, whereas high fear subjects were somewhat afraid (37.9%) or very afraid or terrified (20.9%) of having dental treatment.

**Table 1.** DFAS low and high fear group rating of fear of dental treatment.

Fear of dental treatment	DFAS low fear %	DFAS high fear %
Not afraid	65.4	5.9
Little afraid	29.6	35.3
Somewhat afraid	4.9	37.9
Very afraid	0.1	13.0
Terrified	0.0	7.9

#### Fear of the needle

Table 2 reports the degree of fear associated with having a needle in the mouth, with statistically significant differences ( $p \leq 0.01$ ) identified between mean (sd) DFAS low and high fear scores subjects (low fear mean (sd) = 3.3 (2.1); high fear mean (sd) = 6.3 (2.3). Analysis indicated 70.8% of DFAS low fear subjects rated getting a needle in the mouth as being a low fear experience (scored 1–4 out of 10), whereas 85.7% of DFAS high fear subjects identified this as being a high fear experience (scored 5–10).

**Table 2.** DFAS low and high fear group ratings of fear of the needle.

Fear of the needle Scale: 1–10	DFAS low fear mean=3.3* (sd=2.1) %	DFAS high fear mean=6.3* (sd=2.3) %
Low fear 1–4	70.8	14.3
Moderate fear 5–7	22.7	50.8
High fear 8–10	6.5	34.9

\*  $p \leq 0.01$

### Evoking stimuli

Factor analysis revealed four factors (groups) of evoking stimuli that were identified by participants as causing fear or anxiety. They were identified with eigenvalues greater than 1.0, explaining 75.9% of the variance.

- Factor 1 identified procedures that were extremely invasive (e.g., needle injection, drilling, tooth extraction, root canal);
- Factor 2 identified items characterized by the anticipation of treatment (e.g., sitting in the waiting room or dental chair, seeing the dentist);
- Factor 3 were sensory items (e.g., having teeth cleaned, the scraping sound of the cleaning, gagging); and
- Factor 4 identified items associated with blood and injury (i.e., seeing blood, tasting blood).

Mean scores for all four factors were significantly different between DFAS low and high fear groups ( $p \leq 0.01$ ). DFAS high and low fear subjects felt the most anxious about extremely invasive procedures, then sensory items, blood and injury related items, and last, of items anticipating treatment. The DFAS high fear subjects reported statistically significant higher mean scores for all factors compared with low fear subjects.

### Behavioural (avoidance) dimension

#### Avoidance behaviour

Chi square analysis confirmed a significant difference ( $p \leq 0.01$ ) between DFAS low and high avoiders in the frequency of all six avoidance behaviours investigated (Table 3). Of particular clinical interest is the observation that 70.1% of high avoiders report avoiding the dentist or dental hygienist for as long as possible and 47.6% avoid until they are in terrible pain.

**Table 3.** Percentage of DFAS low and high avoidance subjects confirming avoidance related behaviours.

Avoidance behaviour	DFAS low avoid %	DFAS high avoid %
Avoid as long as possible	13.5	70.1
Avoid till in terrible pain	9.5	47.6
Not shown for appointment	1.9	11.2
Cancelled appointment	6.5	28.6
Arrived at office then left	0.5	4.0
Convinced by someone else to go	3.3	21.5

Tables 4 and 5 report significant differences ( $p \leq 0.01$ ) between DFAS low and high avoiders regarding the frequency of their dental visits, and when they last saw a dentist or dental hygienist. The reasons for dental visits were not specified therefore it is not known if visits were for emergency or preventive purposes (e.g., a checkup). Clinical interest lies in the report of 32.7% of high avoiders who go to the dentist or dental hygienist only when they have pain or problems, with 27.4% of high avoiders not

having seen a dentist or dental hygienist for three years or more, as compared to 3.8% of low avoiders. These findings, in combination with the frequency of avoidance behaviours, suggest that individuals who identify themselves as high avoiders represent a significant percentage of the population who do not visit the dentist or dental hygienist very frequently or do so only when problems arise.

**Table 4.** Percentage of DFAS low and high avoiders reporting on frequency of clinical visits.

Frequency of clinical visits	DFAS low fear mean=1.2* (sd=0.5) %	DFAS high fear mean=2.0* (sd=1.0) %
1x year	88.3	44.2
From time to time	8.0	17.8
Only when pain/problems	3.1	32.7
never	0.7	5.2

\*  $p \leq 0.01$

**Table 5.** Percentage of DFAS low and high avoiders reporting on their last visit to the dentist or dental hygienist.

Last visit to the dentist or dental hygienist	DFAS low fear mean=1.2* (sd=0.5) %	DFAS high fear mean=1.9* (sd=1.3) %
last year	88.4	55.9
1–2 years	7.8	16.7
3–5 years	2.8	13.0
6–9 years	0.6	6.3
10+ years	0.4	8.1

\*  $p \leq 0.01$

### Comparing the DFAS with the Dental Anxiety Scale (DAS)

Table 6 reports significantly different ( $p \leq 0.01$ ) mean and standard deviation DAS scores for subjects in low and high DFAS fear groups and low and high DFAS avoidance groups. The mean (sd) DAS score for high fear DFAS subjects was 11.6 (3.5) and for high avoidance DFAS subjects was 11.6 (3.8)—both of which are below the  $\geq 13$  DAS cut point used to identify dentally anxious subjects.

Table 6 also reports the percentage of subjects identified as being dentally anxious according to the DAS, based on low versus high fear and avoidance on the DFAS. High agreement was found between subjects identified as not anxious by the DAS ( $\leq 12$ ) and low fear (99.0%) and low avoidance (96.1%) by the DFAS. Only 36.3% of DFAS high fear and 39.7% of DFAS high avoidance subjects were identified as dentally anxious according to the  $\geq 13$  DAS cut point.

**Table 6.** Mean and standard deviation DAS scores reported by low and high DFAS.

Dental Anxiety Scale (DAS)	DFAS fear		DFAS avoid	
	Low n=809	High n=366	Low n=909	High n=267
DAS mean (sd)	6.6 (1.9)*	11.6 (3.5)*	7.1 (2.6)*	11.6 (3.8)*
DAS categorization				
not anxious (DAS ≤12)	99.0%	63.7%	96.1%	60.3%
anxious (DAS ≥13)	1.0%	36.3%	3.9%	39.7%

\*  $p \leq 0.01$ 

A high positive correlation (0.82) was reported between the DAS and DFAS *fear* score and a moderate positive correlation (0.61) between the DAS score and DFAS *avoidance* score. This suggests that the DAS and DFAS fear question are measuring a similar dimension of anxiety, namely fear or the cognitive dimension; whereas the DAS and DFAS avoidance question are not measuring something similar. Categorical data was also analyzed to determine if the DAS and DFAS identified similar individuals with and without dental anxiety. Kappa analysis confirmed that there is greater agreement between the DAS and DFAS in identifying subjects with *no* dental anxiety than those with dental anxiety.

## DISCUSSION

### PROJECT 1 – DFAS Reliability

The test-retest reliability study had a 73.2% response rate of initial volunteers returning the second DFAS questionnaire for analysis. Study participants were predominantly female as is often found in dental anxiety studies.<sup>2,32,33</sup> A two way intraclass correlation of 0.87 confirmed that the DFAS has high reliability and is suitable for assessing cognitive and behavioural dimensions of dental anxiety.

### PROJECT 2 – DFAS Validity

Validity testing of the DFAS involved comparing subjects identified as low or high fear and avoidance according to the DFAS with their scores on fear- and avoidance-related questions. Fear related questions assessed feelings related to dental treatment, how anxious or fearful certain things or situations made subjects feel, and the degree of fear of having a needle in the mouth. Analysis indicated that individuals identified as DFAS low fear scored low on their degree of fear associated with each of these questions ( $p \leq 0.01$ ). Similarly, subjects scored as DFAS high fear also scored high on these fear related questions, and were significantly different from subjects categorized as low fear ( $p \leq 0.01$ ). Similar comparisons of subjects with low and high DFAS avoidance scores were made with avoidance related questions asking about presence or absence of six avoidance behaviours, the frequency of dental visits, and when subjects last saw a dentist or dental hygienist. As with fear, DFAS high avoidance subjects also scored high on the avoidance related questions, and low avoidance

subjects scored low on avoidance related questions ( $p \leq 0.01$ ). Mean and standard deviation scores, as well as the percent confirming avoidance behaviours and activities were significantly different between low and fear DFAS groups for each fear- and avoidance-related question. Correlation between the DFAS fear and DFAS avoidance scores was only 0.60, likely because the fear and avoidance questions are measuring two different dimensions of anxiety.

Interesting findings include a large percentage of high avoiders who *did* report visiting a dentist or dental hygienist at least once a year (44.2%), and within the last year (55.9%). There are a number of reasons which may account for this behaviour, including:

- that study subjects felt it was socially desirable that they answer these questions positively;
- that recall was poor and subjects thought they had visited a clinician in the last year, when in fact the time frame was greater;
- that subjects visited a dentist due to a dental emergency that required them to see a dentist, rather than electing to visit the dentist; and
- that subjects who prefer to avoid dental visits do attend, but endure the situation with dread.

It is also worth noting that the DAS and DFAS identified different individuals as dentally anxious in the study sample. More specifically, only a portion of the subjects identified by the DAS as dentally anxious were identified by the DFAS as dentally anxious. Possible reasons may be because the DAS and DFAS are measuring different aspects of anxiety, or that the scales have different levels of sensitivity, or that the DFAS is measuring fear in addition to avoidance and therefore identified a larger number of dentally anxious subjects who would be missed using the DAS. This is supported by finding from Haugejorden and Klock<sup>29</sup> who reported the DAS to have a high negative predictive value ( $\geq 0.98$ ), but low positive predictive value ( $\leq 0.26$ ) regarding identification of individuals with dental anxiety. Analysis of DFAS continuous and categorical data report similar findings. Greater agreement was reported between the DAS and DFAS in identifying subjects with no dental anxiety than those who were dentally anxious. Since there is no true gold standard to measure dental anxiety, it is difficult to determine which scale is more accurate in identifying dentally anxious subjects. Further research is needed to answer this question since it cannot be determined from the data generated in this study. Since the DFAS does not include limitations present in the DAS, confidence exists in use of the DFAS at this time.

### Study limitations

The study relied on the use of an electoral listing for sample selection and as a result individuals who are not eligible to vote may have been missed. This could be an issue given the proportion of immigrants who may not be Canadian citizens living in the geographic region sampled. As well, a four year old electoral listing was used to identify the study sample, and this required assumptions about how the list might have changed since it was drawn up. New electoral listings are no longer available for study purposes; thus the existing list was used and calculations



made to account for a higher attrition than would normally be expected.

Lack of generalizability is an issue in many studies and the case here where results are only applicable to communities with similar demographics to the one sampled. A large scale national study would provide true normative data and be more representative of the general population. However, its benefits must be offset against the high cost of conducting such a study.

Dental anxiety was assessed using a self report scale. Traditionally this is how dental anxiety is measured; however, use of a combination of methods including self report and some qualitative inquiry could yield a greater depth of information. Since logistical constraints exist in clinical practice, the DFAS appears to have suitable utility as a measure of dental anxiety since it is easy to use and does not take too much time to complete.

## CONCLUSION

In conclusion, the results presented confirm the reliability and validity of the DFAS and provide confidence that it is a functional instrument to assess both cognitive and behavioural dimensions of dental anxiety. Its simple design makes it favourable for use in clinical practice, either alone or incorporated into a client's medical/dental history. Use of the DFAS may also facilitate discussion about dental anxiety, which would be beneficial for the client and informative for the clinician.

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**SHORT PAPERS** – The short papers that follow are the summarized oral presentations delivered at the scientific sessions of the conference. All these short papers are peer reviewed.

## An early intervention strategy to improve the oral health of young children

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### Background

Interior Health's Dental Program in British Columbia promotes the healthy growth and development of children's teeth. As with any public health dental program, its success lies with using strategies which are constantly evaluated and adapted in relation to the needs of the population we service.

### Strategy

Interior Health (IH) has employed, among others, an early intervention strategy to improve the oral health of young children. This strategy aims to educate the parents of infants on best practices in oral health. With a strong knowledge foundation, it is hoped that in the long run, overall oral health of the population will improve.

This strategy was chosen based on the need for prevention of early childhood tooth decay (ECTD), as dental decay is the most common chronic disease of childhood. While private dental clinics have been and will continue to be the primary source of oral health care in Canada, the Canadian Oral Health Strategy (COHS) recommends "an increase in alternative delivery systems to complement private oral health delivery, addressing needs that are currently not being met."<sup>1</sup>


The COHS also believes that education, health promotion and awareness activities will create the greatest improvements in oral health.<sup>1</sup> Population wide strategies will be required to accomplish this, a job public health programs are well suited to perform. The challenge faced by all public health programs is implementing the best strategy with limited resources.

The IH Dental Program (IHDP) used the concept of *the right services delivered at the right place, right time by the right people*. In 2003, the IHDP began a pilot project that provided one-to-one service (interventions – *right services*) to parents attending routine childhood immunizations (the immunization schedule for infants in British Columbia is 2, 4, 6, 12 and 18 months, and at Interior Health, is adminis-

Figure 1. Dental key messages.

- 2 month: mouth cleaning and bacteria transfer
- 4 month: tooth cleaning and teething
- 6 month: tooth cleaning, sleep/nap time with a bottle, introduce cup
- 12 month: tooth cleaning, cup only, first dental visit
- 18 month: tooth cleaning, between meal thirst

Figure 2. Tooth talk questionnaire.



### TOOTH TALK!

Dear Parent/Guardian:

Dental Health Staff would like to help you and your family prevent tooth decay. Please answer the questions below by checking yes or no.

