

**MOTIVATORS, EXPERIENCES, AND OUTCOMES OF
DENTAL HYGIENE BACCALAUREATE DEGREE EDUCATION
IN CANADA**

by

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ABSTRACT

Background: There is a paucity of published literature pertaining to motivating influences, experiences, and outcomes of dental hygiene baccalaureate degree education. Since there are various dental hygiene entry-to-practice educational models in Canada, exploring baccalaureate education is becoming an increasingly important subject.

Objective: To explore the motivating influences, experiences, and outcomes of dental hygiene degree-completion education in Canada, from the perspectives of diploma dental hygienists who had continued their education to the baccalaureate degree level.

Methods: This study employed a qualitative phenomenological design, using a maximum variation purposeful sampling strategy. Data generation occurred with sixteen dental hygienists across Canada through individual semi-structured interviews. Interviews were audio-recorded, transcribed verbatim, and coded for data analysis, involving pattern recognition and thematic development.

Results: Emerging themes regarding motivating influences included: expanding career opportunities in dental hygiene, personal development and a desire for knowledge, remaining competitive, status and recognition, access to graduate education, and third-person influences. Participants' experiences in degree-completion programs included obtaining a broader education and being exposed to a wider scope of knowledge within and outside of dental hygiene theory. They also experienced a more independent learning environment, with a stronger focus on literature review and critical thinking, compared to

their learning experiences in their previous dental hygiene diploma education. Themes which emerged about outcomes included changes in: self-perception, values, and knowledge base. 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.

Conclusion: These results reveal important insights for those dental hygienists considering additional dental hygiene education. The findings also provide insights into the positive impact of earning a dental hygiene baccalaureate degree on oneself and one's dental hygiene practice.

PREFACE

This qualitative study was co-authored by members of my thesis committee: Professors Bonnie J. Craig, Geertje Boschma, and Pauline Imai and Dr. Susanne Sunell. I designed the study which was submitted as a research proposal to my thesis committee who provided me with extensive feedback. After their approval of the research proposal, I recruited study participants with the assistance of several dental hygiene professional associations. I conducted and transcribed all interviews. Once I had initially categorized the collected data, my thesis committee assisted me with data analysis and thematic development. I prepared the preliminary manuscripts to be published and received editorial and philosophical feedback from all members of my thesis committee, which I subsequently incorporated into the final manuscripts.

This study received ethics approval from the University of British Columbia's *Behavioural Research Ethics Board* (Certificate # H09-00793).

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DEDICATION

To my beautiful wife, Ada, and our future...

1 INTRODUCTION

1.1 Thesis Overview and Organization

The discourse on dental hygiene baccalaureate education in Canada has become more prevalent in recent years. Since its inception, the entry-to-practice educational credential for dental hygiene in Canada has been a diploma.^{1,2} This thesis provides information about dental hygiene baccalaureate education and offers insight into the impetus for advancing education for the dental hygiene profession.

Chapter 2 includes a literature review which examines the evolution of dental hygiene education in Canada and analyzes the professional influences and political challenges of the baccalaureate movement. In chapters 3 and 4, this study examines:

- (1) motivating influences for pursuing dental hygiene baccalaureate education,
- (2) experiences during dental hygiene baccalaureate education, and
- (3) personal outcomes and dental hygiene practice outcomes of baccalaureate education.

The motivating influences and experiences in dental hygiene baccalaureate education are investigated and discussed in chapter 3. The outcomes of dental hygiene baccalaureate education are investigated and discussed in chapter 4. The concluding chapter contains the overall thesis conclusions, implications of this study, strengths and limitations of this study, and suggestions for future studies.

1.2 Research Question and Objectives

The purpose of this research was to explore the motivating influences, experiences, and outcomes of dental hygiene degree-completion education in Canada, from the perspectives of diploma dental hygienists who had continued their education to the baccalaureate level. Experiences refer to the participants' time spent within the degree-completion programs as well as experiences after having completed the program. Outcomes refer to how the participants may perceive themselves to have changed personally in addition to how they feel their dental hygiene practice may have changed as a result of earning a dental hygiene degree.

The primary research question was: What are the motivating influences, experiences, and outcomes of diploma dental hygienists who complete a dental hygiene baccalaureate degree? Research objectives and sub-questions included exploring the following:

- (1) Why do diploma dental hygienists advance their dental hygiene education?
- (2) What is the perceived difference between learning experiences in diploma and baccalaureate levels of dental hygiene education?
- (3) Has completing a dental hygiene baccalaureate degree changed the participants personally or influenced the way that they practise dental hygiene?

