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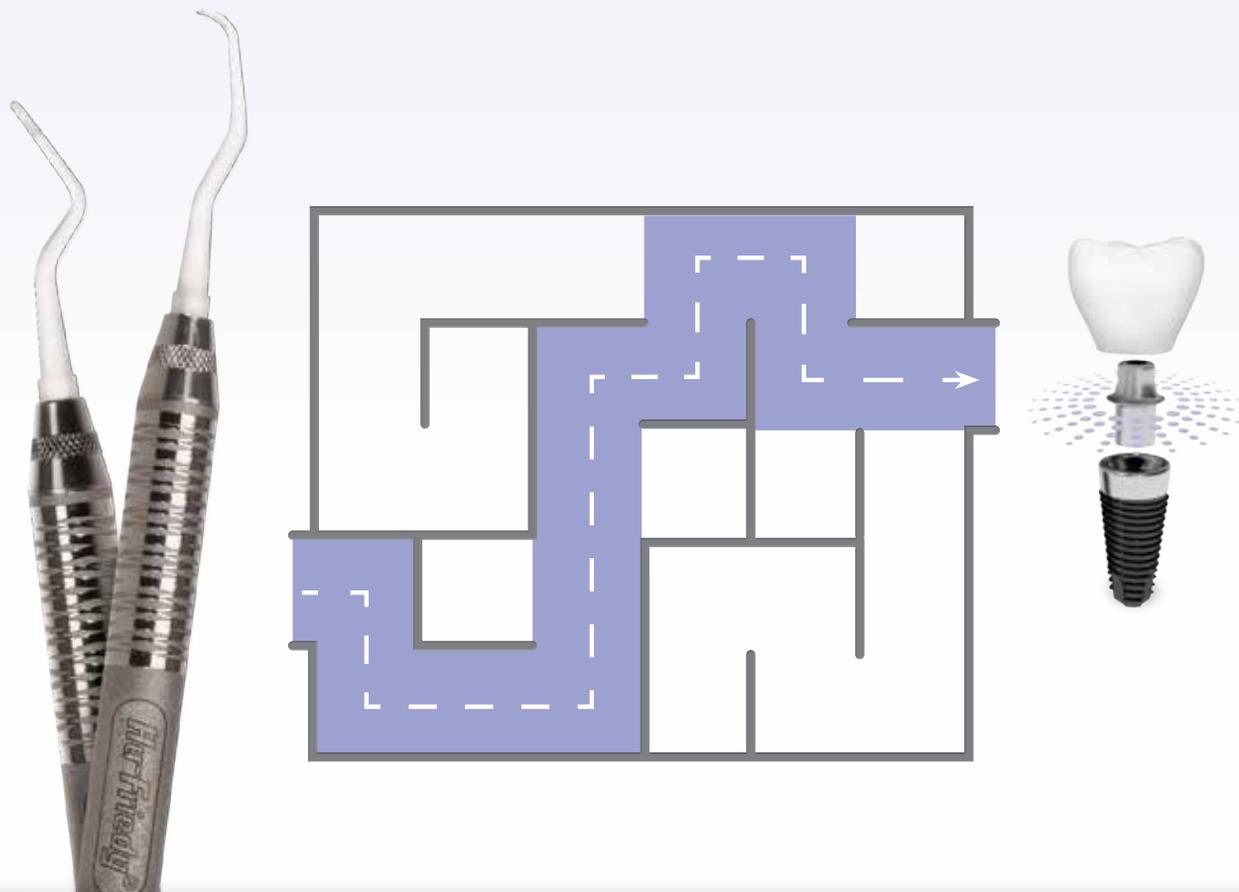
**Understanding service provider, parent, and caregiver
views on early childhood oral health promotion**

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The *Canadian Journal of Dental Hygiene* is the official peer-reviewed publication of the Canadian Dental Hygienists Association (CDHA). Published in February, May, August, and November, the journal invites submissions of original research, literature reviews, case studies, and short communications of scientific and professional interest to dental hygienists and other oral health professionals. Bilingual Guidelines for Authors are available at www.cdha.ca/cjdh.

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The importance of researching dental hygiene education

Zul Kanji, MSc, RDH

The number of dental hygienists in Canada who are pursuing advanced education is growing. Of the 5,400 respondents to the 2013 Canadian Dental Hygienists Association (CDHA) Job Market & Employment Survey, 1,040 dental hygienists indicated that they have a bachelor's degree (358 specifically in dental hygiene), 106 have a master's degree, and 19 have earned a doctoral degree.¹ Considering that there are approximately 17,000 CDHA members, these statistics likely underestimate the true number of Canadian dental hygienists who have post-diploma education.

The evolution of dental hygiene education in Canada has resulted in an eclectic array of entry-to-practice (ETP) programs ranging from 2-year and 3-year diploma programs to a 4-year bachelor's degree program. For several years, I have been teaching within a dental hygiene baccalaureate program and conducting research on dental hygiene education. I continue to find it fascinating and frustrating that a diploma remains the ETP credential for dental hygiene. There has been a lot of talk about making the baccalaureate the ETP requirement for dental hygiene in Canada, particularly now that the dental hygiene baccalaureate is required for ETP in other countries, including Finland, Italy, the Netherlands, and Slovakia. I have been asked countless times why our profession has yet to reach this professional milestone in this country. Moreover, the past 2 decades have been witness to the credential advancement of many other allied health care professions in Canada. Nursing has progressed to a bachelor's degree; physical and occupational therapy have advanced to a master's degree; and most recently, provincial governments across the country have been approving the advancement of pharmacy's ETP credential to a Doctor of Pharmacy designation. So why, in comparison, has dental hygiene remained so stagnant?

I believe that part of the answer involves researching the benefits or outcomes of advancing dental hygiene education. Literature clearly indicates that students pursue



Zul Kanji

a baccalaureate degree in dental hygiene most notably to increase their career opportunities, to increase their perceived credibility, to broaden and deepen their knowledge base, to increase their critical thinking and research use skills, and to access graduate education.²⁻⁹ This research continues to demonstrate that baccalaureate degree dental hygienists are more successful in obtaining employment in educational institutions, sales corporations, regulatory bodies, professional associations, and community-based programs and agencies.²⁻⁹ Most of this research focuses on career outcomes after earning a

dental hygiene baccalaureate degree; there is a scarcity of research exploring the outcomes of such education on practice abilities, client health, and client safety.

CDHA has endorsed baccalaureate level education for dental hygienists for many years. In its 1998 Policy Framework for Dental Hygiene Education, CDHA recognized that future dental hygiene practice must accommodate an expanding body of dental hygiene theory, changing population demographics and oral disease patterns, and an increasing need for quality oral health services.¹⁰ Dental hygiene education must prepare its graduates for increasing levels of responsibility in varied practice environments. The baccalaureate degree for ETP as well as articulation to master's degrees were goals in the 2009 CDHA Dental Hygiene Education Agenda.¹¹ More general research has also indicated that longer educational programs foster graduates with greater critical thinking and reasoning abilities, research use skills to inform practice decisions, and tools to assume leadership roles in healthcare delivery, all of which the World Health Organization has deemed as essential if health professionals are to address the increasingly complex health needs of the public in the 21st century.^{12,13}

Building the capacity of the health care workforce to support improved health outcomes and increased client safety is a central theme nationally. However, to address concerns about "credential creep," the Health Council of

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Canada as well as the Federal, Provincial and Territorial Ministries of Health and Ministries of Post-Secondary/Advanced Education state that increases to credential requirements should occur only when there is evidence demonstrating that the additional education results in an improvement in the quality of client care and client health outcomes.^{14,15}

Here lies the missing piece for dental hygiene! Several of my dental hygiene colleagues and I have conducted research in which dental hygienists self-report providing a higher level of evidence-based care after earning their dental hygiene degree.^{2,4} Yet, there is no research or evidence to demonstrate how this improved level of care translates into improved client health outcomes. Research in this area would provide valuable insight into the level of education required for the more complex care that many dental hygienists are already providing in varied practice environments.

Some nursing literature, for example, has explored the impact of nurses' education on clinical competence, suggesting a correlation between higher levels of nursing education at the baccalaureate degree level and improved patient outcomes including lower patient mortality rates.^{16,17} Conducting this type of research on client health outcomes in dental hygiene is challenging since such outcomes are usually less obvious or explicit than patient mortality. In addition, there are a limited number of dental hygiene degree programs and dental hygienists with a dental hygiene degree in Canada. This presents a catch-22: government ministries and health councils are requiring evidence of improved client care after baccalaureate education before a sufficient number of degree programs and dental hygienists practising with a degree exist. Thus, I would suggest that the focus for dental hygiene be directed first at increasing the number of bachelor's degree programs while advocating for research on the impact of advanced dental hygiene education on the outcomes of care. Recently, I have been inspired by the number of dental hygienists who are interested in conducting educational research. This interest in and dissemination of research will hopefully bring us one step closer to the evidence we need to advance the profession.

IN THIS ISSUE

We are pleased to showcase two original research studies in this issue of the journal. The first, by **Robert Schroth** and colleagues (p. 99), examines service provider, parent, and caregiver views on oral health promotion in Manitoba. The findings from this study are already being used to inform the development of more effective oral health promotion and community engagement activities in that province. The second, by **Sulugodu Ramachandra Srinivas** and colleagues (p. 109), identifies the most common causes for non-usage of dental floss among the student population at a dental college in northern India. Because oral health professionals advise the general public on oral hygiene care for good oral and overall health, students in dental and dental hygiene programs must receive thorough instruction in both the benefits and techniques of using dental floss in order to pass that information along to their future clients. Finally, **Mary Bertone** offers insight into the ongoing debate in Canada over community water fluoridation (p. 92), and **Katherine Zmetana** pays homage to our editorial board members (p. 95), whose expertise and dedication maintain the journal's high quality and scholarly integrity.

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Community water fluoridation: Why the debate continues

Mary Bertone, BSc(DH), RDH

The overwhelming consensus of health professionals and health agencies, including the World Health Organization, is that community water fluoridation (CWF) is a tremendously beneficial and cost effective public health intervention.¹ The Canadian Dental Hygienists Association (CDHA) shares this opinion, which is presented in our formal position paper.² Nonetheless, a small but extremely vocal and motivated anti-fluoridation activist group stands in opposition to CWF.³ This interest group has drawn its own conclusion about both the effectiveness and risks of CWF based on information and factors beyond what is considered valid by the larger scientific community. In the middle of this debate stand the rest of us—the public who would benefit from, or be victimized by, CWF depending on what side of the debate you take. To me, what makes the debate so fascinating is that there shouldn't even be a debate. How does a group so small in numbers and contrary to scientific opinion make such progress? I recently set out to understand just that during my Master of Public Health studies, and here is what I learned.

Because the anti-fluoridation activist group is small in numbers, it tends to employ tactics targeted at drawing public and media attention to amplify their message. These tactics are not designed to simply change opinion; they are intended to infuriate.⁴ Yes, the activists are trying to educate the public, but only to shape their beliefs and develop the levels of anger and outrage that the activists feel themselves.⁴

The anti-fluoridation activist groups' techniques are varied. One way is to imply conspiracy theories involving health establishments, governments, and private corporations.⁴ Anti-fluoridation activist groups use narratives designed to incite fear.⁴ They promote information vetted by those who support their cause and not supported by legitimate scientific research or the scientific community.⁴ Moreover, they debate the



Mary Bertone
CDHA President/Présidente de l'ACHD

Fluoration de l'eau potable des collectivités : pourquoi le débat se poursuit-il?

Le consensus qui domine au sein des professionnels et des organismes de santé, y compris à l'Organisation mondiale de la Santé, est que la fluoration de l'eau potable des collectivités est une intervention extrêmement avantageuse et rentable pour la santé publique.¹ L'Association canadienne des hygiénistes dentaires (ACHD) partage cette opinion, laquelle est présentée dans notre énoncé de position officiel.² Cependant, un groupe d'activistes anti-fluoration, petit, mais bien décidé à se faire entendre, s'oppose vivement à la fluoration de l'eau potable.³ Ce groupe de pression a tiré ses propres conclusions à propos de l'efficacité et des risques liés à la fluoration de l'eau

potable des collectivités en se basant sur de l'information et des facteurs qui ne sont pas endossés par la communauté scientifique en général. Puis, au cœur de ce débat, se trouve le reste d'entre nous — le grand public, qui bénéficiera de la fluoration de l'eau potable dans les collectivités, ou qui en sera victime, selon la position que nous adoptons. Selon moi, ce qui rend ce débat si fascinant est qu'il ne devrait même pas y avoir de débat. Comment se fait-il qu'un si petit groupe de personnes, ayant un point de vue contraire à l'opinion scientifique, puisse faire tant de progrès? C'est précisément ce que j'ai tenté de comprendre récemment, au cours de mes études de maîtrise en santé publique, et voici ce que j'en ai déduit.