	Yes	No
Does your child have teeth? (If "no" go to question #4)	<input type="checkbox"/>	<input type="checkbox"/>
1. Do you clean your child's teeth <b>twice every day</b> ?	<input type="checkbox"/>	<input type="checkbox"/>
2. Do you use a <b>fluoride toothpaste</b> for your child such as Colgate™, Crest™, Aqua Fresh™, AIM™, etc?	<input type="checkbox"/>	<input type="checkbox"/>
3. Do you use a <b>non-fluoride toothpaste</b> for your child such as First Teeth™, Baby Orajel™ Tooth and Gum Cleanser, Pre-Step™, etc?	<input type="checkbox"/>	<input type="checkbox"/>
4. Do you (main caregiver) have cavities?	<input type="checkbox"/>	<input type="checkbox"/>
5. Does your child have older brothers or sisters who have had cavities?	<input type="checkbox"/>	<input type="checkbox"/>
6. Did your baby weigh less than 2500 grams (5.5 lbs.) at birth?	<input type="checkbox"/>	<input type="checkbox"/>
7. Does your child sleep with you and nurse on demand throughout the night?	<input type="checkbox"/>	<input type="checkbox"/>
8. Does your child take a bottle to bed at sleep/naptime <b>with anything other than water</b> ?	<input type="checkbox"/>	<input type="checkbox"/>
9. Does your child sip frequently from a bottle or sip cup throughout the day <b>with anything other than water</b> ?	<input type="checkbox"/>	<input type="checkbox"/>



tered by public health nurses at child health clinics (CHC) in urban locations – *right place*). After every immunization, parents are encouraged to remain at the clinic for a short period of time, which gave the dental staff the opportunity to engage in conversation with them (*right time, right people*).

### Delivery

Key messages, specific to the age of the infant based on the immunization schedule, were developed (Figure 1). At the CHC, dental staff would have one-to-one discussions with parents on the age specific key message. The 12-month visit included a questionnaire (Figure 2) to determine the risk level of dental behaviour. The levels of risk were low, medium or high based on the responses given in the Tooth Talk Questionnaire (TTQ).

### Results

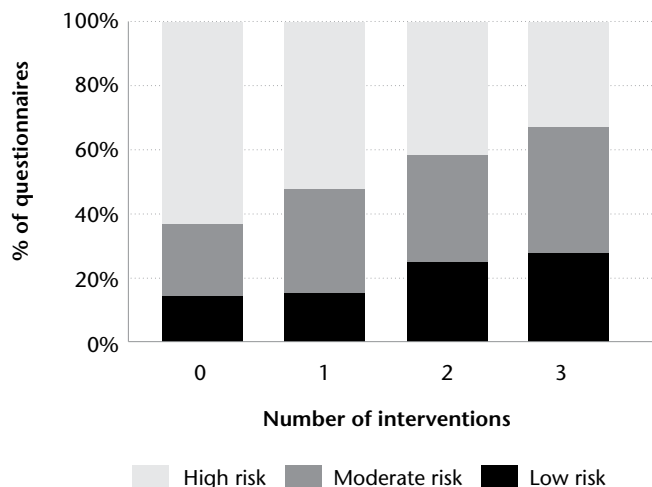
The project had several goals including seeing what effect the interventions made in children's oral health outcomes. The evaluation of the pilot project showed that clients valued the services provided by having dental staff present. This resulted in continued dental staff involvement at the Penticton CHC, British Columbia. While the public's appreciation of the services was welcome, determining if the multiple brief interventions could influence dental health outcomes in children was a key consideration for the long term success of the project.

By keeping track of how many prior interventions each family/child had before completing the TTQ, it was possible to compare the risk level to the number of interventions.

Between 2005 and 2010, 1664 TTQ were collected and analysed. Findings have shown that the risk level based on the classifications from the questionnaires correspond to the number of prior interventions (Figure 3). The results for TTQs:

1. High risk figures were 63%, 53%, 42% and 33% for parents who had 0, 1, 2 or 3 brief interventions.

Figure 3. Risk levels.



2. The overall average of high risk TTQ from the Penticton CHC was 44% whereas the average in areas that were not using the brief intervention strategy was 64%.

### Conclusions

This strategy has shown that parents who receive more brief interventions tend to have increased dental knowledge for the risk factors contributing to early childhood caries. The hope is that this will translate into parents following best practices for oral health with their infants through to childhood; where once good oral habits are established, they will continue to be practised thereby improving the overall oral health of the population.

### References

1. Dental Working Group. *Canadian Oral Health Strategy*. Montreal. August 2005;6 <http://www.fptdwc.ca/assets/PDF/Canadian%20Oral%20Health%20Strategy%20-%20Final.pdf>

## Oral care for adult survivors of childhood violence: Research based guidelines

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Research reporting that at least 1 in 5 women and 1 in 7 men is a survivor of childhood sexual abuse strongly suggests that dental hygienists work frequently, and mostly unknowingly, with adult survivors.

### Objectives

This multidisciplinary qualitative research project used grounded theory and action research to bring together survivors and healthcare providers from across Canada to develop guidelines that all healthcare practitioners can use to improve survivors' healthcare experiences.

### Method

109 women and men survivors were interviewed about their experiences with healthcare providers. Working groups of survivors and healthcare providers used this information as the basis of discussions of how healthcare providers can work more sensitively with survivors of childhood violence. Findings became successive drafts of a Handbook, which were sent to survivor participants and healthcare practitioners in 10 disciplines from across Canada. Written and oral feedback was received and the resulting *Handbook*<sup>1</sup> was published in 2009. Dental hygienists' input into this research was crucial to ensuring the *Handbook*<sup>1</sup> speaks to all dental hygienists.

### Results

The *Handbook*<sup>1</sup> outlines survivors' difficulties when accessing healthcare and presents nine principles of Sensitive Practice and additional guidelines to improve client care. Survivors' commonly identified difficulties when seeing healthcare providers were: fear of abuse by the clinician, fear of judgment, distrust of authority figures, need to feel 'in control', physical pain, discomfort with clinicians of the same gender as the abuser(s), disconnection from or ambivalence about the body, conditioning to be passive or aggressive, triggers, and dissociation. Any and all of these difficulties can be experienced during dental hygiene care.

Survivors strongly expressed that feelings of safety are crucial when seeing a healthcare practitioner. Nine principles represented the most significant contributors to feelings of safety for survivors: respect, taking time, rapport, sharing information, sharing control, respecting boundaries, fostering a mutual learning process, acknowledging that healing from abuse is not a linear process, and clinician's demonstration of an awareness of the prevalence and long term effects of violence. While many of these principles represent tenants of good client centred care when considered within the context of childhood abuse,

the principles represent absolute requirements for many survivors to be able to tolerate healthcare encounters. When continuously employed by the dental hygienist, the principles represent a simple yet profound way to support the survivor while carrying out dental hygiene care.

Our research shed light on some types of triggers that survivors experience during healthcare encounters and identified ways of working with survivors to avoid or manage the triggering of memories of past abuse. Through one technique, termed "task specific inquiry", the clinician enquires about sensitivities and discomforts specific to dental hygiene care. The goal is to establish a dialogue about what the dental hygienist can realistically do to minimize these difficulties during care to work more effectively with the client. Task specific enquiry enables survivors to disclose as much as they are comfortable revealing, and allows the dental hygienist to put the information to good use to facilitate feelings of safety during care. Our findings support the use of task specific enquiry by the dental hygienist, both initially and on an ongoing basis, to facilitate the client's feeling of safety.

This project also identified a method of responding to 'difficult situations' for example, when a client's reaction to some component of care seems to be disproportionate to what the dental hygienist thinks is going on. The SAVE method (Stop, Appreciate, Validate and Explore) can be broadly used in any type of difficult situation with the aim of reestablishing a client's feelings of safety and proceed with oral health care.

Workshops on Sensitive Practice have been facilitated with dental hygiene students at the University of Manitoba and with dental hygienists and dental hygiene educators in Ontario. Feedback from participants confirmed the vulnerability that survivors may experience during oral healthcare interventions, and reinforced the relevance of Sensitive Practice for all dental hygienists, students, and educators.

### Conclusions

Our research findings are consistent with studies that have used quantitative methods to examine dental fear among adult survivors. Sensitive Practice is fine tuning of client centred care for adult survivors of childhood violence. The high prevalence rates of abuse and the knowledge that survivors may not disclose past abuse suggest that dental hygienists should use Sensitive Practice with all clients at all times. The *Handbook*<sup>1</sup> outlines Sensitive Practice background, principles, and guidelines for use by all dental hygienists, students, and educators.

### Reference

1. Public Health Agency of Canada - National Clearinghouse on Family Violence. *Handbook on Sensitive Practice for Healthcare Practitioners: Lessons from Adult Survivors of Childhood Sexual Abuse*. Ottawa. 2009.

## Mouthwashes and their effect on global health

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### Objectives

The purpose of this study is to determine the pH value in mouthwashes, and to investigate their effects on the dentition and global health of clients.

### Methods

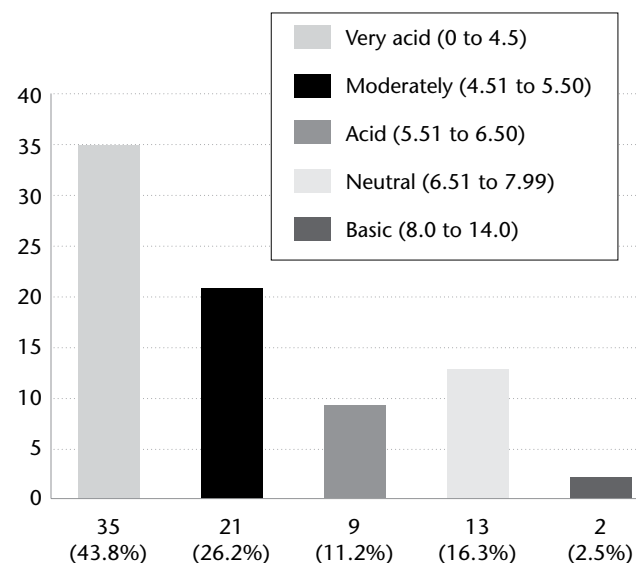
The materials used were acidimeter, three standard solutions (acid = 4,000, neutral = 7,000 and basic = 10,000), magnetic agitator, magnetic plaques, distilled water, thermometer, chronometer and calibre glasses. The protocol consists to do two calibrations. The temperature of the solutions ranged between 21 and 23 degrees Celsius. Three tests were realized with 60 ml at 350 speeds. If a difference between 2 measures was 0.1, another calibration was taken. Data were obtained by statistical analysis using Excel.

### Results

First results on mouthwash indicated acidity up to 2.5 pH with or without alcohol. The first generation of mouthwash was cosmetic; those available now contain therapeutic agents to reduce such oral health problems as gingivitis, calculus, cavities, xerostomia, and stains above the appropriate dose. The authors undertake to disseminate the results on a website to allow dental hygienists to easily access and respond to customer needs. Few case studies will be included to help oral health professionals choose the best products for their clients with their own characteristics. About eighty products were tested between 2010 and 2011.

These 80 products were divided in a pH scale ranging from 0 to 14: very acid (0 to 4.50), moderately acidic (4.51 to 5.50), acidic (5.51 to 6.50), neutral (6.51 to 7.99) and basic or alkaline (8.00 to 14.00). Literature has shown that the enamel composed of fluorapatite crystals is stronger than enamel composed entirely of crystals of hydroxyapatite (new tooth present in the mouth), and that it requires a pH value below 4.5 to be compared with demineralized pH 5.5 for a non fluoridated enamel. Dentin and cementum are more fragile, and their demineralization begins from a pH value of 6.5. For values greater than 6.5 up to 7.99, they are considered neutral (7 plus or minus 1). Products with a pH value above 8 are basic and are very rare on the market.

From the analysis of our statistics, 70% of mouthwashes were at a moderately acidic pH value or very acidic, below the critical level of 5.5. Of these, 43.8% (35/80) are very



N: 80

Source: Paquet MJ, Dubreuil N. 80 products tested and their pH.

acidic, 26.2% (21/80) of mouthwashes are moderately acidic, 11.2% (9/80) are acidic, 16.3% (13/80) were neutral and 2.5% (2/80) were basic.

It is very pertinent to ask whether there are side effects on teeth and soft tissues associated with the daily use of oral hygiene products whose pH value is acidic. It is recognized that regular exposure to an acidic substance (soft drinks, energy drinks, repeated vomiting) may be harmful to dental tissues. Potentially, most mouthwashes may create a demineralization of teeth. In case of loss of tooth structure (abrasion, abfraction, erosion) or tooth sensitivity, it is strongly recommended to limit exposure to acids.

Dental hygienists are aware of the factors that contribute to hyposalivation, for example, the side effects associated with consumption of certain drugs or the exposure of the salivary gland to the radiation treatments or Sjogren's syndrome. Moreover, dental hygienists are educated on the long term consequences of hyposalivation on the oral cavity—high susceptibility to decay, difficulty eating and swallowing, halitosis, to mention a few. Other variables influence the potential loss of tooth structure, such as the frequency, time of exposure to mouthwash, the amount of saliva and its buffering capacity, hardness of teeth, presence of root exposure, health habits using toothpaste or a very abrasive toothbrush or an inadequate technique of toothbrushing.

If an acidic mouthwash is used prior to brushing, for example, use of whitening mouthwash or a mouthwash before brushing, could this increase the loss of tooth substance? Potentially, yes. Thus, the products themselves have a high risk potential. This risk increases with the combination of several factors that have a synergistic effect, such as mechanical brushing using abrasive toothpaste with a low pH value, or using a low pH value mouthwash, or the

consumption of beverages or acidic foods. These isolated oral hygiene habits seem trivial, but in combination they can become a risk factor rather than a protective factor. For example, a low pH value mouthwash without ion remineralizing, such as a therapeutic agent known to be effective against gingivitis, could become a risk factor to erosion in a client with exposed roots.

It is prudent to recommend the use of mouthwash at the end of the brushing and flossing, to extend the benefits of toothpaste to prevent toothpaste ingredients interfere with those of the mouthwash. As for erosive beverages or vomiting, it would also be desirable to consider an interval of 30–60 minutes between brushing and acidic mouthwash in future recommendations.

Therapeutic ingredients may be the subject of a forthcoming presentation of scientific papers and subsequent

research. Ideally, in vivo studies would be very interesting to confirm or disprove the hypothesis of potential tooth loss by mouthwashes that are used alone or in combination with other products. The findings of the research group of College François-Xavier-Garneau suggest a toothbrush, toothpaste, or mouthwash seems most relevant to better suit the characteristics of each client.

### Conclusions

Some solutions will be proposed to reduce enamel loss during acid exposition. For example, erosion, sensitivity in relation with exposed dentin can increase if clients brush their teeth immediately with an acidic mouthwash. Thus, the daily use of mouthwash at acidic pH values is questionable. Dental hygienists will appreciate new perspectives about mouthwashes, in future research.

## Characteristics that place dental hygienists at risk of providing substandard client care: Findings from Ontario's Quality Assurance Program

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### Objective

To investigate whether there are common characteristics among those dental hygienists who practise below acceptable standards.

