

# Outcomes of Dental Hygiene Baccalaureate Degree Education in Canada

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*Abstract:* There is little published literature about the outcomes of dental hygiene baccalaureate degree education, particularly in Canada. Since there are various dental hygiene entry-to-practice educational models in Canada, exploring baccalaureate dental hygiene education is becoming an increasingly important subject. The purpose of this study was to explore the personal outcomes and dental hygiene practice outcomes of dental hygiene degree-completion education in Canada from the perspectives of diploma dental hygienists who have continued their education to the bachelor's degree level. This study employed a qualitative phenomenological design, using a maximum variation purposeful sampling strategy. Data generation occurred with sixteen dental hygienists across Canada through individual semistructured interviews. Interviews were audiorecorded, transcribed verbatim, and coded for data analysis, involving pattern recognition and thematic development. Themes that emerged included changes in self-perception, values, and knowledge base. Changes in self-perception were reflected in a reported increase in self-confidence and perceived credibility. Changes in values included a greater appreciation for lifelong learning. Advancements in knowledge strengthened the development of specific abilities that ultimately influenced participants' dental hygiene practice. These abilities included an increased ability to think critically, to make evidence-based decisions, and to provide more comprehensive care. Participants also commented on having more career opportunities available to them outside of the private clinical practice setting. These results reveal important insights into the impact of earning a dental hygiene baccalaureate degree on oneself and one's dental hygiene practice.

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*Keywords:* dental hygienists, dental hygiene education, dental hygiene degree, baccalaureate degree, outcomes assessment, qualitative inquiry, Canada

*Submitted for publication 7/20/10; accepted 10/5/10*

Dental hygienists in Canada are educated primarily through entry-level two-year and three-year diploma programs in approximately fifty institutions across the country, comparable to associate degree programs in the United States.<sup>1</sup> Canadian diploma dental hygienists who desire additional dental hygiene education can choose from four baccalaureate degree-completion programs in universities across Canada. In addition to its degree-completion options, the Faculty of Dentistry at the University of British Columbia implemented in 2007 Canada's first and only four-year entry-to-practice dental hygiene baccalaureate program, in which students with no previous dental hygiene education may enroll.<sup>2</sup> The scope of professional practice does not change whether one has a two-year diploma, three-year diploma, or baccalaureate degree. Despite the plethora of program options for diploma and baccalaureate education, the entry-

to-practice requirement for dental hygiene in Canada continues to be the diploma.<sup>3</sup>

There exists a high level of skill development in dental hygiene diploma education; however, progress towards advanced theory development is limited by the length of diploma-level programs.<sup>4</sup> Dental hygiene diploma curricula remain focused on the clinical skill required for entry-level practice.<sup>4</sup> This clinical practice model of education provides little opportunity to prepare dental hygienists beyond the traditional role of clinical client advocate.<sup>5</sup> There is a growing movement towards the advancement of dental hygiene education to the baccalaureate degree for entry-to-practice in Canada and the United States.<sup>3,6</sup> Dental hygiene baccalaureate education uses a more professional model with emphasis on preparing graduates for expanded roles.<sup>5</sup> The impetus for this movement stems from a sense of responsibility to address the growing oral health complexities of

the public, a need for dental hygiene research, and a demand for qualified dental hygiene educators.<sup>3,6</sup>

The Canadian Dental Hygienists Association (CDHA) has stated that increasing opportunities at the baccalaureate degree level is needed to open educational pathways to graduate programs that would provide dental hygienists with opportunities to develop proficient research abilities.<sup>3</sup> Similarly, the American Dental Hygienists' Association (ADHA) has argued that the failure to standardize entry-level education at the baccalaureate degree has slowed the pace of development of advanced dental hygiene programs and the continued development of the dental hygiene body of knowledge.<sup>7</sup> Both the CDHA and the ADHA have goals of seeing the baccalaureate degree as the entry-to-practice credential for dental hygiene.<sup>3,7</sup> The American Dental Education Association (ADEA) has also discussed strategies to address access to care issues and to foster research at the graduate level.<sup>8</sup> These strategies include establishing higher levels of academic credentials for dental hygiene, with an emphasis on baccalaureate degree programs as a possible entry point into dental hygiene practice.

There is a paucity of literature pertaining to outcomes of dental hygiene baccalaureate education. The few studies that do exist have focused on career outcomes associated with completing a dental hygiene baccalaureate degree. Research does support the idea that baccalaureate degree dental hygienists are more likely to practice outside of the traditional private clinical practice setting. For example, the University of Toronto's Bachelor of Science in Dentistry (B.Sc.D.) dental hygiene graduates have assumed roles as educators, administrators, researchers, or students in graduate programs.<sup>9</sup> Similarly, the University of British Columbia's Bachelor of Dental Science in Dental Hygiene graduates have been successful in securing employment with educational institutions, regulatory authorities, and community-based programs.<sup>10</sup> According to Brand and Finocchi's study in 1985, 54.2 percent of baccalaureate degree dental hygienists continued to work in the clinical private practice setting, while 23.7 percent became employed as dental hygiene educators, 4.6 percent as public health hygienists, 3 percent as institution or hospital hygienists, and 2.3 percent as dental practice managers.<sup>11</sup> The majority (63.6 percent) of these survey respondents stated that their employment opportunities had increased as a result of the dental hygiene degree. More recently, in 2008, Rowe et al.'s

study found that more baccalaureate degree dental hygienists (30.3 percent) held dental hygiene faculty positions than associate degree dental hygienists (4.3 percent) in the United States.<sup>12</sup> Baccalaureate degree hygienists (8.0 percent) in that study also had greater involvement with research than associate degree hygienists (3.6 percent).