Puisque les groupes d'activistes anti-fluoration de l'eau potable comptent peu de gens, ils ont tendance à employer des stratégies qui attirent l'attention du public et des médias, ce qui les aide à amplifier leurs messages. Les stratégies qu'ils utilisent n'ont pas comme seul objectif de changer l'opinion des gens; elles servent à exacerber les tensions.⁴ Oui, ces groupes d'activistes tentent de sensibiliser le grand public, mais ils le font seulement dans le but de façonner les croyances des gens et de les inciter à être aussi en colère et indignés qu'eux.⁴

Les techniques que les groupes d'activistes anti-fluoration utilisent sont variées. L'une de ces techniques consiste à recourir à la théorie du complot dans lequel serait impliqué les établissements de santé, les gouvernements et certaines sociétés privées.⁴ Les groupes d'activistes tiennent un discours destiné à susciter la peur.⁴ Ils font la promotion d'information validée par ceux qui soutiennent leur cause,

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issues using their unsubstantiated information in order to give the perception of a scientific controversy.⁴ They label those in opposition to their point of view as a pro-fluoride special interest lobby, and accuse them of employing the same underhanded tactics that they themselves use.⁴ The antifuoridation lobby has threatened legal action not just against the communities, local governments, and utilities employing CWF, but even directly against individual employees.³

The emergence of social media has had a significant impact on the antifuoridation movement. Through a well-organized approach and online presence, some antifuoridation activist groups have been successful in changing public opinion.^{1,4} The ability to bypass the general media provides them with a platform from which to present their messages directly to the public with relative ease. Antifuoridation activist groups garner the most attention when they congregate for rallies, and social media helps to facilitate coordination of these events. All of this serves to legitimize and mainstream their beliefs in the eyes of the public. It helps them recruit, and it provides immediate contact and feedback.

The antifuoridation activist approach is not necessarily an unacceptable societal response to legitimate social issues. In fact, one might even argue that it is productive. After all, some of the world's greatest changes and evolutions have resulted from segments of society taking a stand. However, in the case of the antifuoridation movement, the strength of the belief that something must be wrong has resulted in a rejection of science-based reason and an inability to be open to the possibility that they could be mistaken.⁴ It puts an apathetic public in a precarious position.¹ This small but vocal interest group has the capacity to successfully eradicate programs from individual communities despite the clear greater good that CWF provides to citizens.

In fact, this is exactly what happened in the city of Calgary in 2011, and if it can happen in a major, progressive urban city such as this, then it can happen anywhere.⁵ One would think that this development would serve as a rally call for health professionals everywhere to match the tactics of the antifuoridation movement with pro-CWF tactics and strategies of their own. CWF has a powerful trump card: it is backed by the scientific and health professionals' community. Yet many of those who are in favour of CWF feel that taking on the debate through public engagement would legitimize the antifuoridation argument. Because it does not merit this legitimization, the health community does not proactively engage. Instead, the battle is fought on a case by case, community by community basis.⁴ This gives the antifuoridation lobby equal access to venues and, consequently, an equal platform to express their beliefs. An equal platform in turn serves to add legitimacy to their voice.⁴

mais elle n'a pas été légitimée par des recherches approuvées scientifiquement ou par la communauté scientifique.⁴ Par ailleurs, non seulement ils débattent des questions en se servant de leurs données non fondées, mais ils donnent en plus l'impression qu'une controverse scientifique a lieu.⁴ Ils prétendent, de ceux qui s'opposent à leur point de vue, qu'ils font du lobbyisme profluoruration pour des intérêts dits particuliers et les accusent d'employer les mêmes tactiques surnoises qu'ils utilisent eux-mêmes.⁴ Le groupe de pression antifuoruration a menacé d'intenter une action en justice non seulement contre les collectivités, les gouvernements locaux et les services publics qui utilisent la fluoruration dans l'eau potable, mais également contre les employés individuellement.³

L'avènement des médias sociaux a eu d'importantes répercussions sur le mouvement antifuoruration. À l'aide d'une approche bien structurée et de leur présence en ligne, certains groupes antifuoruration ont réussi à faire changer l'opinion publique.^{1,4} Cette capacité de contourner les grands médias leur offre une tribune à partir de laquelle ils peuvent assez facilement présenter leur message directement au public. Les groupes d'activistes antifuoruration attirent d'autant plus l'attention lors de leur ralliements et les médias sociaux facilitent grandement l'organisation de ces événements. Tout ceci sert à légitimer et à consolider leurs croyances aux yeux du public, en plus de les aider à recruter, à avoir un contact immédiat avec le public et à une rétroaction instantanée.

L'approche des activistes antifuoruration n'est pas nécessairement une réponse sociale inacceptable pour les questions sociales légitimes. En fait, certains pourraient même dire que cela peut être fructueux. Après tout, certaines des plus grandes évolutions et des plus grands changements de ce monde sont les fruits de la prise de position de certains acteurs de la société. Cependant, pour ce qui a trait au mouvement antifuoruration, la force de leur croyance que quelque chose doit sûrement être faux les a menés au rejet de la raison fondée sur la science et à une incapacité d'être ouvert à la possibilité qu'ils ont peut-être tort.⁴ Cette approche place un public indifférent en position précaire.¹ Ce groupe d'activistes, petit, mais qui sait se faire entendre, a la capacité d'anéantir les programmes de fluoruration d'une collectivité, en dépit du bien commun évident que la fluoruration de l'eau potable de cette collectivité vient procurer à ses citoyens.

En fait, c'est justement ce qui s'est produit dans la ville de Calgary, en 2011. Si cela peut se produire dans une grande métropole progressiste comme celle-là, on peut alors en déduire que cela pourrait bien se produire n'importe où.⁵ Plusieurs se sont dit que cette situation servirait de cri de ralliement et inviterait les professionnels de la santé de partout à se rassembler afin de faire front commun pour contrer les stratégies du mouvement antifuoruration, en élaborant leurs propres stratégies profluoruration. Les partisans de la fluoruration de l'eau potable des collectivités ont un atout puissant : ils ont l'appui de la communauté scientifique et des professionnels de la santé. Toutefois, plusieurs de ceux qui sont en faveur de la fluoruration de l'eau potable estiment que de lancer le débat par une participation publique ne tendrait qu'à légitimiser les

Without question, the antifuoridation activist lobby is effective and intense. One might take issue with their tactics, but it cannot be denied that they are having more impact of late, particularly by leveraging social media. However, despite their best efforts, the fact will always remain that the consensus opinion of dental and health professionals, the scientific community, and professional associations like CDHA is that CWF works, it is safe, the benefits far outweigh the risks, and the marginalized target populations welcome the help. The challenge we face is to do a better job to educate the public on the benefits of CWF to counter the voice of the small but vocal opposition.

arguments antifuoridation. Puisque ces arguments ne méritent pas une telle légitimation, la communauté des professionnels de la santé ne s'engage pas de manière proactive. Elle choisit plutôt de livrer bataille, cas par cas, et d'une collectivité à une autre.⁴ Ces rencontres permettent aux groupes de pression antifuoridation d'avoir un accès équitable aux sites et, conséquemment, d'avoir une tribune analogue pour exprimer leurs convictions. Une tribune uniforme sert aussi à ajouter de la légitimité à leur voix.⁴

Sans le moindre doute, les groupes de pression antifuoridation sont efficaces et leurs actions sont d'une grande intensité. Certains pourraient être tentés de contester les tactiques qu'ils emploient, mais personne ne peut nier qu'ils ont un plus grand impact ces derniers temps, surtout depuis qu'ils tirent profit des médias sociaux. Cependant, en dépit de tous leurs efforts, l'opinion consensuelle des professionnels dentaires et de la santé, de la communauté scientifique, ainsi que des associations professionnelles comme l'ACHD demeurera toujours que la fluoruration de l'eau potable des collectivités est efficace, qu'elle est sécuritaire, que les bienfaits surpassent grandement les risques, et que les quelques segments de populations ciblées sont heureux d'obtenir cette aide. Le défi que nous devons relever consiste à mieux renseigner la population sur les avantages que comporte la fluoruration de l'eau potable et de contrer la voix d'une minorité de personnes qui, malgré tout, manifeste une vive opposition.

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CJDH editorial board recognition

Katherine Zmetana, DipDH, DipDT, EdD
Scientific Editor

The *Canadian Journal of Dental Hygiene* (CJDH) is evolving with the times. Over the last few years, you may have noticed some subtle and some not-so-subtle changes in the journal. The alterations have been gradual and incremental, starting with the move to quarterly issues and continuing with a new cover look, the addition of new departments (such as the Short Communication), the inclusion of a regular editorial, and finally, a cleaner, leaner overall layout and table of contents. We've revised and simplified the journal's *Guidelines for Authors* and now send out the call for manuscripts to wider audiences. Our pool of peer reviewers has expanded internationally. These enhancements have been carefully introduced by the editorial team and guided by our editorial board.

In the spirit of continuous improvement and development, the journal has sponsored an annual research award and has taken a more active presence at the Canadian Dental Hygienists Association's biennial national conference. The scientific editor also represents the journal on the association's research advisory committee.

As stated in its terms of reference, the editorial board's main function is to "preserve and enhance the journal's reputation as a trusted source of high-quality scientific information" and to "maintain the highest standards of peer review, in line with the current guidelines from relevant bodies." Members of the editorial board take their responsibility seriously, and have worked hard in their voluntary capacity. Editorial board members are appointed, based on their credentials and accomplishments, and are committed to a renewable three-year term. In our succession planning, we have implemented a mentoring program; thus, the 2014 editorial board includes several longstanding members who have agreed to stay on while newer members are becoming comfortable in their new roles. I would like to acknowledge their efforts and to recognize their contributions by introducing the CJDH editorial board members, old and new, to you.



Arlynn Brodie, BPE, MHS, RDH, has been a practising dental hygienist for 26 years and was appointed to the editorial board in January 2014. Her educational background includes a diploma in dental hygiene from the University of Alberta, a bachelor's degree in education from the University of

British Columbia, a diploma in public sector management from the University of Victoria, and a Master of Health Studies from Athabasca University. Currently, Arlynn is a faculty member at the University of Alberta, School of Dental Hygiene. Arlynn's passion for the profession of dental hygiene has driven her to be a strong advocate for the growth and development of our profession. Arlynn has served as chair and board member of the College of Dental Hygienists of BC, president and board member of the BC Dental Hygienists' Association, and board member, president, and past president of the Canadian Dental Hygienists Association.



Ava Chow, PhD, RDH, completed a Bachelor of Science at McGill University, a Master of Science at the University of Ottawa, and did her dental hygiene training and completed a PhD at the University of Alberta. Her current research explores the involvement of the caveolin proteins in a number of

cell processes, including cell death, extracellular matrix degradation and *P. gingivalis* evasion of the host immune response. Though Ava's training is in the basic biomedical sciences, her joining the editorial board earlier this year has enabled her to remain current and involved in the work being done in the dental hygiene community in various research pillars.

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Laura Dempster, PhD, RDH, is an assistant professor in the Faculty of Dentistry, University of Toronto, and has been a member of the editorial board since 2009. She received her DipDH and BScD(DH) from the University of Toronto, her MSc from McMaster University, and her PhD from the

Institute of Medical Sciences, University of Toronto. Her primary undergraduate teaching responsibility includes behavioural science and communication skills, and her research focuses on characterizing dental anxiety, teaching communication skills, and studying the alignment of dentist perceptions and client beliefs in various contexts. Laura holds the inaugural Kamienski Professorship in Dental Education Research and is cross appointed at the Wilson Centre for Research in Education, University of Toronto, and the Centre for Ambulatory Care Education (CACE), Women's College Hospital. Laura has presented to health professional groups locally, provincially, and nationally and was directly involved in Ontario's pursuit of self-regulation. She is past president of the Ontario Dental Hygienists Association, past president of the Association of Canadian Faculties of Dentistry, and currently president of the Education Research Group of the International Association of Dental Research.



Indu Dhir, MS, RDH, has been a registered dental hygienist since 1994. Her educational background includes an Associate of Applied Science in dental hygiene from Hudson Valley Community College, an honours Bachelor of Science from the University of Toronto, and a Master of Science in dental

hygiene education from the University of Missouri-Kansas City School of Dentistry. Recently she completed a graduate diploma in distance education technology from Athabasca University. Indu has been the program director of the dental hygiene program at the Canadian Academy of Dental Health and Community Sciences for over 10 years. She has been active in the profession through her involvement with the Canadian Dental Hygienists Association's research advisory committee and as a member of the CJDH editorial board since 2008; the National Dental Hygiene Certification Board as an item writer and reviewer; and the Commission on Dental Accreditation of Canada as a site surveyor.



Leeann Donnelly, PhD, RDH, is an assistant professor in the Department of Oral Biological and Medical Sciences, Faculty of Dentistry, University of British Columbia (UBC), and was first appointed to the editorial board in 2009. She received her diploma in dental hygiene in 1996 and

her BScD(DH) in 2002 from UBC, where she went on to earn an MSc (2005) and a PhD (2012). Leeann currently implements and coordinates the dental hygiene degree program community service learning programs for special care populations. Her main areas of research include the biopsychosocial effects of oral malodour; the development and evaluation of community outreach programs designed to further our understanding and improve the oral health of vulnerable/marginalized populations; educational strategies aimed at improving cultural competence for undergraduate and graduate dental professionals; and rapid HIV and HCV screening in dental settings.



