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DH baccalaureate education in Canada: motivators and experiences

Patients with eating disorders: challenges

Dental hygiene educators, Québec, 174

THE OFFICIAL JOURNAL OF THE CANADIAN DENTAL HYGIENISTS ASSOCIATION

Continuity gives us roots; change gives us branches, letting us stretch and grow and reach new heights.
Pauline R. Kezer

Jacki Blatz, RDH

Our green tree

CDHA experienced some changes and internal restructuring this spring. Earlier this year, the CDHA Board of Directors ended the relationship with Dr. Susan Ziebarth in her role as CDHA's Executive Director, and appointed Ann Wright, RDH, MBA, as Acting Executive Director. The Board will be seeking candidates to fill this elemental role at CDHA.

Meanwhile, our members can rest assured that the roots of our organization are firmly planted, and that the CDHA will continue operationally to strive for excellence in customer service to our members, and to advocate on behalf of our members. The Board looks forward to the future of the organization, and to harness the potential we still have for growth.

I am excited to see that the results of the *National Dental Hygiene and Job Market Survey 2009* are now available on our website. Every member should read this important document, and understand how it relates to the individual's personal experience. The CDHA Board will use this document as part of its environmental scan in directing the organization, as well as in the development of the Board's Ends. "Thank you" to everyone who contributed, and took the time to answer the survey questions. This is an excellent way for our members to share their input.

The survey confirms that there is an employment crisis for dental hygienists in Canada. I believe that this is a hotly debated issue for our profession right now. There is no easy solution to this issue. The *Entry to Practice Competencies and Standards for Canadian Dental Hygienists* is a document that will help raise the bar for dental hygiene education. In the fall, CDHA will support the implementation of this document by releasing a Q & A document and hosting a webinar to assist individuals to gain a better understanding of national dental hygiene education and practice. Dental hygienists must be innovative and fearless when facing employment issues. Graduates from accredited institutions have well rounded healthcare education. I know there is so much more we can do other than work primarily in traditional dental practices but it will take courage, persistence, and innovation.

During the Pacific Dental Conference at Vancouver in April, I listened to Dr. Susanne Sunell speak about the Research Advisory Committee to the conference attendees. She passionately spoke about the role and necessity of

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La continuité nous fait prendre racine; le changement nous donne des rameaux pour nous étendre, croître et atteindre de nouveaux sommets.
Pauline R. Keser

Notre arbre de verdure

L'ACHD a connu quelques changements et une restructuration interne ce printemps. Plus tôt cette année, le conseil d'administration de l'ACHD mettait fin à ses relations avec la Dre Susan Ziebarth, alors cheffe de direction, et demandait à Ann Wright, RDH, MBA, d'assurer l'intérim. Le conseil cherchera des candidates pour remplir ce rôle fondamental.

Entretemps, nos membres peuvent être rassurés que notre organisation demeure bien enracinée et que, par ses activités, l'ACHD continuera de tendre vers l'excellence des les services à ses membres et d'intervenir en leur nom. Le conseil envisage l'avenir de l'organisation et se propose d'utiliser tout le potentiel que nous avons pour nous développer.

Cela m'enthousiasme de voir dans notre site Web les résultats du Sondage national de 2009 sur le marché du travail et de l'emploi en hygiène dentaire. *Chaque membre devrait lire ce document important et en comprendre le rapport avec sa propre expérience. Le conseil de l'ACHD utilisera ce document pour analyser l'environnement du cadre de direction de l'organisation et développer ses propres buts. « Merci » à toutes celles qui ont participé et pris le temps de répondre au sondage. Ce fut pour elles une façon excellente de partager leur contribution avec nos membres.*

L'étude confirme la crise de l'emploi qui sévit chez les hygiénistes dentaires du Canada. Je crois que cela fait actuellement l'objet d'un chaud débat dans la profession, car la solution du problème n'est pas facile à trouver. Les Normes canadiennes de compétence pour accéder à l'exercice de l'hygiène dentaire (en anglais) aideront à hausser la barre de l'éducation en hygiène dentaire. *À l'automne, l'ACHD soutiendra la mise en œuvre de ce document en ajoutant un questionnaire en appendice et en tenant un webinaire pour aider les personnes à mieux comprendre la formation et la pratique de l'hygiène dentaire à l'échelle nationale. Les hygiénistes dentaires doivent innover et ne pas avoir peur d'envisager les problèmes de l'emploi. Les diplômées des institutions accréditées ont bien cerné la formation en soins dentaires. Je sais que nous pouvons accomplir tellement davantage que de travailler principalement dans le traditionnel cabinet dentaire, mais il faudra du courage, de la persistance et de l'innovation.*

Lors de la Conférence dentaire du Pacifique, tenue en avril à Vancouver, j'écoutais la Dre Susanne Sunell parler du Comité consultatif sur la recherche devant les participantes. Elle parlait avec passion du rôle et de la nécessité de la recherche dans notre profession. Nous avons besoin de la recherche pour démontrer l'importance de l'hygiène dentaire. *C'est si simple, et pourtant si profond. C'est la pierre angulaire de notre profession et*

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Editorial contributions to the *CJDH* do not necessarily represent the views of the CDHA, its staff or its board of directors, nor can the CDHA guarantee the authenticity of the reported research. As well, advertisement in or with the journal does not imply endorsement or guarantee by the CDHA of the product, service, manufacturer or provider.

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The value of a social network is defined not only by who's on it, but by who's excluded.
Paul Saffo, Silicon Valley Forecaster

Ann E. Wright

We want to hear from you!

CDHA views social media as an important key to achieving growth, and to connect with our members. This spring, CDHA launched its social networking site at the Pacific Dental Conference in Vancouver. Our featured presenter at the conference, Melinda Ferguson, underscored not only the importance of social networking tools, but made the point that social networking media are here to stay...blogs, tweets, wikis and forums. This is not a passing fad.

The following statistics on social media may surprise you.

1. Three-quarters of online adult Americans use social technology tools[1]
2. Two-thirds of the global Internet population visit social networks[2]
3. Social networking sites rank 4th in popularity for online activity...and ahead of email[3]
4. Time spent on social networks is growing at 3 times the Internet rate[3]

At the CDHA booth at the Pacific Dental Conference in Vancouver, staff encouraged members to update their profile on our database. Even reluctant participants saw how easy it was to access their information, blog, tweet, or join the CDHA Facebook.

Experts believe that social networking is popular because it is not a one way experience. Therefore, in addition to providing information, CDHA encourages members to contribute information to our knowledge pool, and to create dialogue around current events and thinking.

Not only does networking provide members with an easy way to communicate with CDHA, but it also provides dental hygienists with a vehicle to link with colleagues. To date, over 2000 dental hygienists have joined our CDHA Facebook, and the numbers of blogs and tweets are growing daily. In early 2010, CDHA launched its first webinar—the highly popular Cochrane Review Series. Since then, we have hosted six live webinars, and made these webinars available on demand. Plans are underway to offer our members more webinars starting this summer. Dental hygienists from all parts of the country and time zones will have the opportunity to access these programs.

Social media gurus believe that organizations owe their members more than a social media presence. Social media should have a commitment to public relations, collaboration, customer service, networking, and to leadership. CDHA reaffirms this commitment to our members.

Stay connected…there's more to come.

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La valeur d'un réseau social se définit non seulement par ses adhésions, mais aussi par ses exclusions.
Paul Saffo, pronostiqueur de Silicon Valley

Nous voulons de vos nouvelles !

L'ACHD considère que les médias sociaux sont une clé importante de croissance et de contact avec nos membres. Ce printemps, l'ACHD a lancé un site de réseau social lors de la Conférence dentaire du Pacifique, à Vancouver. Notre conférencière invitée à cette occasion, Melinda Ferguson, a non seulement souligné l'importance des outils de réseautage social, mais elle a aussi fait remarquer que les médias du réseau social sont ici pour y demeurer… blogues, tweets, wikis et forums. Et ce n'est pas une mode passagère.

Les statistiques que voici sur les médias sociaux pourraient vous surprendre.

1. *Les trois quarts des adultes Américains en ligne utilisent des outils technologiques sociaux.[1]*
2. *Les deux tiers de la population Internet du globe visitent les réseaux sociaux.[2]*
3. *Les sites des réseaux sociaux se classent 4e en popularité pour leurs activités en ligne… devant les courriels.[3]*
4. *Le temps passé sur les réseaux sociaux augmente 3 fois plus que le taux d'Internet.[3]*

Au kiosque de l'ACHD, lors de la Conférence dentaire du Pacifique, à Vancouver, le personnel a incité les membres à mettre à jour leur profil dans notre base de données. Même les participants hésitants ont trouvé facile d'accéder à leur information, blog, tweet, ou de se joindre au Facebook de l'ACHD.

Les experts attribuent la popularité du réseautage social au fait qu'il ne s'agit pas d'une expérience à sens unique. En plus de fournir de l'information, l'ACHD incite donc ses membres à contribuer de l'information à notre bassin de connaissances et à créer un dialogue sur les activités et les opinions courantes.

Non seulement ce réseau offre-t-il aux membres un moyen facile de communiquer avec l'ACHD, il procure aussi aux hygiénistes dentaires un véhicule pour établir des liens avec les collègues. Jusqu'ici, plus de 2 000 hygiénistes dentaires se sont jointes au Facebook de l'ACHD et le nombre de blogues et de tweets augmente à tous les jours. Au début de 2010, l'ACHD lançait son premier webinaire — la série de revue Cochrane. Depuis, nous avons accueilli six webinaires en ligne et mis ceux-ci accessibles sur demande. Nous nous proposons d'offrir à nos membres plus de webinaires à compter de cet été. Les hygiénistes dentaires de tous les coins du pays et des zones horaires auront l'occasion d'accéder à ces programmes.

Les gourous des médias sociaux croient que les organisations doivent à leur membres plus que la présence d'un média social. Les médias sociaux devraient avoir un engagement en matières de relations publiques, collaboration, service à la clientèle, réseautage et leadership. L'ACHD réaffirme son engagement envers ses membres.

Demeurez branchées… Il y en a encore plus à venir.

L'ACHD accueille vos commentaires : info@cdha.ca

'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

Chère rédacteure :

Stage international et interculturel au Burkina Faso, Afrique

Tout d'abord, ce qui nous a poussé, à participer à un stage professionnel en Afrique, c'est la chance de vivre une expérience inoubliable. Nous souhaitions aussi saisir toutes les occasions qui nous permettraient de faire de nouvelles découvertes. Nous voulions mettre nos capacités à l'épreuve en partant à l'aventure. Pour nous, partir au Burkina Faso sera un nouveau défi à relever avec ses hauts et ses bas.

Nous devrons faire preuve de souplesse pour passer à travers tous les imprévus qui risquent de survenir à tout moment. Nous n'avons pas peur de travailler dur pour atteindre notre objectif visé : Aide humanitaire et perfectionnement de notre future profession. L'objectif qui nous motive tout particulièrement est : la création de liens très forts avec des gens qui ont les mêmes aspirations, tant au niveau professionnel que culturel. De plus, ce stage sera une occasion rêvée de clore trois belles années d'apprentissage dans le domaine dentaire tout en bonifiant notre formation. Il s'agissait d'une occasion qu'il fallait saisir, car cette expérience unique ne se représenterait pas deux fois dans notre vie.

En plus de faire des détartrages, au Centre municipal bucco-dentaire de Ouagadougou au Burkina Faso, nous allons effectuer des interventions éducatives dans des écoles de la région. Aussi, trois autres étudiantes en techniques d'orthèses visuelles travailleront dans le centre d'optique. Pendant ce stage, d'une durée de trois semaines, nous voulons aider les gens et nous voulons aussi nous sentir utiles. De plus, pour ouvrir notre esprit à un monde différent de celui au quel nous sommes habitués de voir, il sera important d'apprendre à connaître la culture, les mœurs et le mode de vie de ce peuple. C'est d'ailleurs ce que nous avons commencé à faire en préparant nos interventions éducatives et notre voyage en général. Par exemple, le matériel didactique que nous avons bâti (les bons et mauvais aliments pour les dents) a été conçu en fonction de la réalité Africaine. Peut-on dire que les bonbons sont totalement néfastes pour la santé, s'ils sont parfois leur seul petit plaisir de la journée?

Au cours de la dernière année, en préparant le projet de stage interculturel, nous avons développé un esprit d'équipe et excercé un leadership pour arriver à atteindre les objectifs de financement que nous avions établis. Depuis la session d'automne, nous nous sommes rencontrés tous les mardis

▲ De gauche à droite : Myriam Létourneau (étudiante), Louise Bourassa (enseignante en techniques d'hygiène dentaire), Tania Blouin (étudiante) et Éric Champagne (étudiant)

soirs, aux deux semaines, pour mettre sur pied ce stage humanitaire avec l'aide de nos deux professeures. Nous avons appris à connaître le Burkina Faso en assistant à des conférences. Il s'agit d'un merveilleux projet qui favorise la coopération inter-techniques au collège François-Xavier-Garneau. Nous avons pris conscience des contraintes qui affectent les étudiants pratiquant une technique différente de la nôtre et des réalités de leur milieu de travail, ce qui est très bénéfique pour la vie à l'école et pour nos futures communications interprofessionnelles. De plus, cette coopération inter-technique nous a sensibilisé davantage, ceci de part et d'autre, aux problèmes de santé rencontrés chez nos clients (problèmes oculaires par exemple). Ces échanges n'auraient pu être possibles si nous avions étés les seuls à participer au stage.