No research has focused on ability-based outcomes after completing a dental hygiene baccalaureate degree. According to the World Health Organization, building the abilities of health care professionals to better meet public needs of the twenty-first century is an issue of increasing importance.<sup>13,14</sup> This need reflects the rising prevalence of chronic and preventable diseases. The abilities required in dental hygiene to support high-quality and safe care for a population with increasing health complexities include using credible research to inform practice decisions, translating research to educate and treat clients, working collaboratively on interdisciplinary teams, and taking a leadership role in health care delivery.<sup>3</sup> These abilities focus on the role of the dental hygienist as a professional, a critical thinker, a communicator, a collaborator, an advocate, and a coordinator.<sup>15</sup>

Building the capacity of health care professionals has recently been a central theme internationally for the purpose of fostering and supporting improved health outcomes. The focus is directed towards the alignment of entry-to-practice educational programs that are able to integrate these identified abilities in dental hygiene graduates.<sup>3,7</sup> Dental hygienists are among the many health professionals who are prepared to assume greater responsibilities, but they need to be provided with access to educational pathways that can develop their full capacity.<sup>3</sup>

Within the nursing literature, a study conducted by Aiken et al. in 2003 found that nurses with education beyond an associate degree showed a significant difference in clinical competence.<sup>16</sup> This study identified a relationship between higher levels of nursing education and improved patient outcomes, including lower patient mortality rates. In the interest of patient safety and building nurses' capacity, the authors recommended that nurses pursue their education at least to the baccalaureate degree level. No such relationship between additional dental hygiene education and client outcomes exists in the dental hygiene literature.

The purpose of our study was to explore the personal outcomes and dental hygiene practice

outcomes of dental hygiene degree-completion education in Canada from the perspectives of diploma dental hygienists who continued their dental hygiene education to the bachelor's degree level.

## Methods

This study employed a qualitative phenomenological design. Phenomenology explores the lived experience of a specific phenomenon and the results or outcomes of that experience.<sup>17</sup> This research method is both descriptive and interpretive. Giorgi's approach was adopted, as it describes the participants' experiences in their own words.<sup>18</sup> This approach focuses on two aspects: the data, which is obtained through individual interviews, and its analysis.

The inclusion criteria for this study's sample were dental hygienists who 1) initially earned their dental hygiene diploma from an accredited Canadian dental hygiene diploma program, 2) practiced dental hygiene for a minimum of two years before starting their degree-completion education, and 3) subsequently earned their dental hygiene baccalaureate degree in Canada through degree-completion

at the University of Alberta, University of British Columbia, or University of Toronto. Participants were recruited through two rounds of e-mail broadcasts from the CDHA and several dental hygiene provincial associations.

Ethics approval was granted by the University of British Columbia's Behavioral Research Ethics Board. A pilot study with three participants was first conducted to test the research design. Following the pilot study, a maximum variation sample of sixteen dental hygienists was purposefully selected. Purposeful sampling is a deliberate process of selecting participants based on their ability to provide the needed information.<sup>17</sup> Participants differed in years of practice experience, area of dental hygiene practice, dental hygiene diploma and degree program of graduation, and degree program delivery method (see Table 1). Maximum variation sampling captures the heterogeneity across the sample population.<sup>17</sup> When researchers maximize differences at the beginning of a study, they increase the likelihood that the findings will reflect differences and different perspectives—an ideal in qualitative research.<sup>19</sup>

Data were obtained from sixteen individual semistructured interviews that lasted between sixty and ninety minutes. Each interview was audiorecorded, transcribed verbatim, and coded for data analysis, involving pattern recognition and thematic development. Interviews were conducted until data saturation was achieved: the point at which no new information or themes were generated.<sup>17,19</sup> The alternative to saturation—an endpoint determined in advance—is a poor fit for qualitative inquiry.<sup>17</sup> Transcribed interviews and short interview summaries were given to the participants for review to offer them an opportunity to provide corrections and additional information. This process of soliciting participant feedback is termed "respondent validation" or "member-checking" and serves as an important tool for minimizing the possibility of misinterpreting the meaning of what participants say.<sup>17,19</sup>

Phenomenological analysis included reading and analyzing interview transcripts in search of quotes and statements that were emblematic in meaning, in addition to researcher memo writing. These quotes and statements were clustered into themes that formed the architecture of the findings. Data were analyzed using Giorgi's four-step approach: bracketing, intuiting, describing, and analyzing.<sup>18</sup> The first step, bracketing, involved sidelining preconceptions about what may be real while reading the interview transcripts.<sup>17,18</sup> The second step, intuiting, involved

**Table 1. Profile of study participants (N=16)**

Characteristics	Number of Participants
Years of Practice Experience	
5–10	3
11–15	5
16–20	5
21 or more	3
Area of Dental Hygiene Practice	
Clinical	5
Education	2
Clinical and education	6
Other (public health, admin, sales)	3
Diploma Education	
3-year diploma	7
2-year diploma	6
1+1 (1 year DA; 1 year DH)	3
Degree-Completion Program of Graduation	
University of Alberta	4
University of British Columbia	9
University of Toronto	3
Degree Delivery Option Experienced	
Classroom-based	6
Online	5
Both classroom-based and online	5

rereading of the transcripts, which led to the beginning of understanding the phenomenon. The third step, describing, communicated the findings in the form of written descriptions and quotes. The fourth step, analyzing, saw the emergence of themes.