Zul Kanji, MSc, RDH, is a full-time clinical assistant professor in the Faculty of Dentistry, University of British Columbia (UBC), and was appointed to the editorial board in 2012. He has been involved with academia for eight years and enjoys remaining in part-time clinical practice when not teaching

undergraduate and graduate students. Zul earned his BSc (Nutritional Sciences) and MSc (Dental Sciences) from UBC and his DipDH from Vancouver Community College. He is currently enrolled in Simon Fraser University's Doctor of Education program in Educational Leadership in Post-Secondary Contexts and is researching student retention in higher education. Zul's areas of expertise include education-related research using qualitative and mixed-methods approaches. His desire to be part of the CJDH editorial board stems from his passion to advocate for dental hygiene research and to increase the profession's awareness of and proficiency for qualitative inquiry.



Denise Laronde, PhD, RDH, is an assistant professor in the Oral Biological and Medical Sciences Department, Faculty of Dentistry, University of British Columbia (UBC), and was appointed to the editorial board in 2012. As a member of the BC Oral Cancer Prevention Program, Denise's

research interests include oral cancer screening, adjunctive screening devices, and head and neck cancer survivorship. She earned her BA (Psychology) and MSc (Dental Sciences) from UBC, her DipDH from Vancouver Community College, and her PhD (Biomedical Physiology and Kinesiology) from Simon Fraser University. She has presented her research at a variety of cancer and dental conferences across North America, including those associated with the American Association of Cancer Researchers (AACR), the International Association of Dental Researchers, the International Federation of Dental Hygienists, the Canadian Public Health Association, the Canadian Dental Hygienists Association, and the Canadian Association of Public Health Dentistry.



Barbara Long, BGS, SDT, RDH, has practised dental therapy and dental hygiene in many clinical settings since 1978. She has a passion for periodontal instrumentation, which is one of her areas of expertise, and has received both Canadian and American patents for her design of the first short-bladed curette hand instruments, “The Vision Curvettes,” manufactured by the Hu-Friedy Company. Barbara has also participated in numerous research projects and has published in international dental journals throughout her 30-year educational career with the College of Dentistry, University of Saskatchewan. She was invited to take part in the initial CDHA Dental Hygiene Research Agenda Workshop, then continued on the Canadian Foundation for Dental Hygiene Research and Education advisory committee. Barbara was the registrar-executive director of the Saskatchewan Dental Hygienists’ Association from 2003 until 2011 when she relocated to Ontario. She has been an active member of the editorial board since its establishment in 2008.



J Peggy Maillet, DipDH, MEd, has been a dental hygiene educator at Dalhousie University since 1989 and a member of the editorial board since 2009. Peggy received her Diploma in Dental Hygiene from Dalhousie University in 1974, her BA in 1976, and her MEd in 1996, also from Dalhousie. Prior to becoming a dental hygiene educator she worked in private general practice and specialty practices including prosthodontics and periodontics. In 2007, she became the program coordinator of the Bachelor of Dental Hygiene program, and is currently the course director for foundations of clinical dental hygiene for junior students and independent

studies for BDH students. Peggy has given presentations on numerous dental topics both nationally and internationally. Her special interests are clinical teaching, ergonomics, and tobacco dependence education.



Rae McFarlane, MEd, RDH, was appointed as the journal’s book review editor in January 2014. She also serves on the board of the College of Dental Hygienists of British Columbia where she is a member of the inquiry committee and, from 2009 to 2012, was Kootenay director on the British Columbia Dental Hygienists’ Association’s board. Rae graduated from St. Clair College in Windsor, Ontario, before moving on to earn a bachelor’s degree in dental hygiene from the University of Toronto and a Master of Education (Distance Education). She has worked in a range of practices from orthodontics and periodontics to a community health team in the Thompson Okanagan. Currently, Rae practises in a private dental office in Cranbrook, BC, and instructs several online courses for both entry-to-practice and degree completion students in the dental hygiene degree program at the University of British Columbia.



Katherine Zmetana, DipDH, DipDT, EdD, is in her fifth year as scientific editor of the journal. She is a graduate of the University of Manitoba’s School of Dental Hygiene and Saskatchewan’s Dental Therapy program. She has bachelor’s and master’s degrees from the Université Laval, and a doctorate of education from Oregon State University. Katherine has worked in public health, private clinical practice, and post-secondary education, including two years as program head of the Saskatchewan Institute of Applied Science and Technology’s dental programs. She also brings over 20 years’ experience as a professional writer, editor, and developer of curriculum and educational materials to her work with the journal.

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Looking back to move forward: Understanding service provider, parent, and caregiver views on early childhood oral health promotion in Manitoba, Canada

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ABSTRACT

Objective: The Healthy Smile Happy Child (HSHC) initiative has promoted early childhood oral health in Manitoba, Canada. The purpose of this study was to understand service provider, parent, and caregiver views on oral health promotion in Manitoba to inform future work. **Methods:** A qualitative descriptive study design using focus groups was used. Three groups included non-oral health service providers and three included parents and caregivers of young children. Discussions were audio-recorded, transcribed, and then analysed for content into themes. **Results:** Overall, 25 service provider and 25 parents and caregivers participated. Emerging themes included how participants learned about early childhood oral health, the gap between oral health recommendations and reality, and the need for recommendations to be practical and realistic if they are to change behaviours. Both groups expressed difficulty in locating dentists willing to care for young children despite dental professional recommendations for early first visits. Several recommendations for promoting early childhood oral health were provided by service providers, parents, and caregivers. **Conclusions:** Overall, participants felt that the HSHC initiative and resources were useful and effective in promoting early childhood oral health. Findings from this study have been used to refine community development health promoting activities and will inform the development of new strategies.

RÉSUMÉ

Objectif : L'initiative Sourire en santé, enfant heureux a aidé à promouvoir la santé buccodentaire chez les jeunes enfants du Manitoba au Canada. L'objectif de cette étude était de connaître le point de vue des fournisseurs de services, des parents, et des aidants naturels à propos de la promotion de la santé buccodentaire au Manitoba. **Méthodes :** Une étude de type qualitative et descriptive effectuée à l'aide de groupes de discussion a été utilisée. Trois des six groupes qui ont participé à cette étude étaient composés de fournisseurs de services qui n'offrent pas de soins buccodentaires, et trois des groupes étaient formés de parents et d'aidants naturels. Les discussions ont été enregistrées sur bandes audio, transcrites, puis leur contenu a été analysé selon les différents thèmes. **Résultats :** Au total, 25 fournisseurs de services et 25 parents et aidants naturels ont participé à l'étude. Les thèmes qui en sont ressortis comprenaient la méthode par laquelle les participants ont acquis des connaissances sur la santé buccale des jeunes enfants, l'écart entre les conseils en matière de santé buccale, et le besoin d'avoir des conseils qui sont pratiques et réalistes s'ils devaient modifier leur comportement. Les deux groupes ont déclaré avoir de la difficulté à trouver un dentiste disposé à offrir des soins aux jeunes enfants, en dépit des conseils dentaires professionnels à propos des premières visites en bas âge. Plusieurs recommandations visant à promouvoir la santé buccodentaire pendant la petite enfance avaient été prodiguées par les fournisseurs de services, les parents et les aidants naturels. **Conclusions :** Dans l'ensemble, les participants étaient d'avis que l'initiative Sourire en santé, enfant heureux, ainsi que les ressources offertes, étaient utiles et efficaces à la promotion de la santé buccodentaire de la petite enfance. Les résultats de cette étude ont servi à perfectionner les activités qui aident à promouvoir la santé dans la communauté et aideront au développement de nouvelles stratégies.

Key words: child, preschool; early childhood caries; focus groups; health promotion

INTRODUCTION

Good early childhood oral health (ECOH) is important and lays the foundation for optimal oral health across the lifespan. Early childhood caries (ECC) is a complex chronic disease affecting the primary teeth in young children.^{1,2} The multifactorial nature of ECC presents challenges to identifying effective prevention strategies. Traditional oral

health education has had limited success in addressing oral health inequities, such as high caries rates and the lack of healthy dental behaviours in some high-risk groups.³⁻⁵

Opportunities to make healthy lifestyle choices are often unavailable to disadvantaged communities.⁶ A recent meta-analysis concludes that health promotion

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interventions directed at individuals have minimal impact since unhealthy behaviour patterns are a result of larger societal norms and trends.⁶ Furthermore, public health campaigns developed by health professionals to encourage healthy lifestyles also have less impact on promoting health.⁶ Approaches that appear to be the most effective are those that engage the public and involve community development.⁶ Community development enhances bonds between people and groups leading to enhanced capacity to work towards common goals.⁷

Concerns regarding the problem of ECC in Manitoba prompted a collaborative partnership known as Healthy Smile Happy Child (HSHC).⁸⁻¹³ The initiative began as a demonstration project (2000–2006) and expanded as a province-wide initiative in 2006.^{8,14} The initial logic model used by the partnership at the time of this study appears in Figure 1. The initiative has been built around three pillars: community development (community identification and relationship building); knowledge delivery (health promotion and education); and evaluation.^{9,11}

Train-the-trainer activities were selected as a primary strategy to disseminate information regarding ECC and ECOH promotion. This approach built the capacity of local service providers and communities to share simple oral health messages. Sessions ranged in length from one to two hours and covered the concepts of ECC and its risk factors, caries-risk assessment, nutrition and oral hygiene, prenatal oral health, anticipatory guidance, and the connection between oral and overall health.⁹ Each workshop included a simple, standardized interactive PowerPoint presentation as well as group discussions regarding HSHC educational tools and how attendees could use resources to promote ECOH (available at www.wrha.mb.ca/healthinfo/preventill/oral_child.php).⁹ The goals of these sessions included increasing community worker knowledge and understanding of ECC and encouraging the use of the various teaching tools.

Qualitative research can generate information to assess, refine, and modify health promotion interventions.¹⁵ While qualitative methods are relatively new to ECC research, they can be effective in discovering challenges that parents and communities face in adopting behaviours that support optimal childhood oral health.^{13,16-18}

The purpose of this study was to understand perceptions and attitudes of non-oral health providers, caregivers, and parents of young children towards oral health promotion in Manitoba, Canada, and to seek ideas to inform future activities.

METHODS

This study aimed to gain an understanding of non-oral health service provider, parent, and caregiver views on oral health promotion in the province of Manitoba. An explorative qualitative study design was used. Focus group methodology was selected as it reflects the principles of community development by allowing participants to voice

their experiences and opinions which can strengthen health promotion activities.¹⁹ Six focus groups were held across the province. Three sessions were held with parents and caregivers of young children and three with non-oral health care service providers. Parent and caregiver focus groups were held in northern Manitoba, eastern Manitoba, and the city of Winnipeg. Service provider focus groups were held in northern Manitoba, central Manitoba, and the city of Winnipeg. Limited funding prevented the team from conducting focus groups in all regions of Manitoba. Participating regions were selected based on geographic convenience.

Service provider participation was restricted to those who facilitated early childhood programs, worked with parents or caregivers and their families, and previously attended a HSHC workshop and received HSHC resources. Participants included public health staff (nurses and family home visitors), school division staff (involved in literacy programs), and child health clinic staff. Participants were invited by letter. Parents and caregivers were selected from those who had participated in a HSHC workshop or similar health promotion activities, and who cared for a child less than 6 years of age. Flyers were posted in community centres and distributed by service providers to recruit parents and caregivers.

This study was approved by the University of Manitoba's Health Research Ethics Board (protocol H2007:144). Focus groups were facilitated by an experienced qualitative research consultant and a HSHC staff member. Participants provided informed consent before the session, and were asked to consent to an audiorecording of the discussion. Five focus groups agreed to audiorecording of the session. In all 6 sessions, notes were recorded on a flip chart to give participants an opportunity to see how the facilitator understood and interpreted their comments. Participants were encouraged to review the notes throughout the discussion and to correct, delete or add to any comments.