### Background

The *Regulated Health Professions Act 1991* requires all health regulatory colleges in Ontario to develop and to maintain a quality assurance program to ensure the provision of safe and effective quality dental hygiene care to the public. The College of Dental Hygienists of Ontario (CDHO) designed its Quality Assurance (QA) program to promote and monitor continuing quality improvement among its registrants. The cornerstone of the QA program is the requirement that all registrants establish and maintain a professional portfolio. Compliance with this requirement is a mandatory requirement for the annual renewal of their certificate of registration. Each year, 10% of the active registrants are randomly selected to submit their portfolio for a peer review. Upon review by a QA assessor, registrants who have been identified as having deficiencies in their portfolio related to their dental hygiene practice undergo a telephone interview to provide them with an opportunity to clarify identified deficiencies. If the QA Committee is unable to confirm that the registrant has met the criteria for a satisfactory portfolio and/or if concerns are brought forward from other information before it, the QA Committee requires that the dental hygienist undergo an on

site review of her/his dental hygiene practice. If required, the Committee will order specified continuing education and/or remediation program related to the areas in which deficiencies were identified.

### Method

The CDHO's QA records for the past twelve years were analyzed to determine if there were commonalities among dental hygienists who scored poorly on an on site practice assessment. A total of 237 records were examined for characteristics that included year of graduation, practice location, number of days worked per week, and solo or group practice. Registrants were grouped into 5-year cohorts based upon years since graduation from their dental hygiene program. Urban practices were identified as those in areas with a population greater than 100,000. Registrants who worked four or more days per week were considered to be practising full time while those who worked three days/week or less were considered to be practising part time.

### Results

Analysis of the QA records suggest that the dental hygienist at the greatest risk of practising below standards and/or providing substandard client care is one who has been in practice between 16 and 20 years. Of those dental hygienists undergoing an on site review, 84.4 % practised in an urban location while 72.2% worked in a solo practice. No statistically significant difference was identified between those who worked part time (52.7%) and those who worked full time (47.3%) at the time of portfolio submission. Examination of the records revealed that 73% of unsuccessful registrants were required to undergo remediation in ethics and/or jurisprudence, 71% in record keeping, 69% in process of care and 32% in infection con-

trol. The majority of registrants were required to complete remediation in multiple areas of deficiency.

### **Conclusion**

Common characteristics have been identified that will provide insight helpful to regulators, educators and individual dental hygienists, and to QA programs. A direct relationship appears to exist between the results of this analysis and that of the Total Quality Improvement (TQI) study undertaken by the CDHO in 2002. In this study, dental hygienists who performed below the provincial average were found to be less likely to participate in continuing quality improvement activities related to record keeping or to participate in the design of the client record forms being used in their practices. They were also less likely to study the dental hygiene process of care. The relationship of the findings of this analysis with the perceptions of dental hygienists taking part in the 2002 TQI study regarding infection control, appear to be less clear. The 2002 study indicated that four out of ten dental hygienists worked in a

practice with a written infection control policy while only six out of ten indicated that compliance with the policy was regularly monitored. The frequency of completing continuing quality improvement activities related to infection control was not collected or reported. The 2002 study also did not directly address issues related to ethics and/or jurisprudence. The characteristics identified in this analysis as indicators of risk will assist groups and individuals who wish to take a proactive approach to quality assurance and continuing competency. Regulators may use the information to develop a targeted approach in the development and promotion of future policies and programs aimed at improving the quality of care delivered to dental hygiene clients and in developing materials to assist registrants in this regard. Education programs may also be targeted to meet the needs of the groups at risk and individual dental hygienists who are in the groups identified as being at risk may use the information to assist and guide them in their self assessment and in choosing future continuing quality improvement activities.

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## **Meeting the challenge of responding to abuse of older adults: A survey of tools being used by diverse frontline responders**

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### **Objectives**

This presentation provides an overview of the intent and outcomes of Elder Abuse Knowledge to Action Project carried out by the National Initiative for the Care of the Elderly (NICE). The purpose of the project is to involve meaningfully older adults in all aspects of the project including raising community awareness of abuse of older adults and the successful introduction of evidence based detection, intervention and prevention tools into the practice of professional and community responders.

### **Methods**

Detection, intervention, and prevention tools were selected based on input from the Elder Abuse Team and Seniors Advisory Council within NICE, the project's senior coordinators and a diverse array of practitioners/responders from across Canada who participated in

teleconferences or completed training forum evaluation forms. Respondents were asked what tools they are using and the areas in which tools are needed to assist them to address/prevent abuse of older adults.

### **Results**

This session highlights the tools selected for sharing across Canada in pocket card format, and the processes employed to maximize uptake by the various intended users. Preliminary evaluative data will be made available based on preliminary analysis of training forum evaluation forms, follow up online surveys and selected interviews. This session augments the other session being offered in relation to the CDHA Elder Abuse Awareness Professional Development Program

### **Outcomes**

The process by which the various tools are being integrated into practice will be described and summarized as Lessons Learned for effective Knowledge Exchange.

## Dental hygienists in interdisciplinary healthcare for the homeless

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### Introduction

What began as a simple question, *What can we do about the oral health of the homeless and less fortunate in our community?* rolled into a community project involving dental hygiene students, educators, advisory committees, dentists, and staff at the shelters.

Plans were made to meet with the officials at the shelter in St. Catharines to discuss some possibilities for our students. A committee was formed, which included among others, local dentists and dental hygienists; I was nominated "Chair".

### Objective

To establish a dental clinic for the homeless and to advocate for their oral health.

### Methods

Two committee members decided, at first, to visit two shelters in Toronto which had dental clinics to gain from the models they worked. During the process, the idea of investing in a portable unit at the St. Catharines shelter advanced to installing a dental unit at the new Community Health Centre (CHC) in St. Catharines. Our advisory committee took on a new role with our relationship with the Centre and dental care became part of the interdisciplinary care for their target population.

### Observations

CHCs are "non-profit, community-governed organizations that provide primary health care, health promotion and community development services, using multidisciplinary teams of health providers." Utilizing the different professions, as you assess and plan for an individual's treatment holistically, benefits the client. Individuals within a priority population will not go to a dental office out of fear and lack of money. A Swedish study indicated that the majority of clients would visit a dental clinic in a shelter, rather than in an office.

At the CHC, individuals would receive assistance from doctors, nurse practitioners, social workers, dentists, dental hygienists and others. As a dental hygienist, being able to utilize this team for referrals and consultations would be part of the complete care for each client. The reward of helping someone in need is self rewarding as you learn from others and give back to those less fortunate.

### Challenges

There were a few challenges that we encountered. One that surprised me was the question from local dental hygienists: "Can self initiated dental hygienists volunteer in a community health centre?" The College of Dental Hygienists of Ontario verified that we could provide "primary, interceptive, therapeutic, preventive, and ongoing care procedures" that would enable this population. Another challenge involved advocacy for our cause. I had the opportunity to speak to our local MPP about dental care in the CHC. He told me that he was behind the project 100% and understood that the "priority" population needed our help. What a relief!

### Results

Our committee had to review the capital and operational aspects for the dental area. The CHC received a grant, through the local health unit, and with that, we have two complete dental units, lab, and digital radiography equipment. Currently the committee is organizing fund raisers and other venues for financial support. The dental clinic opens in the Fall of 2011. The committee will be contacting dental hygienists and dentists to volunteer. A full time dental assistant will be hired. Where do we begin to find volunteers? There is nothing more successful or effective in getting the word out about something than through *warm* networks. Our committee is working on putting a list together of those we know, trust, and respect and those who will listen.

### Conclusion

As dental hygienists, many of us take our profession and give back to those less fortunate outside of our day job. It isn't about the money you make in your *day job*, but about volunteering and helping with your time and experience. How do dental hygienists work with other professions? Take an idea and get involved. The St. Catharine's Health Centre, *Quest*, will be a model of how different professions can all work together to provide care for the client's mental, social, physical, and dental health. The journey, the *quest* for individuals to have an opportunity to have a better life, began when a police officer approached me with the question, "What can we do about the oral health of the homeless and less fortunate in our community?" Our committee assessed the need, researched, and planned. The CHC has two dental operatories for hygienists to provide and implement preventive care to this priority population within an interdisciplinary environment in St. Catharines.



## **Interprofessional collaboration, a community of practice and research capacity building: Just how and where to begin for the dental hygienist involved in interprofessional practice**

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Dental hygienists worldwide are committed to collaborative interprofessional patient/client centred practice.<sup>1</sup> The need to advance and contribute to the knowledge base of interprofessional education for collaborative patient centred practice (IEPCP) is vital to healthcare, because although logically it makes sense that professional collaboration better meets the needs of the client/patient, the best practices and evidence base to support this logic are needed from a research and practice perspective. The activities and experiences of dental hygiene interprofessional collaborations need to be captured and disseminated throughout the healthcare community. What are the lessons learned? How does one measure success of such collaborations? Are there tools and strategies that work better than others? The research and evaluation of IEPCP and, in particular, the role of the dental hygienist within healthcare, are vital to defining and informing its way of being within healthcare.

The World Health Organization (WHO) and the Canadian Interprofessional Health Collaboration (CIHC) have clearly stated that patient centred practitioners who collaborate promote better health outcomes for the patient and the healthcare system.<sup>2,3</sup> Health professional programs are advancing the curricula to one that offers an interprofessional educational grounding with articulated standards and guiding principles of the interprofessional collaborative health professional.<sup>4</sup> Such a curriculum prepares “collaborative-ready” practitioners.<sup>2</sup> Dental hygiene programs, like the other health professional programs, have embraced the IEPCP curricula;<sup>5-7</sup> hence the entry to practice dental hygienists are increasingly knowing themselves as interprofessional collaborative practitioners.

Research capacity building (RCB) is a process and an outcome, a means to an end that promotes the active capturing of evidence based practice.<sup>8</sup> It is recommended that dental hygienists assess what they are doing in a meaningful manner, based on reliable and valid assessment tools and strategies so as to capture the empirical outcome and the significance of that outcome to practice. Does the presence of a dental hygienist as part of an interprofessional collaborative healthcare team for a patient/client with cardiovascular disease make a significant difference to the quality and outcome of the client’s care? Cooke<sup>8</sup> presents a two dimensional research capacity building framework for

planning change and measuring progress. One dimension is the developmental activities of structural levels individual, team, organizational, and network, and the other dimension is the six capacity building principles—skills and confidence building, close to practice, linkages and collaborations, appropriate dissemination, continuity and sustainability, and infrastructures.<sup>8</sup>

Cooke’s framework helped a community of health professionals—administrators, educators (one of whom was a dental hygiene educator), practitioners, and graduate students—who were working together through the CIHC to help inform research and evaluation of IEPCP.<sup>9</sup> The community recognized itself as a “community of practice” (CoP) defined by Wenger<sup>10</sup> as a basic building block of a social learning system of a group of people who share a passion or a commitment and who purposefully interact together to deepen and expand their knowledge and ability to fulfill the passion and/or commitment.<sup>11</sup> The framework and process employed gave the CoP purpose, direction, and determined the course of action: develop a research and evaluation agenda for interprofessional education and collaborative practice. The dental hygiene educator saw “building skills and confidence” and “being close to practice”, two of Cooke’s six principles of RCB, as speaking directly to the dental hygienist embracing IEPCP. The concept of a CoP furthered solidified the “place” and contributions to the advancement of health and well being the dental hygienist plays in advancing healthcare through IEPCP.

Knowing the dental hygienist has a place and a contribution to collaborative practice for patient centred care starts with having the confidence to step forward and stay centred “close to one’s practice”; in essence, “know what you know; know what you don’t; know when to refer/consult”. Swanson Jaacks<sup>12</sup> surveyed a convenience sample of over one hundred practising dental hygienists in Oregon, USA, to gather their perceptions regarding interdisciplinary collaboration and barriers in achieving it. Dental hygienists in Oregon are able to provide dental hygiene care under the “limited access permit” to persons in long term care facilities. The survey measured experience, confidence, leadership, knowledge utilization, and the role of dental hygienist in interdisciplinary collaboration. The results assure the profession that dental hygienists respect their current and future contributions to collaborative practice for client care. The top ranking barriers to achieving this were as follows: insufficient time, willingness of other professionals to collaborate, need for more professional freedom, and possessing insufficient knowledge about medical diseases/conditions. The first three barriers are common enough in IEPCP for many health professionals;<sup>13</sup> however, the dental hygienists’ perception that the profession has insufficient knowledge about medical

diseases/conditions as being a barrier to interprofessional collaboration is perhaps a misguided perception of what it means to be involved in interprofessional collaboration.

The concept of “community of practice” invites dental hygienists to engage, imagine, and align their expertise in oral health promotion and oral disease prevention with that of other health professionals’ expertise and contributions to patient centred practice. Ways of participating or modes of belonging, as defined by CoP include engagement, imagination, and alignment; these lead to profiling of the competencies of the CoP.<sup>10</sup> Interprofessional health collaboration, as a CoP, would thus define its competencies. The *British Columbia Competency Framework for Interprofessional Collaboration* has 4 key competencies:

1. Interprofessional and communication skills
2. Patient centred/family focused care
3. Collaborative practice (collaborative decision making, role/responsibility, team functioning) and
4. Continual quality improvement.

These competencies are known all too well to the dental hygienist;<sup>14</sup> the dental hygienist can confidently be part of IECPCP and contribute greatly to improving healthcare for one and all.

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## Dental Hygiene curriculum: An investigation of novice dental hygienists’ assessment of how prepared they were for the transition from student to clinical practice

**Lisa Taylor**, RDH, BA, BEd  
Associate Registrar, College of Dental Hygienists of Ontario

### Objective

This was an exploratory, descriptive, and analytic investigation of novice dental hygienists to determine if they felt their education was effective in preparing them for clinical practice.

### Method

Novice dental hygienists are defined as dental hygienists who graduated within the previous two years from an Ontario institution and who had an opportunity to practise

for at least 1200 hours. Seven volunteer dental hygienists were asked to reflect on how prepared they felt they were for clinical practice following entry-to-practice. A semi structured interview technique was used to solicit recollections, perspectives, and opinions to gain an understanding of how prepared graduates of the present curriculum felt they were for dental hygiene practice.

### Results

The findings of this study suggest that current dental hygiene graduates are not appropriately prepared for the transition from student to practitioner. All seven study participants reported struggling to work within the dental hygiene concept of client centred care while trying to serve dentists who were focused on maximizing dental hygiene

revenue. All participants reported that conforming to the standardized client appointment time while attempting to meet client needs was the most difficult part of their transition to practise.

Recordkeeping requirements of dental hygienists, essential to the dental hygiene process of care and to the autonomy of dental hygienists, was mentioned by all participants as problematic during their transition. Their experience was that office scheduling did not allow them to write the breadth and depth they had become accustomed to in school. Many described second guessing themselves about what needed to be charted especially when questioned by dentists who thought the dental hygienists were taking up too much time and using too much space in the client charts.