## Results

From the participant interviews, three main themes emerged about outcomes of dental hygiene baccalaureate degree-completion education. These themes were changes in self-perception, values, and knowledge base (see Figure 1). Changes in self-perception were reflected by a reported increase in self-confidence and perceived credibility. Changes in values included a greater appreciation for lifelong learning. Advancements in knowledge strengthened the development of specific abilities, which ultimately influenced the participants' dental hygiene

practice. These abilities included an increased ability to think critically, to make evidence-based decisions, and to provide more comprehensive care. Participants also commented on having more career opportunities available to them outside of the clinical practice setting.

## Self-Perception

A reported increase in self-confidence and perceived credibility was reflective of how completing a dental hygiene degree influenced participants' perception of themselves as professionals.

**Confidence.** All the participants interviewed stated that completing a dental hygiene baccalaureate degree had increased their self-confidence. One participant commented, "I have more confidence in myself with a degree, and I am more confident in the skills and knowledge that I bring to my dental hygiene practice." The independent learning envi-

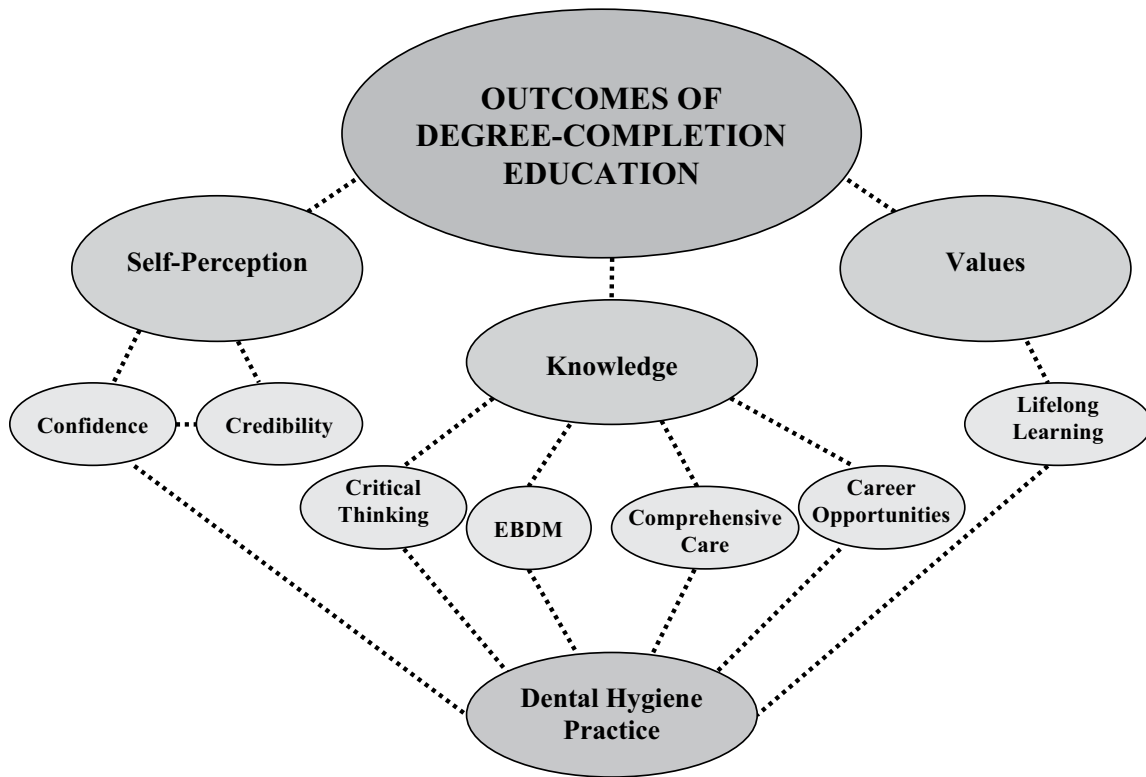


Figure 1. Outcomes of dental hygiene baccalaureate degree-completion education in Canada: completing a degree influenced participants' self-perception, values, and knowledge base, which ultimately positively impacted their dental hygiene practice

ronment experienced by these participants during the degree program also contributed to this increase in self-confidence. One participant stated that “the process of learning on your own gives you a lot of confidence in your abilities.” The status afforded by earning a degree also proved to be a contributing factor. “Now I feel that I’m more on par with other health care professionals in terms of education,” said one participant. “The degree gave me a sense of legitimacy.”

**Credibility.** Most participants expressed that they felt more credible as a dental professional with a baccalaureate degree. One participant said:

“You’re taken more seriously and regarded with more respect and credibility after your bachelor’s degree in dental hygiene because the perception is that you take your work seriously and show an interest in learning more about your area of expertise.”