Focus groups used a semi-structured question guide developed by the HSHC partnership (Figures 2 and 3). Service providers were asked about their role in promoting oral health and their opinions of the HSHC initiative. Topics explored included their role in ECOH promotion and thoughts on the HSHC initiative, workshops, and resources. Parents were asked for their perspectives on how they learn about ECOH, oral hygiene practices and barriers, and recommendations for oral health promotion. The facilitator maintained an open environment that encouraged participants to share their perceptions and experiences in a non-judgmental way. Recordings and notes were transcribed verbatim and analysed. Data sets from the two participant groups were analysed independently using thematic analysis by 2 members on the team. Words, phrases, and concepts were coded and grouped into categories (the core component of qualitative content analysis).²⁰ Themes were developed to reflect participant responses. Subsequently, data from each set

Figure 1. Healthy Smile Happy Child initiative logic model

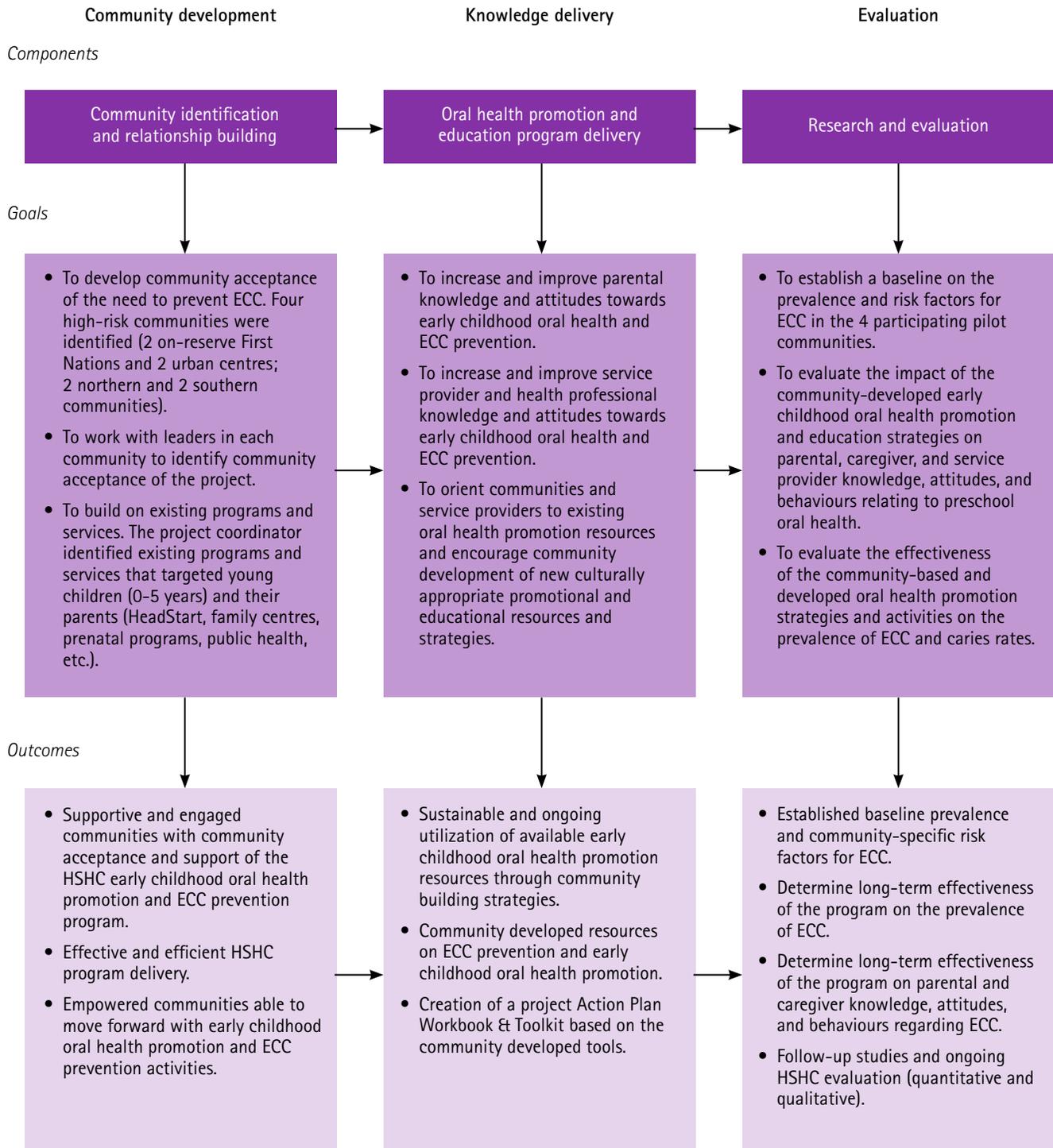


Figure 2. Questions posed to health care service providers

1. How important is it to keep baby teeth healthy?
2. Why do baby teeth get decay?
3. What does good early childhood oral health mean to you?
4. How important is good early childhood oral health to overall health? Is there a relationship between decay and childhood health?
5. How do you help your parents/caregivers achieve optimal early childhood oral health?
[Probe: What things help you do this? What barriers exist?]
6. Tell me about your experience with the Healthy Smile Happy Child project? What do you think about it?
7. Can you share with me the ways you have integrated early childhood oral health information into your daily routine?
8. When looking at the HSHC method of training, what would you improve upon?
[Probe: What would you change? What would you keep? Was this an effective way of learning? And if not, what other ways of learning would you suggest? Or how could the program be more effective?]

of groups were collated under each theme. Key areas of interest included service provider perspectives on the HSHC initiative and caregiver and parent perspectives on current oral health promotion and ECC prevention activities in Manitoba, as well as participant recommendations on how to disseminate these key oral health messages to the public.

RESULTS

The 3 service provider focus groups consisted of 8 participants in central Manitoba, 6 in northern Manitoba, and 11 in Winnipeg. There were 9 parents and caregivers in northern Manitoba, 6 in eastern Manitoba, and 10 in Winnipeg. Key findings and emerging themes from the 2 series of focus groups follow.

How we exchange knowledge

Parents indicated that they learned about young children's oral health from displays at community organizations and from a wide range of providers including support workers, HSHC staff, dental professionals, and doctors. Some parents described the HSHC workshop and reported that staff members at a Best Beginnings program made their own sugar bottles (to show the amount of sugar in beverages often put in bottles), posters, and videos about ECC.

One participant learned to "lift the lip" and check for early signs of decay from a dental hygienist. Participants described how someone from a local dental practice spoke on the importance of prenatal nutrition and dental care, infant oral hygiene, and brushing children's teeth (including strategies for dealing with resistance).

Dentists were said to have encouraged mothers to transition children from bottles and "sippy cups" to regular

Figure 3. Questions posed to parents/caregivers and community members

1. How important is it to keep baby teeth healthy?
2. Why do baby teeth get decay/cavities?
3. Can you share with me what good early childhood oral health means for your child?
4. How important is good early childhood oral health for your child's overall health?
5. What things do you do to keep your child's teeth healthy?
[Probe: What helps you keep your child's teeth healthy? What things get in your way? What prevents you from taking better care of your child's teeth?]
6. Do you find it hard to find a dentist for your child? Are dentists willing to see young children?
7. Where do you get information about keeping your child's teeth healthy? Have your "service providers" ever shared information with you on early childhood oral health and early childhood tooth decay? Did you like this information?
[Probe: Are there any programs that you go to that talk about good oral health for your child? What way of obtaining information would you prefer?]
8. When your child's teeth are not healthy, what things do you do to make them healthier?
[Probe: Some kids go through dental surgery. What are your thoughts about this? Many young children have to be put to sleep to have dental surgery. What do you think about this?]

cups and from sweetened beverages to water and to have offered practical strategies for doing this.

Caregivers described a kit that was distributed to pregnant women and new mothers upon discharge from hospital, which provided information about oral care for infants and young children and the link between good infant nutrition and oral health, along with oral hygiene products. Participants were disappointed that their local hospital no longer distributes these packages.

I'm so upset that you guys are saying that the hospital doesn't give out information anymore, because when you leave the hospital, you need information on how to take care of your baby when you get home.

Caregiver, Eastern Manitoba

Caregivers also received information through pamphlets distributed by the public health nurse; one had even received information from a pediatrician.

I asked the pediatrician, when I had my first child (eleven years old), right after he was born, I asked at the first appointment—because when he was two months old, he had already sprouted two teeth—so I asked when I should start doing stuff and what to do. Because they were just starting to come in, he told me to wipe with a clean washcloth on his gums and then once they came through, I had a toothbrush with

rubbery bristles, he said to use that and then once he had more teeth in there was a smaller brush that I could use that had soft bristles.

Caregiver, Winnipeg

Other sources of information included a display at a library and a community-based parenting course. That program also displayed the “think about your baby’s teeth” poster showing the amount of sugar cubes in drinks. Many participants said they are using the information they learned about ECOH. Hands-on activities, visual aids, and personal interaction were mentioned by caregivers as effective ways to convey oral health information to parents and families.

My Families First worker brought over bottles filled with sugar cubes, for Coke and apple juice and orange juice. It was quite interesting to see how much sugar was in apple juice or orange juice even, because I don’t give my kids juice either. Well, that’s hopefully just common sense, but that there’s that much sugar in juice—and even in some formulas and milk—there’s a lot of sugar in it. It’s scary almost to think how much sugar, especially if your kid goes to bed with a bottle. Once I’d seen those sugar cubes, I stopped giving her a bottle at night.

Other caregivers said that the sugar bottle displays and videos were very effective, citing “Dustin’s Story” about a young boy’s own dental surgery experience.²¹ Participants emphasized that pictures were an effective way to reach parents.

How a [child] would look if you were taking care of your kids’ teeth and doing the right thing and this is what would happen if you don’t.

Yes. Because when you see that on TV or in the news, they show little kids with their rotten mouths, oh! It’s just so awful!

Worst pictures, too. You know they can’t show you one kid who’s all healthy teeth, just smiling. They have to show you the grossest pictures.

Caregivers, Northern Manitoba

Parents in 2 groups suggested that television, radio, and posters are effective ways to reach families. Meanwhile, some pointed out the value of learning from others and through word of mouth.

You’re more likely to listen if someone’s telling you than off the radio or something.

Say the Families First worker, if she talks to me about teeth, I’m going to tell my girlfriend and spread the word.

Caregivers, Winnipeg

Parents in one group felt that it was important to train a broad range of service providers about ECOH. Similarly, participants in another group suggested incorporating oral health information into the curriculum for doctors, nurses, and midwives.

Many service providers indicated that they facilitated ECOH educational activities and shared resources with parents to help them meet their children’s oral health needs. They gave examples of using HSHC resources at clinic visits, prenatal and parenting support meetings, and preschool wellness fairs. Participants described helping with tooth brushing programs, putting on puppet shows for children, and teaching parents to screen for early signs of caries by “lifting the lip.” However, service providers indicated that more staff is needed in their communities to promote oral health.

The gap between recommendations and reality

Service providers said that they were unsure if the oral health messages they share with parents are changing parenting behaviours.

But knowing it and putting it into practice are two different things.

A tendency I’ve seen with some of my families is that they get all excited about doing it, go with it for about four days and then they fall off. And then they think that just because they’ve failed, they don’t want to pick it up again. If you can just pick it up and do it again for a couple of days, then you get into the habit again. I just try to encourage them to keep going.

Parents and caregivers said it is hard to do everything they feel they should to take care of their children’s teeth.

[If a baby falls asleep while nursing], after you’re done, you can wipe their mouth.

But you don’t think about that in the middle of the night.

Caregivers, Eastern Manitoba

Each caregiver group indicated that children’s resistance to brushing was a barrier to oral hygiene. Some stated that their child cried while others indicated that their child refused or became aggressive when it was time to brush. They noted it can be difficult to fit oral hygiene into their busy schedules, particularly so for those with large families.

Caregivers and service providers stated that they receive conflicting information about the recommended age for the first dental visit. They said that many dentists refuse to see children before the age of 3. Service providers said that dentists need to be aware of the new recommendation to schedule a child’s first dental visit at age 1.

I had one dentist tell a family, “Don’t bring him until he’s five.”

Our clients call and call and call. They call multiple places across the city, and they all get told the same thing: “Your child is too young.”

Recommendations with HSHC are that children should see a dentist at one year, but a lot of the dentists are saying not till three years. If we’re saying something to the parents and they’re getting a different message from the professionals, are we saying the wrong information? I don’t think we are, but if we’re giving that message, then we need to make sure that the message is being received by the people who are going to provide the care.

Caregivers also discussed their own experiences, as many had been told to return to a dental office when their children were older. One parent who had taken her 1-year-old child to the dentist was told that she did not need to bring him because his teeth were fine. One year later, her child’s teeth needed to be extracted.

When I took my child, I took him before he even had any cavities. I was still nursing him and my husband said, “Well, maybe we should take him to the dentist.” And so I did – and he’s a pediatric dentist and he’s like, “No, no, no. His teeth are fine.” And I guess they weren’t so fine because they got extracted.

They say that you should try to take your kids to the dentist right away. But I tried to take my kids when they were two and younger and the dentist was like, no, no, forget it. Bring them back when they’re three. I tried both dentists in town here and they were like, “Bring them back when they’re older.”

Service providers also identified inconsistencies in recommendations about when a child should start using fluoridated toothpaste. This group requested more information so that they could be more aware and share this information with parents.

Some parents felt guilt about their children’s oral health status and even questioned their parenting skills. One parent noted that children may be teased if they have bad teeth. Many mentioned that their child needed dental treatment and commented on these experiences.

When my son got his done, I was thinking to myself, I wonder if they’re thinking I’m a bad parent now. I felt really guilty.

What we were talking about, about being judged as a bad parent if your kid is going through that surgery. You feel ashamed and you feel guilty after when you see them crying.

For me it was the dentist, his dental hygienist, because they always give me heck when I go there. The hygienists do the work and those are the ones that are saying, “You should be doing this or they should be flossing more.”

Caregivers, Eastern Manitoba

Parents and caregivers also mentioned how extended family, particularly grandparents, often undermined efforts to keep their children’s teeth healthy.

They give my daughters bottles still. The oldest one’s five and the other one’s three and they still give her bottles. With juice or Pepsi®. That’s what causing my daughter to have such bad teeth. That’s why I say grandparents are so bad. They just do whatever for the grandchildren.

Service providers recommended approaching families in a supportive and non-judgmental manner to promote ECOH in order to avoid attaching blame to parents and caregivers. They also discussed the significance of helping parents to understand that they are crucial role models and play a vital part in cavity prevention.

It’s good for us to give them education, but we’re not there at four-o’clock in the morning when the baby is screaming...especially if you’re a single mom or a working mom. We may say to them, put water in your bottle, but if that child has been used to milk in the bottle and they’re screaming at you at four-o’clock in the morning, you’re going to break down. I think we have to look at the overall picture of how we’re supporting families.

Not pointing fingers and not blaming is really important. People can say, “I didn’t know that.” It takes away some of that shame.