Nous tenons à remercier tout spécialement nos professeures, Mesdames Louise Bourassa et Louise Robichaud, et tout ceux qui ont contribué aux activités de financement ou au don de matériel. Sans cette précieuse collaboration, ce stage n'aurait pu être l'occasion extraordinaire d'enrichir notre parcours de vie qu'il a été.

Éric Poulin Champagne, étudiant
Collège François-Xavier-Garneau, Québec

Editor's note: At the time of publication of this letter, Éric and his team are in Burkina Faso living the experiences they've expressed. We hope to hear more from them in due course.

Winner of the *Outstanding Research Award* 2010

Dental hygiene baccalaureate degree education in Canada: Motivating influences and experiences

Zul Kanji*§, BSc, DipDH, RDH; Susanne Sunell§, BA, DipDH, MA, EdD; Geertje Boschma±, PhD, RN; Pauline Imai§, DipDH, BDSc (DH), MSc, RDH; Bonnie J. Craig§, DipDH, MEd, RDH

ABSTRACT

There is little published literature pertaining to motivating influences, experiences, and outcomes of baccalaureate degree education in dental hygiene. Since there are various dental hygiene educational models in Canada, exploring the advancement of dental hygiene education is becoming an increasingly important subject. The purpose of this study was to explore the motivating influences for and experiences in dental hygiene baccalaureate degree-completion education in Canada, from the perspectives of diploma dental hygienists who had continued their education to the bachelor's degree level. This study employed a qualitative phenomenological design, using a maximum variation purposeful sampling strategy. Data generation occurred with sixteen dental hygienists across Canada through individual semi structured interviews. Interviews were audio recorded, transcribed verbatim, and coded for data analysis, involving pattern recognition and thematic development. Emerging themes regarding motivating influences included: expanding career opportunities in dental hygiene, personal development and a desire for knowledge, remaining competitive, status and recognition, access to graduate education, and third person influences. Participants' experiences in degree completion programs included obtaining a broader education and being exposed to a wider scope of knowledge within and outside of dental hygiene theory. They also experienced a more independent learning environment, with a stronger focus on literature review and critical thinking, compared to their experiences in their dental hygiene diploma education. These results reveal important insights for those dental hygienists who may be considering additional dental hygiene education.

RÉSUMÉ

La littérature traite peu des influences motivantes, des expériences et des résultats de la formation au niveau du baccalauréat en hygiène dentaire. Comme il y a divers modèles de formation en ce domaine au Canada, l'examen des modalités de perfectionnement dans cette profession prend de plus en plus d'importance. La présente étude a donc pour objet d'examiner les influences motivantes et les expériences de formation au niveau du baccalauréat, dans la perspective des hygiénistes dentaires qui ont terminé leurs études à ce niveau. La recherche utilise un modèle qualitatif et phénoménologique, à l'aide d'une stratégie voulue de recherche qualitative par échantillonnage avec un maximum de variations. Les données ont été recueillies auprès de seize hygiénistes dentaires à travers le pays, lors d'entrevues personnelles semi-structurées. Celles-ci ont été enregistrées, puis transcrites textuellement et codées pour l'analyse des données, impliquant la reconnaissance des tendances et le développement thématique. Les thèmes émergeants des influences motivantes comprenaient l'accroissement des opportunités de carrière, le développement personnel et le désir de connaissances, le maintien de la compétitivité, le statut et la reconnaissance, l'accès à la formation pour les diplômées et l'influence des tierces personnes. L'expérience des participantes aux programmes de parachèvement de diplôme comprenait l'obtention d'une plus grande formation, et l'exposition à une plus vaste connaissance sur le plan théorique de l'hygiène dentaire, et au-delà. Les participantes avaient aussi fait l'expérience d'un environnement d'apprentissage plus indépendant, avec une plus grande concentration sur l'étude de la littérature et la pensée critique, comparativement à leur expérience de formation pour le diplôme d'hygiène dentaire. Ces résultats révélèrent à ces hygiénistes dentaires d'importantes perceptions qu'elles peuvent considérer comme un supplément de formation en hygiène dentaire.

Key words: Dental hygienists, dental hygiene education, baccalaureate degree education, motivation, experiences, qualitative

INTRODUCTION

Dental hygiene is a growing profession. One challenging issue in dental hygiene is entry-to-practice educational qualifications. The evolution of dental hygiene education in Canada over the past few decades has resulted in a diversity of entry-to-practice programs that include numerous 2-year and 3-year diploma programs, several baccalaureate degree-completion programs for dental hygienists, and one 4-year entry-to-practice baccalaureate degree program (see Table 1).[1,2] Despite the plethora of program options for diploma and baccalaureate education, the entry-to-practice requirement for dental hygiene practice in Canada continues to be the diploma.[2] There exists a high level of skill development in dental hygiene diploma education. However, two to three years is not considered adequate education to confer professional status according to attribute theories and is thought to limit progress towards advanced theory development.[3]

BACKGROUND

Dental hygienists with a dental hygiene baccalaureate degree have either continued their formal education in a degree-completion program or have completed a 4-year entry-to-practice university program. The University of Montreal was the first institution in Canada to offer a dental hygiene degree-completion (DH-DC) program in 1971, followed by the University of Toronto in 1977.[4]

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Educational Model	Province
2-year Diploma	NB, ON, SK
3-year Diploma	AB, BC, MB, NS, QC
Baccalaureate Degree-Completion	AB, BC, MB, NS
4-year Entry-to-Practice Baccalaureate Degree	BC

Table 1. Dental hygiene education program models in Canada.

These two programs have since been discontinued.[4,5] The University of British Columbia, the University of Alberta, and Dalhousie University have offered DH-DC programs since 1992, 2000, and 2008 respectively.[6–8] The University of Manitoba accepted its first DH-DC students in January 2010.[9] In addition to its degree completion options, the University of British Columbia, in 2007, became the first university in Canada to implement a 4-year entry-to-practice dental hygiene baccalaureate option, whereby secondary school graduates or post secondary students with no previous dental hygiene education can enrol, taking all four required years in the Faculty of Dentistry.[6]

There is a growing movement towards the advancement of dental hygiene education to the baccalaureate degree in Canada and the United States, with the impetus stemming from a sense of responsibility to address the growing oral health needs of the public, a need for dental hygiene research, a demand for dental hygiene educators, and a desire to advance the profession.[1,10] Entry-to-practice education has emerged as the most substantive challenge impacting dental hygiene research in Canada.[1] The Canadian Dental Hygienists Association (CDHA) states that one reason for increasing educational opportunities at the baccalaureate level is to provide Canadian dental hygienists with the educational pathways to graduate programs that will allow them to develop proficient research abilities and, thus, further contribute to dental hygiene's body of knowledge.[1]

The CDHA has endorsed baccalaureate level education for dental hygienists for many years. In its 1998 *Policy Framework for Dental Hygiene Education*, the CDHA recognized that future dental hygiene practice must accommodate to an expanding body of dental hygiene theory, changing population demographics and oral disease patterns, and an increasing need for quality oral health services.[11] Dental hygiene education must prepare its graduates for increasing levels of responsibility in varied practice environments.[12] The baccalaureate degree for entry-to-practice is also a goal in the 2009 CDHA Dental Hygiene Education Agenda.[1] Similarly, in 2000, the American Dental Education Association (ADEA) developed several strategies to address access to care issues, to foster research at the graduate level, and to advance the dental hygiene profession. These strategies included establishing higher levels of academic credentials for dental hygiene, with an emphasis on baccalaureate degree programs as the entry point into dental hygiene practice.[10,13]

Throughout the 20th century, other healthcare professions in Canada such as Physical Therapy, Occupational Therapy, Dietetics, Laboratory Technology, and Nursing have pressed for baccalaureate degree programs as the entry-to-practice credential.[14–17] This emphasis on higher educational credentials was related to an increasing body of both generalized and specialized knowledge, as is the case with dental hygiene. Increasing the number of baccalaureate degree programs has further enabled these professions to develop specialized discipline specific graduate programs which have created opportunities for practitioners to increase their qualifications in areas such as education, public health, research, and administration.[14–17] All Canadian provinces and territories, except Quebec and the Yukon, now require registered nurses to have a baccalaureate degree education or are in the process of transitioning to this requirement.[18] An articulated system of nursing education between diploma and bachelor degree programs, as well as more entry-to-practice bachelor degree programs, facilitated movement towards the advancement of education that now includes the graduate level. Nursing's first master's degree program in Canada started in 1959, and 1978 marked the introduction of the graduate "clinical nurse practitioner," resulting in an expanded scope of nursing practice.[17] An even stronger progression has occurred in the Physiotherapy and Occupational Therapy professions. For example, all fourteen Physical Therapy programs in Canada have now implemented a professional Master of Science in Physical Therapy degree for entry into practice, achieving the Canadian Physiotherapy Association's entry-level educational requirement goal set forth in its 2007 Position Statement.[19]

Rationale for study

Motivating influences for adopting baccalaureate education from the dental hygiene profession's perspective are well documented in current literature.[1–3,10–13] However, little is known about the motivating influences for advancing education from individual dental hygienists' perspectives. The CDHA states that furthering one's education in dental hygiene depends on an individual's goals, aptitudes, and interests.[20] Education beyond the diploma level would be a natural next step for dental hygienists who desire to advance their professional expertise and academic qualifications, to increase their knowledge and abilities, and to explore different career opportunities.[20]

There is a paucity of literature about dental hygienists' motivation for pursuing dental hygiene baccalaureate education. The few studies that do exist have been conducted using quantitative methodologies, using Likhert scales and closed ended surveys. Imai and Craig's[5] study of 27 dental hygienists who had graduated from the University of British Columbia's DH-DC program identified the following motivating reasons that diploma dental hygienists may have for pursuing the baccalaureate degree: personal satisfaction (92.6%), increasing knowledge (85.2%), advancing career (55.6%), the status afforded by the degree (37.0%), and for graduate school entrance requirements (7.4%). Waring's[21] analysis of 189 dental hygienists from the United States in 1991 also found that personal satisfaction (97.6%), increasing knowledge and skill (95.1%), career advancement (80.5%), and status of a degree (75.6%) were the primary motivators that associate degree dental hygienists had for pursuing their dental hygiene baccalaureate degree. Other studies exploring dental hygiene

baccalaureate degree education have focused on career outcomes following completion of the degree.

No literature is available about dental hygienists' experiences during their DH-DC education. Within the healthcare literature, several studies have explored nurses' experiences as they returned to school for their bachelor's degree in nursing after having practised with an associate degree.[22–24] However, these studies focused on nurses' coping strategies involved with returning to school while managing their employment and family, rather than exploring their educational experiences in degree completion programs.[22–24]

According to more general literature regarding experiences in higher education, baccalaureate education is designed to educate broadly and liberally, producing graduates who are proficient critical thinkers, communicators, problem solvers, and decision makers.[25–28] A liberal education will foster the development of abilities considered key for expanding dental hygiene practice, such as critical thinking skills, cause and effect reasoning, intellectual empathy, maturity of social–emotional judgement, and increased respect for diversity.[28]

Building the abilities of health professionals to better meet the public needs of the 21st century has become an issue of increasing importance.[29,30] These needs reflect the rising prevalence of chronic and preventable diseases.[29,30] The abilities required in dental hygiene to support quality and safe care include: using credible research to inform practice decisions, translating research to educate and treat clients, working collaboratively on interdisciplinary teams, and taking a leadership role in healthcare delivery.[2] These abilities focus on the role of the dental hygienist as a professional, a communicator and collaborator, and a critical thinker.[31] The current focus is the alignment of educational programs at the baccalaureate degree level to further develop and integrate these abilities in dental hygiene graduates.[2,29,30] The development of stronger research and critical thinking abilities are fostered by longer educational programs such as baccalaureate and particularly graduate level education.[32,33]

Despite evolving curricula, dental hygiene diploma education remains primarily a clinical practice model, wherein there lies limited opportunity to socialize dental hygienists beyond the role of clinical client advocate.[34] Client care needs of an increasingly complex and changing population require dental hygienists with a more diverse educational background, including broader health sciences and humanities exposure.[35,36]

The purpose of this study was to explore the motivating influences for and experiences during DH-DC education in Canada, from the perspectives of diploma dental hygienists who continued their dental hygiene education to the bachelor's degree level.

METHODS

This study employed a qualitative phenomenological design. Phenomenology explores the lived experience of a specific phenomenon and the results of that experience.[37] This research method is both descriptive and interpretative. Giorgi's[38] approach was adopted, as it describes the participants' experiences in their own words. This approach focuses on two aspects: the data, which is obtained through individual interviews, and its analysis.[38]

Characteristics	Number of participants
Years of practice experience	
5–10	3
11–15	5
16–20	5
21+	3
Area of dental hygiene practice	
Clinical	5
Education	2
Clinical & Education	6
Other (Public Health, Admin, Sales)	3
Diploma education	
3-year diploma	7
2-year diploma	6
1+1 (1 year DA; 1 year DH)	3
Degree-completion program of graduation	
University of Alberta	4
University of British Columbia	9
University of Toronto	3
Degree delivery option experienced	
Classroom-based	6
Online	5
Both classroom-based and online	5

Table 2. Profile of participants (N = 16).

The inclusion criteria for this study's sample included dental hygienists who:

(1) initially earned their dental hygiene diploma from an accredited Canadian dental hygiene diploma program,

(2) practised dental hygiene for a minimum of two years before starting their degree-completion education, and

(3) subsequently earned their dental hygiene baccalaureate degree in Canada through degree completion at either the University of Alberta, the University of British Columbia, or the University of Toronto.