These questions require an in-depth analysis into the impact of earning a dental hygiene baccalaureate degree, an analysis that is currently absent in dental hygiene literature. This inquiry may add empirical evidence to current discussions regarding advancing dental hygiene education in Canada.

1.3 References

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<http://www.cdha.ca/pdfs/Profession/Policy/EducationAgenda.pdf>
2. Canadian Dental Hygienists Association. Dental hygiene programs. At:
http://www.cdha.ca/AM/Template.cfm?Section=DH_Programs.
Accessed: May 25, 2010.

2. A DISCOURSE ON DENTAL HYGIENE EDUCATION IN CANADA*

2.1 Synopsis

Over the past decade, the discourse on dental hygiene education has gained momentum in Canada. This review provides insights into the evolution of dental hygiene education in Canada, briefly exploring the history and professional influences for diploma and baccalaureate education within the profession. The profession in Canada has yet to implement a national standardized entry-to-practice educational model, but the recent development of national educational competencies may prove to be a promising beginning. The review also discusses efforts to advance dental hygiene education in recent years, while exploring the political and professional pressures and challenges that remain. Further discourse on education and outcomes-related research can be effective in positively influencing governmental, professional, and public opinions of higher entry-level education for dental hygiene which may ultimately result in regulatory change and improved client outcomes.

2.2 Introduction

Dental hygiene is a growing profession in Canada. Not only has there been a dramatic increase in the number of dental hygienists in recent years across the country, but the profession has also established self-regulation in almost all provinces. One continuing challenge in dental hygiene, however, has been entry-to-practice educational standards.

* A version of this chapter has been accepted for publication. Kanji Z, Sunell S, Boschma G, Imai P, Craig BJ. A discourse on dental hygiene education in Canada. *International Journal of Dental Hygiene*.

Current dental hygiene entry-to-practice education in Canada is eclectic. The diverging evolution of dental hygiene education over the past few decades has resulted in a diversity of programs which vary in prerequisites, length, and institutional setting. Dental hygienists in Canada are educated primarily through entry-level 2-year or 3-year diploma programs.¹ Dental hygienists with a diploma who desire additional dental hygiene education can choose from four baccalaureate degree-completion programs in universities across the country. Canada also has one 4-year entry-to-practice dental hygiene baccalaureate program (see Table 1).

The scope of professional practice does not change whether one has a 2-year diploma, a 3-year diploma, or a baccalaureate degree. However, each province and territory has its own dental hygiene regulatory body. Because of the variations between regulatory bodies, dental hygiene's scope of practice is not uniform across Canada, a factor that makes educational reform and consistency quite challenging. 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. An exploration into the past few decades is intended to help identify the slow but progressive movement in Canada towards advancing dental hygiene entry-to-practice education to the baccalaureate degree level.

2.3 Dental Hygiene Diploma Education

The impetus for the development of dental hygiene programs in Canada initially stemmed from the dental profession with a desire to increase access to dental care, particularly

preventive services.² The first dental hygiene program in Canada was a 2-year diploma program, established in 1951 at the University of Toronto.³ A second program followed in 1956, implemented through the Canadian Armed Forces Dental Services.² Four additional university-based dental hygiene diploma programs opened during the 1960s: the University of Alberta (1961), Dalhousie University (1961), the University of Manitoba (1963), and the University of British Columbia (1968).^{2,3}

Initially, the Canadian Dental Association (CDA) had recommended that dental hygiene programs be offered through faculties of dentistry within universities.² However, with the rapid growth of community colleges and technical institutes in the 1970s and 1980s, Canadian dental hygiene diploma programs were discontinued in universities. Political and economic factors also fueled the closure of dental hygiene diploma programs in universities, many of which reopened in community colleges in provinces such as British Columbia and Ontario.³

The first Ontario college dental hygiene program was established at Algonquin College in 1974, followed by a program at George Brown College in 1976. Shortly thereafter, the diploma program at the University of Toronto closed in 1978.² In British Columbia, the diploma program at the University of British Columbia (UBC) closed in 1986, and students were transferred to a new diploma program which opened at Vancouver Community College. Two additional diploma programs were established at the College of New Caledonia and Camosun College in the following three years.² Over the past decade, numerous new diploma programs across Canada have opened. Diploma programs

in Canada involve 2 years of specific dental hygiene instruction; however, prerequisites for some programs include secondary school matriculation while other programs require a minimum of first year university education in general sciences. At the time of this review, there are 49 dental hygiene diploma programs in Canada: 32 of these programs require 2 years of study and 17 programs require 3 years (including the prerequisite university year of study).¹ With regard to institutional setting, 44 of these diploma programs are located within community colleges or technical and private institutions; only 5 are university-based.