Service providers, Central Manitoba

Service providers valued HSHC project resources. Winnipeg participants liked the flipchart and other visuals. While handouts were useful, some wondered if they were helpful to those with lower literacy. They also indicated that resources seemed effective, specifically when working with individuals of different cultures. Participants from the Northern group suggested that materials should feature Aboriginal people, while other participants thought it was important that HSHC activities be inclusive of different cultural and socioeconomic groups noting that, “rich people can get caries too.” They suggested that HSHC resources be translated into additional languages.

Personally, I felt when I took the course that this was targeted for Aboriginal people. Maybe because that’s the pilot project and that’s where the pictures were taken, but I have some moms in my area who would look at that and say, “That’s not an issue for me.” I think it needs to be more—you need some different pictures, an Asian family, a Caucasian family, Hutterites, all the different peoples.

Changing behaviour: Make it practical

Service providers agreed that the HSHC project’s information and workshops increased their knowledge of ECOH, and felt this information would be beneficial to share with caregivers and families.

The trainings opened up my eyes to see how important it was to get information out to parents.

Service provider, Northern Manitoba

It's a wonderful project. To teach families to have early dental care is even better. Early dental care means better health care all around.

Service provider, Winnipeg

Service providers valued HSHC's train-the-trainer style, which builds community and individual capacity. They felt the training was well delivered. In only a few hours they learned basic information on ECOH that they could share with families. One participant stated:

I've appreciated having the resource. It gives us something to refer to and provides specific, up-to-date information about dental health.

Service provider, Northern Manitoba

Northern participants also appreciated that, despite provincial and federal jurisdictional barriers to oral health care delivery, HSHC offered training in First Nations communities. Central Manitoba providers stated that workshops gave them an opportunity to learn from each other's experience. The hands-on activities and PowerPoint presentation held their attention and, like northern participants, they were pleased to have received current information. However, some reported leaving the workshop still feeling somewhat unqualified and requested additional training on effective implementation strategies.

What's the best way to use it? (Because a lot of us are coming from different professions). So how do we take this information and incorporate it into our day-to-day practice?

Service provider, Eastern Manitoba

Despite these concerns, service providers noted that HSHC staff was able to convey key messages in interactive and appropriate ways. Service providers also called for more oral health training for non-oral health professionals and service workers. They discussed the need for organizational capacity building, as some did not have approval from management or funding to implement what they learned from HSHC in their health regions.

Service providers emphasized the importance of presenting parents with practical information and said they preferred giving key messages rather than an overwhelming amount of information at one time. Participants suggested giving "key messages" on the essentials of oral health.

What is the key point that you want people to do? When you have a parent group, what can I do? What's the most important thing they should do? Is it seeing

a dentist before one? Is it wiping those gums for sure? What's the biggest issue? Toothbrushing? Don't prop the bottle? That's important too, but then we might not get them at that stage. Maybe the ten or five top things to do.

Service provider, Winnipeg

Parents and caregivers identified key messages that they feel parents, families, and community members need to hear about ECOH. These included:

- Attending classes in the community is a good way to learn about and share information with other parents.
- Parents are role models. It's important that they teach their children about healthy eating and good oral hygiene routines.
- Grandparents can help parents take care of children's teeth by offering their grandchildren healthy snacks and beverages.
- Parents, grandparents, friends, and babysitters can all help children learn to brush their teeth and maintain oral health.

DISCUSSION

This study was undertaken to understand parents', caregivers', and service providers' thoughts on ECOH promotion and the HSHC initiative. Service provider and caregiver groups felt that personal interaction, visual presentations, and hands-on learning activities were effective means of delivering information to parents. These findings mirror those from a study in which parents and staff suggested passing along key oral health messages and concepts through hands-on training, demonstrations, and even role playing.²² Audiovisual teaching resources may provide a useful method to deliver essential anticipatory guidance to parents and caregivers.²³ Parents interviewed following their child's dental surgery have also indicated that one-on-one interactive counseling may be more helpful than pamphlets or handouts.²⁴ Furthermore, parents frequently want to know the reasons for changing behaviour. Simply passing along information is not enough to lead to the adoption of dentally appropriate routines.¹⁷ Consequently, it may be easier for parents to make behavioural changes if they understand the rationale behind these actions.

Our findings also suggest that the ECOH recommendations should be practical and sensitive to parents' real life circumstances and social context. Parents have reported feeling that professionals don't always recognize the daily life challenges and stressors they face that might affect oral health behaviours at home.^{17,22} Parents may feel that professional guidelines, such as when to start using fluoride toothpaste and visit the dentist, are unrealistic and even contradictory.¹⁷ It was evident in our study that both caregivers and service providers were receiving mixed messages about when to take a young child for the first dental visit. Most were

aware of the 12-months-of-age recommendation, though many mentioned that they had been told to return when their child was much older. Such difficulties are frustrating for parents, who may ultimately abandon the search for a dental home for their young child. This barrier also hinders health care providers who want to advocate for oral health and limits their ability to refer young children to dental professionals in the community. The challenge of finding a dental home is not unique to Canada, as focus groups with non-oral health care providers in Australia have reported similar findings.¹⁸ Early preventive visits help to establish “dental homes” for the child and provide an opportunity to assess an infant’s overall caries risk and provide anticipatory guidance. Dentists and dental hygienists need to move beyond simply endorsing the concept of early preventive dental care and begin to accept their professional obligation to provide this important service in their own offices to at-risk infants and toddlers or refer them to colleagues willing to deliver this care.^{18,25} Unfortunately, some dentists and dental hygienists continue to be unaware of these recommendations.^{26,27} Some of the known barriers to seeing infants and toddlers in clinical practice include the practitioner’s age, their comfort level and experience with young children, and their overall awareness of ECOH.^{26,27} Dental hygienists can and must play a key role in getting correct ECOH messages out to the public particularly relating to the recommended timing for the first visit and the introduction of fluoridated toothpaste for young children.

Our findings reinforce the need to maintain positive and encouraging attitudes when working with parents and caregivers. We found that some parents were ashamed of their children’s poor oral health. Some spoke openly about struggling to get their children to eat better foods and cooperate with oral hygiene. Others experienced guilt because their child developed ECC.²² Some service providers in our study indicated that their peers could be critical of parents when it came to their ability to care for their children’s teeth. Unfortunately, some health care providers believe that feelings of guilt can be used as a strategy to motivate parents.¹⁸ Overall, the shame and embarrassment associated with their child’s development of caries may be a barrier to the promotion of ECOH among parents and caregivers.¹⁸ Similar reports have come from parents participating in early childhood development programs.²² This is important information for dental hygienists and dentists that can help shape how they approach parents with key ECOH messages.

What parents really desire is supportive and practical advice,²² and actual demonstrations of how to provide oral care for their children.¹⁷ Participants in our study called for more oral health education activities that directly involve children and their families. Parents identified that extended family members, including grandparents, can significantly impact their children’s oral health. They recommended

that grandparents play a positive role by offering young children healthy snacks and learning how to brush young children’s teeth.

Our findings reveal that parents obtain oral health information from a variety of sources. In fact, dental professionals in one study felt that non-oral health providers who work with pregnant women and infants are the appropriate messengers for ECOH as they are more likely to see these young children earlier.¹⁸ This opinion affirms the HSHC initiative’s principle to equip those who provide health and social support services to expectant women, preschool children, and their families with basic oral health information.

A few service providers mentioned that there was a lot of material covered during HSHC train-the-trainer workshops. Others called for more training to increase their confidence to disseminate the information. A lack of oral health knowledge and differing opinions about ECC amongst non-oral health care providers has previously been reported.¹⁸ It is important to remember that these workshops were not intended to certify attendees as oral health experts, but rather to equip them with the essential dental knowledge needed to advocate for ECOH. Non-dental primary care providers may feel most comfortable passing on basic oral health messages to parents, rather than complex concepts that challenge their own knowledge.¹⁸ Our past research has shown that train-the-trainer workshop participation improved service provider knowledge and awareness of ECOH.⁹ Further, it demonstrated that non-oral health providers can effectively deliver simple key ECOH messages.⁹

Findings from this study were used to tailor HSHC activities. While it is important for workshops to increase service providers’ knowledge, the practical issue of how to incorporate new knowledge into their current work is vital. Some mentioned that having access to a reference guide would increase the likelihood that they would address oral health in their care provision. In response, HSHC staff was encouraged to spend additional time focusing on the process of helping providers identify ways to integrate this new oral health knowledge into everyday work. Similarly, a previous study involving Early Head Start staff revealed that they requested basic oral health training to increase their comfort level and confidence to share this information with parents and wanted to know how best to integrate this dental knowledge into programming and their daily work routines.²²

Service providers in Northern Manitoba called for educational materials that feature Aboriginal people. This was interesting, considering that the majority of materials currently used by HSHC were developed and pilot tested with several Aboriginal communities. HSHC resources are in keeping with recommendations for culturally appropriate messaging when attempting to support healthy child development in Aboriginal families.²⁸ The need to be culturally and linguistically

sensitive has emerged as a key consideration for oral health promotion.²² However, our focus groups revealed the importance of considering all at-risk groups as ECC crosses cultural and socioeconomic boundaries.

This study is not without limitations. Findings cannot be generalized to all ECOH promotion activities in Manitoba, nor do the views expressed by participants necessarily reflect the views of all residents of a given region. In this study, focus groups involved a convenience sample and were only held in 5 of the 11 health regions in Manitoba. Unfortunately, we did not collect descriptive information on participants. Nonetheless, these findings provide an important glimpse into the views of service providers, caregivers, and parents and may have relevance for those wishing to implement ECOH promotion strategies, including dental hygienists.

Since participants were recruited with assistance from workers at service provider organizations, it is likely that many were parents who had established relationships with these workers or organizations. Therefore, parents who lack connections with local service providers and community supports were likely underrepresented. Additionally, participants who accepted the invitation to take part may have been those who place a greater priority on oral health and already had some understanding of the problem of ECC.

CONCLUSIONS

Themes emerging from this exploratory study include how participants learn about early childhood oral health, the gap between oral health recommendations and reality, and the need for recommendations to be practical and realistic in order to change behaviours. Several recommendations for promoting early childhood oral health were made by service providers and parents and caregivers. Specific barriers to promoting oral health include the guilt and blame associated with children developing caries at young ages and the difficulty in finding dental offices willing to see children by one year of age. Suggestions included the need to provide key oral health messages that are both practical and realistic for parents and caregivers. Overall, participants felt that the HSHC initiative and resources are useful and effective. Findings have been used to refine health promotion and community engagement activities in Manitoba. These data and emerging themes warrant consideration and may prove useful for dental hygienists and others who wish to implement ECOH promotion strategies in their communities. ECOH messages must remain simple enough for parents and caregivers to understand, practical enough to facilitate adoption and behaviour change, and be consistent with professional recommendations. Oral health professionals must also be supportive and empathetic when engaging parents and caregivers in discussions relating to their child's oral health. Lastly, meaningful engagement activities such as focus groups can be used as an ongoing strategy to involve key stakeholders in shaping and evaluating programs.

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Causes for non-usage of floss among students in a dental institution in North India: A questionnaire study

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ABSTRACT

Plaque accumulation on the interproximal surfaces of the teeth can initiate periodontal disease and caries. For removal of plaque from interproximal surfaces, dental floss is recommended by oral health practitioners. However, advice on flossing is usually not well received and followed by the client. **Objective:** This study sought to identify the most common causes for non-usage of floss among the dental student population in Kanti Devi Dental College and Hospital, Mathura, India. **Methods:** A total of 404 dental students were segregated into flossers and non-flossers. A questionnaire on the causes for non-usage of floss was administered to the non-flossers, who were asked to select the 2 most appropriate causes for non-usage of floss. **Results:** Of the 404 dental students, 287 were non-flossers and 117 were flossers. Among 287 non-flossers, 62 students (21.6%) chose "never been introduced to the habit of flossing by my parents" and "I feel my mouth is clean after brushing" as the most common combination of causes. **Conclusion:** The findings of this study suggest that dental students in Mathura are using floss to a very limited extent. Hence, the inclusion of advice on flossing in the oral hygiene instructions to their clients is also limited. In order to increase the awareness of flossing in the general population, efforts have to be made to better instill the importance of complete oral hygiene, which includes flossing, in the dental student population.