“Having a degree validates the additional knowledge that I have,” stated another participant. Participants also believed that their colleagues and, to a lesser extent, their clients treated them with more respect if it were known that they had continued their education. “I have a higher level of confidence when talking with other professionals,” said one, “and if they knew that I had done my degree, they generally seemed to take my word with a little more weight.” When referring to a practice dentist, one participant noted, “I have the feeling from him that he sees me as a very qualified professional . . . he wants to know what I think. . . . I feel he trusts my judgment more now because he knows that I’m more educated.”

Several participants discussed how their dental hygiene colleagues have higher expectations of their knowledge base. “My dental hygiene diploma colleagues perceive me now as having more knowledge,” one participant reported. “They tend to ask me about dental things, expecting that I now would know.” Several participants also expressed that their clients reacted positively upon learning that their dental hygienist had earned a degree. One said, for example: “Clients see my degree on the wall now, and they seem very interested in the information that I had to share with them. . . . I think having a degree made them ask more questions.” A few participants did express that they did not feel any difference regarding how they were viewed or treated by other dental colleagues or clients after earning this degree.

## Values

A second outcome that resulted from completing a dental hygiene degree was a change in how the participants valued lifelong learning and continued education.

Participants indicated gaining a greater appreciation for lifelong learning by earning the degree. Before entering the degree program, many said they were unaware of how much they did not know until they were in the process of learning additional theory, both within and outside of dental hygiene. One remarked, “You don’t realize what you don’t know until you learn more”; another noted, “I have a better appreciation that you just never know everything.” In providing a summary of how she felt she had changed after completing this degree, one participant stated: “I perceive myself as a more educated person, more open-minded, more of a critical thinker, and I realize that I don’t know everything—learning is a lifelong process.” Comparing experiences in the diploma program, another participant stated:

“You graduate with your diploma knowing how to practice as a clinical dental hygienist. Then you study towards your degree and realize that what you learned in your diploma was just the tip of the iceberg. There’s so much I don’t know. The more I learn, the more I realize there is to learn.”

Several participants also expressed a greater interest in pursuing additional formal education after completing this degree. “I’m much more open to doing a master’s than I was previously,” said one. “I think the more education you complete, the more you want to know in general.” Another participant stated that the degree “gave me the impetus to apply to the master’s degree.” Yet others were satisfied with knowing that a graduate degree was now available to them if they desired to return to school in the future. One commented: “If I ever wanted to do something further, having the bachelor’s degree now, I know it [the opportunity] is there. I don’t have to worry that the avenue to pursue a master’s degree is closed.”

## Knowledge Base and Dental Hygiene Practice

A broader and more advanced knowledge base was the third theme that emerged about outcomes of degree-completion education. All participants expressed that they valued the diversity of courses to

which they were exposed. Participants experienced not only a broader education compared to their previous dental hygiene diploma, but they also commented on learning more detailed dental hygiene theory. Courses they specified include literature review, oral pathology, microbiology and immunology, oral epidemiology, research methodology, health and social psychology, biomedical ethics, philosophy, nursing, anthropology, interdisciplinary studies, adult education, and the business of dental hygiene. One participant expressed the point like this: “You gain a broader perspective on health issues where you go beyond just working in clinic and applying knowledge and theory to clinic. I think you receive a more global health care view of how dental hygiene as a profession can contribute.” Other comments included these: “The courses you take in the degree go beyond what you learn in the diploma. . . . I feel like I can explain things on a deeper level to my clients”; “The diversity of elective courses provided me with exposure to a wider academic field outside of dental hygiene”; and “I really enjoyed the variety of courses because you can actually put your dental hygiene education into a much broader interdisciplinary context.”

This broader and more advanced knowledge base underpinned specific abilities that were enhanced further through the pursuit of a dental hygiene degree. These abilities included critical thinking, evidence-based decision making, and providing more comprehensive dental hygiene care. The application of these abilities has reportedly influenced the way these participants practice dental hygiene. Their expanded knowledge base and the additional credential have also resulted in more career opportunities now available to these baccalaureate dental hygienists.

**Critical thinking.** All of the participants stated that completing this degree had increased their critical thinking ability, making comments like these: “I’m more of a critical thinker than I used to be”; “I’m a lot more critical of research now”; and “I’m more critical of the evidence behind my clinical recommendations to my clients.” This outcome was predominantly related to the participants’ experiences in the literature review courses within the degree program. One participant stated, “There was much more to read in the literature review course than any other, and the analysis of the studies was at a much more technical level, which required much more critical thought than in the diploma.” Another participant agreed: “Much of what we did in many courses was a lot of reading and evaluating current

literature. In doing so, we became more familiar with current research in our field and also developed our critiquing and critical thinking skills.” “I learned to think more broadly and critically,” added a third participant. “I ask ‘why’ more.”

**Evidence-based decision making (EBDM).**

The study participants stated that the courses undertaken in the degree helped further develop their evidence-based decision making abilities. They said that completing this degree increased their confidence in critiquing literature. Many participants noted that the volume of scientific literature they read and evaluated was significantly higher in the degree program than in their previous dental hygiene diploma education. “I am now more confident with reading literature, critiquing it, and using research more effectively to make decisions,” said one. Another commented: “I remember reading through journal articles in the diploma program, but I don’t remember learning how to examine their credibility and validity—that critiquing ability was made more clear in the degree program.”