Participants were recruited through two rounds of e-mail broadcasts from CDHA and several provincial associations.

Ethics approval was granted by the University of British Columbia's Behavioural Research Ethics Board. A pilot study with 3 participants was first conducted to test the research design. Following the pilot study, a maximum variation sample of 16 dental hygienists was purposefully selected. Purposeful sampling is a deliberate process of selecting participants based on their ability to provide the needed information.[37] Participants differed in years of practice experience, area of dental hygiene practice, dental hygiene diploma and degree program of graduation, and degree program delivery method (Table 2). Maximum variation sampling captures the heterogeneity across the sample population.[37] When researchers maximize differences at the beginning of a study, they increase the likelihood that the findings will reflect differences and different perspectives—an ideal in qualitative research.[39]

Data was obtained from sixteen individual semi structured face to face and telephone interviews that lasted between 60 and 90 minutes. Each interview was audio

recorded, transcribed verbatim, and coded for data analysis, involving pattern recognition and thematic development. Interviews were conducted until data saturation was achieved; the point at which no new information or themes were generated.[37,39] The alternative to saturation — an endpoint determined in advance — is a poor fit for qualitative inquiry.[37] Transcribed interviews and short interview summaries were given to the participants for review to offer them an opportunity to provide corrections and additional information.

Phenomenological analysis included reading and analyzing interview transcripts in search of quotes and statements that were emblematic in meaning, in addition to the researcher's memo writing. These quotes and statements were clustered into themes which formed the architecture of the findings. Data was analyzed using Giorgi's[38] four step approach: bracketing, intuiting, describing, and analyzing.

1. Bracketing involved sidelining preconceptions about what may be real while reading the interview transcripts.[37,38]
2. Intuiting involved re-reading the transcripts which led to the beginning of understanding the phenomenon.
3. Describing communicated the findings in the form of written descriptions and quotes.
4. Analyzing saw the emergence of themes.

Common themes emerged with the participants' motivating influences for pursuing DH-DC education and in their perceptions of experiences within these programs.

RESULTS

Motivating influences

Six themes emerged related to motivating influences for pursuing DH-DC education based on the sixteen participants' responses (Table 3).

Expanding career opportunities
Personal development/desire for knowledge
Remaining competitive
Status/recognition
Access to graduate education
Third person influences (instructors, family, and friends)

Table 3. Identified common motivating influences for pursuing dental hygiene degree-completion (DH-DC) education.

Career opportunities

All the participants interviewed stated that they believed earning a dental hygiene baccalaureate degree would increase their career opportunities in dental hygiene. Although research, public health, and sales were mentioned as career options of interest, the strongest interest pertained to teaching. Participants commented:

> *More career opportunities would be available to me with my degree.*

> *A degree would open doors to more non-traditional roles of dental hygiene practice like teaching and public health.*

Another interviewee stated:

> *My greatest motivating reason was to possibly become a dental hygiene educator. In order to go that route, I needed to further my own education to get the required qualifications - my understanding was you now need to have an education at least one credential higher than what you're teaching.*

A degree seemed to be most desirable for those with a career interest outside of dental hygiene clinical practice.

Personal development

Personal development and a desire for additional knowledge emerged as the second theme. Some participants expressed an interest in pursuing their degree to satisfy personal curiosity to learn more detailed dental hygiene theory. Other participants desired additional knowledge to benefit their self confidence and improve client care outcomes. One participant's thoughts were:

> *I want to know as much about it [dental hygiene] as I can; just being able to talk about the disease process… to have a higher level of understanding [be]cause I think it then relates to when you're talking to patients. You have more confidence in what you're talking about because you have a more solid background. I think that it [the degree] really would help increase your quality of dental hygiene that you're able to provide, not necessarily on a technical level, but it would broaden your comprehensiveness of it.*

Remaining competitive

The third theme that emerged regarding motivating influences was to remain competitive. Many participants expressed not only their concern over the growing competitiveness in the employment market, but many also explicitly commented on their belief that dental hygiene would inevitably evolve into a degree for entry-into-practice profession in Canada, and they "…didn't want to be left behind."

Participants commented:

> *If I was looking for work as a dental hygienist and there were two resumes and everything was equal but I have my degree; that could be one of the reasons that may put me ahead of somebody else.*

> *I decided to do my degree because I could see that that is where the direction of our profession is moving in as well.*

Status / recognition

A fourth theme that emerged from the data analyzed was the status and recognition of earning a degree. Participants expressed frustration with the lack of societal recognition that is granted for a diploma:

> *It's kind of a status issue. Society recognizes a degree. You've achieved something. But if you have a diploma, I feel like people generally really do not understand the work that has gone into it [a diploma] or the knowledge base that you acquire as compared to earning a degree.*

> *People know what a degree is. They know what a bachelor's or master's or PhD is. But certificates and diplomas, they are misunderstood and not as recognized as having a specific area of knowledge under your belt.*

Participants also expressed a desire for dental hygiene to be viewed more as a profession.

I really think that dental hygiene would be better recognized and our skills and knowledge would be more appreciated if we had a degree.

Other participants commented on their wanting to feel more respected:

I felt that I could be more respected with a Bachelor of Science.

Implied by many participant responses was a sense of slight inadequacy practising dental hygiene with a diploma.

Access to graduate education

Access to graduate education was the fifth theme to emerge regarding motivating influences. Only a few participants had an interest in pursuing a graduate degree, but most participants wanted that option to be available to them in the future.

If I ever wanted to do a master's degree in the future, it is essential to start with my bachelor's degree.

Third person influences

The sixth theme that emerged regarding motivating influences for pursuing DH-DC education was third person influences. Previous dental hygiene instructors, family members, and friends with degrees were these third person influences, either directly or indirectly.

I had a lot of friends who had degrees. And I think I was envious of those who had that education. I always thought deep down that they were a step above me.

Some participants were motivated to complete their degree because their family members also had degrees.

A lot of people in my family had degrees. It was just something that I wanted to accomplish. It was important to me personally and for my family.

I come from a family who's well educated.

Conversely, some participants were motivated because no one in their family had degrees; they wanted to be the first.

My parents didn't have a university education...

Nobody in my family had a degree.

Experiences

There were a few notable differences in the participants' experiences within their DH-DC education. These differences were based primarily on the different degree program delivery options (classroom based versus online) and the participants' ages and time since enrolment in formal studies. However, acknowledging these variables, three common themes regarding experiences emerged from these participants' narratives (Table 4).

Broad education
Independent learning environment
Focus on literature review and critical thinking

Table 4. Identified common experiences in dental hygiene degree-completion education.

Program delivery options

The degree program delivery options experienced by these participants were either classroom based, online, or a combination of both. Participants who experienced their DH-DC education online stated that this delivery option was extremely convenient. Many participants believed that this additional education would not have been possible through the traditional classroom based format because of their location of residence and employment schedules.

The online components were convenient and flexible. It increased access to education.

I liked online education because I could fit it in where it worked for me.

However, these participants also disclosed that online learning had its challenges. Participants commented on the challenges confronted with online group work.

The toughest aspect was trying to do group work in distance education because you never meet with the people in your group… it was difficult forming relationships.

Sometimes I found that a lot of the burden fell on specific members of the group. Other people easily got away from contributing because it was difficult to get a hold of those group members.

Findings also indicated that the participants' age affected their online experiences, particularly those participants who were older and had been away from formal studies for an extended time. Some of these older participants expressed having difficulty and frustration with computer based technology.

Those participants who experienced all or parts of their degree completion education in the classroom based format shared a different perspective. Classroom based delivery was the only option available for those who enrolled in DH-DC education in the earlier years of these programs; thus, participants who experienced solely classroom based education expressed a sense of frustration with what they knew to be an evolving program. Several participants stated that the program structure was "disjointed." There were frustrations with some of the perceived disorganization surrounding coursework and learning objectives. On the other hand, participants who experienced classroom based education also shared that they valued, what they called, "mutually beneficial" interdisciplinary learning. These participants enjoyed learning from classmates from other health professions.

Some of the courses consisted of students from grad perio, medicine, nursing, pharmacy, and occupational therapy. It was interesting to learn about the perspectives of other health-care professionals, and it was interesting for other professionals in my classes to learn about what our profession does.

Broad education

Despite a few notable differences, participants shared common experiences in their DH-DC programs. All participants commented that they valued the diversity of courses which they undertook. They experienced a broad education that participants reported they did not have in their previous dental hygiene diploma education. Courses specified included: literature review, oral pathology, microbiology and immunology, oral epidemiology, research

methodology, health and social psychology, biomedical ethics, philosophy, nursing, anthropology, interdisciplinary studies, adult education, and the business of dental hygiene. Participants expressed:

> *The diversity of elective courses provided me with an exposure to a wider academic field outside of dental hygiene.*
>
> *I found the diversity of the coursework far more interesting. There was more flexibility in the learning.*
>
> *I really enjoyed the variety of courses because you can actually put your dental hygiene education into a much broader interdisciplinary context.*

Independent learning environment

Participants commented on how they experienced a more independent learning environment compared to their dental hygiene diploma education.

> *It took quite a bit of self-discipline to try to do all of the readings and stay on track… it was all independent study.*

Participants commented on the transitional challenge between diploma education and degree education, where the latter involved less perceived institutional and faculty support but greater self responsibility and accountability.

> *During my diploma in dental hygiene, a lot of the work was laid out for you or prescribed, whereas in university, a lot of it has to be self-motivated… There isn't anyone holding your hand. And in retrospect, it was hard to do because I had gone from being told what to do and where to go, and now I had to choose on my own.*

Another participant expressed a similar experience:

> *In the diploma program, it was a lot more regimented, and you were told more what to do whereas in the degree program, you had a lot more freedom.*

Literature review and critical thinking

A third theme that emerged from the participants' narratives regarding experiences in DH-DC education was a strong focus on literature review and critical thinking. Participants commented on how much more extensively they had to read and analyze literature which consequently challenged and developed their critical thinking abilities.

> *Much of what we did in many courses was a lot of reading and evaluating current literature. In doing so, we became more familiar with current research in our field and also developed our critiquing and critical thinking skills.*

In comparing experiences, another participant stated:

> *… the analysis of the studies was at a much more comprehensive level which required much more critical thought than in the diploma.*

All sixteen participants recommended the dental hygiene baccalaureate degree for other diploma dental hygienists not only for personal and career development, but also for the professionalization of dental hygiene in Canada.

DISCUSSION

A consideration in the analysis of this study is that the dental hygienists who voluntarily chose to participate were self selected. Therefore, the positive findings in this study may be attributed to the participants' inherent bias.

Motivating influences

This study's findings about motivating influences for pursuing DH-DC education supports the findings in Imai's and Waring's studies.[5,21] Those two studies found that personal satisfaction, additional knowledge, increasing career opportunities, status of a degree, and access to graduate education were primary motivators for undertaking additional dental hygiene education. However, in this study, remaining competitive and third person influences were also motivating reasons which had not been previously documented.

Upon further analysis, several participants desired to expand their career opportunities beyond clinical practice in large part because of the redundancy which they experienced in this practice environment.

> *I found clinical dental hygiene repetitive, clerical, and quite production-based. I wasn't happy.*
>
> *I was getting sort of stagnant. I wanted more out of my professional experience than solely clinical dental hygiene.*

Participants in this study were interested in pursuing careers in dental hygiene education, public health, research, and sales. This interest was also found in Imai's study[5] where participants undertaking DH-DC education were interested in pursuing careers in the areas of education, community health, residential care, and research. Most of the participants in this study who were interested in alternate dental hygiene practice settings expressed interest in teaching. A study conducted by Cameron and Fales[40] supported this finding, reporting that 70% of dental hygienists who had completed a dental hygiene degree were interested in preparing for teaching as a career option.

Research supports the outcome that baccalaureate degree dental hygienists are more likely to practise outside of the clinical setting. For example, the University of Toronto's Bachelor of Science in Dentistry (BScD) dental hygiene graduates have assumed roles as educators, administrators, researchers, or students in graduate programs.[41] Similarly, graduates of the University of British Columbia's Bachelor of Dental Science in Dental Hygiene were successful in securing employment with educational institutions, regulatory authorities, and community based programs.[42] According to Brand and Finocchi's study,[43] 54.2% of baccalaureate degree dental hygienists continued to work in the clinical private practice setting, 23.7% became employed as dental hygiene educators, 4.6% became employed as public health hygienists, 3% as institution or hospital hygienists, and 2.3% as dental practice managers. The majority (63.6%) of the baccalaureate dental hygiene survey respondents stated that their employment opportunities had increased as a result of the dental hygiene degree.[43] Similarly, Rowe et al.[44] indicated in their study that more baccalaureate degree dental hygienists (30.3%) held dental hygiene faculty positions than associate degree dental hygienists (4.3%) in the United States. Baccalaureate degree hygienists (8.0%) also had greater involvement with research than associate degree hygienists (3.6%).

Research also supports the outcome that baccalaureate dental hygienists are likely to further their formal education to the graduate degree level. From the 34 dental hygiene baccalaureate degree graduates of the University of Toronto contacted in Pohlak's study,[41] fourteen (41%)

continued their formal education in a graduate degree, including two doctoral degrees. In addition, 25% of the University of British Columbia dental hygiene baccalaureate degree graduates have continued their education in graduate studies.[42] In the United States, Rowe et al.[45] found that 21% of their baccalaureate respondents continued on to complete a graduate program with most degrees being a master's degree in education (53%) and in dental science/dental hygiene (28%).