All participants in this study reported being ill prepared for the expectations around the use of technology. Six of the seven participants were intimidated by the ultrasonic scaler. While it would be unlikely for a dental hygiene operatory not to include this tool, participants reported that school clinics had a limited supply and that the equipment was usually reserved for clients with heavy subgingival deposits.

Another theme identified in this study was the inadequacy of the pharmacology component of the dental hygiene programs. While the interviewees reported not knowing enough about the medications their clients were on, they had equal concern that they did not know how to use antimicrobial agents or antibiotic preparations as part of client care.

Six of the seven study participants suggested that they were not prepared at entry level to be the communicators they needed to be, although they felt that those with dental assisting backgrounds had less difficulty. However, they were of the opinion that this communication skill would improve with increased work experience.

Six of the seven participants were unprepared for the billing issues requiring knowledge of procedure specific insurance codes. Five participants reported feeling intimidated by dentists and other office staff to bill more units of time than they felt was appropriate and that were not adequately prepared to handle these situations.

All participants placed an emphasis on the advantage dental assisting experience had on their success. Their experience was that classmates who did not have a dental assisting background were at a severe disadvantage because of their teachers' expectations that students had this knowledge. This was true of both the community and the private career college graduates.

All participants described a need for less summative and more formative evaluations during the program. Five of the six participants who were graduates of private career colleges reported that the majority of their instructors had clinical experience but had little if any teaching experience. Their common concerns were that teachers seemed ill prepared, inexperienced, and not engaged in student learning. Three of the participants were critical of their instructors' attitudes towards students and cited authoritarian practices, and use of power and influence to convince students that their claim of expertise and status was legitimate.

The dental hygienists interviewed for this study reported difficulty finding employment admitting that they limited their applications to general dental practices. All reported not having the knowledge or the skills at entry level to apply for jobs in public health, or in specialty practices. In addition, all but one indicated that they lacked confidence in treating clients who were medically, physically, or mentally challenged. Six out of seven reported that they had limited or no clinical experience treating special needs clients during their dental hygiene programs.

Participant interviews indicated that there were greater challenges for graduates of non accredited programs in how prepared they were for the NDHCB examination. Both participants from the non accredited program described themselves as "self-taught" having formed study clubs and purchased textbooks not included in their curriculum to augment perceived gaps in knowledge. In addition, both reported using social media such as YouTube and dental companies' websites to learn instrumentation techniques.

During the transition to practise, participants reported using several methods to address deficiencies in knowledge and skill such as non formal mentoring, self study, study clubs, and post graduate courses.

## **Conclusion**

This study suggests that dental hygiene graduates are not socialized to the contradictory social relations that dominate the dental field nor are they given the proper tools to prepare them for the dissonance between school and practice, nor to deal with other professions who will cause them to doubt the validity of their knowledge in an effort to have them accept their subordination to the hierarchy of the medical model. Dental hygiene students' limited exposure to special needs clients and alternative practices including independent practice, serves to encourage graduates towards the traditions of dental practice that place their professionalism as inadequate.

## Going on your own: Results of a survey of dental hygienists who have opened their own practices

**Fran Richardson**, RDH, BSCD, MED, MTS  
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frichardson@cdho.org

Dental hygienists in various jurisdictions were asked to complete an e-mailed questionnaire that provided space for answering open ended questions. Information was sought on number of years of practice prior to going on their own, reasons for that choice, type of practice setting chosen, barriers encountered, advantages and disadvantages for both the clients and the practitioner, success stories and challenges.

Results indicate that dental hygienists who chose to venture out on their own have been practising the profession for a mean of 20 years with a minimum of 5 years and a high of 32 years. There are a variety of practice choices with some choosing to open a “store front” practice alone or with another health professional. Some respondents do mobile practice only or combine that with another form of practice. The dental hygienists’ reasons for choosing to go on their own are varied but the common themes are:

1. the ability to practise as they choose,
2. to practise to the standards set by their own regulatory body, and
3. to meet the needs of clients who were unable or unwilling to attend a traditional dental practice.

Other findings relate to the barriers that the respondents continue to face and their recommendations to others who may wish to follow this path. A number of anecdotal success stories illustrate how these dental hygienists have touched other people’s lives.

Dental hygienists in Canada have traditionally worked as employees. The most prominent employment setting is within a private dental office; yet there are dental hygienists employed in public health, education, hospitals, administration, and research. Due to recent legislative changes, dental hygienists in several jurisdictions in Canada are now able to open their own dental hygiene practices. While this choice of practice setting is not for all members of the profession, a number of dental hygienists have chosen to invest in the opportunity. The author conducted an informal e-mail survey of dental hygienists in Canada who indicated that they owned their own practices. The majority of the respondents were from Ontario, with a few from Alberta and British Columbia. One dental hygienist in Britain has a unique arrangement whereby she

is informally partnered with a dental office, yet sees clients on referral from other practitioners.

The primary reasons for conducting the survey was to find out:

1. why dental hygienists chose independent practice
2. their perceptions of the advantages and disadvantages for the client
3. the type of practice setting they own
4. what advice they would give to others who were interested in exploring that possibility, and finally,
5. to hear some of their success stories.

Not surprisingly, the dental hygienists who responded to the survey indicated that they had been practising the profession for a significant period of time, with a mean of 20 years, a minimum of 5 years, and a high of 32 years. Most of the respondents indicated that it was their desire to practise dental hygiene in a manner acceptable to them that prompted them to start their own businesses, rather than an employer. Another prominent reason was to serve clients who, for a variety of reasons, had difficulty in attending a traditional dental office. Many of the respondents indicated that they offered mobile services and travelled to the client rather than having the client travel to them. A number of the respondents stated they believed that, as independent practitioners, they could provide the client with more individualized care, oral health education, and time. None of the respondents indicated that money was a prime motivator for going on their own, though several did say that they were “tired” of working for someone else who, they believed, did not appreciate preventive oral care in the same way in that they themselves did. According to a recent article in the *Journal of the Canadian Dental Association*, a survey conducted by the Canadian Dental Association indicated that “Many [members of the public] believe that the hygienist “cares” more than the dentist, a perception based on the amount of time the hygienist spends with the patient compared to the dentist.”

The advice given by the dental hygienists with respect to setting up their own practices varied, but all had the common themes of doing one’s homework and limiting expectations for rapid growth. It was clear that the ones who felt they were experiencing financial success had been practising in this mode for the longest time. However, when it came to measuring success by way of client acceptance, some of the stories are truly remarkable. The presentation includes a number of quotes from the participants in the study.



**POSTER PRESENTATIONS** – The peer reviewed posters were presented between the scientific sessions of the conference on 11 June 2011. The posters' content follows.

## Developing an oral health education program for personal care providers using an interactive consultative approach

**Janet Munn, RDH, RRI**  
munnj@algonquincollege

An action planning workshop was held in October 2009 with 35 stakeholders, researchers, and care providers to plan priorities for education, training, policy, and evaluation to support personal daily mouth care practices for frail older adults living in three long term care facilities. This knowledge translation/exchange initiative is part of an ongoing interdisciplinary community based research project in Nova Scotia, *Oral Care in Continuing Care Settings: Collaborating to improve policies and practices*.

### Objective

To establish an educational program for personal care providers that includes support, tracking, and evaluation strategies.

### Methods

Using an interactive consultative process, personal care providers were engaged in focus groups, informal discussions, and an action planning workshop to establish

relevant educational topics and special support required to enhance the provision of personal daily mouth care. Ideas were modified with direct feedback from end users. Evaluation forms and periodic diary studies were collected.

### Results

The following oral health education topics were established and presented at each site:

- Oral health: The basics
- Caring for adults with dementia
- Palliative care: Oral care, and
- Specialty tools for extra special needs.

An oral health toolkit prototype was developed that includes a process for individualizing patient requirements using detailed colour coded "care cards". Evaluation of the program was positive.

### Outcomes

Relevant knowledge translation products were developed that include: oral health education modules, with Power-Point presentations and DVD, for each education topic; direct messaging posters; individualized oral health toolkits for each resident, and a comprehensive program resource binder and website.

## Interprofessional learning modules for dentistry and dental hygiene students

**Nancy R. Neish, BA, DipDH, MEd;**  
**Cynthia A. Andrews, BSc, DDS**  
nancy.neish@dal.ca

### Objectives

This presentation will describe interprofessional learning opportunities provided to dental and dental hygiene students attending the faculty of Dentistry at Dalhousie University during the 2010–2011 academic year. Organized as four educational modules, these learning opportunities are designed to encourage dental and dental hygiene students gain an understanding of their respective roles and expertise, and to learn how to work together to provide optimal oral healthcare to the community they serve. To facilitate the implementation of similar modules at other interested institutions, the poster presentation will provide a description of each module, including the learning objectives, the course format, content, and evaluation forms.

### Methods

The topics chosen for the four modules are: Patient/client co-management, Collaborative practice in the real world, Teamwork, and Tobacco dependence education. The modules are designed as two hour sessions. The format includes an introductory plenary session, small group work, and a reconvening plenary session where representatives from each of the small groups present their group's activities. Each small group will comprise both dental and dental hygiene students.

### Results

Evaluation forms will be completed at the end of each session and results will be included in the poster presentation.

### Outcomes

To date, there have been few studies regarding interprofessional educational opportunities with dental and dental hygiene students. It is hoped that fostering these opportunities will enhance collaboration and mutual respect among oral health professionals.

## Evaluating outcomes for the School of Dental Hygiene, Dalhousie University

**Nancy R. Neish**, BA, DipDH, MEd;  
**Peggy J. Maillet**, DipDH, BA, MEd  
 nancy.neish@dal.ca

### Objectives

The purpose of this study was to determine the extent to which dental hygiene graduates perceived the program outcomes were being met at the School of Dental Hygiene at Dalhousie University.

### Methods

The authors constructed a survey instrument when their literature review revealed there was no standardized protocol for evaluating programs. Opinio, an online survey tool, through Dalhousie University, was used to design the survey and statistically analyze the results. Graduates from the classes of 2006–2009 were e-mailed the survey that also included a letter describing the study and other necessary information to meet the requirements for informed consent.

### Results

Of the 164 graduates in the target population, accurate e-mail addresses were obtained for 140 graduates. The response rate to the survey was 51%. Results indicated graduates believed the program outcomes were met, showing a mean score of greater than 8 (out of a maximum possible score of 10) for all but one outcome that was scored 7.17, SD 2.2. Additional measures of program outcomes used included national board exam results, feedback from students and faculty reviewing the curriculum and determining whether the national dental hygiene competencies for entry to practice were being addressed in the curriculum.

### Outcomes

Conclusions from the study indicate a need to have:

1. program outcomes operationally defined to enable adequate measurement,
2. multiple measures of program outcomes, and
3. accurate methods of maintaining contact with alumni.

(This poster was presented at ADEA, March 2010.)

## A scoping review of periodontal disease and adverse pregnancy outcomes

**Alison MacDougall**, RDH, DipDH  
 alisonmacdougall@hotmail.com

### Objective

Adverse pregnancy outcomes such as pre-term birth and/or low birth weight continue to be a significant cause of infant morbidity and mortality. The objective of this poster presentation is to examine the existing science on the relationship between periodontal disease and adverse pregnancy outcomes.

### Methods

A search was conducted in the Cochrane, Medline, CINAHL, EMBASE, PUBMED and BioMed Central online databases. Of the 72 papers identified, 9 systematic reviews and meta-analyses met the inclusion criteria for our scoping review. Narrative synthesis was performed.

### Results

Some studies have reported an association between peri-

odontal disease and adverse pregnancy outcomes; however, association does not imply causation. Methodological inconsistencies such as varying definitions of periodontal disease and adverse pregnancy outcomes, small sample size, inadequate control of risk factors and confounders and unclear study designs strongly influence the validity of the findings and call some into question.

### Outcomes

To date there is no evidence to support providing periodontal treatment during pregnancy to reduce the occurrence of an adverse pregnancy outcome. Preventive dental hygiene care during pregnancy has been shown to be safe and effective in reducing periodontal symptoms in pregnant clients. Dental hygienists should encourage their pregnant clients to seek non surgical periodontal treatment, especially during the second trimester. We recommend that larger, more methodologically rigorous studies using universally accepted definitions be undertaken to explore further the nature of any relationships between periodontal disease and adverse pregnancy outcomes.





**ABSTRACTS** – This section presents the Abstracts of the speakers' presentations of the plenary sessions on 10 June 2011.

### **Keynote address**

**Terry Mitchell**, BSc, DipDH, MEd, CGN  
Terry.Mitchell@Dal.ca

Success in the dental hygiene profession has been achieved through the work of small groups of dedicated and persistent dental hygienists. We are now in the process of being recognized as a bone fide, stand alone health profession. The opening address will highlight accomplishments to date, and how we use these successes to further advance our profession.

### **Comparing the oral health findings from CMHS to those of Inuit Oral Health Survey**

**Lisette Dufour**, RDH  
lisette.dufour@hc-sc.gc.ca

The Canadian Health Measures Survey (CHMS) led by Statistics Canada with the participation of Health Canada and the Department of National Defence has gathered useful oral health data from Canadians aged 6 to 79. The OCDO was approached by the First nations and Inuit organizations to conduct an oral health survey similar to the CHMS. Two separate surveys were using the same measurement tools as those of the CHMS. This presentation will compare the oral health issues of Canadians in general with those of Canadian aboriginal populations.

### **Facing abuse of older adults**

**Alison Leaney, April Struthers, Fran Richardson, and Christina Wolf**

This panel will talk about indicators, communications with your client, and how to liaise with other professionals; to be safe, effective, and ethical in working with this complex topic. The session includes an interactive segment to help illustrate how to deal with suspected abuse/neglect.

### **Motivational interviewing: Improving patient compliance**

**Wendy Bebey**, RDH, BS  
bebey.w@pg.com

Motivational interviewing is a client centred approach, enhancing intrinsic motivation to change by exploring

and resolving ambivalence. Originally developed in the field of addiction therapy, motivational interviewing has been increasingly applied in the health professions with a growing body of successful outcomes for tobacco cessation and diabetic control which can significantly impact oral health.

### **Shedding new light on oral cancer**

**Jo-Anne Jones**, RDH  
jjones@rdhconnection.com

There has never been a greater sense of urgency to adhere to close examination of the oral cavity for early discovery of mucosal abnormalities. Oral cancer ranks thirteen among commonly diagnosed cancers in Canada. Oral cancer typically is discovered in late stages with a 5-year survival rate of 30%. The extraoral and intraoral examinations will be reviewed as well as an introduction to an innovative device recognized by the World Health Organization to address this global health concern.