The participants’ increased proficiency with reading and critiquing scientific literature resulted in making evidence-based recommendations to their clients more confidently and readily. Their comments on this point included the following: “I talk to my clients more now about what is evident in the literature rather than relying as much on anecdotal information”; “I integrate research findings more now into my clinical care”; and “I am more confident and aware that my clinical decisions are evidence-based, particularly concerning my role in initial therapy and making decisions to refer.” One participant expressed that the evidence-based decision making process can also be applied outside of the clinical practice setting: “I’m more comfortable retrieving information more effectively and then I can turn it into more appropriate education for the public and in program development.”

**Comprehensive care.** The participants felt that, after completing a degree, they were able to provide more comprehensive dental hygiene care to their clients. One commented that “the extra knowledge has made me so much more of a comprehensive hygienist.” This feeling was related primarily to having learned more detailed dental hygiene theory in the degree program and increasing her familiarity with current research. One participant stated, “I have more confidence with researching questions my clients may ask me. And now being more familiar with literature in general in our field, I’m more

comfortable answering my clients' questions knowing that I'm up-to-date and current." Like this one, many participants indicated that they were more comfortable educating their clients through the transfer of new knowledge, explaining the disease process on a more comprehensive level, and making periodontal diagnoses. Participants commented on providing a higher quality of dental hygiene care—not so much on a technical level but rather that the degree had broadened their perspectives on oral health. "I'm delivering a higher level of care in clinical practice," said one. The degree "has helped with talking with clients about the broader aspects of health promotion, not simply brushing and flossing," another stated. Yet another noted, "I think the diagnosis of perio is done a lot more with my clients now . . . because I think you get a lot more comfortable understanding periodontal disease as part of this degree so you're able to better explain the disease process."

**Career opportunities.** Participants said they felt the acquisition of additional knowledge and the additional credential have opened the door for them to more career opportunities in dental hygiene outside of the private clinical practice setting. Participants reported being able to branch into areas of dental hygiene practice such as education, administration, public health, sales, and graduate degree studies. "Well, I did want to get into teaching, and I did," said one. Noted another: "The degree has opened the door for me to work in education and in my current position in sales."

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

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## Discussion

The paucity of available literature in this area makes placing this study in the context of relevant dental hygiene research quite challenging. The most relevant study was a survey reported by Imai and Craig in 2005 on graduates from the University of British Columbia's dental hygiene degree-completion program.<sup>20</sup> Several of their participants may have also participated in our study, as there were nine participants in this study from the University of British Columbia's program. Otherwise, results from this study are placed primarily in the context of relevant nursing literature.

## Self-Perception

Participants in our study reported finding that completing a dental hygiene degree had increased their self-confidence and perceived credibility. Findings regarding self-perception have only been briefly noted in two other studies.<sup>20</sup> In Imai and Craig's survey, degree-completion respondents wrote: "I am more confident because of up-to-date knowledge" and "I am more confident with critically analyzing research."<sup>20</sup> In Osterman et al.'s study of nurses returning for a baccalaureate, familiarity with research (staying current with published literature and learning how to critique and apply it) was identified as an element of their education that increased nurses' perceptions of themselves as professionals.<sup>21</sup> Nurses reported a sense of self-betterment and enhanced professionalism as they progressed through the degree-completion programs. Nurses in their study also felt more comfortable with leadership and with their newfound ability to educate and influence other professionals.

Most participants in our study perceived that completing a dental hygiene baccalaureate degree had increased their professional credibility with their colleagues and clients. No other studies have specifically investigated this perceived outcome. However, two respondents in Imai and Craig's survey wrote: "I feel more like a professional who is respected for my knowledge and expertise" and "The degree has raised my profile when talking with other health care professionals."<sup>20</sup> Exploring other professionals' and clients' perceptions about dental hygienists with baccalaureate education would reveal further insights into the impact of having a dental hygiene degree on dental hygienists' credibility.

## Values

Participants expressed that the dental hygiene degree had increased their appreciation for lifelong learning. This finding was similar to that in Imai and Craig's survey, in which 100 percent of survey respondents indicated that the University of British Columbia's dental hygiene degree-completion program encouraged lifelong learning.<sup>20</sup> Lifelong learning plays a critical role in enhancing dental hygienists' knowledge base and in the care and treatment they provide to their clients.<sup>22,23</sup> Lifelong learning allows dental hygienists to maintain their professional competence and affirms their responsibility to be critical thinkers.<sup>22,23</sup> Similarly, nurses returning for their baccalaureate found that their values increased

towards advanced education and they held a greater appreciation for the value of research.<sup>21</sup>

Several participants in our study expressed that earning this degree had resulted in greater interest in pursuing additional formal education. Six of the sixteen participants were either currently enrolled in a master's degree program or had already earned a master's degree. Research supports the idea that baccalaureate dental hygienists are likely to further their formal education to the graduate degree level. From the thirty-four University of Toronto dental hygiene baccalaureate degree graduates contacted in Pohlak's study, fourteen (41 percent) continued their formal education with a graduate degree, including two doctoral degrees.<sup>9</sup> In addition, 25 percent of the University of British Columbia dental hygiene baccalaureate degree graduates have continued their education in graduate studies.<sup>10</sup> Rowe et al. found that 21 percent of their baccalaureate respondents continued on to complete a graduate program, with most degrees being a master's degree in education (53 percent) and in dental science/dental hygiene (28 percent).<sup>12</sup>