Of interest, none of the participants in this study indicated that an increase in salary was a motivating influence for pursuing DH-DC education. The absence of this theme is not unexpected, given other findings in relevant research. According to Imai's[5] study, 55.6% of survey respondents cited that a salary increase was a "not important" motivating reason for pursuing degree education. Only 3.7% of the survey respondents thought that the dental hygiene degree would increase their salary potential.[5] According to Rigolizzo and Finocchi,[46] baccalaureate dental hygienists employed in clinical practice were not paid a higher salary than non baccalaureate hygienists. Imai's study[5] supported this finding, as 74.0% of respondents reported that the dental hygiene degree did not increase their income.

Experiences

Due to the absence of previously published literature on experiences within DH-DC education, much of the discussion presented is generic and placed in context with relevant nursing literature. The results regarding experiences are somewhat limited due to the number of variables affecting participants' experiences in DH-DC programs in Canada. These variables included the program delivery method (classroom based versus online) and participants' age and time away from formal studies. Therefore, the saturation point for this data is not particularly strong. However, common themes did emerge regarding experiences from the participants' narratives.

The benefits and challenges of online education found in this study support similar findings in dental hygiene and nursing literature. Online education is the favoured method of learning (98%) by dental hygienists pursuing their degree, since it increases access to the program and allows flexibility in their lives.[21] Nurses also stated that convenience and flexibility with distance learning were important factors in completing their degree.[47–49] However, this literature reports that students in distance education can also experience feelings of being disconnected and isolated.[47–49] Similar to what was found in this study, a study by Buxton[49] indicated that age and time away from formal education affected nursing students' experiences. Some nurses returning to school experienced frustration and anxiety because they lacked experience with computerized technology.

Participants in this study experienced a broader education in their DH-DC programs, compared to their previous dental hygiene diploma experiences. This finding was also reported in Imai's survey,[5] where one respondent indicated:

> *It [the DH-DC Program] was very applicable and had great depth and exposure to a number of areas of dental hygiene practice as well as other areas of health care. It gave a broad, global perspective.*

These findings support more general literature on the meaning of baccalaureate degree education.[25–27] Baccalaureate study requires multiple dimensions, not merely cumulative exposure to more and more of a specified subject area.[25–28] Such a model is designed to educate broadly and liberally, graduating professionals with more diverse backgrounds.[25–28,35,36]

Participants expressed challenges transitioning from the structured and directive diploma format to a more independent self directed learning environment in DH-DC programs.

> *I guess one of the professors put it really well when she said: 'I'm not here to teach you, I'm here to guide your learning.' That was a big difference between the diploma and degree… they [the professors] were more of vehicles that would give you some direction, but you sort of ran with things a lot more at the degree level on your own.*

Another participant stated:

> *The diploma was almost a parent-child relationship, and in the degree, I experienced a more collegial relationship. The learning was more mature… you had to be self-motivated.*

This independent learning environment was also experienced by nurses completing their degree, who reported that professors facilitated instruction.[49] Faculty at the baccalaureate degree level expect students to assume more responsibility for active learning through guided independent study.[47–49] Many students in these studies were found to be unfamiliar with the responsibilities of an active learning environment.[47–49] This unfamiliarity may have contributed to the participants' transitional challenges between dental hygiene diploma and DH-DC education as reported in this study. Exploring how diploma education prepares one for baccalaureate education in dental hygiene may warrant further investigation.

Another experience reported was a stronger focus on literature review and critical thinking in DH-DC education. Although Imai's[5] study did not explore learning experiences, 96.2% of her survey respondents reported that the dental hygiene degree enhanced their analytical skills for problem solving, and further developed their scientific skills for gathering information and evaluating results. Enhancement of research use, knowledge translation, and critical thinking, attributed to the dental hygiene degree, are key abilities that are needed by health professionals to provide quality and safe care for citizens in the 21st century.[29–31]

No participants in this study reported that DH-DC education was repetitive, compared to learning experiences in dental hygiene diploma education. Participants commented that they learned core subjects in more detail, building on their prior knowledge.

> *The courses you take in the degree go further beyond what you learn in the diploma.*

This experience aligns with Wayman's[36] foundational proposition from her 1985 study that DH-DC education needs to build on the existing diploma level education, incorporating advanced dental hygiene theory while encouraging a more liberal education.

An important finding was the overall support the study participants expressed for recommending the dental hygiene baccalaureate degree to other diploma dental hygienists in Canada. All sixteen participants recommended

this degree not only for personal and career development, but also for the professionalization of dental hygiene in Canada. Participants supported the baccalaureate degree becoming the entry-to-practice credential. Similarly, Imai[5] found that degree graduates expressed overwhelming support for the baccalaureate dental hygiene degree as the entry to practice credential in Canada.

CONCLUSION

This study explored motivating influences and experiences during DH-DC education with sixteen dental hygienists across Canada. Similar to what has been documented through surveys and questionnaires in previous research, themes which emerged for motivating influences for pursuing DH-DC education included: expanding career opportunities, personal development and a desire for additional knowledge, status and recognition, and access to graduate education. Remaining competitive and third person influences (from previous dental hygiene instructors, family, and friends) were also motivating influences for these dental hygienists, providing new undocumented insights in this area of literature.

Three common themes which emerged regarding experiences in DH-DC education included: a broad education, an independent learning environment, and a focus on literature review and critical thinking. Each of these themes revealed important insights into some of the differences between dental hygiene diploma and degree-completion education. These experiences in the degree programs relate to the development of abilities considered essential by the CDHA to better meet the public healthcare needs of the 21st century such as research use, knowledge translation, and critical thinking.

Areas of future research include exploring motivating influences for not pursuing (or barriers to pursuing) DH-DC education. Investigating personal outcomes and dental hygiene practice outcomes of DH-DC education was also a component of this study that will be published separately. Outcomes of dental hygienists in Canada who have continued their education to the master's and doctorate levels also warrants investigation. Overall, the participants valued their degree education and recommended the dental hygiene degree to other diploma dental hygienists in Canada. This study may provide valuable insights for those dental hygienists considering additional education, and may also provide further impetus for discussions surrounding the value of dental hygiene baccalaureate degree education in Canada.

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Call for Abstracts for the CDHA Conference

Advancing Dental Hygiene Practice
HALIFAX
2011 CDHA Conference, Halifax, NS

Advancing Dental Hygiene Practice

Halifax, Nova Scotia, 10–11 June 2011

Closing date for Abstracts: 30 September 2010

Abstract Categories

- ***Research Presentations:*** This category includes 1-hour oral presentations on research, including program evaluation. Accepted submissions will give unique perspectives on research and program evaluations that have not been previously presented to or published for a primarily dental hygiene audience. **The initial submission, by 30 September 2010**, may include findings you plan to discuss when your data analysis phase is completed. You would then need to forward a **final abstract submission by 30 November 2010** indicating your results and conclusions.

  In this category, you will also need to submit a condensed version of your oral research presentation in 750–1000 words by **5 January 2011** for publication in the *Canadian Journal of Dental Hygiene*. Please note that CDHA reserves the right to edit your submission prior to publication.
- ***Community Connections:*** This category involves 30-minute oral presentations on community projects, including a Q & A period.
- ***Poster Presentations:*** The topics for the 4' x 4' sized posters are research, program evaluation, and community projects.

Abstract Guidelines and Requirements

1. Complete the abstract submission form electronically **no later than 30 September 2010**. *Every applicant must meet this submission deadline*. The abstract submission is to be completed electronically at http://www.surveymonkey.com/s/callforabstractscdha2011
2. Abstracts are accepted in English only. The presentations at the conference may be in English or in French.
3. The abstract must be no longer than 250 words including a brief statement of the objectives, methods, results, and conclusions. More than one abstract may be submitted. However, each abstract must be submitted separately. Individuals submitting multiple abstracts may be the primary presenter on only one but may be the co-author on other abstracts. Presenters are not required to be the principal investigator of the study, but should be a member of the research team.
4. Previously presented and/or published abstracts will be considered, and must include the citation and/or the title and date of the event where the abstract was presented or published.
5. If an emergency arises and the presenter is unable to attend, he/she must notify CDHA in writing ***prior to the conference*** that he/she is withdrawing the abstract or naming a substitute presenter. All notices should be emailed to abstracts@cdha.ca
6. To view examples of abstracts, visit http://www.cdha.ca/pdfs/Abstract_examples.pdf
7. Presenters are responsible for financial costs incurred with attending the conference.
8. Submission of an abstract constitutes a commitment by the identified presenter to be in attendance at the conference if the abstract is selected.

Review and Selection Process

Abstracts will be selected through a blind peer review process based on the following: relevance to dental hygiene practice, importance of issue, uniqueness of topic, quality of research methodology/approach, and clarity of abstract.

Notification of results

Participants will receive written notification of either acceptance or rejection of their abstract in January 2011.

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Information inquires should be directed to:
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Toll free in Canada and the US: 1-800-267-5235 ext. 143 or Fax: 1-613-224-7283
Telephone from other countries: 00+1+613-224-5515 or Fax: 00+1+613-224-7283

OTTAWA student and Dewar launch campaign for dental care

Ottawa, 22 June 2010 — MP Paul Dewar (Ottawa Centre) joined Ottawa student Strahinja Nesic to launch a campaign to make dental care available to all Canadians under the age of 18.

"Dental health care is an important component of primary health," said Dewar. "I'm excited to work with Strahinja and advocate for this important idea".

"I wanted to promote the idea of free dental services for our children and youth, because I do believe that all of us should enjoy the same quality of health services, regardless of the income in the family," said Strahinja Nesic.

Nesic, a grade 9 student at the Nepean High School, is the winner of *2010 Create Your Canada* contest. The contest is a Paul Dewar initiative to give a real opportunity for youth involvement in policy development. Students in grades 9–12 submit proposals for new federal legislation and Dewar introduces the winning proposal to the House of Commons in the form of a private member initiative.

Based on Strahinja Nesic's proposal, Paul Dewar put forward **Motion 557** in the House of Commons which states:

> *"That, in the opinion of the House, the government should work with the provinces and territories to provide universal dental health coverage to Canadians under the age of 18 in order to: (a) close the gap between those who presently have dental coverage and those who do not; (b) help contain rising costs for emergency dental care; (c) promote primary health by preventing dental diseases; and (d) make dental health care and oral health the right of citizenship, similar to health care".*

For more information, please contact:
Kiavash Najafi, Office of Paul Dewar: 613-995-1794

Un étudiant d'Ottawa et Paul Dewar lancent une campagne pour les soins dentaires

Ottawa, le 22 Juin 2010 *— Le député Paul Dewar (Ottawa-Centre) s'est joint à un étudiant d'Ottawa, Strahinja Nesic, pour lancer une campagne visant à rendre les soins dentaires accessibles à tous les Canadiens de moins de 18 ans.*

« Les soins dentaires sont une composante majeure de la santé primaire, a indiqué M. Dewar. Je suis très content de collaborer avec Strahinja en plaidant pour une cause aussi importante. »

« Je voulais promouvoir l'idée de soins dentaires gratuits pour les enfants et les jeunes car je crois que nous devrions tous recevoir des services de santé de même qualité, peu importe le revenu familial, a dit Strahinja Nesic. »

▲ MP Paul Dewar and Strahinja Nesic launch a dental campaign at the Parliament.

Strahinja Nesic, étudiant de 9e année de la Nepean High School, est le lauréat du concours Crée ton Canada 2010. Ce concours a été lancé à l'initiative de Paul Dewar pour donner aux jeunes l'occasion de participer véritablement à l'élaboration de politiques. Des élèves de la 9e à la 12e année soumettent des propositions de loi fédérales, et M. Dewar dépose à la Chambre des communes la proposition gagnante sous la forme d'un projet de loi d'initiative parlementaire.

En se fondant sur la proposition de Strahinja Nesic, Paul Dewar a présenté à la Chambre des communes la motion 557, qui est la suivante :

> Que, de l'avis de la Chambre, le gouvernement devrait travailler avec les provinces et les territoires pour fournir un régime universel de soins dentaires aux Canadiens de moins de 18 ans, afin de : a) combler l'écart entre ceux qui ont actuellement une assurance de soins dentaires et ceux qui n'en ont pas; b) freiner l'escalade des coûts des soins dentaires d'urgence; c) promouvoir une santé de base par la prévention des maladies dentaires; d) faire des soins de santé dentaire et de la santé bucco-dentaire le droit des citoyens, comme pour les soins de santé.

Pour plus de renseignements
Kiavash Najafi, bureau de Paul Dewar, 613-995-1794

Winner of the *Outstanding Research Award* 2010

Zul Kanji received the *Outstanding Research Award* 2010 for his submission, *Dental Hygiene Baccalaureate Degree Education in Canada: Motivating Influences and Experiences*. This CDHA award, in participation with P&G, carries a prize of $2,000, and is offered to acknowledge the important role of dental hygiene research in building the knowledge base of the profession, guiding the practice of the dental hygiene profession, and improving the oral health of Canadians.

Zul's academic profile reads: BSc (Nutritional science) from UBC, DipDH from Vancouver Community College, and currently graduate student of Dental Science at UBC. He works part time at a private general dental practice in Richmond as well as at Vancouver Community College as a part time faculty member.