RÉSUMÉ

L'accumulation de la plaque sur les surfaces interproximales des dents peut provoquer la maladie parodontale et causer des caries. Les professionnels de la santé buccodentaire conseillent d'utiliser la soie dentaire pour enlever la plaque des surfaces interproximales. Cependant, ces conseils ne sont pas toujours bien accueillis ni suivis par le client. **Objet :** Cette étude sert à identifier les causes les plus communes de l'absence d'utilisation de la soie dentaire chez la population étudiante du programme dentaire de l'établissement *Kanti Devi Dental College and Hospital*, situé à Mathura en Inde. **Méthodes :** En tout, 404 étudiants en dentisterie furent séparés en deux groupes; ceux qui utilisent la soie dentaire et ceux qui ne l'utilisent pas. Un questionnaire sur les causes de l'absence d'utilisation de la soie dentaire a été distribué au groupe d'étudiants qui n'utilisent pas la soie dentaire. Ces étudiants devaient sélectionner les 2 causes principales pour lesquelles ils n'utilisent pas la soie dentaire. **Résultats :** Parmi les 404 étudiants en dentisterie, 287 n'utilisaient pas la soie dentaire et 117 l'utilisaient. Parmi les 287 étudiants qui n'utilisent pas la soie dentaire, 62 étudiants (21.6 %) ont sélectionné les combinaisons de réponses suivantes comme étant les causes les plus communes pour lesquelles utiliser la soie dentaire ne fait pas partie de leur routine d'hygiène buccodentaire : « Je n'ai jamais été introduit à l'habitude d'utiliser la soie dentaire par mes parents » et « Je trouve que ma bouche est propre après le brossage ». **Conclusion :** Les résultats de cette étude indiquent que les étudiants du programme dentaire à Mathura utilisent très peu la soie dentaire. Conséquemment, des conseils sur l'utilisation de la soie dentaire ne sont pas ajoutés aux instructions d'hygiène buccale qu'ils donnent à leurs clients. Afin de sensibiliser l'ensemble de la population à l'importance d'utiliser la soie dentaire, des efforts doivent être mis pour que la population étudiante puisse mieux comprendre qu'une routine d'hygiène buccodentaire complète est importante, et qu'elle doit inclure l'utilisation de la soie dentaire.

Key words: dental health behaviour; dental students; flossing; instructions; oral hygiene

INTRODUCTION

Plaque accumulation on the interproximal surfaces of the teeth can initiate periodontal disease.¹ Brushes usually do not reach and remove plaque from interproximal surfaces. For removal of plaque from these surfaces, dental floss is recommended by oral health practitioners.¹ Flossing significantly decreases the abundance of microbial species associated with periodontal disease and dental caries.² In the early 1800s, Dr. Levi Spear Parmly first introduced flossing as the most efficient way to prevent periodontal disease.^{3,4} Yet, while clients are compliant with advice

and instructions on toothbrushing techniques, advice on flossing is usually not well received and followed.⁵

Different populations have been shown to floss with different frequency.^{5,6} Compared to the population in India, the general public in the western and developed world is very conscious of oral health and tends to use floss as an oral hygiene aid more readily.⁷ In many developing countries like India, however, flossing is not practised regularly. In a study conducted on non-medical, paramedical, and medical students in Udaipur city, India, approximately

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Figure 1. Questionnaire administered to identified non-users of dental floss

PROFORMA (For non-users)

Name: _____ Age: _____ Gender: _____

Address: _____

Please answer the following questions by marking in front of the suitable answer:

Third year: Final year: Internship: Post graduate

Socioeconomic status:

Lower middle (Rs:1500-2999) Upper Middle (Rs: 3000-4999) Poor (Rs 500-1499)

High (Rs:5000-9999) Upper High (Rs: 10000 and above) Very Poor (Below 500)

Location:

Urban Semi-urban Rural

Please tick two most appropriate reasons for non-usage of floss.

- Never been introduced to the habit of flossing by my parents
- Participant is not aware of the correct technique of using floss
- Time consuming
- Costly
- Technique sensitive
- I feel my mouth is clean after brushing

Are you including advice on flossing in your oral hygiene instructions to the patient?

Yes No

22.7% of the students used dental floss as an additional oral hygiene aid.⁷ In another study, which included first- and final-year dental students in Udaipur city, India, it was reported that only 4.9% of first-year students flossed,

whereas 12.1% of the final-year students flossed.⁸ Usage of dental floss and the importance of maintaining good oral hygiene is usually advocated by oral health practitioners. Causes for low usage of floss could be variable; limited data have been gathered on this subject. This gap in the literature is problematic because dental students assume the role of advisors for oral hygiene maintenance when they enter clinical practice. Consequently, the aim of this study was to determine the causes for non-usage of floss among dental students in Mathura, India.

METHODS

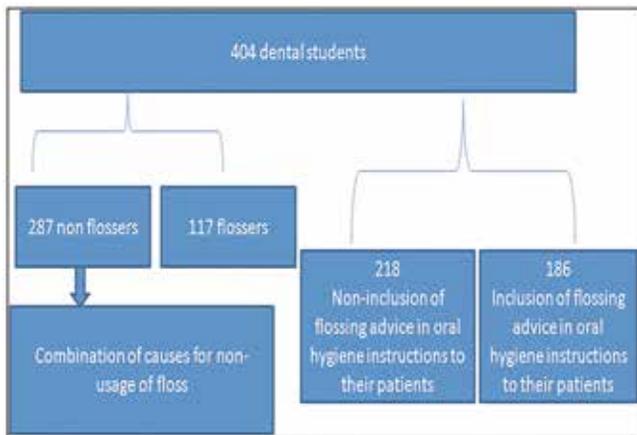
A total of 404 third-year, final-year, internship, and postgraduate dental students in Kanti Devi Dental College and Hospital, Mathura, India, were included in a survey. The age range of the participants was 20–26 years; the average age was 23 years. Students were segregated into dental floss users (who floss regularly or occasionally) and dental floss non-users. Of the 404 dental students, 287 were non-users of dental floss. Subsequently, a questionnaire was specifically designed to determine the causes for non-usage of floss among these 287 non-users (Figure 1). The questionnaire was pretested through a pilot survey, and 6 major causes for non-usage of floss were identified, from which respondents were asked to select the 2 most appropriate. The questionnaires were handed out between 20 August 2012 and 30 August 2012, and authors SR and RS were present individually with the students while they completed it. Response rate to the questionnaire among the non-users of dental floss was 100%. All 404 dental students were also asked if they advised their clients to use dental floss.

Data on age, gender, demography, and socioeconomic status were also collected. Socioeconomic status was classified according to Prasad’s classification.⁹ All aspects of the study were reviewed and approved by the Institutional

Table 1. Distribution of the identified causes for non-usage of floss

	Combination of causes for non-usage of floss	Frequency	Percent (%)
1	Never been introduced to the habit of flossing by my parents / I feel my mouth is clean after brushing	62	21.6
2	Time consuming / I feel my mouth is clean after brushing	52	18.1
3	Technique sensitive / I feel my mouth is clean after brushing	43	15.0
4	Never been introduced to it by my parents or dentists / Participant is not aware of the correct technique of using floss	39	13.6
5	Never been introduced to the habit of flossing by my parents / technique sensitive	26	9.1
6	Participant is not aware of the correct technique of using floss / I feel my mouth is clean after brushing	26	9.1
7	Time consuming / technique sensitive	17	5.9
8	Participant is not aware of the correct technique of using floss / technique sensitive	8	2.8
9	Never been introduced to the habit of flossing by my parents / time consuming	6	2.1
10	Participant is not aware of the correct technique of using floss / time consuming	5	1.7
11	Costly / I feel my mouth is clean after brushing	2	0.7
12	Never been introduced to the habit of flossing / costly	1	0.3
Total		287	100

Figure 2. Distribution of study participants based on responses to the survey



Ethical Committee. The research was conducted in full accordance with the World Medical Association Declaration of Helsinki. All of the students who participated in the study gave their consent to participate.

Statistical analysis

Data gathered from the students were analysed using the Statistical Package for the Social Sciences (SPSS), software version 17.0, manufactured by IBM. Chi-square tests were used to calculate proportions at 5% level of significance.

RESULTS

A total of 404 dental students participated in the study. Of the total survey population, 117 (29%) reported using floss as compared to 287 (71%) who did not. The pretested questionnaire was administered to the non-flossers. A chart explaining the distribution of subjects in the study is presented in Figure 2. Among the dental floss non-users (287), 33% were third-year students and 18% were postgraduate students.

The 2 most common reasons for non-usage of floss were “never been introduced to the habit of flossing by my parents” and “I feel my mouth is clean after brushing” (21.6%). The next most common combination stated was “time consuming” and “I feel my mouth is clean after brushing” (18.1%). The third most common combination reported by non-flossing students was “technique sensitive” and “I feel my mouth is clean after brushing” (15%). Another substantial group (13.6%) reported “never been introduced to the habit of flossing by my parents” and “not aware of the correct technique of using floss.” These combinations of causes are presented in Table 1. Approximately 68% of the dental floss non-users who live in urban areas cited “time consuming” and “I feel my mouth is clean after brushing” as the 2 most common causes (20.5%), while 17.9% identified “never been introduced to the habit of flossing by my parents” and “I feel my mouth is clean after brushing” as the 2 most common causes. Among

Table 2. Distribution, according to education, of professional recommendations to clients regarding floss use

Education	Advising floss use to clients		Total
	Yes	No	
Third year	5 (2.6%)	96 (44.0%)	101
Fourth year	47 (25.2%)	54 (24.7%)	101
Interns	58 (31.1%)	43 (19.7%)	101
Postgraduates	76 (41.1%)	25 (11.6%)	101
Total	186 (100%)	218 (100%)	404

p <0.05
Chi-square test

the third-year and final-year students, 29.2% and 27.3%, respectively, gave “never been introduced to the habit of flossing by my parents” and “I feel my mouth is clean after brushing” as the most common causes. In addition, 17.5% of the interns and 21.6% of the postgraduates reported “time consuming” and “I feel my mouth is clean after brushing” as the most appropriate causes for not flossing.

Among the 404 students who participated in the survey, 46% said that they advised their clients to floss, while 54% did not (Table 2). There was a linear increase in the number of students recommending flossing to their clients (third-year = 2.6%; final-year = 25.2%; internship = 31.1%; postgraduate = 41.1%) (Table 2). Ninety-three percent of floss users advised their clients to floss, whereas only 26% of dental floss non-users recommended flossing to their clients. There was a statistically significant difference between years of education and reasons for recommending flossing to clients (p<0.05). There were also statistically significant differences between years of education and reasons for non-usage of floss (p<0.05) (Table 3).

DISCUSSION

Several studies have shown the usefulness of dental floss in maintaining oral health. However, flossing is not practised by many individuals, and those who do floss do not do so regularly.⁶ Professional oral health practitioners play an important role in teaching clients about oral hygiene techniques and in encouraging their use. In this study, students in their third year or final year, as well as interns and postgraduates were included because, according to the teaching curriculum of the university to which the college is attached, clinical postings and interactions with clients begin in the third year of instruction. In the questionnaire, participants were asked to select the 2 most appropriate causes for not flossing, because during the pilot survey the authors (SR and RS) realized that most of the participants had more than one reason for not flossing. The 6 causes for non-usage of floss in the questionnaire were identified after a pilot survey of 100 non-flossing students.

Table 3. Distribution of reasons for non-usage of floss according to education

Education	Combination of causes*												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
Third year	17 17.7%	0 0.0%	4 4.2%	28 29.2%	0 0.0%	2 2.1%	12 12.5%	2 2.1%	15 15.6%	0 0.0%	16 16.7%	0 0.0%	96 100.0%
Final year	6 7.8%	3 3.9%	8 10.4%	21 27.3%	3 3.9%	0 0.0%	8 10.4%	3 3.9%	15 19.5%	0 0.0%	10 13.0%	0 0.0%	77 100.0%
Interns	11 17.5%	3 4.8%	7 11.1%	6 9.5%	2 3.2%	1 1.6%	2 3.2%	9 14.3%	11 17.5%	0 0.0%	10 15.9%	1 1.6%	63 100.0%
Postgraduate	5 9.8%	0 0.0%	7 13.7%	7 13.7%	0 0.0%	5 9.8%	4 7.8%	3 5.9%	11 21.6%	2 3.9%	7 13.7%	0 0.0%	51 100.0%
Total	39 13.6%	6 2.1%	26 9.1%	62 21.6%	5 1.7%	8 2.8%	26 9.1%	17 5.9%	52 18.1%	2 0.7%	43 15.0%	1 0.3%	287 100.0%

*refer to Table 1 for details on each combination

p = 0.016

Chi-square test

In our initial survey, only 29% reported usage of floss compared to the 71% who reported non-usage of floss. In a study conducted in United States on health care professionals, daily flossing among periodontists was reported to be 82%, though a slightly smaller number (74%) said they recommended that their clients floss once a day.¹⁰ In a study of 79 male dentists, daily flossing was reported to be 56.3%. Clearly, the budding dental professionals in our study were using floss far less when compared to the dental professionals in the developed world.¹¹

Among the combination of causes chosen by the students, “never been introduced to the habit of flossing by my parents” and “I feel my mouth is clean after brushing” emerged as a commonly cited combination of reasons. “Never been introduced to the habit of flossing by my parents” seems to be a reasonable choice because, if the parents are themselves unaware of the technique of flossing, it would be unlikely that they would encourage or teach their children to floss. If a habit is not introduced by a parent or dentist at home or in the clinic, it would be unreasonable to expect it from the individual when he or she grows old.¹²⁻¹⁴ In addition, there is no clarity on when to initiate flossing in children. In contrast, there is adequate guidance given to parents on when to initiate toothbrushing in their children. This inconsistency or lack of clear recommendations for childhood oral hygiene practices from professional and paediatric organizations may be a contributing factor for low rates of dental flossing.¹⁵

The next most common reason cited by participants was that they felt their mouth was clean after brushing. Because toothbrushing is usually performed first during daily oral care, the need for additional oral hygiene measures may not seem as important, particularly if participants feel that brushing removes substantial amounts of plaque from the surfaces of the teeth. As a result, when instructing clients on flossing, care should be given to recommend that flossing be performed first, followed by toothbrushing.¹⁶ This

protocol also facilitates better absorption of fluoride from toothpaste on all tooth surfaces, especially interproximal, after the removal of the biofilm.¹⁶