### **Dentin hypersensitivity: Effective clinical management**

**Dr. Brian N. Feldman**, DDS, BA  
brian\_feldman@colpal.com

The increase in enamel erosion, patient aging, gingival recession, and periodontal disease have resulted in an increased occurrence of dentin hypersensitivity. Correct diagnosis and effective treatment are critical to relieving a problem that can seriously affect a patient's quality of life. This lecture will provide an overview of the biology, current treatment, and new approaches to managing this common patient problem.

### **The long and winding road to Private Practice**

**Ann Wright**, RDH, MBA  
awright@cdha.ca

This informative session will take you through ten top things you need to know before setting up a private practice. We will review the important practical and personal factors that impact the success of your practice with numerous anecdotes on real life challenges that dental hygienists face. This session will provide practical roadmaps for making your dream a reality.

**Annual meeting of members of the  
Canadian Dental Hygienists Association (CDHA)**

**L'assemblée annuelle des membres de l'association  
canadienne des hygiénistes dentaires (ACHD)**

## Notice

NOTICE is hereby given that the annual meeting of the members of CDHA will be held at the The Fairmont Winnipeg, 2 Lombard Place, Winnipeg, Manitoba, R3B 0Y3, on Saturday, the 1<sup>st</sup> day of October 2011 at the hour of 12 noon to:

1. receive the financial statement of the corporation for the fiscal period ended 30 April 2011, and the report of the auditors thereon;
2. appoint auditors; and
3. transact such further and other business as may properly brought before the meeting or any adjournment thereof.

Copies of the financial statements and the auditor's report are available for review at the corporation's head office during normal business hours.

Dated the 1<sup>st</sup> day of August 2011  
By the order of the Board of Directors



*Executive Director*

## Avis

AVIS est par les présentes donné que l'assemblée annuelle des membres de L'ACHD aura lieu The Fairmont Winnipeg, 2 Lombard Place, Winnipeg, Manitoba, R3B 0Y3, le samedi 1 octobre 2011, à midi. En voici l'ordre du jour:

1. recevoir l'état financier de l'Association pour l'exercice ayant pris fin le 30 avril 2011 et le rapport des vérificateurs à ce sujet;
2. nommer les vérificateurs;
3. régler toute autre question dûment soulevée à l'assemblée annuelle ou à toute nouvelle assemblée convoquée en cas d'ajournement de l'assemblée annuelle.

Des exemplaires des états financiers et du rapport du vérificateur peuvent être examinés au siège social de l'Association pendant les heures d'affaires ordinaires.

Fait le 1 août 2011  
Par décret du conseil d'administration



*Directrice générale*

## Proxy

The undersigned hereby appoints Arlynn Brodie, or failing her, Palmer Nelson, or instead of the foregoing\*

as proxyholder of the undersigned with full power of substitution to attend and vote at the Annual General Meeting of the members of the Canadian Dental Hygienists Association on 1 October 2011 and at any adjournment thereof (each a "Meeting") with the same powers as if the undersigned were personally present. This proxy revokes any and all previous proxies executed by the member in respect of the relevant Meeting.

\_\_\_\_\_  
Signature of Voting Member

\_\_\_\_\_  
Date (please print)

\_\_\_\_\_  
Voting Members name (please print)

\* A Voting Member has the right to appoint a person (who must be another Voting Member of the Canadian Dental Hygienists Association).

To be valid this proxy must be signed by the Voting Member; and received at the Canadian Dental Hygienists Association, 96 Centrepointhe Drive, Ottawa, Ontario, K2G 6B1 (by mail or facsimile to 613-224-7283) not later than 9:00 a.m. ET 27 September 2011; and shall be valid only for the meeting for which it was specifically given or for any adjournment thereof.

## Formulaire de procuration

La personne soussignée nomme par la présente Arlynn Brodie, ou à défaut, Palmer Nelson, ou à la place des personnes susmentionnées\*

comme fondée ou fondé de pouvoir avec pleins pouvoirs de substitution pour assister et voter en son nom à l'assemblée générale annuelle des membres de l'Association canadienne des hygiénistes dentaires, le 1 octobre 2011, ainsi qu'à toute reprise en cas d'ajournement de cette assemblée (chacune constituant une « réunion »), avec les mêmes pouvoirs que si la personne soussignée y assistait personnellement. La présente procuration révoque toute autre procuration donnée antérieurement par le membre relativement à l'assemblée en question.

\_\_\_\_\_  
Signature du membre votant

\_\_\_\_\_  
Date (en lettres moulées)

\_\_\_\_\_  
Nom du membre votant (en lettres moulées)

\* Tout membre votant a le droit de désigner une personne (qui doit être un autre membre votant de l'Association canadienne des hygiénistes dentaires).

Pour être valide, cette procuration doit être signée par le membre votant; elle doit être reçue aux bureaux de l'Association canadienne des hygiénistes dentaires, 96 Centrepointhe Drive, Ottawa, Ontario, K2G 6B1 (par la poste ou par télécopieur, au 613-224-7283) le 27 septembre 2011 à 9 h HE, au plus tard; en outre, elle n'est valide que pour la réunion pour laquelle elle a été expressément donnée ou pour toute reprise en cas d'ajournement.

# Auditory sensory impairments and the impact on oral healthcare: A review of the literature

Shannon K. Waldron, RDH, DipDH, BDSc(DH)

## ABSTRACT

**Introduction:** The goal of this literature review was to investigate current literature related to oral healthcare for individuals with auditory sensory impairments. **Methods:** A systematic search was completed on EBSCOhost, CINAHL with full text, MEDLINE with full text, and PubMed. The following search terms were used: auditory sensory impairment and dental care, hearing impairment and dental hygiene treatment, hearing impairment and dental care, hearing loss and dental care, hearing loss and oral health, hearing aids and ultrasonic scalers, and ultrasonic scalers. Selection criteria for the literature review included articles that: discussed original research or a literature review; were written in English and dated 1995 or later; and were accessible in full text through the databases or the UBC Library. Articles were also hand searched to eliminate irrelevant articles. Bibliographies of the selected articles were also scanned for relevant articles to include in the literature review. Additional resources were utilized to assist with background knowledge. **Discussion:** This literature review has exposed some gaps in the literature. Ample literature on meeting the needs of clients who are medically compromised was found. However, there is a lack of research that applies directly to auditory impairments and oral healthcare. **Conclusion:** This paper explores the specific needs of individuals with auditory sensory impairments and discusses the impact that this condition has on their oral health.

## RÉSUMÉ

**Introduction :** Cette revue a pour objet d'examiner la littérature actuelle portant sur les soins de santé buccale des personnes qui ont un affaiblissement sensoriel de l'audition. **Méthodes :** L'on a fait une recherche dans les bases de données EBSCOhost, CINAHL avec texte entier, MEDLINE avec texte entier et PubMed. Les termes suivants ont été utilisés : affaiblissement sensoriel de l'audition et soins dentaires, malentendement et traitement d'hygiène dentaire, malentendement et soins dentaires, perte d'audition et soins dentaires, perte d'audition et soins buccaux, appareils auditifs et détartreur ultrasonique, et détarteurs ultrasoniques. Pour la revue de la littérature, les critères de sélection comprenait des articles traitant de la recherche originale ou d'une revue de la littérature, rédigés en anglais et datés de 1995 ou après, et accessibles dans leur texte entier par le biais des bases de données ou de la bibliothèque de l'UBC. La recherche d'articles a aussi été faite par dépouillement des textes pour éliminer les articles hors de propos. Les bibliographies des articles retenus ont aussi été scrutées pour repérer les articles pertinents à inclure dans la revue. On a aussi utilisé d'autres ressources pour repérer les connaissances de base. **Discussion :** Cette revue a fait voir certaines brèches dans la littérature. On a trouvé amplement de littérature pour répondre aux besoins des clients qui sont médicalement compromis. Toutefois, il y a un manque de recherche s'appliquant directement aux déficiences auditives avec soins de santé buccale. **Conclusion :** Cet article explore les besoins spécifiques des personnes qui ont un affaiblissement sensoriel de l'audition et traite de l'impact de cette condition sur leur santé buccale.

**Key words:** oral health, dental care for disabled, healthcare quality, access and evaluation, health services accessibility, auditory diseases, hearing loss, hearing disorders

## INTRODUCTION

In the healthcare environment, oral health professionals are treating an increased population of elderly and medically compromised clients. These clients often present with sensory or motor impairments that have a direct impact on both the treatment needs and care provided. The focus of this paper is to explore the literature related to auditory impairments, and more specifically, to determine the effect that hearing loss can have on oral healthcare. This literature review will describe the demographics and key characteristics of clients with auditory sensory impairments, and then discuss the impact that this condition has on both the client's oral health and overall health. This paper aims to analyze and critique the current literature,

and to explore the implications that this condition has on the dental hygiene process of care.

## Demographics and characteristics

Loss of auditory function is very common in the elderly, and has been reported to have affected 30–40% of individuals 63 years and older, and 41–75% of individuals aged 75 and over.<sup>1–3</sup> Furthermore, it has been reported that the number of children and young adults with hearing loss has increased in correlation with the amount of hazardous noise exposure.<sup>4</sup> Common sounds such as city traffic noise are deemed hazardous when listened to over an 8-hour period; and exposure to loud personal music players, rock concerts, and night clubs can be damaging after only 15

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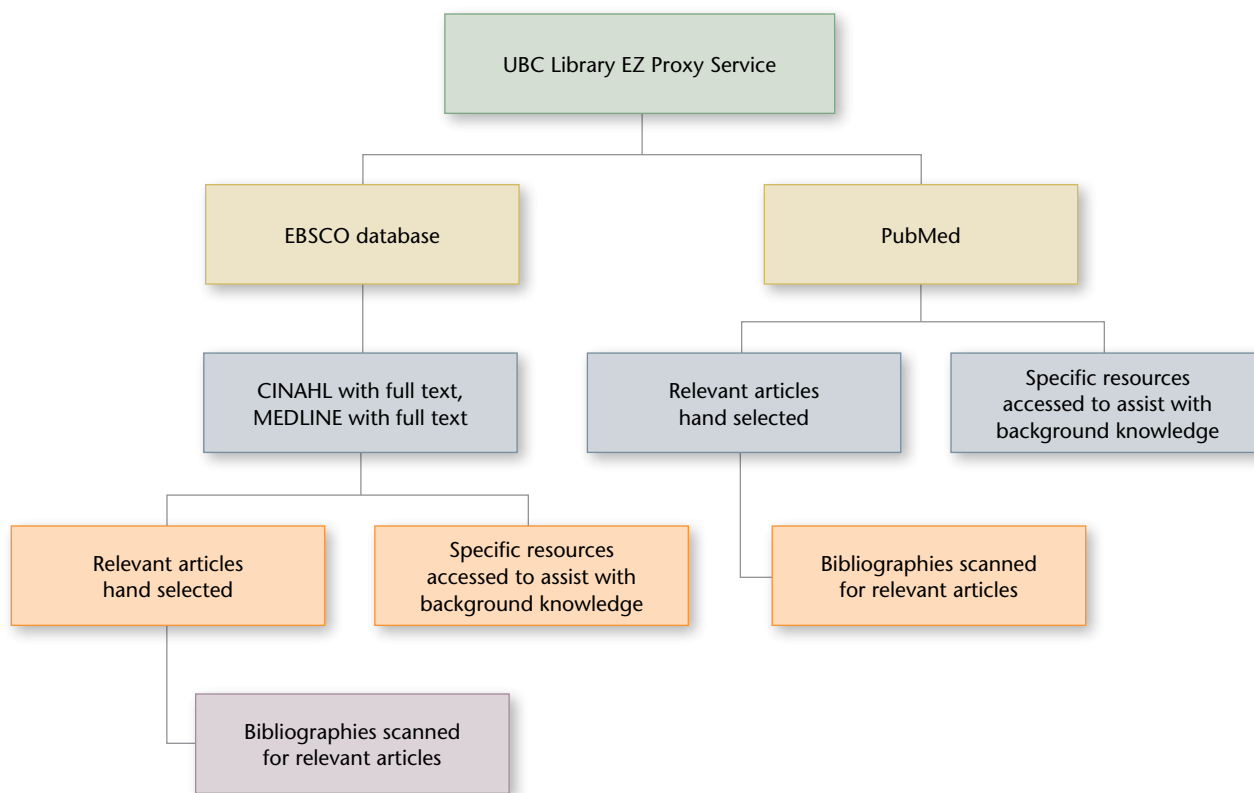


Figure 1. Schematic of literature search.

minutes.<sup>4,5</sup> Hearing impairments can be caused by several types of cochlear dysfunction including damage to the auditory nerve, birth anomalies (which may or may not be related to other conditions), infections and presbycusis.<sup>1</sup> Aminoglycoside antimicrobial agents, chemotherapy agents, loop diuretics, and anti inflammatory agents have also been implicated in hearing loss.<sup>6</sup> Presbycusis, the most common etiology for auditory impairment, is a gradual progressive hearing loss due to age and noise damage.<sup>1,4,6</sup> In some instances this hearing loss is accompanied by a ringing sound in the ears, referred to as tinnitus and it has been suggested that this should be assessed to exclude a systemic infection or disease as the cause.<sup>6,7</sup>

Several systemic diseases have been associated with auditory sensory loss including hyperlipidemia, hypertension, and diabetes mellitus.<sup>6</sup> Smoking and non use of hearing protection have also been identified in the literature as strong risk factors for hearing impairments.

Technological advances in hearing aids have resulted in those that are of minimal size and of better sound quality. These hearing aids were developed to be worn behind the ear, in the ear, in the canal (either partially or completely) or as an earpiece attached to a box worn on the body. Digitally programmable hearing aids can be customized to reduce the amplification of continuous background sounds, allow for telephone conversations, or adjust for quieter environments.<sup>6,8</sup> One product, an intraoral device called the SoundBite hearing system is designed for individuals with single sided deafness, and uses the teeth and

the bone to conduct sound to the ear. Research on the efficacy of this product is still in its infancy and this author was unable to locate any published results for blinded clinical control trials.<sup>9</sup>

A hearing impairment creates a marked disruption in the client's ability to communicate effectively and, as such, has a significant bearing on the client's overall quality of life. This is attributed to reduced social interaction, isolation, a sense of exclusion, depression, low self esteem, and being perceived as having impaired cognitive function.<sup>2,4-5,10</sup> Poor nutrition and a lack of personal hygiene have been implicated as some of the long term effects of reduced communication with friends, family, and health professionals.<sup>2</sup>

## METHODS

A systematic search was completed on EBSCOhost, CINAHL with full text, MEDLINE with full text, and PubMed (Figure 1). The following search terms were used: auditory sensory impairment and dental care, hearing impairment and dental hygiene treatment, hearing impairment and dental care, hearing loss and dental care, hearing loss and oral health, hearing aids and ultrasonic scalers, and ultrasonic scalers. Selection criteria for the literature review included articles which:

- discussed original research or a literature review,
- were written in English and dated 1995 or later, and
- were accessible in full text through the databases or the UBC Library.