National Dental Hygiene Job Market and Employment Survey

Ottawa, 26 May 2010 – CDHA released the results of *National Dental Hygiene Job Market and Employment Survey*. The data collected by this survey provide CDHA members with valuable information for salary and benefits negotiations as well as career planning. Topics covered by the survey include education, employment conditions, occupational health issues, future career interests, among others. Through these surveys, the CDHA monitors trends and provides advice to the CDHA Board of Directors.

Highlights

- The younger age groups are notably larger compared with the responding group for 2006, when those aged 20 to 29 represented almost 11% compared to this survey showing that age group as 28%.
- The surveys completed by Quebec respondents were the largest group representing 37% of responses, followed by Ontario respondents (26%) and then those residing in British Columbia (17%). In the 2006 study British Columbia yielded the majority of responses (52%), whereas Ontario represented less than half that number of respondents (20%). Slightly more than a third (34%) of respondents completed the survey in French.
- The responses indicate that 736 of the dental hygienists (15%) had a dental assisting certificate upon entry to dental hygiene education, with the majority having a broader range of credentials. There were 361 bachelor degrees reported by the 3,151 respondents.
- The average hourly wage reported across all positions held as employees was $36.47 per hour, which is lower than the average $39.00 per hour wage reported in the 2006 study. The lowest wages were $27.08 reported for Québec jobs, being approximately half the Alberta rate of pay. The high participation of Québec dental hygienists, compared to previous years, caused the lower overall reported average hourly wage in this study.
- While 66% of respondents indicated that they had only one workplace, there were 13% who had reported having two jobs, and the remaining 21% held a variety of jobs. While 20% of dental hygienists responded that they were seeking more hours of work, 75% of respondents are satisfied with their number or work hours. However, in the 2006 study 6% of respondents sought more hours and 86% were satisfied with the number of work hours.
- A large number of dental hygienists representing 44% indicated they have searched for new employment in dental hygiene in the past two years. In the 2006 survey there were 31% of respondents who had searched for employment in the two years previous to the survey.

To read the survey visit:
http://www.cdha.ca/pdfs/labourSurvey09.pdf

New Canadian Oral Health Report

The Office of the Chief Dental Officer released the Report on the Findings of the Oral Health Component of the Canadian Health Measures Survey. This new report will guide workforce training, dental public health program planning and public policy development for the next several years. The survey demonstrates that overall, Canadians have a very good oral health status. In fact, three out of every four Canadians annually visit a dental professional. However, this survey report does not include First Nations and Inuit health data, which will be released at a later date.

The following statistics indicate increased Federal and provincial support for oral health is needed.

- 17% of Canadians reported that they did not make an appointment to see a dental professional due to the cost, the highest rates are seen among young adults (20–39) with no and lowest incomes (50%)
- 16% stated that they avoided getting all their recommended treatment done due to the cost
- 57% of 6–11 year olds have or have had a cavity
- 59% of 12–19 year olds have or have had a cavity
- The average number of teeth affected by decay in children aged 6–11 and 12–19 year olds is 2.5
- 96% of adults have had a history of cavities
- 21% of adults with natural teeth have, or have had, a moderate or a severe periodontal (gum) problem
- 32% of Canadians have no dental insurance at all
- Canadians from lower income families have almost two times worse outcomes compared to higher income Canadians
- In 1998, dental care costs ranked second only to cardiovascular disorders in total direct costs, exceeding the costs of treating digestive diseases, respiratory diseases, injuries and cancers.
- Despite the large and increasing resources expended on dental care (of which public programs remain a very small part), utilization of dental care is inconsistent with the needs of the population.

Report Overview
http://www.healthcanada.gc.ca/ocdo

Reports
http://www.fptdwg.ca/English/e-documents.html

The Oral Health Statistics 2007–2009 factsheet
http://www.hc-sc.gc.ca/hl-vs/pubs/oral-bucco/fact-fiche-oral-bucco-stat-eng.php

Stay tuned for more information in the journal, including an article by Dr. Peter Cooney, Chief Dental Officer, who oversaw this groundbreaking report.

CDHA and provincial lobbying efforts succeed: Increased access to care for First Nations and Inuit Peoples

Ottawa, 13 May 2010 – CDHA is excited to share the great news with you! The First Nations and Inuit Health Branch's Non-Insured Health Benefits Program (NIHB) is initiating an 18 month pilot project in the Alberta region to pay dental hygienists directly for NIHB eligible dental services rendered to eligible First Nations and Inuit clients under the NIHB Program. The NIHB Program has invited other Health Canada's FNIH regions to consider the potential of joining this pilot project where the provincial/territorial legislation permits dental hygienists to be recognized as independent providers.

CDHA President Jacki Blatz reports, "CDHA's work began in 2003 and for the next seven years, we made it our priority to lobby the government on this front. Our efforts have finally paid off! We made oral presentations and written submissions to the House of Commons Standing Committees on Health and Finance and numerous presentations directly to Health Canada personnel, including Director Generals, Regional Directors and Benefits Management staff. Our stakeholders, such as the College of Registered Dental Hygienists of Alberta, the Assembly of First Nations, and Inuit Tapiriit Kanatami were important allies in the process, as we worked collaboratively with them to ensure our requests reflected their members' needs. In addition, numerous dental hygienists across Canada and their provincial associations have written letters to FNIHB describing the poor oral health status of their First Nations and Inuit clients."

The new pilot project will increase access to care and improve oral health for First Nations and Inuit peoples. For any inquiries regarding the Alberta Region pilot project, please communicate directly with the FNIH Alberta region Dental Predetermination Office at 1-888-495-2516.

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L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

For additional information contact:
Judy Lux, MSW, Health Policy Communications Specialist
jlux@cdha.ca 613-224-5515 ext 123 or 1-800-267-5235.

Help at hand: Legal advice for dental hygienists in Canada

Dental hygienists sometimes encounter personal or employment situations that require legal advice. This chart provides contact information for various paralegal and legal information and referral services across the country. Depending on the province, this service is available free of charge or for a minimal fee.

Jurisdiction	Assistance	Contact information
Legal Line® – across Canada	Contacts for all regions	http://www.legalline.ca
Prince Edward Island	30 minutes for $10	1-800-240-9798
Newfoundland and Labrador	—	—
Legal Information Society of Nova Scotia - lawyer referral	30 minutes for $20	1-800-665-9779
Law Society of New Brunswick	Information page under construction	—
Quebec Law Society	30 minutes for $30	514-866-2490 1-866-954-3528
Ontario-Upper Canada Law Society	30 minute consultation with paralegal	1-800-268-8326
Law Society of Manitoba	General legal information and referral	1-800-262-8800
Saskatchewan	—	—
Alberta Law Society Referral Service	Free 30 minute consultation	1-800-661-1095
Law Society of BC Also available for Nunavut, the Yukon or NWT	30 minutes for $25	1-800-663-1919

8th International Dental Ethics and Law Congress

This event will take place **18–20 August 2010** in Helsinki, Finland. This year's theme is *Dentistry and Information Technology: Ethical and Legal Considerations*. Details are available at www.ideals.ac/congress/?event=4

CDHA represents the voice of dental hygiene at research event: Canadian Cochrane Centre Stakeholder's Meeting

Pauline Imai, BDSc, MSc, RDH*

CDHA has been an active partner with Canadian Cochrane Centre (CCC) for the past two years. As part of this partnership, CDHA attended the CCC's Stakeholder Meeting during the 8th Annual Canadian Cochrane Centre's Symposium on 19 May 2010 at Ottawa, Ontario. The theme for the symposium was *Evidence in Uncertain Times: Meeting the Challenge*.

Dr. Jeremy Grimshaw, Director and Chair of the CCC and Symposium, facilitated the stakeholder's meeting with a brief background of the CCC's mission and collaborations. The mission of the CCC is to advance the science of information synthesis; in other words, present the vast amounts of evidence in the literature into an unbiased package for consumers. Its objectives are supporting the preparation and update of Cochrane Systematic Reviews, developing methods of synthesis, and facilitating knowledge transfer.

There are 109 countries involved with Cochrane, with over 27,000 authors contributing to the systematic reviews. The CCC supported 322 reviews or 7.6% of all Cochrane systematic reviews. In Canada, the number of review authors increased from 665 to 1352 in the last five years, and consumer visits to the Cochrane website increased three fold since 2006.

Future projects are:

- partnerships with Pan American Health Organization for webinar software access,
- increasing the number of professional organizations that host the "Cochrane Corner" on their associations' website and thus, increasing visibility and accessibility of the Cochrane library to professionals, and
- a national licence for one click access for all Canadians. Currently, most consumers need an institutional affiliation to access Cochrane.

The CCC's future goals include:

- new methods for training delivery and standardizing training
- knowledge translation when identifying priorities
- support to stakeholders in producing Cochrane systematic reviews
- increased public and media awareness
- links with CIHR institutes
- new communication tools (Web 2.0)

There were fourteen partners, including CDHA, presenting their knowledge translation activities at the meeting. Many of the knowledge translation activities involved producing systematic reviews and practitioner guidelines; and facilitating workshops, podcasts, and webinars.

CDHA is a relatively new partner with the CCC, but has been active in promoting knowledge translation; activities that focus on disseminating evidence based information to the community. CDHA launched its inaugural webinar series entitled *Getting on Board with Evidence-Based Practice*. The three topics in the series involved the importance of research for dental hygiene practice, methods of finding reliable evidence in the Cochrane Library database, and understanding systematic reviews. The *Canadian Journal of Dental Hygiene* published fifteen Cochrane Review abstracts over the past year, eight of which were bilingual.

Ms. Pauline Imai was recruited as the first dental hygienist to join the *Oral Health Review Team*. Pauline is collaborating with an international and interdisciplinary team on a systematic review about dental flossing. The next knowledge translation project will be a collaborative project with CCC to develop a webinar and research forum on fluoridated dentifrices. CDHA's partnership with CCC demonstrates the profession's support of evidence based dental hygiene practice as dental hygienists meet the needs of their clients.

* Pauline Imai is the DHDP Clinical Education Coordinator, DHDP Year 1 and 2 Coordinator, Dental Hygiene Degree Program, Faculty of Dentistry, University of British Columbia. She received the CDHA *Symposium Bursary* 2010, in participation with P&G, to attend the Canadian Cochrane Centre Symposium.

Patients with eating disorders: Challenges for the oral health professional

David B. Clark, BSc, DDS, MSc (Oral Path), FAAOP, FRCDC

ABSTRACT

Background: Recent attention being paid to the oral–systemic disease paradigm has focused not only on the potential systemic complications linked to oral inflammation and infection but also to the oral manifestations of systemic disease. One such group of systemic illnesses is that of a psychiatric nature; diseases which affect with significant impairment, an individual's emotional, behavioural, and social relationships. This paper will endeavour to enhance the self efficacy and knowledge of the practising dental hygienist through a review of one particular psychiatric diagnosis, eating disorders. This paper will focus on current theories of causation, medical and clinical oral manifestations, and preventive dental strategies. **Methodology:** A literature search was conducted using several data bases: Medline, CINHAL, and *Psychological abstracts*. The search terms included anorexia nervosa, bulimia nervosa, oral management of eating disorders, and erosion. The great majority of the articles retrieved from these databases consisted of case reports and peer reviewed literature reviews. **Results and discussion:** Eating disorders comprise one of the more common psychiatric diagnoses, and have been further subdivided into anorexia nervosa, bulimia nervosa, and binge eating disorder. These subtypes are closely linked, often inter-related, and form the majority of eating disorders. Both knowledge and awareness of this illness is important for the dental hygienist. In many cases, they may often be the first individuals to recognize some of the characteristic oral manifestations. And in conjunction with the dentist, they may engage in secondary preventive practices through the initiation of dialogue and referral processes to facilitate the patient obtaining appropriate medical care. **Conclusion:** As common as mental illness is in our society today, patients with eating disorders will often go unrecognized, be misunderstood, or receive inadequate treatment due to the attitudes arising from the stigma associated with this illness. Dental management considerations in turn present a significant challenge to the oral health professional. Eating disorders continue to represent a serious and, often fatal, threat to an individual — a threat which can be preventable through earlier recognition, referral, and treatment.

RÉSUMÉ

Contexte : L'attention portée récemment au paradigme des affections bucco-systémiques se concentre non seulement sur la possibilité de complications systémiques liées à l'inflammation et à l'infection buccale mais aussi aux manifestations buccales de la maladie systémique. Un groupe d'affections systémiques est de nature psychiatrique – des maladies dont les déficiences importantes affectent les relations émotionnelles, comportementales et sociales d'une personne. Le présent article cherche à améliorer l'efficacité et les connaissances personnelles de la pratique de l'hygiéniste dentaire, en examinant un diagnostic psychiatrique personnel particulier, celui des troubles alimentaires. Il se concentre sur les théories actuelles des causes, les manifestations buccales, médicales et cliniques, et les stratégies dentaires preventives. **Méthodologie :** Une recherche de la littérature a été menée à partir de plusieurs bases de données : Medline, CINHAL et *Psychological abstracts*. La recherche a porté sur les termes suivants : anorexie mentale, boulimie, gestion buccale des troubles de l'alimentation et érosion. Les articles récupérés dans les bases de données proviennent en grande majorité de comptes-rendus de cas et d'examens de la littérature revue par les pairs. **Résultats et discussion :** Les troubles de l'alimentation comprennent un des diagnostics psychiatriques les plus communs. Ils ont été subdivisés davantage sous anorexie mentale, boulimie et grosse bouffe. Ces sous-types, étroitement liés et souvent en corrélation, forment la majorité des troubles de l'alimentation. Le savoir et la sensibilisation à cette maladie sont importants pour l'hygiéniste dentaire. Dans beaucoup de cas, celle-ci peut être la première personne à reconnaître certaines caractéristiques des manifestations buccales. Puis, conjointement avec le dentiste, elle peut s'engager dans des pratiques secondaires de prévention par l'amorce d'un dialogue et des procédés d'orientation pour faciliter au patient l'obtention des soins médicaux pertinents. **Conclusion :** Aussi communément que la maladie mentale l'est dans la société d'aujourd'hui, les patients qui ont des troubles de l'alimentation demeurent souvent méconnus et incompris, ou reçoivent des traitements inadéquats à cause des attitudes que soulèvent le stigmate associé à la maladie. Les considérations en matière de gestion dentaire posent alors un défi significatif à la professionnelle de la santé buccale. Les troubles alimentaires continuent de présenter une menace sérieuse et souvent fatale à la personne — une menace qui peut être prévenue par la reconnaissance, l'orientation et le traitement rapides du patient.