Many participants mentioned that flossing is a time-consuming procedure. Indeed, one of the main barriers to flossing is the time constraint. Students in professional colleges often have a very busy schedule and may have very low levels of patience. They would much rather use an automated tool or some other device to remove debris from the teeth quickly without the effort of flossing. Furthermore, it can be difficult to manipulate the floss in between every tooth. Because the oral cavity is a small space compared to the size of an average hand, trying to work the floss into each space between the teeth can be a challenge.¹⁷ In a study of dental clients in Australia, which focussed on their dental care experiences and particularly on the relationship between clients and dentists during the provision of preventive care and advice, researchers found that many clients considered flossing to be time consuming.¹⁸ The clients also stated that preventive care might not be of much use and would be a waste of money.¹⁸

“Technique sensitive” was another reason cited by our study participants for not using floss. This finding is consistent with those of a study conducted on Japanese dentists, wherein subjects were categorized into very easy, easy, moderate, and difficult groups according to their perceptions of the ease of flossing. In that study, 13.7% and 36.4% found flossing to be very difficult and difficult, respectively, whereas 30.2% and 16.8% found flossing to be moderately easy and easy/very easy, respectively.¹⁹

Many students chose “not aware of the correct technique” as one of the causes for non-usage of floss. This cause was more prevalent among third- and final-year students as compared to interns and postgraduates. In a survey of floss frequency, habit, and technique conducted in a hospital dental clinic and private periodontal practice, it was noted that 40% of the participants were not using proper flossing

technique.²⁰ This finding highlights the need for faculty to give equal importance to flossing and brushing techniques. Cases have been reported in periodontal literature wherein improper flossing techniques have led to gingival trauma and periodontal bone loss.²¹⁻²³

Very few people chose cost as a reason for non-usage of dental floss. Most of the participants in the study were either from high socioeconomic groups or from the upper middle class. Because of their socioeconomic status, most study participants correctly felt that they could easily afford dental floss. In addition, since study participants were either students attending dental clinics or interns and postgraduates, they had access to dental floss in the form of samples from various floss manufacturing companies. Consequently, neither the availability nor the cost of floss was a cause for non-usage of dental floss among our study participants. In a study carried out on 291 Japanese dentists, however, 187 felt floss was moderately expensive, 59 felt it was slightly expensive, and 29 felt the price of floss was cheap.¹⁹ In our study most of the participants felt cost was not a major factor for non-usage of floss.

In our study, there was a linear increase in the number of students who floss as well as recommend flossing to their clients over the course of their dental college program. This increase is primarily due to increased exposure of these students to the benefits of flossing (reducing caries, gingivitis, and periodontal disease). Our findings are in agreement with studies conducted on Iranian dental and non-dental students.²⁴ Studies of first- and final-year dental students revealed that knowledge and attitudes towards better oral health improved among final-year students.²⁵⁻²⁷

At Kanti Devi Dental College, oral health prevention lectures begin in year 3, i.e., at the beginning of clinical years. Details about floss and flossing instructions are included in the 2-hour on-campus lectures on mechanical plaque control. In the Department of Periodontology, each student group is given a briefing about the oral hygiene instruction protocol during the clinical introductory sessions in year 3. Students are instructed to demonstrate the correct brushing technique using toothbrush and dental models after every client appointment. Dentists whose teachers at dental school had demonstrated dental flossing tended to recommend flossing to their clients 2.2 times (1.0–4.6; 95% CI) more frequently than those who did not see demonstrations of flossing at dental school.¹⁹ The demonstration of the use of dental floss by teachers gave dentists a good impression and a positive opinion of dental flossing. This was closely associated with recommendations to their clients to use dental floss.¹⁹ Thus, time spent by dental school educators on flossing instructions and methods should improve the attitude of the student towards flossing, which in turn may result in more flossing by the student and may also have a positive impact on their advice to clients regarding flossing.

Limitations of the study

This study included students who were primarily from urban areas and belonged to the upper or upper-middle socioeconomic strata. In addition, girls outnumbered the boys, so the suitable associations of non-usage of floss with both gender and socioeconomic strata could not be drawn.

CONCLUSIONS

The findings of this study suggest that dental students in Mathura are using floss to a very limited extent. Hence, the inclusion of advice on flossing in oral hygiene instructions to their clients is also limited. To increase the awareness of flossing in the general population, efforts have to be made to better instill the importance of complete oral hygiene, which includes flossing, in the dental student population. A more aware dental community will be better equipped to impart the importance of flossing to the masses.

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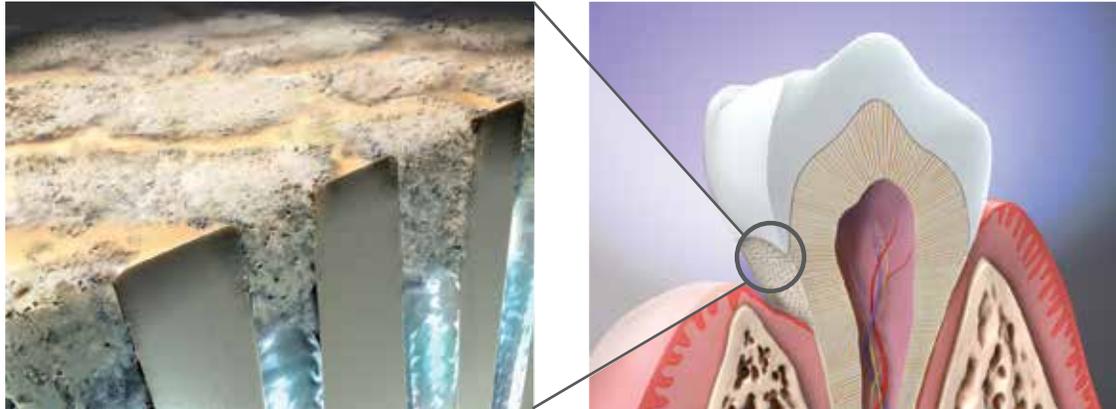
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Details on the required components of each manuscript category may be found under “Manuscript Preparation” at www.cdha.ca/cjdh.

Manuscript topics

CJDH welcomes your original submissions on

- **Professionalism:** ethics, social responsibility, legal issues, entrepreneurship, business aspects, continuing competence, quality assurance, and other topics within the general parameters of professional practice.
- **Clinical practice:** interceptive, therapeutic, preventive, and ongoing care procedures to support oral health.
- **Oral health sciences:** knowledge related to the sciences that underpin dental hygiene practice.
- **Theory:** dental hygiene concepts or processes.
- **Health promotion:** public policy and elements integral to building the capacity of individuals, groups, and society at large, such as the creation of supportive learning environments, developing abilities, strengthening community action, and reorienting oral health services.
- **Education and evaluation:** teaching and learning at an individual, group or community level (includes education related to clients, oral health professionals, as well as program assessment, planning, implementation and evaluation).

Please note that manuscripts submitted to CJDH should be the original work of the author(s) and should not be under review or previously published by another body in any written or electronic form. This does not include abstracts prepared for and presented at a scientific meeting and subsequently published in the proceedings. The journal’s full Ethics Policy governing authorship, conflict of interest, research ethics, and academic misconduct is available online at www.cdha.ca/cjdh. Please consult this document prior to submitting your manuscript.

Peer review: All papers undergo initial screening by the Scientific Editor to ensure that they fall within the journal’s mandate and meet our submission requirements. Suitable papers are then sent for peer review by two or more referees. This process also applies to position papers generated by CDHA, given that they involve an analysis of literature. Additional specialist advice (e.g., from a statistician) may be sought for peer review if necessary.

Revision: When a manuscript is returned to the corresponding author for revision, the revised version should be submitted within 6 weeks of the author’s receipt of the referee reports. The author(s) should explain in a covering letter how the requested revisions were addressed or why they were discounted. If a revised manuscript is resubmitted after the 6-week period, it may be considered as a new submission. Additional time for revision may be granted upon request, at the managing editor’s discretion.

Manuscript submission checklist

Check	Cover Letter
	Originality of the work and any conflicts of interest declared.
	Contact information for corresponding author provided.
Check	Manuscript
	Text is presented in a clear font, such as Arial or Times New Roman, double-spaced, and in 12-point size.
	All margins are 1 inch (2.5 cm).
	Pages are numbered consecutively, starting with title page.
	Authors’ full names, academic degrees, and affiliations are listed on the title page.
	Corresponding author’s contact information is provided on the title page.
	Key words from the Medical Subject Headings (MeSH) database at www.nlm.nih.gov/mesh/meshhome.html are listed after the abstract.
	Abbreviations and units conform to the <i>Système international d’unités</i> (SI). SI symbols may be used without definition in the body of the paper. Abbreviations are defined in parentheses after their first mention in the text.
	Figures and tables are numbered consecutively, cited in the text, and inserted at the end of the manuscript.
	Previously published tables or figures are accompanied by written consent from the copyright holder (usually the publisher) to reproduce the material in the print and online versions of CJDH.

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	Any information (text or images) identifying clients or research subjects is accompanied by written consent from the individual(s) to publish the information in CJDH.
	References in the text are numbered and listed in order of appearance.
	References are formatted according to the Vancouver style (www.nlm.nih.gov/bsd/uniform_requirements.html), using abbreviated journal titles.
	Personal communications are not included in the reference list but are cited in parentheses in the text. Confirmation of permission to print the quotation is included in the Acknowledgements section.

Artwork includes any illustrations, graphs, figures, photographs, and any other graphics that clearly support and enhance the text. This artwork must be supplied in its original file format (as source files). Acceptable file formats include .eps, .pdf, .tif, .jpg, .ai, .cdr in high resolution, suited for print reproduction:

- minimum of 300 dpi for grayscale or colour halftones
- 600 dpi for line art
- 1000 dpi minimum for bitmap (b/w) artwork
- colour artwork submitted in CMYK (not RGB) colour mode

The author(s) must provide proof of permission to reproduce previously produced artwork from the original source and acknowledge the source in the caption. The editorial office reserves the right to reschedule publication of an accepted manuscript should there be delays in obtaining permissions or artwork of suitable print quality.

Data or tables may be submitted in Excel or Word formats.

Supplementary information

Supplementary information is peer-reviewed material directly relevant to the conclusions of an article that cannot be included in the printed version owing to space or format constraints. It is posted on the journal's web site and linked to the article when the article is published and may consist of additional text, figures, video, extensive tables or appendices. Sources of supplementary information should be acknowledged in the text, and permission for using them sent to the editorial office at the time of submission. All supplementary information should be in its final format because it will not be copy-edited and will appear online as originally submitted.

SAMPLES OF REFERENCES AND CITATIONS

CJDH, like most biomedical and scientific journals, uses the Vancouver citation style for references, which was established by the International Committee of Medical Journal Editors

in 1978. References should be numbered consecutively in the order in which they are first mentioned in the text. Use the previously assigned number for subsequent references to a citation (i.e., no "op cit" or "ibid"). Use superscript Arabic numerals to identify the reference within the text (e.g.,^{1,2} or ³⁻⁶). For more information on this style and the uniform requirements for manuscript preparation and submission, please visit www.nlm.nih.gov/bsd/uniform_requirements.html. Examples of how to cite some common research resources appear below.

JOURNAL ARTICLES

Standard article

Orban B, Manella VB. A macroscopic and microscopic study of instruments designed for root planing. *J Periodontol.* 1956;27:120–35.

Volume with supplement

Orban B, Manella VB. A macroscopic and microscopic study of instruments designed for root planing. *J Periodontol.* 1956;27 Suppl 7:S6–12.

Conference proceedings – abstract

Austin C, Hamilton JC, Austin TL. Factors affecting the efficacy of air abrasion [abstract]. *J Dent Res.* 2001;80(Special issue):37.

No author

What is your role in the profession? [editorial] *J Dent Topics.* 1999;43:16–17.

Organization as author

Canadian Dental Hygienists Association. Policy framework for dental hygiene education in Canada. *Probe.* 1998;32(3):105–7.

BOOKS AND OTHER MONOGRAPHS

Personal authors

Hooyman NR, Kiyak HA. *Social gerontology: A multidisciplinary perspective.* 6th ed. Boston: Allyn & Bacon; 2002.

Editors as authors

Cairns J Jr, Niederlehner BR, Orvosm DR, editors. *Predicting ecosystem risk.* Princeton (NJ): Princeton Scientific Publications; 1992.

Chapter in book

Weinstein L, Swartz MN. Pathological properties of invading organisms. In: Soderman WA Jr, Soderman WA, editors. *Pathological physiology: mechanisms of disease.* Philadelphia: WB Saunders; 1974. p. 457–72.

Conference paper

Calder BL, Sawatzky J. A team approach: Providing off-campus baccalaureate programs for nurses. In: Doe AA, Smith BB, editors. Proceedings of the 9th Annual Conference on Distance Teaching and Learning; 1993 Sep 13–15, Ann Arbor, MI. Madison (WI): Ann Arbor Publishers; 1993. p. 23–26.

Scientific or technical report

Murray J, Zelmer M, Antia Z. *International financial crises and flexible exchange rates*. Ottawa: Bank of Canada; 2000 Apr. Technical Report No. 88.