**Table 1.** Hearing Handicap Inventory for the Elderly Screening Version (HHIE-S; Ventry & Weinstein, 1983).

		Yes	Sometimes	No
E	1. Does a hearing problem cause you to feel embarrassed when you meet new people?			
E	2. Does a hearing problem cause you to feel frustrated when talking to members of your family?			
S	3. Do you have difficulty hearing when someone speaks in a whisper?			
E	4. Do you feel handicapped by a hearing problem?			
S	5. Does a hearing problem cause you difficulty when visiting friends, relatives, or neighbours?			
S	6. Does a hearing problem cause you to attend religious services less often than you would like?			
E	7. Does a hearing problem cause you arguments with family members?			
S	8. Does a hearing problem cause you difficulty when listening to a TV or radio?			
E	9. Do you feel any difficulty with your hearing limits or hampers you personal or social life?			
S	10. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?			
<b>Score</b> _____				

**Legend:** E=emotional; S=social; Sometimes=2; Yes response=4; No=0

HHIE-S score interpretation		
Raw score	Handicap range	Post hoc prob. of hearing impairment
0–8	No handicap	13%
10–24	Mild-moderate handicap	50%
26–40	Severe handicap	84%

Source: American Speech-Language-Hearing Association. *Guidelines for Audiologic Screening* 1997. Available from [www.asha.org/policy](http://www.asha.org/policy).<sup>18</sup> Reprinted with permission.

The articles were also hand searched to eliminate irrelevant articles. Articles that measured oral health or oral hygiene status in institutions were also excluded. The bibliographies of the selected articles were also scanned for relevant articles to include in the literature review. Additional resources were utilized in order to assist with background knowledge.

## RESULTS

### *Impact on quality of life*

Insufficient communication between an oral health-care provider and a client can lead to poor home care, inadequate postoperative care, and fear and anxiety.<sup>2,11</sup> Oral health professionals must make a concerted effort to identify and reduce the barriers that occur for individuals with an auditory sensory impairment. Efforts to identify a client's needs should begin at the initial assessment phase of care, since in many cases hearing loss can go undiagnosed and even unnoticed by the client.<sup>6,10</sup> Screening forms such as the Hearing Handicap Inventory for the Elderly short form (HHIE-S) have been developed and recommended for use by health professionals<sup>6</sup> (See Table 1). Utilizing these tools to make the appropriate referral is an aspect of interprofessional care that would assist the clients in improving their quality of life and overall health.

### *Communication between oral healthcare providers and hearing impaired clients*

It is imperative to assess the current care being provided by oral health professionals to improve access to oral care for hearing impaired clients. The predominant complaint expressed by clients with sensory impairments and their families is compromised communication, much of which can be alleviated by minor changes in practice.<sup>2,3,10</sup> In a study by Champion and Holt,<sup>10</sup> 62% of children with hearing impairments reported that the dentist had worn a mask while communicating with them, and that their communication was further reduced by excessive background noise.

Many suggestions have been made to improve communication during the provision of oral healthcare for hearing impaired clients (Table 2). Often these can be very simple measures such as ensuring that the client is wearing the hearing aid, and speaking directly to the client without a mask. Maintaining eye contact, keeping hands and objects away from the mouth, and speaking only when the client is looking will afford clients who read lips to compensate for their loss of hearing, the ability to do so.<sup>5,6,10,11</sup> An effort by the operator to adapt speech may also be helpful. Many people with a loss of auditory sensation can pick up lower tones rather than high pitched ones and speaking clearly and slowly during treatment is imperative. Often, vowels sounds can be picked up, but consonants cannot be heard without intentional enunciation.<sup>6</sup>

Clients with hearing impairments experience a heightened use of their other senses and may interpret such visual cues as another person's facial expressions to assess situations. Providing care in a calm relaxed manner in which the operator has an increased awareness of facial expressions will serve to reduce client anxiety and increase client communication.<sup>2,3,10,11</sup> Written communication such as postoperative and oral hygiene instructions can also be very helpful as it allows the client to review the information at home. Marked signage throughout the office clearly identifying separate male and female restrooms will also help decrease stress for the hearing impaired client.<sup>2,3,10,11</sup> Finally, and perhaps most necessarily, background noise should also be reduced. This can be



done by closing windows, turning off music and avoiding conversation during instrumentation.

### **Significance of oral health and the maintenance of teeth on hearing loss**

It has also been suggested that oral health may play a role in the client's ability to hear. Previous studies that found an association between dental health and acuity have hypothesized "the presence of teeth may influence hearing acuity by contributing to the vibratory capacity of the skull, enhancing bone conduction and maintaining the correct vertical dimension of occlusion so that the Eustachian tube and ear canal size, shape, and resonance optimize hearing acuity."<sup>12</sup> It has also been suggested that tooth loss causes a lack of muscle activity of the palate on the auditory tube and therefore plays a role in hearing loss.<sup>4</sup> Although Schell's study<sup>12</sup> was able to quantitatively identify a positive correlation between the number of teeth present and hearing acuity, no rigorous, adequately sized studies to test these hypotheses have been carried out.

It should also be noted that there are some dental considerations for the placement of an intraoral hearing system such as the SoundBite hearing system discussed previously in this paper. A device such as this requires that the abutment teeth are free of caries, periodontal conditions, and endodontic lesions. The role of oral healthcare providers would be to assess and maintain these tissues as well as to monitor for appliance adjustments of the oral device.<sup>9</sup>

### **Ultrasonic safety**

Although methods of improving communication for individuals have been discussed previously in this paper, there are other treatment modifications that should be considered. In addition to reducing background noise, it is prudent to review the safety of the sonic and ultrasonic scalers, and to consider the appropriateness of using these to treat clients with hearing impairments. Previous studies have suggested that the noise emitted from ultrasonic scalers is actually worse for the client than the operator, and that the noise level is still below the limit for risk of hearing loss.<sup>7,13,14</sup>

Further discussion about the effect that ultrasonic scalers have on clients is warranted. Temporary hearing shifts and tinnitus have been reported following ultrasonic scaling; however these results were not significant when compared to the normal population.<sup>13,15</sup> Subsequent studies have had mixed results, and it was later determined that vibration to the ear through the bone has not been sufficiently explored to deem it a hazard. It has been shown that ultrasonic scalers do not to cause any harm to hearing through airborne noise.<sup>6,15,16</sup>

Ultrasound technology is also being used in the research and development of hearing aid devices, and therefore the safety of ultrasonic scaling instruments can be inferred.<sup>17</sup> Excessive background noise from ultrasonic instruments must be considered as well as how this noise affects the client with an auditory sensory impairment. If the client is unable to adjust the hearing aid to account for such excess

**Table 2.** Methods of improving communication for the hearing impaired client.<sup>2,3,5,11</sup>

Avoid wearing masks during conversation
Face client to facilitate lip reading
Treat client in a calm and relaxing manner
Use clear concise sentences
Enunciate consonants
Minimize general conversation and sudden shifts in topics
Reduce background noise
Emphasize facial expressions
Provide written communication
Restrooms should be clearly marked
Learn simple sign language
Confirm that client understands explanations and instructions
Utilize a Typetalk service
Utilize friends, family, or a professional interpreter
Use text phones to communicate
Do not use solely verbal communication to call client from waiting area
Ensure hearing aids are in place and working properly
Speak in low tones
Get the client's attention prior to speaking
Discuss treatment needs in areas that are free of distraction and private
Do not speak to the client as if he or she were a child

noise, then the ultrasonic scaler should be used judiciously. If the client's optimal treatment plan necessitates the use of the ultrasonic, then it is best to discuss the client's preferences.

### **DISCUSSION**

Ample literature on meeting the needs of clients who are medically compromised was found. However, there is a lack of research that applies directly to auditory impairments and oral healthcare. Only one study was located that actually measured the current experiences of oral health clients with auditory impairments. Collaboration of literature focused on hearing impairments in medicine and literature which addressed the oral healthcare needs of individuals with a sensory impairment yielded numerous suggestions for the appropriate oral healthcare of clients with auditory impairments. A limitation of this method is that it runs the risk of making assumptions based on medicine that does not apply to all circumstances in oral healthcare.

A further weakness is that many of the studies were out of date. In particular, studies assessing the safety of ultrasonic scalers were not repeated, and therefore lacked





validity and reliability. Furthermore, no studies that actually assessed the effect of ultrasonic scalers on hearing aids were found, and there was no research that provided evidence related to client's preferences in scaling methods. Another weakness in the literature is that much of the research on the assessments and attitudes of oral health-care providers was actually done in the United States.

## CONCLUSION

This literature review aimed to determine the effect that auditory sensory impairments have on the dental hygiene process of care. The initial database search yielded a limited number of results, and very few articles which specifically addressed auditory sensory impairments within oral healthcare. Despite this, a plethora of suggestions have been compiled from the literature and have been adapted for use with dental hygiene treatment (Table 2). In addition to these suggestions, it has been recommended that health professionals utilize a screening index for hearing impairments, referred to as, "the short form of the Hearing Handicap Inventory for the Elderly (HHIE-S)" (Table 1). Referrals can then be made for an accurate hearing test.<sup>6,18</sup>

This literature review has exposed some gaps in the literature; there is also opportunity for further research to branch into several areas such as measuring the current dental hygiene education curriculum to assess the community experience component that incorporates care for clients with such special needs as sensory impairments. Future directions in research could assess the confidence level of dental hygienists providing oral care to hearing impaired clients as well as the experiences and accessibility of these clients while receiving oral healthcare in Canada.

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# Effects of orthodontic treatment on self confidence: perspective survey by dental hygiene students

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## ABSTRACT

**Background:** Orthodontic therapy not only provides oral benefits to the client physiologically but it also contributes to an improved self confidence. However, compliance to conventional treatment is limited due to complications before, during, and after therapy. The development of Invisalign™ provides an option for clients to minimize possible challenges experienced throughout the process. **Methods:** A literature review was performed to provide information regarding the outcomes of orthodontic treatment. An electronic survey was conducted by dental hygiene students of Regency Dental Hygiene Academy Inc. to support the findings from the literature review. **Results and Discussion:** 61% of students responded. 87% of these students were satisfied with results and 81% indicated an improvement in self confidence upon the completion of treatment. 50% indicated that they were self conscious about their looks during treatment. **Conclusion:** Evaluation of the findings proved there was a consistency in an overall improvement in one's self confidence after orthodontic treatment. The availability of Invisalign™ provides an additional benefit during the treatment process because it is aesthetically more pleasing compared to other orthodontic appliances.

## RÉSUMÉ

**Contexte :** La thérapeutique orthodontique ne fait pas que procurer des bienfaits physiologiques au client; elle contribue à améliorer la confiance en soi. Toutefois, l'observance du traitement conventionnel est limitée, à cause des complications qui surviennent avant, pendant et après la thérapie. Le développement d'Invisalign™ offre aux clients et clientes un choix pour minimiser les possibilités de défi pendant le processus. **Méthodes :** Une revue de la littérature a permis de recueillir de l'information sur les résultats du traitement orthodontique. Les étudiantes en hygiène dentaire de la Regency Dental Hygiene Academy Inc. ont effectué un sondage électronique pour soutenir les résultats de la revue littéraire. **Résultats et discussion :** 61 % des étudiantes ont répondu : 87 % de celles-ci se sont dites satisfaites des résultats et 81 % ont indiqué une amélioration de la confiance en soi après traitement; 50 % ont indiqué que leur apparence les gênait pendant le traitement. **Conclusion :** l'évaluation des résultats fait voir globalement une amélioration cohérente de la confiance en soi après le traitement orthodontique. La disponibilité de l'Invisalign™ procure un avantage additionnel pendant le traitement parce qu'il est esthétiquement plus agréable comparativement aux autres appareils d'orthodontiques.

**Key words:** orthodontics, oral hygiene, psychosocial, self confidence, self esteem, self concept

## BACKGROUND

It is estimated that in Canada and the United States three million teenagers are being treated with braces, and that more can probably benefit from it.<sup>1</sup> A variety of orthodontic treatments are made available for clients to choose from according to their individual needs. Aside from the traditional buccal metal braces, clients also have the option of ceramic braces. The ceramic brackets are made of clear monocrystalline or polycrystalline materials.<sup>2</sup> This translucency provides less visibility of the appliance in the mouth, allowing the client to be less self conscious about its appearance.<sup>2</sup> Another alternative in treatment is lingual braces that have not gained the similar level of popularity in North America as in Europe.<sup>3</sup> A fairly new option offered on the market is clear aligners called Invisalign™. The introduction of Invisalign™ in 1997 was a more aesthetically pleasing technique for orthodontic treatment. These sets of clear aligners are made from detailed impressions of the client's teeth.<sup>4</sup> These aligners fit over the teeth similar to bleaching trays. The invisibility of the material allows

for the appliance to be nearly undetectable.<sup>5</sup> Invisalign™ is not suitable for everyone. Candidacy will be determined upon a thorough assessment completed by the qualified dentist or orthodontist.<sup>2</sup>

Invisalign™ has proven to be a successful alternative to traditional orthodontics. However, many limitations such as lack of measurable control over root movement, a limited amount of intermaxillary correction, a decrease of operator control over the entire treatment, and/ or a high level of client cooperation are necessary for a successful prognosis match.<sup>6</sup> Clients exhibiting a moderate to severe malocclusion such as crowding or spacing over five millimetres, severely rotated teeth over twenty degrees or severely tipped teeth over forty-five degrees, have an increased limitation to root movement which pose limitations to the use of Invisalign™.<sup>7</sup> Intermaxillary corrections require pre-oral facial surgery, therefore lengthening completion time. There are no intermediate steps during treatment for adjustments of clear aligners or establishing a lack of operator control.<sup>6</sup> Adjustments to the

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clear aligners require a new treatment plan and delivery time at the dental office. This can take up to two months, further delaying completion.<sup>7</sup> The cost of treatment of Invisalign™ and traditional orthodontics is comparable; however, the cost of treatment can increase if new clear aligners are required. There are also numerous reports of lost clear aligners due to their non fixed application and clear appearance. Patient compliance to wearing the aligners daily for at least twenty two hours is crucial for treatment success.<sup>6</sup>

The suitability of these alternatives depends on the nature of the client's overall dentition. However, it may be assumed that appearance would play a critical factor when choosing which type of orthodontic appliance to use. Self concept is defined as the beliefs one holds of oneself and the responses from others.<sup>8</sup> Therefore, the client's self concept with conventional braces may cause apprehension to orthodontic treatment. Affirmation of the results of orthodontics has contributed to a client's

overall self concept.<sup>9</sup> Self confidence and self esteem are closely related terms that describe the feeling of trust in one's own worth, abilities, qualities, and judgment.<sup>8</sup> Positive self esteem and self concept has shown to have an improvement on social and interpersonal relationships, along with better adaptation.<sup>10</sup> The de Paula et al. study<sup>11</sup> revealed that adolescents with a higher need of orthodontic treatment displayed a disadvantage in the psychosocial aspect. In Grzywacz's report,<sup>12</sup> participants 12 years of age indicated dentition that is well aligned contributes to the significance of facial appearance. Van der Geld et al.<sup>13</sup> found a correlation between facial attractiveness and self confidence/self esteem.