Key words: anorexia nervosa, bulimia nervosa, erosion, oral diseases, oral management of eating disorders

BACKGROUND

Excerpts from a diary of a 15 year old girl. Personal communication of Dr. T.E. (Betty) Powers. Regency Dental Hygiene Academy. Toronto, ON

Dear Diary,

...today was my last day at my old school. My friends brought me cake. I can't believe I start my new school 2morrow. What 2 wear? I look fat. I have to only drink H2O & eat cucumbers (teen mag[azine]). It's 8:00 pm. [pa]rents still not home yet. Weight 94 lbs. I feel so bad for eating that cake. my friends are cool!

Dear Diary

I HATE MY NEW SCHOOL!! Girls were staring at me at swim practice. I hate bathing suits. 93 ½ lbs. Today I saw a new boy and I wondered if he noticed me. His name is Kyle.

Dear Diary,

Swim comp[etition] in 1 day. I like Kyle. I hate my mom. forgot to bring me my new cell phone. Nanny made me lunch. threw it out. 93 lbs. drink more glasses of H2O. paint nails. Scared for tomorrow! Have to win to be popular.

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This is a peer reviewed article.
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700 Gordon Street, Whitby, ON, L1N 5S9

INTRODUCTION

Eating disorders are just one example of an illness that affect the brain, but manifest as problems throughout the rest of the body. This further continues to refute the long held theories of a distinct separation between mental illness and physical illness.[1] Eating disorders represent a serious, life threatening psychiatric illness affecting a disproportionate number of females, and usually arising during adolescence.[2] Being a period of major life transitions, adolescence becomes a time for a search of individuality, purpose, and independence with identification with peer groups becoming increasingly important. This may result in the selective rejection of beliefs and values previously established by family, peers, and one's culture in general. The media constantly bombards individuals with images of ultimate thinness, pushing dieting into the realm of being a socially accepted behaviour. However, the etiology of eating disorders is in reality more complex involving interplay between biological, psychological, and social issues (Figure 1). Research has suggested some possible genetic links for the development of an eating disorder.[2,3] Genetic predispositions in combination with other specific physical or psychological stressors may place an individual at increased risk for developing an eating disorder. Alterations in regulation of certain neurotransmitters (serotonin) and hormones (leptin) have also been speculated as possible contributors to the onset of these diseases, particularly anorexia.[4] Other factors known to predispose one to the development of a particular eating disorder can include:

- female gender
- familial expectations and/or dysfunction
- fear of obesity
- a perfectionist and/or competitive personality
- earlier onset of one's menstrual cycle
- a desperate effort to cope with or suppress personal conflicts and problems via preoccupation with food intake and body weight.[2–7]

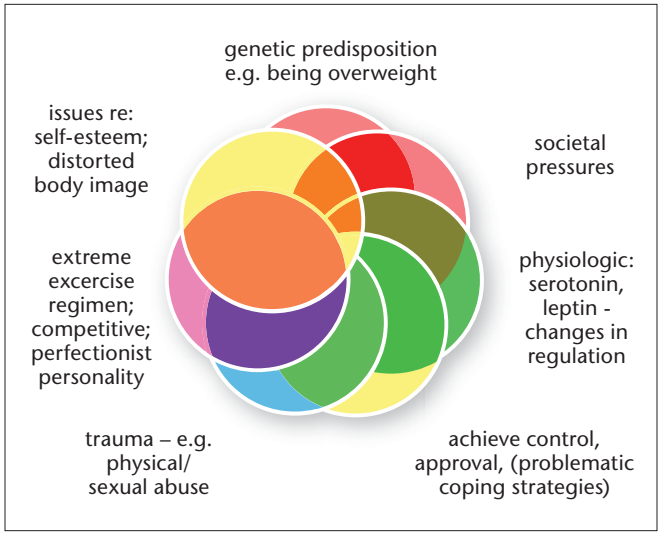

Figure 1. Multifactorial etiology of eating disorders.

While food appears to be the central issue, in reality it is the characterization of food related problems that become an outlet for the expression of a variety of underlying psychosocial issues or disturbances.[5] Comorbid mental disorders are exceedingly common, but the interrelationships are poorly understood. Comorbid disorders include affective disorders (especially depression), anxiety disorders, substance abuse, and personality disorders.[3] While sociocultural factors instill a desire for thinness and beauty, they simultaneously stigmatize obesity. Dieting may quickly become a measure of one's self esteem highlighting a sense of personal control for the individual resulting in an ongoing obsession with weight loss, food, and exercise. This obsession begins to supersede family, school, work, and social interactions in general. This change of focus serves to perpetuate the illness with its potentially severe consequences. The mind begins to develop a distorted or even delusional thought process with respect to one's body image, perceiving oneself as continually being "too fat". Psychopathology quickly develops into a physiopathology with the ultimate emergence of a particular eating disorder.[5] Individuals with eating disorders display one of the highest mortality rates among any group suffering from different forms of psychiatric illness.[8] For example, mortality rates for individuals with anorexia have been reported as being six to twelve times higher than all other causes of death in females aged 15–24 years.[8–10] While the death rate from bulimia is somewhat lower than that for anorexia, it remains greater than that for age matched controls in the general population.[11] Given the importance of this disease, the aim of this paper will be to enhance the self efficacy and knowledge of the practising dental hygienist through a review of the major types of eating disorders. This review will focus on the current theories of causation, medical and clinical oral manifestations, and preventive dental strategies.

METHODS

A literature search was conducted using several data bases: Medline, CINHAL, and *Psychological abstracts*. The search terms included anorexia nervosa, bulimia nervosa, oral management of eating disorders, and erosion. The great majority of the articles retrieved from these databases consisted of case reports and peer reviewed literature reviews; there are few studies to draw from. The author has also been working in the frontline treatment of patients hospitalized for treatment of various types of psychiatric illness including those of eating disorders. Hence the literature review has essentially been conducted over many years, and it also incorporates historic depth. However, there continue to be limitations to our current knowledge in this area. Little research has been conducted in this area, necessitating reliance on case reports, and the views of experts to support our decision making. As clinicians we strive to use the best available information possible, and this article is based on the presentation of the evidence we have to date.

Organ system	Symptoms	Signs
Cardiovascular	weakness, dizziness, palpitations	bradycardia, irregular weak pulse; prolonged Q-T interval on EKG; cardiac arrest; orthostatic hypotension
Skeletal	bone pain with exercise	osteopenia; osteoporosis; delayed growth
Muscular	weakness; muscle aches	muscle wasting
Reproductive	loss of libido	amenorrhea; infertility
Endocrine/Metabolic	fatigue; intolerance to cold; vomiting	hypothermia; electrolyte imbalance; hypothyroid; abnormal liver function
Integumentary	dry skin	increased lanugo hair; brittle nails; Russell's sign (bulimia)
Gastrointestinal	vomiting; abdominal pain; constipation; dehydration	esophageal rupture (bulimia) pancreatitis; decreased motility; gastritis
Genitourinary	pitting edema	renal failure
Hematologic	fatigue; cold intolerance	anemia; leukopenia immunodeficiency
Central Nervous System	apathy; poor concentration	irritable mood; depression

Table 1. Medical complications associated with eating disorders.

DESCRIPTION

Major types of eating disorders

There are currently three major types of eating disorders identified in the literature. The following information provides the reader with a context for better understanding patients living with these disorders.

1. *Anorexia nervosa*

Originally described in 1868 as a loss of appetite for nervous reasons,[4] the term "anorexia" is actually a misnomer since there is no specific loss of appetite, but rather a drastic ability to control food intake to the point of starvation. Individuals often show a preoccupation with food preparation and cooking for others, but are still able to place dietary restrictions on themselves. The established definition and diagnostic criteria as listed in the Diagnostic and Statistical Manual of Psychiatric Disorders (DSM-IV)[12] are:

a) a refusal to maintain body weight at or above a minimal normal weight for one's age and height (e.g. body weight less than 85% of expected weight)
b) an intense fear of gaining weight
c) a distortion of body image
d) amenorrhea for three consecutive months.

Anorexia is further subdivided into two subtypes: a restricting type where the individual will markedly restrict food intake, and a binge eating or purging type describing the individual who will also engage from time to time in binge eating and purging behaviours. This subdivision highlights further the overlap that may be seen between anorexia and bulimia with some reports even describing bulimia as a variant of anorexia.[2,7] Most studies of anorexia place the prevalence of the disease between 1–3% of the female population, the majority of whom are in the 12–25 age group with a peak age of onset being approximately 17–18 years of age.[3,4,13] Anorexia has also been described as occurring in women in the 30–50 age range, but information as to the exact prevalence remains sparse.[7] A male to female ratio of 1:10 has been described in the literature with a formal diagnosis of either anorexia or bulimia with men representing approximately 5–15% of patients with eating disorders.[3,4,14] Found predominantly in white middle to upper class families, individuals at risk for anorexia can include those involved in such activities as modelling, gymnastics, running, dancing, and other sports related occupations or competitions.[2–4,14] However, in order to embrace an even more realistic view of this disease, it is important to expand one's perception of the illness beyond the stereotype of someone involved in gymnastics, dancing, or some other demanding physical activity. For example, a variant of eating disorders, seen in both teens and adults with Type 1 diabetes, has evolved into the term *diabulimia*.[14–16] Those patients with Type 1 diabetes have additional risk factors for an eating disorder, and these include a poorer self image due to a chronic illness, a more intensive focus on dietary control, and the known tendency towards weight gain with insulin usage. This latter point can cause one to reduce insulin administration or even forgo insulin injections completely in order to lose or keep off any excess weight, or to both. Failure to administer insulin places the body in a starvation state leading to the breakdown of both muscle and fat into ketone bodies. As well, the body becomes unable to process consumed sugars, which are then excreted rather than used for energy or storage as fat. Weight loss that results places the patient at risk for such life threatening conditions as diabetic ketoacidosis. Long term diabetic complications from this behaviour often occur earlier in one's life than normally seen, and stem primarily from the more frequent episodes of hyperglycemia and ketoacidosis. Lower self esteem and depressive symptoms may also escalate in patients with diabulimia.[15,16]

In anorexia, the body is denied the essential nutrients it needs to function normally. The physical features of anorexia are therefore largely due to the nutritional deficits and self starvation. And in the binge eating or purging subtype,

the consequences of vomiting, with or without the misuse of laxatives, results in a severe electrolyte imbalance, for example.[11] Nearly every organ system can be involved as the disease progresses despite the fact that early physical examination or assessments or both may be well within normal limits. Generally, a metabolic slowdown develops, characterized by bradycardia, orthostatic hypotension, hypothermia, and decreased gastrointestinal motility, for example.[9] Decrease in overall heart size and stroke volume has also been reported.[9] Amenorrhea is also considered to be of such significance as to be incorporated in the DSM-IV diagnostic criteria for anorexia.[3] Skin changes consisting of dry skin, the appearance of lanugo or fine body hair and loss of subcutaneous fat may develop. Osteopenia that may be seen in patients with anorexia is related to both a progressive estrogen deficiency as well as low calcium and Vitamin D intake[4,14] (Table 1).

2. *Bulimia nervosa*

The term "bulimia", derived from Greek, literally meaning "ox hunger" was first described by Russell in 1979.[17] The disease as defined by the criteria outlined in the DSM-IV[12] includes:

a) binge eating twice weekly over a 3-month period of time followed by inappropriate and compulsive behaviours involving self induced vomiting, use of laxatives, diuretics, enemas and excessive exercise regimens, and
b) persistent preoccupation with one's body shape or weight or both.