Over the past few years, there has also been a proliferation of private businesses offering diploma level dental hygiene education in Canada. This rapid growth of 2-year private dental hygiene programs was in large part due to the CDA's concerns over the shortage of dental hygienists in Canada, an issue which first surfaced in the late 1990s.⁴ At that time, with an increased demand by clients for more preventive services, the CDA was convinced that there was an inadequate number of dental hygienists in Canada to meet the needs of many dental offices.⁴ In addition to opening more diploma programs to address this perceived shortage, provincial dental hygiene regulatory bodies were pressured to increase the practice mobility for dental hygienists across Canada.

For example, in British Columbia in 2004, with campaigning pressure from the British Columbia Dental Association, the College of Dental Hygienists of British Columbia amended their bylaws to create a process to allow graduates from non-accredited programs, including foreign educated hygienists, to become licensed.⁴ This amendment

opened the door for dental hygienists educated in other provinces to practice in British Columbia, despite different entry-level dental hygiene education. The increase in practice mobility between all provinces has brought more attention to the need to have standardized educational qualifications for all Canadian dental hygienists.

Today, there are approximately 20,000 dental hygienists in Canada, roughly 14,000 of whom are members of the Canadian Dental Hygienists Association (CDHA), the voluntary national professional organization, a number that has risen by approximately 45% since 2003.^{1,3,5} According to the 2009 CDHA *National Dental Hygiene Job Market and Employment Survey* conducted with 3,151 dental hygienists in Canada, roughly an equal number of Canadian dental hygienists have earned either a 2-year diploma or a 3-year diploma.⁵

2.4 Dental Hygiene Baccalaureate Education

Dental hygiene diploma education remains focused around a clinical practice model which is thought to limit the opportunity to socialize dental hygienists beyond the traditional clinical role of client care.^{6,7} Dental hygiene baccalaureate education utilizes a broader academic model, preparing graduates for expanded roles.⁷ The past decade has been witness to a growing movement towards the advancement of dental hygiene education to a baccalaureate degree in Canada. The impetus for advancing education stems from a sense of responsibility to address the growing oral health complexities of the public (not only clinically, but also in the community and at the level of policy

making), a need for dental hygiene research conducted by dental hygienists, a demand for qualified dental hygiene educators,^{8,9} and a desire to advance the profession.⁹

Dental hygienists with a dental hygiene baccalaureate degree in Canada have either continued their formal education in one of four degree-completion programs or have completed a 4-year entry-to-practice university program. In 1971, the University of Montreal became the first institution (francophone) in Canada to offer a dental hygiene degree-completion program, followed by the University of Toronto in 1977. Due to budgetary, enrolment, and political issues, the University of Montreal's program was discontinued in 1979 as was the University of Toronto's program in 2001.^{2,3,10} The University of British Columbia, the University of Alberta, and Dalhousie University have offered degree-completion since 1992, 2000, and 2008 respectively.¹¹⁻¹³ Most recently, the University of Manitoba accepted its first dental hygiene degree-completion students in 2010.¹⁴ In addition to its degree-completion options, the University of British Columbia, in 2007, implemented Canada's first and only 4-year entry-to-practice dental hygiene baccalaureate option within its program.¹¹ From the 3,151 Canadian dental hygienists surveyed in 2009, only 532 (16.9%) had earned a baccalaureate degree (either prior to or after their dental hygiene diploma education), of whom only 147 (4.7%) had completed a baccalaureate degree in dental hygiene.⁵

Incorporating advanced theory within a broader context in dental hygiene education in large part stems from a need to improve ability-based outcomes for dental hygiene graduates.⁸ According to the World Health Organization, building the abilities of the health care workforce to address the rising prevalence of chronic and preventable diseases in the

21st century is an issue of increasing importance internationally.^{15,16} The abilities required in dental hygiene to support quality care for a population with increasing health complexities include: using credible research to inform practice decisions, translating research to assist clients in understanding health issues, transferring information to clients and other health professionals, working collaboratively on interdisciplinary teams, and taking a leadership role in healthcare delivery.⁸ The focus of educational organizations is directed towards the alignment of entry-to-practice programs that are able to integrate these abilities in dental hygiene graduates and towards laying the foundation for continued studies at the graduate degree level.^{8,9} Dental hygiene baccalaureate degree education in Canada provides a broader education, a more independent learning environment, and a stronger focus on critical thinking compared to learning experiences in dental hygiene diploma programs.¹⁷ Longer educational programs, in general, have been shown to support the development of greater abilities in the use of research and critical thinking that have been found to result in improved client outcomes.^{18,19} Dental hygienists, therefore, need to be provided with access to educational pathways, such as baccalaureate and graduate level education, to develop their full capacity.⁸