## METHODS

This research paper was performed by first semester dental hygiene students of Regency Dental Hygiene Academy Inc. located in Toronto, Ontario. The purpose was to investigate the outcomes of orthodontic treatment in respect

**Table 1.** Survey: *Orthodontic treatment and its effects.*

1. How old are you?	8. Orthodontic treatment was: a. Recommended to me by my dentist b. Self motivated because I was concerned about my teeth	a) Before treatment:  b) After treatment:
2. Gender: a. Female b. Male		
3. If you've been recommended for orthodontic treatment, did you proceed with the treatment? a. Yes b. No	9. During treatment, it affected by: a. Limiting my eating habits b. Making oral hygiene care difficult c. Being self conscious about the way I look and limited my social life d. Other—please specify	14. I had my hesitations to orthodontic treatment because: a. Fear of pain b. The duration of treatment c. I wouldn't be able to eat the foods I wanted to d. The way I would look with the appliance e. Other—please specify
4. If "yes", please check the boxes that apply. If "no", please proceed to Question 14. a. Braces b. Invisalign c. Both—braces and Invisalign (due to relapse) d. Other—please specify	10. Treatment caused: a. Staining of teeth b. Gingival recession c. Sensitivity d. Other—please specify	15. Do you regret your decision? a. Yes b. No
5. How old were you when you had orthodontic therapy?	11. Were you satisfied with the results? a. Yes b. No	16. May we contact you if we require further information? If "yes", please type below your full name and e-mail contact.
6. How long was the duration of your orthodontic treatment?	12. Did you relapse after orthodontic treatment? If "yes", what did you do to correct this?	
7. What was your facial profile prior to treatment that required orthodontic therapy? a. Upper and/or lower crowding b. Over-bite c. Open-bite d. Over-jet e. Under-bite f. Cross-bite g. Other—please specify	13. Your level of confidence/self esteem before and after treatment, based on a scale of 1–5: 1 – low confidence/self esteem 2 – moderate confidence/self esteem 3 – N/A (This wasn't an issue for me regarding treatment) 4 – confident 5 – very high confidence/self esteem	

to self esteem. The literature review was executed using PubMed database in search of articles with relevance to orthodontic treatment and self esteem. Other topics researched involved Invisalign™, psychosocial factors, and oral hygiene. Access to majority of the online articles was limited; the University of Toronto Dental Library was facilitated for retrieval of the journals in print. The central component being assessed was the self confidence aspect around orthodontic treatment.

A 16-question survey (Table 1) was created and distributed to all students at Regency Dental Hygiene Academy. A total of 144 e-mails were sent out, with a link to the website where the survey was formatted using Survey Methods Inc.<sup>14</sup> The survey commenced on 4 June 2010 and terminated on 16 July 2010. By participating, implied consent was authorized to publish information gathered while maintaining anonymity of the respondents. The survey consisted of general questions concerning the participant's age, gender, and whether or not the participant was recommended for orthodontic treatment. It then branched into questions concerning those who previously had or are undergoing orthodontic treatment. Questions on method of orthodontic treatment; age the participant received orthodontic treatment; duration; facial profile prior to treatment; motivation; effects during treatment; effects after treatment; satisfaction with the results of orthodontic treatment; and self esteem levels pre- and post-treatment. Also, those who were recommended orthodontic treatment but did not follow through were asked their reasons, and if they regretted their decision. The responses were evaluated to correlate the factors linking the client's decisions regarding orthodontics and self confidence. Analysis was performed based on the response percentages received to investigate the impact of orthodontic treatment on self confidence levels before and after treatment or recommendation.

## RESULTS

Out of the 144 surveys circulated, 61% of the students responded. Of the 61%, 72% of students had undergone orthodontic treatment, with a female to male ratio of 19:1. 17% indicated they had had orthodontic treatment at the age of 12 and under; 42% had received treatment between ages 13 and 17; and 41% had been treated at ages 18 and over. The duration of treatment for a total of 2 years or less was 69% and 31% extended over 2 years. 80% had traditional braces, 16% used Invisalign™, and 3% indicated other. One respondent experienced both traditional braces and Invisalign™ due to relapse. Many respondents chose more than one option regarding the complications during treatment; nearly 65% responded that their eating habits were limited, 63% found their appliances made oral hygiene care difficult, and 50% felt self conscious about the way they looked during treatment. 19% indicated other effects during treatment (Figure 1). The post treatment responses revealed approximately 27% experienced staining, 29% had gingival recession, 31% had sensitivity, and 52% indicated "other" (Figure 2). Reservations and hesitations drew the following; about 32% had fear of pain, 56% disinclined to duration of treatment, 20%

Figure 1. Effects during treatment (%).

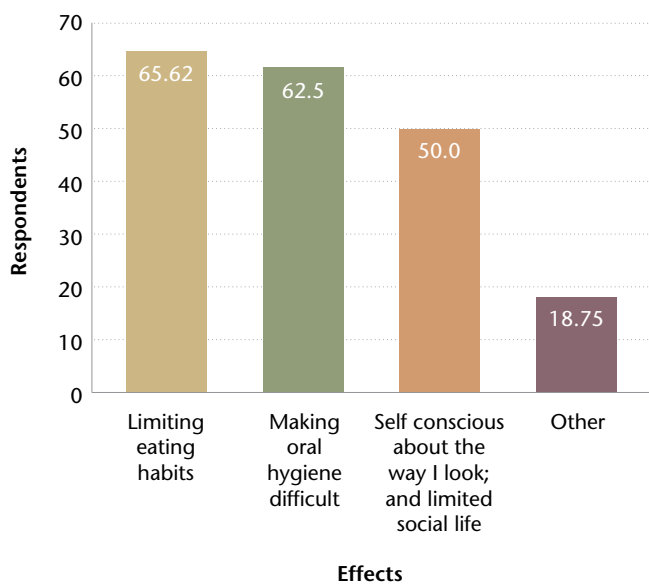


Figure 2. Effects after orthodontic treatment (%).

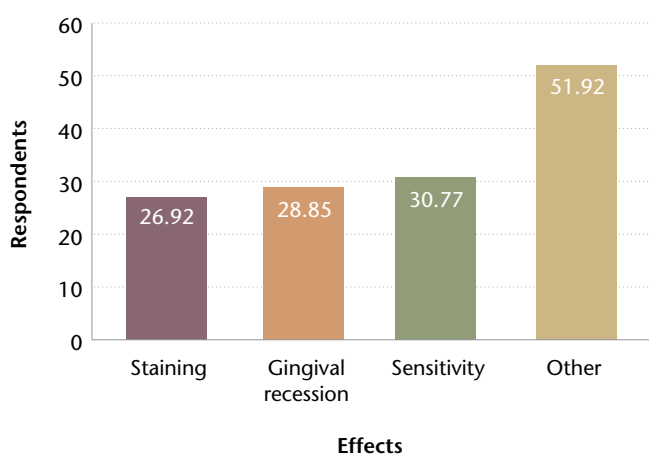
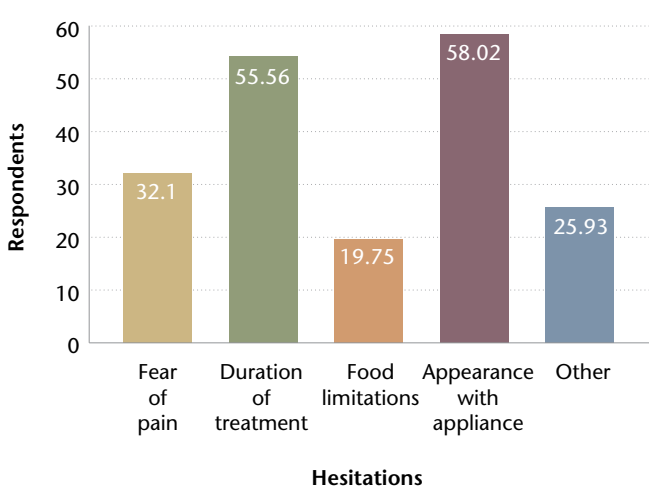
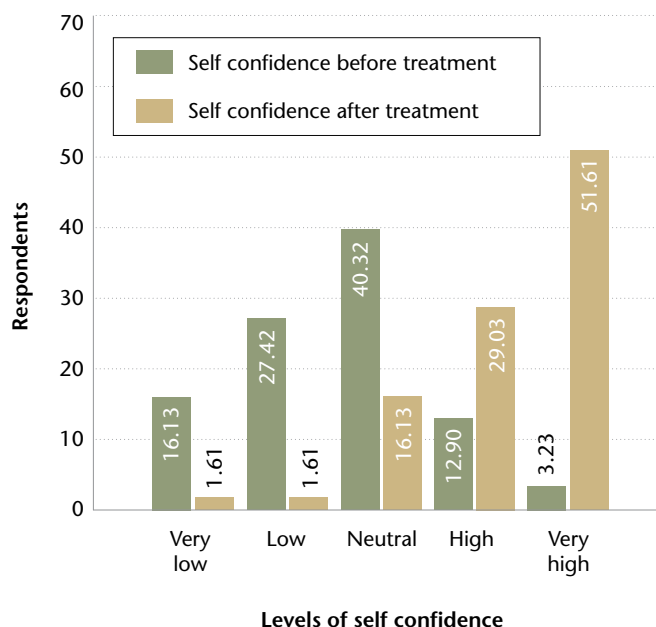


Figure 3. Participants' hesitations towards orthodontic treatment (%).





**Figure 4.** Comparison of self confidence before and after orthodontic treatment (%).



queried food limitations, 58% were concerned with the appearance, and 26% specified “other” (Figure 3). Self confidence before and after treatment was assessed using a 5-point scale. Approximately 16% indicated very low self confidence before treatment and 52% indicated very high self confidence after treatment (Figure 4). 87% of total respondents were satisfied with the results of their orthodontic treatment.

## DISCUSSION

### Before orthodontic treatment

First impressions formed within seconds of meeting somebody new is common, and teeth can play a determining factor. Malocclusion can oftentimes contribute to the way one is perceived by others, and it may also add self perception because it may have a negative effect in terms of appearance. Rosenberg<sup>15</sup> reports that 80% of clients generally seek the service of an orthodontist for esthetic purposes as opposed to health or function. Primary expectations of clients from orthodontics are improvements in their self image, their appearance to others, and social functioning.<sup>16–19</sup> According to the results of the survey, approximately 44% specified a level of self confidence before orthodontics as below neutral.<sup>20</sup> Persons satisfied with their own physical appearance are perceived to be more outgoing and socially successful, based on research of body image.<sup>19</sup>

Orthodontics is an option for people who are not born with naturally aligned teeth. However, based on our survey, many responses revealed hesitations to treatment. Chief concerns of candidates were: appearance during treatment (58%) and the duration of treatment (56%). 26% indicated “other” as their response which included the cost of treatment, and surgical requirements.

### During orthodontic treatment

Serogl et al.<sup>21</sup> reported a survey on clients with fixed and removable orthodontic treatment to compare problems encountered during their treatment. The results show that during the first seven days of orthodontic treatments, difficulty with speech, swallowing, social discomfort, and pain were the most frequent complaints.<sup>21</sup> The study demonstrated that on the first day of appliance insertion, 81.9% complained of difficulty with speech, 61.4% lacked confidence in public, 54.1% found swallowing difficult, and 10.8% had difficulty breathing.<sup>21</sup> However, there was a significant decrease of complaints regarding the discomfort during the short term period of seven days.<sup>21</sup>

A client's attitude before treatment has a significant role in the outcome of the dental treatment. Clients with high self esteem and a higher self efficacy are less concerned with the anxiety associated with orthodontic treatment. Our survey supported this finding because approximately 40% of respondents indicated a neutral level of self confidence going into orthodontic treatment. Therefore, a client's attitude before and during treatment can provide a good indication of how well they can accommodate functional discomfort and social judgment.

After orthodontic treatment begins, adjustments are periodically required for successful results; and it may involve a prolonged period of treatment.<sup>22</sup> An increase in the time needed to obtain satisfactory results would imply that a greater compliance is demanded from the client. Serogl et al.<sup>21</sup> identified that clients presenting with higher self confidence, having the least concern in their appearance, were more compliant and had fewer complaints throughout treatment.<sup>21</sup> Client counselling prior to the start of therapy and during therapy will help clients understand the treatment process and reinforce the importance of compliance in order to achieve expectations.

Our own survey analysis showed that 50% were self conscious about their looks during treatment. Other complications during treatment were: limited eating habits (66%); difficulty in oral hygiene care (63%), and other factors (19%). Eating and oral hygiene measures were challenging because the majority of the respondents wore fixed appliances, such as braces. The use of fixed appliances impeded clients' ability to maintain regular diet and hygiene practices. Some of the other factors identified included pain, anxiety, and interference with social functions due to discomfort.

### After orthodontic treatment

The overall effectiveness of orthodontic treatment, be it a removable or fixed appliance, varies on the severity of individual client's oral concerns. The goal is to achieve optimal aligned teeth following treatment, but some studies show measurements that suggest the quality of outcome for removable appliances is lower than that of fixed appliances.<sup>23,24</sup> Not only were there the obvious results of improved teeth alignment, but also the use of a removable appliance for orthodontic treatment posed an advantage in maintaining personal oral hygiene throughout therapy.<sup>22</sup> Aside from the dental and facial benefits of treatment, some studies demonstrated a client response of improved



self confidence after therapy.<sup>9,25</sup> Hunt et al.<sup>9</sup> discussed a questionnaire which revealed that general practitioners and orthodontists in Northern Ireland agreed that the top three psychosocial benefits of orthodontic treatment were to improve self esteem, to improve physical attractiveness, and to improve self confidence.