## Knowledge Base and Dental Hygiene Practice

Acquiring a broader knowledge base, both within and outside of dental hygiene theory, was another outcome of degree education found in our study. According to more general literature about outcomes of higher education, baccalaureate education is purposely designed to educate broadly, producing graduates who are proficient critical thinkers, communicators, problem solvers, and decision makers.<sup>24-26</sup> Baccalaureate education produces graduates of more diverse backgrounds and, thus, involves study of multiple dimensions, not merely cumulative exposure to more and more of a specified subject area.<sup>24-26</sup>

Respondents in Imai and Craig's survey also commented on receiving a broader education and acquiring more detailed knowledge in their degree-completion program. The degree provided "great depth and exposure to a number of areas of dental hygiene practice as well as other areas of health care."<sup>20</sup> In their survey, 80.8 percent of the respondents either strongly agreed or agreed that the dental hygiene degree enhanced their knowledge for dental hygiene practice. Advancing education to the baccalaureate degree has also been found to make a difference in nursing practice by broadening knowledge, enriching

understanding, and sharpening expertise.<sup>21,27</sup> Nurses have commented retrospectively that their diploma education focused on disease and the physiological aspects of patient care.<sup>21</sup> The nursing baccalaureate degree, on the other hand, focused on more global issues, offering broader perspectives in which nursing theory and leadership were of paramount importance.<sup>21,27</sup> The baccalaureate degree provided nurses with a greater awareness that enabled them to focus on holistic care.<sup>21,27</sup>

**Critical thinking.** Participants in our study found that completing a dental hygiene degree had enhanced their critical thinking ability. This was also a finding of Imai and Craig's survey.<sup>20</sup> With regard to professional expertise, 80.4 percent of their respondents strongly agreed and another 15.4 percent agreed that the degree-completion education enhanced their scientific skills for gathering information, planning and implementing strategies, and evaluating results. In addition, 96.2 percent of their respondents indicated that they enhanced their analytical skills for problem solving. Enhanced critical thinking abilities and improved clinical judgment by nurses may explain the link between higher nursing education and better patient outcomes.<sup>21</sup> Nurses who completed a baccalaureate degree have reported a general shift in their thinking, from the technical to the professional: from a practice that was automatic to a practice that revolved around problem solving.<sup>21</sup>

Longer educational programs have been shown to support the development of greater abilities in critical thinking and use of research that has been found to result in improved client outcomes.<sup>28,29</sup> This outcome was predominantly related to the participants' experiences in the literature review courses within the degree program. Students experience a more extensive exposure to reading and critiquing literature in dental hygiene degree-completion education compared to dental hygiene diploma-level education.<sup>30</sup>

**Evidence-based decision making.** Most participants expressed that they were exposed to the principle of evidence-based decision making in their dental hygiene diploma education; however, their proficiency with using research to inform practice decisions, termed research utilization,<sup>31</sup> was enhanced after completing a dental hygiene degree. Participants in Osterman et al.'s study also commented: "You use evidence-based practice and get the best patient outcomes" and "I was not familiar with the research process. . . . The concept of evidence-based practice was a fairly new concept to me [in the degree program]."<sup>21</sup> The literature review and transfer of knowledge skills



that accompany baccalaureate nursing education are critical to applying evidence-based practice changes with patients.<sup>21</sup>

In 2002 in the United States, a descriptive study was published on the curricular utilization of evidence-based decision making in dental hygiene education in both baccalaureate and non-baccalaureate programs.<sup>32</sup> The researchers reported that 86 percent of baccalaureate programs and 61 percent of non-baccalaureate programs encouraged their students to make evidence-based recommendations to patients and educated their students about how to apply evidence-based findings to clinical situations. The study concluded that the baccalaureate degree respondents utilized library facilities, journal indices, and electronic databases to a greater extent than their non-baccalaureate counterparts. Developing a positive attitude towards research use and developing the skills to find, critique, and implement research findings in practice require learning experiences that can more easily be obtained through longer educational programs.<sup>3</sup>

**Comprehensive care.** Participants in our study generally felt that they were providing more comprehensive care to their clients due to their expanded knowledge base and ability to educate their clients through the transfer of new knowledge and research utilization. Respondents in Imai and Craig's survey felt similarly: one noted that the degree "improved my analytical abilities and, therefore, I am better able to diagnose my patients and provide them with a higher standard of care."<sup>20</sup> The respondents in Anderson and Smith's 2009 study on dental hygienists' perceptions about the bachelor of science in dental hygiene stated that "improved professional competence" was the most important personal benefit of earning a dental hygiene degree.<sup>8</sup> Osterman et al. state that it is critical to understand how the pursuit of a baccalaureate influences one's nursing practice to provide a work environment that fosters knowledge acquisition and transfer of new knowledge to practice such that patient care is enhanced.<sup>21</sup> The Canadian Nurses Association states that there is growing evidence that baccalaureate-prepared health care professionals are most able to provide safe, ethical, and evidence-based quality care to meet the increasing health complexities of the public and evolving practice environments.<sup>33</sup>