OTHER PUBLICATIONS

Newspaper article

Rensberger B, Specter B. CFCs may be destroyed by natural process. *The Globe and Mail*. 1989 Aug 7;Sect B:24.

Audiovisual

Wood RM, editor. *New horizons in esthetic dentistry* [videocassette]. Chicago: Chicago Dental Society; 1989.

Unpublished material

Smith A, Jones B. The whitening phenomenon. *J Nat Dent*. (Forthcoming 2004)

ELECTRONIC MATERIAL

Monograph on Internet

National Library of Canada. *Canadiana quick reference* [monograph on the Internet]. Ottawa: The Library; 2000 [cited 2003 Nov 30]. Available from: www.nlc-bnc.ca/8/11/index-e.html

Journal on Internet

Walsh MM. Improving health and saving lives. *Dimens Dent Hyg* [serial on Internet] 2003 Nov/Dec [cited 2004 Jan 12]. Available from: www.dimensionsofdentalhygiene.com/nov_dec/saving_lives.htm

Homepage/website

Canadian Dental Hygienists Association [homepage on the Internet]. Ottawa: CDHA; 1995 [cited 2003 Nov 20]. Available from: www.cdha.ca

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Le *Journal canadien de l'hygiène dentaire* (JCHD) est une publication trimestrielle révisée par les pairs de l'Association canadienne des hygiénistes dentaires. Il invite la présentation de manuscrits en anglais et en français sur des sujets relevant de la pratique, la théorie, la formation et la politique de l'hygiène dentaire. Les manuscrits devraient traiter de sujets d'actualité afin de contribuer de façon significative à l'ensemble des connaissances en hygiène dentaire et de faire progresser les bases de la pratique. Toute demande de renseignements préalables et toutes les soumissions doivent être adressées au journal@cdha.ca.

Catégories de manuscrits

1. **Articles de recherche originaux** : maximum de 6 000 mots, pas plus de 150 références et un résumé limité à 250 mots.
2. **Revue de la littérature** : entre 3 000 et 4 000 mots, limite de 150 références et un résumé limité à 250 mots.
3. **Communications courtes/Rapports de cas** : maximum de 2 000 mots, autant de références que nécessaire et un résumé limité à 150 mots.
4. **Exposés de principe** : maximum de 4 000 mots, pas plus de 100 références et un résumé limité à 250 mots. Cette catégorie comprend les documents de prise de position de l'ACHD.
5. **Lettres à la rédactrice** : maximum de 500 mots, pas plus de 5 références et 3 auteurs. Pas de résumé.
6. **Éditoriaux** : sur invitation seulement.

Les détails des composantes requises pour chaque catégorie de manuscrit peuvent se trouver sous « Préparation de manuscrit » dans www.cdha.ca/jchd.

Sujets des manuscrits

Le JCHD accueille vos textes originaux concernant :

- *Le professionnalisme* : éthique, responsabilité sociale, questions juridiques, entrepreneuriat, aspects commerciaux, maintien de la compétence, assurance de la qualité et autres sujets selon les paramètres généraux de la pratique professionnelle.
- *La pratique clinique* : procédures des soins d'interception, de thérapie, de prévention et de constance pour maintenir la santé buccodentaire.
- *Les sciences de la santé buccodentaire* : connaissance des sciences de base soutenant la pratique de l'hygiène dentaire.
- *La théorie* : concepts ou processus de l'hygiène dentaire
- *La promotion de la santé* : politique publique et éléments faisant partie intégrante du développement des capacités aux niveaux individuels, des groupes ou des sociétés en général, comme la création d'environnements de soutien à l'apprentissage, le développement des capacités, le renforcement des activités communautaires et la réorientation des services buccodentaires.

- *La formation et l'évaluation* : l'éducation et l'apprentissage aux niveaux individuels, des groupes et des collectivités (comprenant la formation concernant la clientèle, les professionnels de la santé buccodentaire, de même que l'évaluation des programmes, la planification, la mise en œuvre et l'évaluation).

Veillez noter que les manuscrits soumis au JCHD doivent être des œuvres originales de la part de chacun(e) des auteur(e)s et ne devraient pas avoir été revus ni publiés précédemment par tout autre organisme sous forme écrite ou électronique. Cela ne comprend pas les résumés préparés pour ou présentés à une réunion scientifique et subséquemment publiés dans les procédures. Le Code d'éthique concernant les auteurs, les conflits d'intérêt, l'éthique de la recherche et l'inconduite universitaire est accessible en ligne à www.cdha.ca/jchd. Veuillez consulter ce document avant de soumettre votre manuscrit.

L'examen par les pairs : Tous les textes sont d'abord examinés par la rédactrice scientifique qui veille à ce qu'ils respectent le mandat du journal et répondent à nos exigences de soumission. Les textes retenus sont alors soumis à l'examen par des pairs, deux ou plus. Cette procédure s'applique aussi aux documents de prise de position formulés par l'ACHD, étant donné qu'ils impliquent une analyse de la littérature. L'on peut aussi solliciter au besoin l'avis d'un spécialiste additionnel (par exemple, un statisticien).

La révision : Lorsqu'un manuscrit est renvoyé à l'auteur correspondant pour révision, la version remaniée devrait être soumise dans un délai de 6 semaines après la réception par l'auteur du rapport des examinateurs. Le ou les auteur(e)s devraient expliquer par lettre de couverture comment les révisions demandées ont été abordées ou, le cas échéant, pourquoi ces personnes n'en ont pas tenu compte. Un manuscrit remanié soumis de nouveau après la période de 6 semaines peut être considéré comme une nouvelle soumission. Sur demande, on pourrait alors accorder plus de temps de révision, à la discrétion de la gestionnaire de la rédaction.

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Originalité du travail et déclaration de tout conflit d'intérêt.

Fourniture des coordonnées de l'auteur(e)-ressource.

Coche Manuscrit

Texte présenté en caractères clairs, comme Arial ou Times New Roman, à double espace et en 12 points de taille.

Toutes les marges de 1 pouce (2,5 cm).

Pages numérotées consécutivement, à partir de la page titre.

Noms entiers des auteurs, grades universitaires et affiliations listés sur la page titre.

Coordonnées de l'auteur(e)-ressource inscrites sur la page titre.

Coche	Manuscrit
	Liste des mots-clés des <i>Medical Subject Headings</i> (MeSH), base de données www.nlm.nih.gov/mesh/meshhome.html , inscrite après le résumé.
	Abréviations et unités conformes au Système international d'unités (SI). Les symboles SI peuvent être utilisés sans définition dans le corps du texte. Les abréviations sont définies entre parenthèses à la première mention.
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	Les tableaux ou figures publiés précédemment sont accompagnés du consentement écrit de la personne détenant le droit d'auteur (ordinairement l'éditeur ou éditrice) autorisant la reproduction du matériel dans les versions imprimées et en ligne du JCHD.
	Toute information (texte ou images) identifiant des clients ou des sujets de recherche est accompagnée d'un consentement écrit de la ou des personnes concernées de publier l'information dans le JCHD.
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La **Maquette** comprend des illustrations, graphiques, chiffres, photographies et tout autre graphisme qui soutient et rehausse le texte. L'iconographie doit être fournie dans son format original (comme source d'origine). Les formats du fichier comprennent .eps, .pdf, .tif, .jpg, .ai, .vdr en haute résolution, appariés pour la reproduction imprimée :

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L'information complémentaire est un matériel revu par les pairs et relevant directement des conclusions d'un article, qui ne peut pas être inclus en version imprimée à

cause de contraintes d'espace ou de format. Affichée dans le site Web du journal et reliée à l'article lorsque celui-ci est publié, elle peut comprendre un texte, des figures, des vidéos, de larges tableaux ou des annexes. Les sources d'information supplémentaire devraient être reconnues dans le texte et la permission de les utiliser, envoyée au bureau de la rédaction lors de la soumission. Toute information supplémentaire devrait être dans sa forme définitive car elle ne sera pas révisée et paraîtra en ligne comme son original.

Exemples de références et de citations

Comme la plupart des journaux biomédicaux et scientifiques, le JCHD utilise le style de citation de Vancouver pour ses références, lequel a été établi par le Comité international des rédacteurs de revues médicales en 1978. Les références doivent être numérotées consécutivement dans l'ordre de leur première mention dans le texte. Utilisez le numéro précédemment attribué pour la référence des citations subséquentes (i.e., pas de "op cit" ni de "ibid"). Utilisez les chiffres arabes en exposant pour identifier la référence dans le texte (e.g.,^{1,2} ou ³⁻⁶). Pour plus d'information sur ce style et les exigences de préparation et de soumission des manuscrits, consultez www.nlm.nih.gov/bsd/uniform_requirements.html. Voici des exemples sur la façon de citer quelques ressources communes de recherche.

ARTICLES DE REVUES

Article standard

Orban B, Manella VB. A macroscopic and microscopic study of instruments designed for root planing. *J Periodontol.* 1956;27:120-35.

Volume avec supplément

Orban B, Manella VB. A macroscopic and microscopic study of instruments designed for root planing. *J Periodontol.* 1956;27 Suppl 7:S6-12.

Compte-rendu de conférence – Résumé

Austin C, Hamilton JC, Austin TL. Factors affecting the efficacy of air abrasion [abstract]. *J Dent Res.* 2001;80(Special issue):37.

Pas d'auteur

What is your role in the profession? [editorial] *J Dent Topics.* 1999;43:16-17.

Organisation comme auteur

Canadian Dental Hygienists Association. Policy framework for dental hygiene education in Canada. *Probe.* 1998;32(3):105-7.

LIVRES ET AUTRES MONOGRAPHIES

Auteurs personnels

Hooyman NR, Kiyak HA. *Social gerontology: A multidisciplinary perspective.* 6th ed. Boston: Allyn & Bacon; 2002.

Éditeurs comme auteurs

Cairns J Jr, Niederlehner BR, Orvosm DR, editors. *Predicting ecosystem risk*. Princeton (NJ): Princeton Scientific Publications; 1992.

Chapitre d'un livre

Weinstein L, Swartz MN. Pathological properties of invading organisms. In: Soderman WA Jr, Soderman WA, editors. *Pathological physiology: mechanisms of disease*. Philadelphia: WB Saunders; 1974. p. 457-72.

Texte de conférence

Calder BL, Sawatzky J. A team approach: Providing off-campus baccalaureate programs for nurses. In: Doe AA, Smith BB, editors. *Proceedings of the 9th Annual Conference on Distance Teaching and Learning*; 1993 Sep 13-15, Ann Arbor, MI. Madison (WI): Ann Arbor Publishers; 1993. p. 23-26.

Compte-rendu scientifique ou technique

Murray J, Zelmer M, Antia Z. *International financial crises and flexible exchange rates*. Ottawa: Bank of Canada; 2000 Apr. Technical Report No. 88.

AUTRES PUBLICATIONS

Article de journal

Rensberger B, Specter B. CFCs may be destroyed by natural process. *The Globe and Mail*. 1989 Aug 7;Sect B:24.

Audiovisuel

Wood RM, editor. *New horizons in esthetic dentistry* [videocassette]. Chicago: Chicago Dental Society; 1989.

Matériel non publié

Smith A, Jones B. The whitening phenomenon. *J Nat Dent*. (A paraître 2004)

MATÉRIEL ÉLECTRONIQUE

Monographie sur Internet

Bibliothèque nationale du Canada. *Références rapides Canadiana* [monographie sur Internet]. Ottawa: BNC; 2000 [citation 2003 Nov 30]. Accessible sur : www.nlc-bnc.ca/8/11/index-e.html

Revue sur Internet

Walsh MM. Improving health and saving lives. *Dimens Dent Hyg* [revue sur Internet] 2003 Nov/Dec [citation 2004 Jan 12]. Accessible sur : www.dimensionsofdentalhygiene.com/nov_dec/saving_lives.htm

Page d'accueil ou site web

Association canadienne des hygiénistes dentaires [page d'accueil sur Internet]. Ottawa: ACHD; 1995 [citation 2003 Nov 20]. Accessible sur : www.cdha.ca

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The *Canadian Journal of Dental Hygiene* (CJDH) is a quarterly, peer-reviewed journal that publishes research on topics of relevance to dental hygiene practice, education, theory, and policy.

CJDH is currently seeking high-quality manuscripts of the following types:

- **Original research:** These manuscripts (maximum 6000 words) report on the findings of quantitative or qualitative research studies that explore a specific research question.
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¹ Than a manual toothbrush. M. Ward, K. Argosino, W. Jenkins, J. Milleman, M. Nelson, S. Souza. Comparison of gingivitis and plaque reduction over time by Philips Sonicare FlexCare Platinum and a manual toothbrush. Data on file, 2013.

² Defenbaugh J, Liu T, Souza S, Ward M, Jenkins W, Colgan P. Comparison of Plaque Removal by Sonicare FlexCare Platinum and Oral-B Professional Care 5000 with Smart Guide. Data on file, 2013. Single use study. © 2014 Philips Oral Healthcare, Inc. All rights reserved. PHILIPS and the Philips shield are trademarks of Koninklijke Philips N.V. Sonicare, the Sonicare logo, DiamondClean, FlexCare Platinum, FlexCare, FlexCare+, ProResults, Sonicare For Kids and AirFloss are trademarks of Philips Oral Healthcare.