Once a client has endured the entire treatment process, and has achieved an aesthetically ideal dental-facial appearance, any form of hesitation that was present before has been replaced with increased self confidence. This would enable the client to be less self conscious and be given the opportunity to socialize with comfort. The results of our survey showed there was a difference between self confidence before and after treatment, with 44% having lower confidence and 81% having higher confidence. However, Williams et al.<sup>25</sup> found that clients with initial motivations for an improved social life were less likely to report that their needs were met following treatment.<sup>25</sup> This is suggestive of a greater personality component of an individual to create interpersonal relationships. An estimated 87% of the participants were satisfied with the results, and 13% were not—possibly due to the effects treatment had on their dentition and soft tissues after orthodontics. Almost 27% reported presence of staining, 29% had gingival recession and 31% had teeth hypersensitivity which may be due to the type of fixed appliance and impaired hygiene practices. 52% indicated other factors which involved the presence of caries, irritation/pain, temporomandibular joint complications, hypertrophy, and the chief complaint being demineralization.

Some researchers did not mention self esteem as a critical factor in orthodontic treatment, but there are several studies which highlight the significance of change in one's self esteem undergoing therapy, and how that would affect one's psychosocial development.<sup>9,25</sup>

### **Invisalign™**

Studies have proved that self esteem and confidence can be influenced negatively during treatment of traditional orthodontic braces.<sup>21</sup> The client becomes more self aware when smiling or speaking, which leads to decrease in self confidence when it comes to carrying out daily activities.<sup>21</sup>

According to the survey, 58% of respondents indicated self consciousness of their appearance as a factor affecting their decision to participate in orthodontic treatment. Invisalign™ addresses this concern with aligners of a clear appearance that may be a motivating factor and an advantage to client compliance throughout therapy.

Williams et al. study<sup>25</sup> revealed that a significant portion of clients undergoing treatment were initially self conscious about their facial appearance. During treatment, approximately 35% felt self conscious about their fixed appliance.<sup>25</sup> In comparison to our 61% response rate, 50% were self conscious during the course of orthodontics.

The clear profile of such aligners makes it nearly undetectable. It may be a solution to prevent anxiety of one's facial appearance during the course of orthodontic treatment. Conventional braces are bulky with obvious metal tracks and brackets rendering them uncomfortable during mastication, speech, and smiling. The material of

braces can cause damage to the oral mucosa and leave yellow stains around the site of the tracks.<sup>26</sup> With the use of Invisalign™, the stains and oral damage can be avoided; the aligners can be removed before meals and to allow for easier achievement of better oral hygiene care.<sup>27</sup> This is also supported by Miethke and Vogt's<sup>28</sup> evaluation in comparing clients with traditional orthodontic appliance versus Invisalign™ to reveal a lower plaque score with Invisalign™. However, in examining periodontal health of both groups, no significant difference was noted.<sup>28</sup> Very limited evidence was available of further evidence on treatment effects regarding Invisalign™ as indicated in Lagraverre and Flores-Mir's systematic review.<sup>29</sup> This type of orthodontic appliance is an optimal choice for clients who have the tendency to be self aware about the appearance of their teeth. It meets the client's expectations by enabling the achievement of aligned teeth without the uncomfortable social and physical circumstances during the therapy process.

As a retrospective study, recall and accuracy of personal feelings during orthodontic treatment by the respondents may be limited because of the amount of time that has passed. As well, majority of respondents indicated orthodontic treatment was done after the age of 12 years. Further research could be conducted to assess whether the development of self confidence is affected by orthodontic treatment or by the age of psychological maturation. Our survey was completed by dental hygiene students, and their responses may reflect a greater sensitivity to oral appearance and advanced knowledge of orthodontic treatment than that of the general population. Therefore, a study that surveys a general population may be more representative of the psychological effects related to different types of orthodontic appliances used during treatment. It is recommended that further studies be conducted on the relationship between Invisalign™ or similar orthodontic appliances and their effects on self confidence. As well, an early evaluation for the need of orthodontic treatment may play a significant role in not only preventing abnormalities in dental development, but to build a strong foundation for self confidence at the earliest age possible.

### **CONCLUSION**

The evolution of orthodontic treatment over the years has created a wide selection of different techniques giving clients the option to choose any method of therapy. This addresses their individual needs. The availability of orthodontics has enabled for the achievement of ideal smiles and contributed to an overall improvement in one's self confidence and perception. With different techniques, there are advantages and disadvantages involving its effectiveness, comfort and maintenance of the appliance as well as personal oral hygiene. Self motivation related to one's determination to obtain optimal results, function to remedy client compliance during orthodontic management. Our study supports that Invisalign™ and other clear aligners would contribute to better outcomes as these are aesthetically more appealing. Findings of our survey conclude that there is an increase in self confidence after orthodontic therapy, achieving client satisfaction.





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This section features a few titles of the latest published research in oral health, the authors of the published research, and the journals of publication. The search term "oral healthcare" was used to find titles through the US National Library of Medicine's database, PubMed.

The work by researchers in the field of oral health is critical to the practice of the profession, and to client care. Please visit <http://www.ncbi.nlm.nih.gov/pubmed/> for the entire articles, or access these articles through your university libraries.

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▲ Procession of presidents at the Opening Ceremony.

## **"Anchors Away" to Nova Scotia** Highlights of the CDHA national conference

Over 240 dental hygienists attended the CDHA biennial conference hosted at the historic Lord Nelson Hotel in Halifax, NS. The Educators Workshop, on Thursday afternoon, was a forum for topics chosen to interest the CDHA Educator community. CDHA's welcome reception followed in the evening in the Regency Ballroom with the exhibitors at hand. Dalhousie University hosted a walking tour of the Faculty of Dentistry and a reception at 5:00 p.m. The university's close proximity to the conference venue made this event a popular side trip for conference attendees.

Friday morning was the official opening of the conference. A procession of CDHA Board Directors and provincial presidents were piped in by the 33<sup>rd</sup> Halifax Pipe and Drum band. A video timeline of CDHA past presidents and milestones projected on two large screens; we were pleased to honour nine past presidents who were in attendance. Terry Mitchell, of Dalhousie University Faculty of Dentistry, delivered the keynote address. Complete with props and a healthy dose of humour, Terry reminded dental hygienists how far we have come professionally in our chosen profession. Friday afternoon consisted of six plenary sessions, with lunch and breaks to network and meet exhibitors.

The key social event was the *Down East Kitchen Party* at Murphy's Restaurant on the Halifax waterfront. Dental hygienists were harbour-hoppered to and from the restaurant. Delegates were entertained by Murphy's dancing lobster and, the finer points on dining etiquette when eating lobsters; later in the evening guests danced to the beat of a Céilidh 3-piece band, generously sponsored by the College of Dental Hygiene of Nova Scotia. No one seemed to notice the lack of male dance partners.

Saturday was an early day with two sessions at breakfast. The CDHA Board of Directors presented a session on Ownership Linkage. The prize for getting up early and attending the session was a draw for registration to the next CDHA Conference. After that, the conference reorganized into two concurrent sessions of the scientific programme.

Cathy Jones from "This hour has 22 minutes" entertained the audience with her east-coast anecdotes during a sit-down lunch. Many dental hygienists were anxious to meet her and she generously posed for photos with anyone who asked.

Afternoon sessions ended at 4:30 p.m. followed by the Closing Ceremony. This included a photo montage of the conference attendees. The president elect, Arlynn Brodie, formally brought the conference to a close, and announced that we "shift tack downstream" to Toronto for the 2013 conference.



▲ Terry delivers the keynote address.



▲ Cathy Jones at the conference.

▼ Happy on board the Harbour Hopper.



▼ Lobster etiquette.



▼ 33<sup>rd</sup> Pipe and Drum band.





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### Dental caries in indigenous communities

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**News release:** [http://www.cps.ca/English/Media/  
NewsReleases/2011/ToothDecay.htm](http://www.cps.ca/English/Media/NewsReleases/2011/ToothDecay.htm)

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## The Role of Health Professionals in Tobacco Cessation

### POSITION

There is a role for every Canadian health professional in tobacco-use cessation.<sup>1</sup> Tobacco use<sup>2</sup> inflicts a heavy burden on Canadians' health and on the Canadian health-care system, and health professionals can advocate effectively for tobacco-use cessation at the clinical and public health levels.

#### As providers of client- and patient-centred services, health professionals are involved in tobacco cessation by:

- assessing and documenting all forms of tobacco use, willingness to quit and risk of exposure to second-hand smoke;
- discussing with clients and patients the negative health effects of tobacco use and exposure to second-hand smoke, and the health and other benefits (e.g., financial) of becoming tobacco free;
- offering to help, and helping, tobacco users quit;
- offering a variety of tobacco-cessation strategies (e.g., counselling, behavioural therapy, self-help materials, pharmacotherapy) as appropriate to their knowledge, skills and tools;
- providing strategies for non-smokers to help them reduce their exposure to second-hand smoke;
- being knowledgeable about and providing referrals to community-based initiatives and resources;
- recognizing that relapse occurs frequently, and conducting follow-up assessment and intervention;
- tailoring interventions to the needs of specific populations (e.g., age, gender, ethnicity, diagnosis, socio-economic status); and
- using a collaborative, multidisciplinary approach.

#### As educators and researchers, health professionals are involved in tobacco cessation by:

- including education on tobacco-cessation strategies and strategies for resisting tobacco use in basic education programs for health professionals;

- providing professional development programs for health professionals on tobacco cessation;
- conducting research to encourage and improve health professionals' knowledge and provision of tobacco cessation; and
- communicating research evidence about tobacco-cessation strategies.

#### As administrators of health-care organizations, health professionals are involved in tobacco cessation by:

- offering training on tobacco cessation as part of employee orientation;
- providing access to professional education on tobacco cessation for employees;
- enforcing applicable bans on tobacco wherever health professionals are employed (e.g., health-care facilities, private homes); and
- ensuring that tobacco-cessation programs and tobacco-free workplaces are included in accreditation standards.

#### As public health advocates, health professionals are involved in tobacco cessation by:

- increasing public awareness that health professionals can help people remain tobacco free or stop using tobacco; and
- advocating for federal, provincial and territorial governments' investment in comprehensive tobacco control that includes programs, legislation and policies to prevent the uptake of tobacco and reduce tobacco use (e.g., bans on tobacco advertising). Programs must focus on health promotion and include community-based initiatives.

1. For detailed recommendations and guidelines for tobacco treatment related to health professionals, see Canadian Action Network for the Advancement, Dissemination and Adoption of Practice-informed Tobacco Treatment, (2008); Registered Nurses' Association of Ontario, (2007); and Canadian Dental Hygienists Association, (2004).
2. For the purpose of this position statement, tobacco includes products that can be inhaled, sniffed, sucked or chewed (e.g., flavoured cigarillos, kreteks, chewing tobacco, moist snuff, betel or qat, hookah or shisha, bidis, cigars and pipes).

\* The entire position statement with references is available bilingually:

English: [http://www.cdha.ca/pdfs/Joint\\_Position\\_Statement\\_Tobacco\\_Cessation\\_2011.pdf](http://www.cdha.ca/pdfs/Joint_Position_Statement_Tobacco_Cessation_2011.pdf)

French: [http://www.cdha.ca/pdfs/Joint\\_Position\\_Statement\\_Tobacco\\_Cessation\\_2011\\_FR.pdf](http://www.cdha.ca/pdfs/Joint_Position_Statement_Tobacco_Cessation_2011_FR.pdf)

# CDHA Community Calendar

Plan ahead. Participate in the events posted on this page. Or mark your calendar.

2011

## UPCOMING EVENTS/ÉVÉNEMENTS À VENIR (Events listed may be subject to change.)

	Online event	July 2011 launch	On demand	COCHRANE Series (en français)	
	Online event	August 2011 launch	On demand	Elder Abuse Series (en français)	
	Onsite event	1 October 2011	The Fairmont Winnipeg, Winnipeg, MB	CDHA Annual General Meeting and Professional Development Workshop	
	Online event	26 October 2011	Live Webinar	Sugar and its impact on overall systemic health and oral	
	Online event	November 2011	Live Webinar	Elder Abuse Series (3 <sup>rd</sup> in the series of three)	
	Online event	To be announced	Live Webinar	Shedding light on oral cancer	

Keep checking [www.cdha.ca](http://www.cdha.ca) under **Webinars & Workshops** for dates and times.

### Career opportunity – Canadian National Institute of Health Inc., Ottawa

Position: Teaching faculty. Term: Full and part time. Application deadline: On going. Description: CNIH is seeking dental hygiene (DH) faculty members who have excellent communication skills, enjoy working in a team environment and are committed to life long learning. Responsibilities include curriculum development, implementation and evaluation in theory and clinical courses. Qualifications: Current registration with the College of Dental Hygienists of Ontario; Bachelor degree in DH and/or Science and/or Education; Minimum of 5 years experience in dental hygiene; Minimum of 2 years experience in DH education. Contact: James Keslassy, President, 2650 Queensview Drive, Suite 160, Ottawa, Ontario, K2B 8H6, Tel: 613.726.2644; Fax: 613.726.3366; E-mail: [jkeslassy@cni.ca](mailto:jkeslassy@cni.ca)

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#### About the cover

The front covers of the journal in 2011 will feature the visual theme *Advocacy efforts of individual dental hygienists in our communities*. CJDH lauds their efforts and those of other dental hygienists who contribute so much to community.

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Laine Lowe and Dominique Berard have been working to improve access to dental care for low income individuals of North Okanagan region, British Columbia, since 2002. Advocacy started as a small *Dental Access program* developed by Laine with community partners. Dominique was the first volunteer dental hygienist providing assessments and referrals to local dentists for treatment. The volunteer dental hygienist base expanded to free periodontal treatment at a local dental office for clients seen in the program. The program had to close in 2009 due to increased demand for services and the inability keep up with the need. Advocacy did not stop there as the Dental Access Steering Committee will be opening a low cost dental clinic in Vernon after four years and countless hours of volunteer time. Programs include a first dental check up at age one, sealant clinics for kids, periodontal therapy for low income, high risk mothers, and clients with diabetes. [www.communitydentalaccess.ca](http://www.communitydentalaccess.ca)



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