**Career opportunities.** Many participants in our study commented that completing a dental hygiene degree had expanded their career opportunities

in dental hygiene. Prior research on career outcomes has clearly documented that baccalaureate degree dental hygienists are more likely to practice outside of the traditional clinical practice setting and have successfully found employment in educational, administrative, public health, and sales environments.<sup>9-12</sup>

An important finding of our study was the overall support the participants expressed for recommending the dental hygiene baccalaureate degree to other diploma dental hygienists in Canada. All sixteen participants recommended this degree not only for personal and career development, but also for the professionalization of dental hygiene in Canada. Participants supported the baccalaureate degree becoming the entry-to-practice credential. In 2010, Okwuje et al. reported on their survey of the directors of 300 accredited U.S. dental hygiene programs: three-quarters of them supported advancing dental hygiene entry-level educational requirements to a bachelor's degree.<sup>34</sup> Similarly, Imai and Craig found that degree graduates expressed overwhelming support for the baccalaureate dental hygiene degree as the entry-to-practice credential in Canada.<sup>20</sup>

## Limitations and Strengths of This Study

A limitation of this study is that the dental hygienists who participated were self-selected. Participants not only voluntarily chose to complete a dental hygiene baccalaureate degree, but they also voluntarily responded to the recruitment messages expressing their interest in this study. Therefore, the positive findings in this study may be attributed to the participants' inherent bias. However, strategies such as maximum variation sampling, transcribing interviews verbatim, collecting data until saturation, and respondent validation enhanced the study's validity and inferrability.

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## Conclusion

This study qualitatively explored the personal outcomes and dental hygiene practice outcomes of completing a dental hygiene baccalaureate degree with sixteen dental hygienists across Canada. The study provided new insights, revealing that completing a dental hygiene baccalaureate degree positively impacted participants' self-perception, values, and the way they practice dental hygiene. The dental hygienists in this study reported that earning a bac-

calaureate degree had increased their self-confidence, perceived credibility, and appreciation for lifelong learning. The participants also shared outcomes that directly affected their dental hygiene practice. These outcomes included an expanded knowledge base that underpinned a furthered proficiency with critical thinking, evidence-based decision making, and comprehensiveness of client care. As previously documented in others' research, participants in our study reported having more career opportunities available to them outside of the clinical practice setting.

These outcomes relate to the development of abilities considered essential to better meet the public health care needs of the twenty-first century such as research use and integration into practice, transfer of new knowledge to other professionals and clients, and critical thinking. This study provides empirical evidence to suggest that dental hygiene entry-to-practice education may need to be aligned at the baccalaureate degree level to foster the capacity of graduates to care for a public with increasing health complexities in varied practice environments.

An investigation into learning experiences in dental hygiene degree-completion education was also conducted in our study. This investigation included a comparison of experiences between those participants who completed their degree online versus a classroom-based format. Differences in learning experiences within degree-completion programs and the participants' prior dental hygiene diploma education were also explored. Results regarding learning experiences have been published in the *Canadian Journal of Dental Hygiene*.<sup>30</sup>

Even though completing a dental hygiene degree positively influenced the participants' dental hygiene practice, further research is needed to investigate whether this positive influence results in an improvement in client outcomes. Future studies should also focus on exploring the outcomes of dental hygienists who have continued their education to the master's and doctoral levels. Overall, this study may provide the impetus for further discussions surrounding advancing dental hygiene entry-to-practice education.

## Acknowledgments

The researchers would like to thank the dental hygienists who donated their time to participate in this study. We would also like to thank the Canadian Dental Hygienists Association, the British Columbia

Dental Hygienists' Association, the College of Registered Dental Hygienists of Alberta, and the Ontario Dental Hygienists' Association for their assistance with participant recruitment in this study.