An often distinguishing feature between bulimia and anorexia is that while bulimia is considered more common than anorexia, patients often show no outward signs of their illness, displaying a normal or near normal appearance despite frequent fluctuations in their weight.[4,11] This in turn feeds into the secrecy component of bulimia in contrast to the thin, emaciated appearance of those patients suffering from the restrictive behaviours inherent with anorexia. One particular clinical finding that may be seen in patients with long term bulimia is Russell's sign; the development of friction related calluses on the knuckles of the hand from contact with the maxillary incisors during induction of purging activity.[2,17,18]

The prevalence of bulimia is reported at 1–5% of females, the majority of whom are between the ages of 18 and 30 years.[4,11,19] As with anorexia, there is a male to female ratio of 1:10. Up to 40% of individuals with anorexia are also thought to have bulimia concurrently.[19]

3. *Binge eating disorder*

Binge eating disorder is defined as the presence of binge eating not followed by some such compensatory behaviour as vomiting, excessive exercise, or laxative abuse. This disorder may often be associated with obesity. The lifetime prevalence rate of this disorder has been put in the range of 3.5% in women and 2.0% in men,[4,6,14,20] and while the etiology remains unclear, previous dieting, obesity and emotional stressors are cited as risk factors for binge eating disorder.[14] Binge eating disorders are often associated with mood disorders with patients exhibiting symptoms of moderate to severe depression.[14]

MEDICAL MANAGEMENT OF EATING DISORDERS

Medical management of eating disorders varies with each subtype accompanied by varying factors capable of influencing the overall outcome and prognosis in each particular case.[9] Cornerstones of medical management include the normalization of body weight, electrolyte stabilization, efforts to offset the preoccupation with weight loss, and finally relapse prevention.[9]

1. *Anorexia*

Immediate treatment goals include the re-establishment of stable vital signs, serum electrolyte levels, and normalization of body weight.[2–4,9] While manageable in the outpatient setting, patients who have sustained very rapid weight loss, severe electrolyte imbalance, severe bradycardia, or other cardiac disturbances as well as signs of acute psychosis or suicidal ideation, require immediate hospitalization.[2] Nutritional counselling is vital providing education and needed adjustments to both caloric and nutritional intake. Limitation of physical exercise is often implemented to control energy expended, focusing instead on a more balanced weight for the individual. Those at risk for osteopenia will require calcium and Vitamin D supplementation as well as periodic bone density examinations.

Psychotherapy is also critical in terms of addressing those key components of the illness that centre around body image, weight control, and inappropriate coping strategies that have been developed by the individual. Also key to recovery is addressing the ambivalence in therapy that those with anorexia tend to have about their disease.[4] A more favourable treatment outcome relies heavily on positive relationships, for example between the parents and the child, an earlier age of onset of anorexia (before adulthood), and a shorter duration of organ system involvement. Recovery rates can be as high as 50%.[4] However, mortality rates still remain far too elevated with some estimates being as high as 10% of patients with anorexia dying within ten years of the onset of the disease.[6]

2. *Bulimia*

In addition to psychotherapy—especially cognitive behavioural therapy (CBT)—and nutritional counselling, the use of such medications as antidepressants plays a more pivotal role in the overall medical management of bulimia.[3,11] CBT is a psychotherapeutic modality that encourages patients to focus on and challenge their beliefs that link weight to self esteem.[11] Depression also plays a key role within the overall progression of the disease, and as such, antidepressant medication will assist the patient to focus on achieving a healthier body image. Despite the success achieved with both CBT and pharmacotherapeutics, relapse rates have been reported as high as 30%.[4] This poorer prognosis is linked in large part to the higher incidence of such psychiatric comorbidities as substance abuse and personality and anxiety disorders.[4]

3. *Binge eating disorder*

CBT, family psychotherapy, as well as antidepressant medication comprise the main thrust of medical management for binge eating disorder. CBT focuses on changing unhealthy eating behaviours while family psychotherapy

Location	Findings	Etiology
Teeth	erosion; caries; thermal sensitivity; chipping of teeth; anterior open bite	vomiting; poor oral hygiene; high carbohydrate intake
Mucosal lesions	mucosal atrophy; glossodynia; glossitis erythema (soft palate); dysgeusia	vitamin deficiency (e.g. B6, B12); vomiting; nutritional deficiency possible somatoform disorder
Periodontal lesions	gingivitis; periodontitis	vitamin deficiency (e.g. Vitamin C); poor oral hygiene
Salivary changes	enlargement of major/minor salivary glands (sialadenosis); xerostomia	metabolic/secretory abnormalities concurrent medications e.g. antidepressants

Table 2. Oral manifestations of eating disorders.

attempts to strengthen a patient's relationship with family and friends. Antidepressants not only help manage the associated depression but also, according to a study by Greeno et al.,[21] help induce satiety rather than decrease appetite. A supervised weight loss program is also a key component in the management of binge eating disorder. Prognosis is more favourable than in anorexia or bulimia but is also be influenced by the severity of any underlying mood disorder with or without a substance abuse problem.[22]

ORAL MANIFESTATIONS OF EATING DISORDERS

Oral findings in patients suffering from eating disorders are significant and varied, and can include specific dental findings, mucosal abnormalities, gingivitis, periodontitis, salivary gland, and other often non specific oral manifestations.[2,4,13,22–25] A recent study by DeBate et al.[26] explored the knowledge among dentists and dental hygienists of the oral and physical manifestations of anorexia and bulimia. Generally low scores were obtained from both groups with respect to both physical and oral cues of these diseases. Through earlier detection and assessment by the oral health practitioner, referrals may be expedited allowing medical management of the underlying condition to be initiated sooner, favouring a much better overall prognosis for the individual.[26] A summary of oral manifestations is presented in Table 2.

1. *Effect on dentition*

Enamel erosion (perimolysis) is perhaps the most frequently cited effect on the teeth in patients exhibiting the purging behaviours of bulimia.[18,20,25,27] The most frequently identified site for this erosion to occur is on the palatal surfaces of the maxillary teeth. Such chemically induced erosive changes are dependent on both the frequency and duration of self induced vomiting. The actual duration of time required before enamel erosion becomes clinically apparent varies among different studies. This duration has been described as occurring as early as six months following the initiation of consistent purging behaviour and caloric restriction.[6,26] Dental erosion is however a more complicated phenomenon, and in many cases consideration needs to be given to other risk factors that can play a role in the development of this finding.[28,29] Such factors may include the increasing usage of highly acidic sport drinks during periods of high exercise activity. The more frequent ingestion of caffeinated beverages to heighten not only energy levels but also to lessen the reflex hunger stimulus through increased dilation of the stomach is another such factor.[27] In addition, consideration must be given to salivary flow rates as well as to the quality of saliva. In one study of bulimia, this was considered an indicator for the risk of progression of dental erosion.[30] The erosive changes seen on the teeth are characterized by the affected surfaces displaying a smooth, highly polished appearance[4,5,26] (Figure 2a). In some cases, often in older patients, pre-existing amalgam fillings may appear as "raised islands" due to the erosive changes affecting the surrounding tooth structure[4,5] (Figure 2b). With the progressive loss of enamel, chipping of the incisal edges of maxillary incisors may be encountered with gradual development of an anterior open bite.[4,5,23] Increased levels of generalized thermal sensitivity due to exposed dentin may be a frequent presenting symptom.[3–5,20]

Other dental manifestations include rampant caries, influenced in part by a greater consumption of sweetened beverages and foods, used to appease the constant thoughts of hunger (e.g. episodes of binge eating) as well as a wider variability in oral hygiene practices.[3,4,19,24] Such a caries risk is further exacerbated in some patients by the xerostomic side effect of antidepressant medications when used as part of the pharmacotherapeutic treatment for eating disorders, particularly in bulimia.[1,5,14]

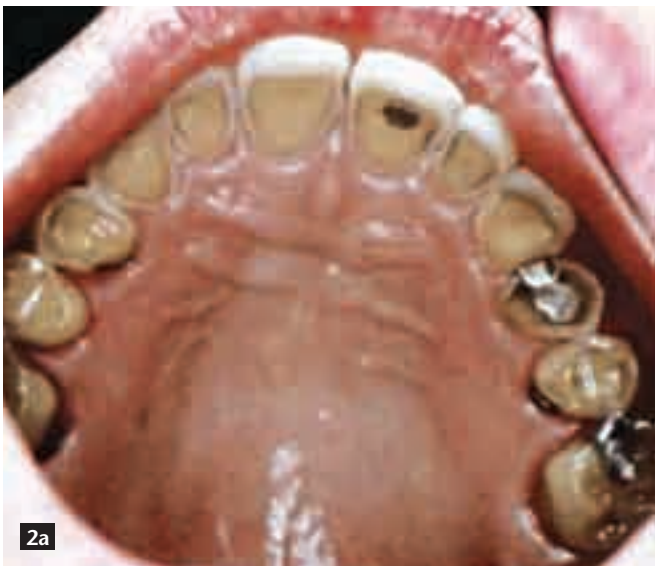

Figure 2a. Perimyolysis of maxillary teeth, palatal surfaces.

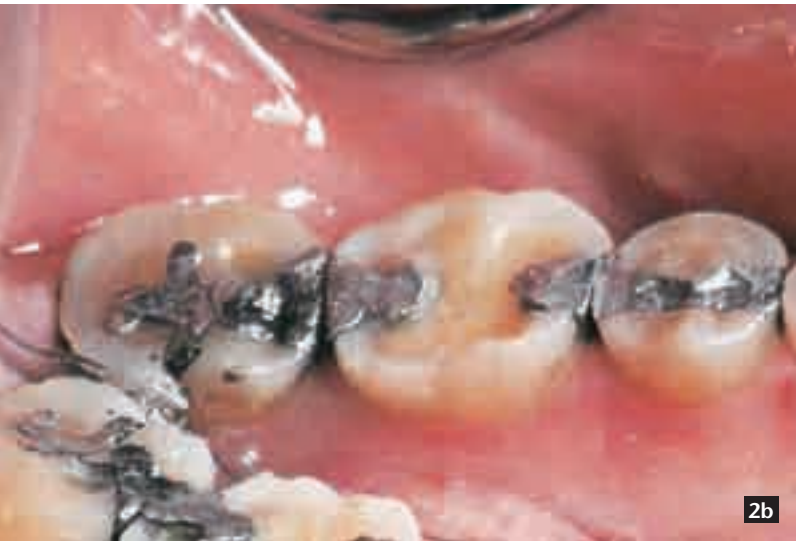

Figure 2b. "Raised islands" of amalgam secondary to enamel erosion in bulimia.

2. *Mucosal changes*

The oral mucosa remains an excellent marker for underlying systemic health.[31] Many systemic diseases often manifest initially in the oral tissues before becoming obvious elsewhere in the body e.g. anemia. Deficiencies in nutritional intake inherent in eating disorders (e.g. Vitamin B6, B12, and iron deficiency), can have a direct effect on the integrity of the oral mucosa resulting in mucosal atrophy, taste/sensory alterations (i.e. dysgeusia/glossodynia), angular cheilitis, and an overall impairment of the repair potential of the oral tissues.[23,31] Depending on the mode of induction of purging behaviour, the palatal mucosa may exhibit erosive or erythematous type lesions secondary to repeated frictional trauma and from direct contact with gastric acids.[5]

3. *Potential damage to the periodontium*

While eating disorders have the highest incidence of occurrence in young adults, periodontal disease remains relatively uncommon in this age group. However, nutritional deficiencies as a consequence of the chronicity of eating disorders can also impact directly on the health and integrity of the periodontium. For example, a reduced intake of Vitamin C will lead to a deficiency in collagen formation within the periodontium thereby weakening the integrity of these supporting tissues.[31] Repeated episodes of binge eating and purging can act as a hindrance to performing adequate daily oral hygiene. In addition, the frequent comorbidity of depression with eating disorders may also result in a neglect of adequate oral self care. The higher incidence of smoking in this patient population can also impact negatively on periodontal health.[1,4,9]

4. *Salivary gland structural changes*

Salivary gland swelling (sialadenosis) of predominantly the parotid glands has been described in patients with bulimia, in as many as 50% of cases.[2,23] Sialadenosis may in fact be the initial presenting sign before any other intraoral findings (i.e. erosion) are detected.[5] The swellings are generally described as being soft and non tender.[2] While the exact etiology remains unknown, a general consensus concludes that as a result of repeated emetic episodes, there is the progressive development of an impaired metabolic and secretory function of the salivary glands. These disturbances likely result from an alteration to the peripheral nerve innervation to the affected salivary glands leading to abnormal enlargement of the individual secretory units (acini) of the glands and subsequent impaired functioning of these units.[5,22]

DENTAL MANAGEMENT STRATEGIES

1. *Dental health practitioner–patient interaction*

One of the greatest challenges, as with any significant health issue, is that the dental practitioner must perceive that a medical problem such as an eating disorder represents a threat to their patient's overall physical or oral health or both combined. If this perception or acknowledgment is absent there will be a far less engagement of secondary preventive behaviours that would otherwise have led to earlier identification, referral, and treatment. Furthermore, this earlier identification and referral process provides an opportunity for some collaboration and integration of oral health care with mental health care services.

There are many studies that suggest that the oral health professional may be in the unique position of being the first individual to detect the clinical oral signs of an eating disorder, usually in the face of outright denial or ambivalence by the patient.[3,4,8,14] It is imperative that the practitioner carry a non judgmental and empathetic attitude when attempting to begin a dialogue with patients presenting with findings suspicious for an underlying eating disorder. A confrontational or blunt approach will most likely incur resistance, denial, protestation, or even hostility towards the practitioner. Lengthy questionnaires and surveys that have been developed for diagnosing eating disorders have proven to be too lengthy for use in the dental office.[7]

Hazelton et al.[7] reviewed two simple questions that could be added to any dental health history form which were considered to convey both a high specificity and sensitivity towards those patients suspected of suffering from an eating disorder. These questions were:

> ***Are you satisfied with your eating patterns?***

and

> ***Do you ever eat in secret?***

Each requires a "yes" or "no" response. Other questions described in a review by Schmidt and Treasure[3] include:

> ***Your teeth are quite badly damaged. I am not totally certain what this is due to. But we do see these kinds of changes quite often in young women who drink a lot of diet drinks. Is this something you do on a regular basis?***

or

> ***Sometimes the kind of changes that I see in your teeth are to do with a young person making herself sick. Is this something that you ever do?***

Two scenarios may arise from such lines of questioning; either the patient will acknowledge that something is in fact wrong, but yet not be ready to fully disclose and proceed further with any discussion of the problem. Or the patient will show complete denial that any such problem

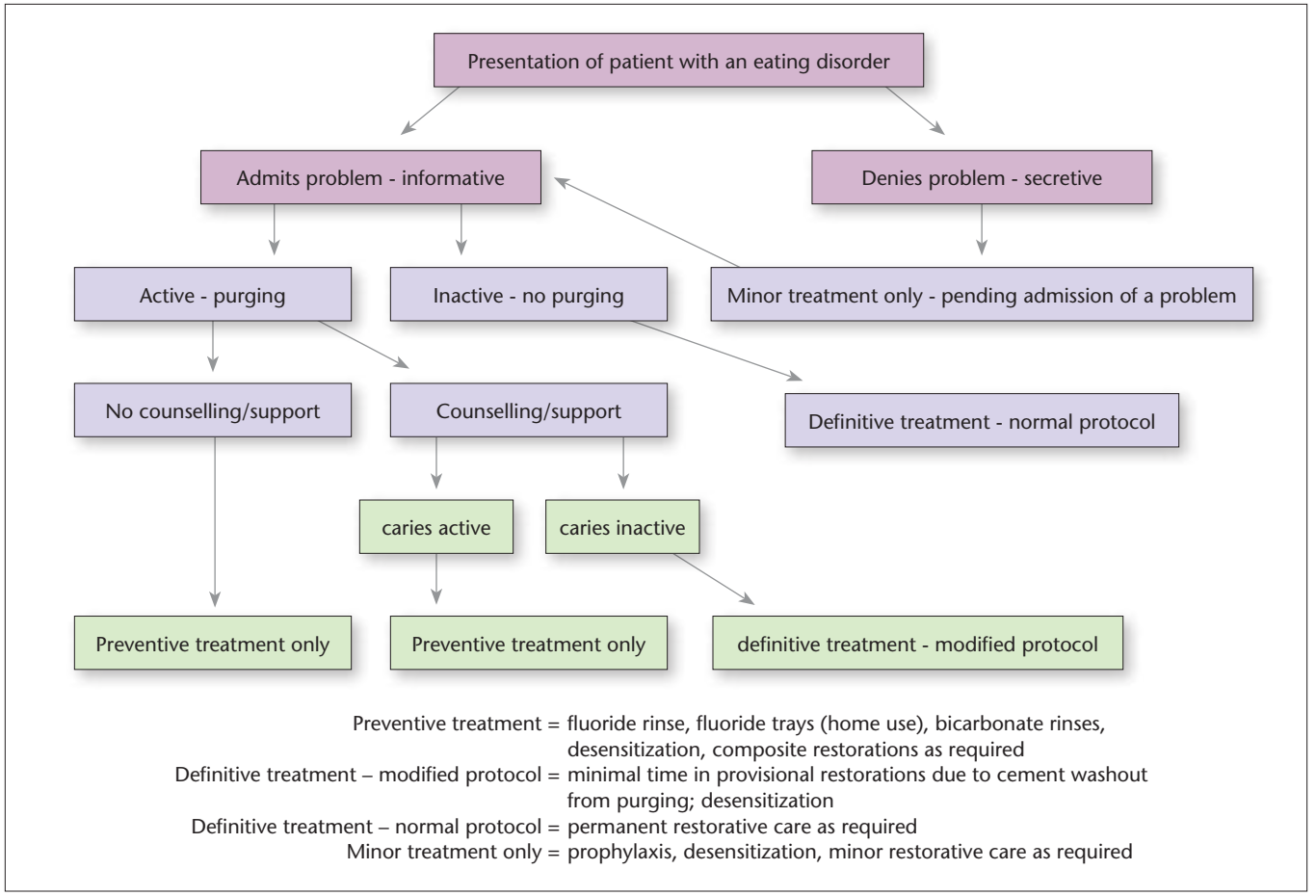

Figure 3. Algorithm for a dental treatment protocol for a patient with an eating disorder. (Adapted from: Hazelton LR and Faine MP. Diagnosis and Dental Management of Eating Disorder Patients. *Int J Prosthodont*. 1996;9:65–73.)

exists. In the former situation, the initiation of dialogue is critical to ensure that the patient understands the support and empathy the practitioner offers for further discussion when the patient is ready. In the latter scenario, the dental practitioner must still be prepared to provide background clinical information on both the physical and oral effects of eating disorders including simple preventive care strategies that can be used to prevent further damage of the dental and oral tissues. Patients who acknowledge the possibility of an underlying eating disorder should be referred for a consultation with a medical practitioner. Oral health practitioners (dentist/dental hygienist) should remain as part of a multidisciplinary team that includes a psychotherapist/psychiatrist, physician, nurse, and nutritionist and a team that is designed to manage in a highly collaborative approach the psychological and physical needs of those being treated for a particular type of eating disorder. The dental practitioner should also be able to provide information on support resources (e.g. support groups, helplines) on eating disorders to which an interested patient may be referred for additional professional help.

2. *Clinical dental intervention strategies*

Any form of comprehensive dental rehabilitation will carry the best prognosis once both the medical and psychiatric aspects of these diseases have been stabilized.[2] Intervention strategies must be accompanied by both a sympathetic and non judgmental approach to acquire patient confidence and trust gradually. Minimally invasive or palliative type dental care can include dietary counselling and oral hygiene instruction. High carbohydrate diets may be prescribed by the physician for patients with anorexia. However, to help reduce the volume of the high sugar or acid content or both in some of these foods, other food substitutes can be recommended such as crackers, cheese, and other high protein containing foods.[4] Emphasis has been placed on avoiding toothbrushing immediately after purging episodes to avoid excessive loss of demineralized enamel or dentin.[18,22] Neutralization of the gastric acids is of paramount importance immediately following purging behaviours. This can be accomplished with oral rinses consisting of either sodium bicarbonate, neutral sodium fluoride, milk, or plain water.[4] Exposed dentin surfaces that exhibit thermal sensitivity can be treated with desensitizing toothpastes. If necessary, the use of provisional coronal restorations will restore tooth integrity, and maintain some degree of patient self esteem pending the placement of more permanent restorations.[32]

Patients experiencing xerostomia secondary to concomitant psychotherapeutic medications may be counselled to follow a dry mouth protocol involving salivary substitutes, oral moisturizers, high concentration fluoride containing

dentifrices and rinses, and the use of sugar free gum.[4,18,19,32] Regular and frequent recall examinations, prophylaxes, and fluoride applications will also serve to prevent further deterioration of the teeth either during the period of active illness or as the patient slowly responds to medical treatment to gradually cease their purging behaviours.

Permanent restorative care may be considered once recovery has been verified by the eating disorders treatment team. For patients with bulimia in particular, restorative treatment may vary depending on the degree of erosion that has occurred. Mild erosion may require no treatment while moderate to severe erosion may range from veneer application, orthodontic repositioning, endodontic therapy, and full coronal coverage.[22] Figure 3 highlights a suggested algorithm of various dental treatment protocols for the patient with an eating disorder.[7]

CONCLUSION

Factors that have always been fundamental to the oral health practitioner–patient relationship include education, trust, and respect. These same factors become highly significant in the management of patients with various psychiatric disorders. Every oral health practice will include patients who may be dealing with a particular eating disorder even though many of these patients may appear healthy despite struggling with this illness. Oral health practitioners may often find themselves on the frontline in terms of initially identifying the various oral signs and symptoms of an eating disorder. Eating disorders and their resulting disabilities inflict immeasurable difficulties and consequences on the patient and his or her friends and family.

Early detection and intervention play a vital role in the treatment and recovery from an eating disorder. Intervention also provides mechanisms for reducing further damage to the entire body, including the teeth and surrounding structures. Dentistry can play a significant role in the diagnosis, support, and long term management of those patients suffering from an eating disorder. In addition, it remains crucial that undergraduate dental and dental hygiene curricula, and continuing dental education programs provide up to date didactic and clinical information on eating disorders. It is important that such educational initiatives enable the oral health practitioner to confidently assume what is often a first observer role in this disease.[26] The ability of the dental team to contribute to increased feelings of self worth and self esteem within the overall psychotherapeutic and medical management of a patient suffering from an eating disorder is not only a challenging task but also an extremely rewarding experience in terms of a positive outcome.

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As dental hygienists seek out more unique practice opportunities and locations, it becomes increasingly clear that they also need to examine their target clientele. In our multicultural society, it is important that we recognize and begin to understand the cultural differences that are presented among our client groups. In the 2006 Census, 19.8% of the Canadian population reported being foreign born, and 70% of that group spoke a mother language other than English or French.[1] Therefore, Canada's growing multicultural population will impact anyone who works in the healthcare settings.

Each of us has a culture. The Canadian Nurses Association defines it as "a way of life, a way of viewing things and how one communicates...it provides an individual with a way of viewing the world, and as a starting point for interacting with others.[2]

Sondra Thiederman[3] states that one of the most important considerations when communicating with different cultural groups is to have an effective communication style.

The following are Dr. Thiederman's tips for effective communication in the healthcare sector:

1. Write it down, in simple English.
2. Make an excuse to repeat the instructions or question. You can say something like "I am not sure that I covered this, so let's go over it again".
3. Look for non verbal signs that your client is not understanding such as repeated head nodding or self conscious laughter.
4. Beware of tentative answers from the client such as "I think I can figure this out". In some cultures this means that "I do not understand, but do not want to say so".

Many languages are spoken in Canada today. Accents differ, and may interfere with the client's ability to be understood. Dr. Thiederman offers the following techniques for better understanding.

1. Expect to understand. If you do not expect to understand you will give up trying. Let your ear adjust to the different language tonalities, and you will begin to get the message.
2. Create a relaxed atmosphere: anxious clients tends to speak with a more pronounced accent which makes them more difficult to understand.
3. Do not interrupt the speaker. The message may become clearer as the client speaks.
4. Rephrase questions in different ways to allow the speaker to use different words that may be more easily understood.
5. If all else fails, ask the client to write the message.

Dr. Josepha Campinha-Bacote[4] speaks about the process of *becoming* culturally competent rather than *being* culturally competent. The process involves five steps.

Cultural awareness: The process of looking at one's own biases to other cultures.

Cultural knowledge: The process of finding sound information on world views of different cultures and ethnic groups, and understanding biological variations, diseases, and health conditions of the different populations.

Cultural skill: This refers to the health professional's ability to collect and assess relevant data about the client and their health problems and to conduct a physical assessment.

Cultural encounter: The process where a health professional engages in cultural interactions with clients of diverse backgrounds.

Cultural desire: Refers to the motivation of the health professional to "want" to become culturally aware.

The building blocks of effective dental hygienist–client relationships reflect a client centred focus. Dental hygienists in all types of practice settings are ideally positioned as the first contact with new clients. The ability to provide culturally appropriate care will most certainly improve outcomes, and create a more satisfying work experience.

CDHA welcomes your feedback: awright@cdha.ca

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CDHA Community Calendar

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

UPCOMING EVENTS/ÉVÉNEMENTS À VENIR

Programs may be subject to change.

Online event	8 September 2010	Webinar and Forum	*Fluoride toothpastes for children and adolescents*	THE COCHRANE COLLABORATION®
Online event	27 October 2010	Webinar	*Entry-To-Practice Competencies and Standards for Canadian Dental Hygienists*	CDHA ACHD THE CANADIAN DENTAL HYGIENISTS ASSOCIATION L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES
Online event	Later this fall	Webinar	*Insensitive to Dentin Hypersensitivity? Etiology & Prevention Strategies*	PHILIPS sonicare the sonic toothbrush
Onsite event	October 2010	Montreal, QC	CDHA Annual General Meeting	CDHA ACHD THE CANADIAN DENTAL HYGIENISTS ASSOCIATION L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES
Onsite event	10–11 June 2011	Halifax, NS	*Advancing Dental Hygiene Practice*—CDHA national conference	Advancing Dental Hygiene Practice HALIFAX 2011 CDHA Conference

President's message, *Our green tree* …continued from 139

research in our profession. We need research to provide evidence that *dental hygiene matters*. It is so simple, yet so profound. This is the cornerstone of our profession and our education.

I see the branches of our profession budding with potential for new growth. We must nurture the tree with support, collaboration, education, and vision.

This is our green tree.©CDHA

Message de la présidente, *Notre arbre de verdure* …suite 139

de notre formation.

Je vois naître les bourgeons des rameaux de notre profession, source d'une nouvelle croissance. Nous devons entretenir cet arbre de notre soutien, de notre collaboration, de notre éducation et de notre perspective.

C'est notre arbre de verdure.©CDHA

(Acting) Executive Director's message de la directrice générale (intérimaire), *We want to hear from you! / Nous voulons de vos nouvelles !*

…continued from/suite 143

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Dental hygiene educators, France Lavoie (President RHDQ), Louise Bourassa, and Nadia Dubreuil are teachers–researchers from Québec. They co-authored a chapter on dentifrices in *Dental Hygiene Theory and Practice* of Michele Darby, reference book for dental hygienists in North America. They are members of *Comité Recherche* at Cégep François-Xavier-Garneau, and present on such topics as dentifrices and mouthrinse. ©CDHA. Printed with permission.