## REFERENCES

1. Canadian Dental Hygienists Association. Dental hygiene programs. At: [www.cdha.ca/AM/Template.cfm?Section=DH\\_Programs](http://www.cdha.ca/AM/Template.cfm?Section=DH_Programs). Accessed: May 25, 2010.
2. University of British Columbia, Faculty of Dentistry. Dental hygiene degree program. At: [www.dentistry.ubc.ca/Education/Hygiene/default.asp](http://www.dentistry.ubc.ca/Education/Hygiene/default.asp). Accessed: May 25, 2010.
3. Canadian Dental Hygienists Association. Pathways to support the oral health of Canadians: the CDHA dental hygiene education agenda, 2009. At: [www.cdha.ca/pdfs/Profession/Policy/EducationAgenda.pdf](http://www.cdha.ca/pdfs/Profession/Policy/EducationAgenda.pdf). Accessed: May 26, 2010.
4. Clovis J. The professional status of dental hygiene in Canada. Part one: progress and challenges. *Probe* 1999;33(6):186–95.
5. Edgington EM, Pimlott JFL, Cobban SJ. Societal conditions driving the need for advocacy education in dental hygiene. *Can J Dent Hyg* 2009;43(6):267–74.
6. Monson AL, Engeswick LM. ADHA's focus on advancing the profession: Minnesota's dental hygiene educators' response. *J Dent Hyg* 2007;81(2):1–3.
7. American Dental Hygienists' Association. Dental hygiene: focus on advancing the profession. At: [www.adha.org/downloads/ADHA\\_Focus\\_Report.pdf](http://www.adha.org/downloads/ADHA_Focus_Report.pdf). Accessed: June 29, 2010.
8. Anderson KL, Smith BS. Practicing dental hygienists' perceptions about the bachelor of science in dental hygiene and the oral health practitioner. *J Dent Educ* 2009;73(10):1222–32.
9. Pohlak M. University of Toronto BScD (dental hygiene) graduates 1978–95: where are they now? *Probe* 1996;30(2):67–9.
10. Craig BJ, McCloy D, Boyd M. Preparing the dental hygiene profession for leadership: evaluation of a Canadian baccalaureate program. *J Dent Educ* 1999;63(3):288(Abstract).
11. Brand MB, Finocchi LL. Post-certificate dental hygienists education and professional development. *Educ Dir Dent Aux* 1985;10(1):12–20.
12. Rowe DJ, Massoumi N, Hyde S, Weintraub JA. Educational and career pathways of dental hygienists: comparing graduates of associate and baccalaureate degree programs. *J Dent Educ* 2008;72(4):397–407.
13. World Health Organization. A safer future: global public health security in the 21<sup>st</sup> century. Geneva: World Health Organization, 2007.
14. World Health Organization, Noncommunicable Disease and Mental Health Cluster, Chronic Disease and Health Promotion Department. Preparing a health care workforce for the 21<sup>st</sup> century: the challenge of chronic conditions. Geneva: World Health Organization, 2005.
15. Dental Hygiene Educators Canada, Canadian Dental Hygienists Association, National Dental Hygiene Certification Board, Federation of Dental Hygiene Regulatory

- Authorities. National dental hygiene competencies for entry-to-practice. Ottawa, ON: Dental Hygiene Educators Canada, Canadian Dental Hygienists Association, National Dental Hygiene Certification Board, Federation of Dental Hygiene Regulatory Authorities, 2008.
16. Aiken LH, Clarke SP, Cheung RB, Sloane DM, Silber JH. Educational levels of hospital nurses and surgical patient mortality. *JAMA* 2003;290(12):1617–23.
  17. Padgett DK. Qualitative methods in social work research. 2<sup>nd</sup> ed. Thousand Oaks, CA: Sage, 2008.
  18. Giorgi A. Phenomenological and psychological research. Pittsburgh: Duquesne University Press, 1985.
  19. Creswell JW. Qualitative inquiry and research design. 2<sup>nd</sup> ed. Thousand Oaks, CA: Sage, 2007.
  20. Imai P, Craig BJ. Profile of the University of British Columbia's bachelor of dental science in dental hygiene graduates from 1994 to 2003. *Can J Dent Hyg* 2005;39(1):117–29.
  21. Osterman PL, Asselin ME, Cullen HA. Returning for a baccalaureate: a descriptive exploratory study of nurses' perceptions. *J Nurs Staff Dev* 2009;25(3):109–17.
  22. Hovliaras-Delozier CA. Lifelong learning and your dental hygiene career. Access, April 2008.
  23. Westphal C. Learning never stops: keys to lifelong learning. Access, April 2008.
  24. American Association of Dental Schools, Standing Committee of Dental Hygiene Directors. Report of the task force on dental hygiene education. Washington, DC: American Association of Dental Schools [now American Dental Education Association], 1995.
  25. Smith V, Karelis C. Considering the public interest: part I. *Lib Educ* 1995;81:4–11.
  26. Stewart D, Chickering AW. Considering the public interest: part II. *Lib Educ* 1995;81:12–9.
  27. Long KA, Bernier S, Aiken LH. RN education: a matter of degrees. *Nurs* 2004;34(3):48–51.
  28. Veramah V. Utilization of research findings by graduate nurses and midwives. *J Adv Nurs* 2004;47:183–91.
  29. Finley-Zarse SR, Overman PR, Mayberry WE, Corry AM. Information-seeking behaviors of U.S. practicing dental hygienists and full-time dental hygiene educators. *J Dent Hyg* 2002;76(2):116–24.
  30. Kanji Z, Sunell S, Boschma B, Imai P, Craig BJ. Dental hygiene baccalaureate degree education in Canada: motivating influences and experiences. *Can J Dent Hyg* 2010;44(4):147–55.
  31. Graham ID, Logan J, Harrison MB, Straus SE, Tetroe J, Caswell W, Robinson N. Lost in knowledge translation: time for a map? *J Cont Educ Health Prof* 2006;26(1):13–24.
  32. Chichester SR, Wilder RS, Mann GB, Neal E. Incorporation of evidence-based principles in baccalaureate and nonbaccalaureate degree dental hygiene programs. *J Dent Hyg* 2002;76(1):60–6.
  33. Canadian Nurses Association. Joint position statement: educational preparation for entry to practice. At: [www.cna-nurses.ca/CNA/documents/pdf/publications/PS76\\_educational\\_prep\\_e.pdf](http://www.cna-nurses.ca/CNA/documents/pdf/publications/PS76_educational_prep_e.pdf). Accessed: June 13, 2010.
  34. Okwuje I, Anderson E, Hanlon L. A survey of dental hygiene program directors: summary findings and conclusions. *J Dent Educ* 2010;74(1):79–87.