The CDHA has supported baccalaureate level education for dental hygiene for many years. The association recognizes that dental hygiene education must accommodate to an expanding body of dental hygiene theory, changing population demographics, new oral disease patterns, and varied dental hygiene practice environments with increasing levels of responsibility.^{8,20} In 2000, the CDHA passed a policy statement endorsing the baccalaureate degree as the entry-to-practice credential by 2005 for all dental hygiene

students commencing their studies in that year.²¹ This policy statement reflected an audacious goal, one to stimulate action given the limited number of baccalaureate programs. Unlike many other health care professions in Canada, dental hygiene has not been able to establish baccalaureate degree education as the entry-to-practice credential. Social, economic, and political resistance from a variety of sources continue to prevail, including within governmental policies and from both the dental and dental hygiene professions.^{3,22} One decade after the acceptance of this policy statement, establishing baccalaureate education as the entry-to-practice credential still remains an important goal of the CDHA, as stated in its 2009 *Dental Hygiene Education Agenda*.⁸

2.5 International Dental Hygiene Education

In Johnson's 2009 comparative study on international dental hygiene practice, the majority of entry-level programs noted internationally were 2-3 year diploma or associate degree programs.²³ Dental hygiene baccalaureate degree education is the entry-to-practice requirement in just four countries: Finland, Italy, the Netherlands, and Slovakia.²³ Four of these entry-to-practice baccalaureate degree programs were reported for Finland and for the Netherlands and three baccalaureate programs for Slovakia; specifics for Italy were missing. In comparison, the United States of America offers 51 accredited 4-year Bachelor of Science in Dental Hygiene programs and 47 dental hygiene baccalaureate degree-completion programs.²⁴ However, the entry-to-practice credential for dental hygiene practice in the United States continues to be the associate degree, where there are currently 270 programs, similar to Canada's dental hygiene diploma.^{9,24}

Dental hygiene education continues to evolve internationally. Even though most entry-level programs consist of 2-3 years of post-secondary education, changes in curriculum are anticipated for 17 of the 21 countries examined in Johnson's comparative study. Cited most frequently were expected changes in the length of entry-level programs, expanding curriculum to the baccalaureate level.²³

There are currently no graduate level dental hygiene programs in Canada. Even though there are several general Master of Science in Dental Science programs open to oral health professionals, Canadian dental hygienists must currently access programs internationally for discipline-specific (dental hygiene) graduate education. For example, in the United States, there are currently 14 Master of Science in Dental Hygiene programs.²⁴ In addition to the United States, masters programs in dental hygiene can be found in Finland, Italy, and the Netherlands and are pending approval in Australia and Norway.²³ No countries currently have doctoral programs in dental hygiene, although one is reportedly under development in Norway.²³

2.6 National Dental Hygiene Educational Competencies

The dental hygiene profession, until recently, had several national documents pertaining to entry-to-practice issues. The need for a national educational standard has become increasingly evident over recent years with the divergence of entry-to-practice educational models across the country, the implementation of new programs in multiple post-secondary institutions in new jurisdictions, and the increase in practice mobility between Canadian provinces. National dental hygiene organizations identified the need to

articulate standards about the knowledge and abilities required for entry-to-practice. The competency approach was adopted to provide a way to communicate these standards which could then be used to support dental hygiene education and develop curricula, assess programs through accreditation, examine graduates, and develop provincial regulatory standards.²⁵

In January 2010, the *Entry-to-Practice Competencies and Standards for Canadian Dental Hygienists* document was approved. These National Dental Hygiene Competencies (NDHCs) were created in collaboration with the major stakeholders within the profession in Canada: the CDHA, the Federation of Dental Hygiene Regulatory Authorities, the Commission on Dental Accreditation of Canada, the National Dental Hygiene Certification Board, and dental hygiene educators.²⁶ The NDHCs include: "...the abilities that dental hygienists require to practice competently and responsibly."^{26,p.3} The competencies are divided into core abilities and abilities related to client services provided by the dental hygienist (see Table 2). The core abilities reflect the shared abilities that dental hygienists have with other health care professionals. The description of these core abilities is then followed by the client service abilities which articulate the specialized services provided by dental hygienists.²⁵ The core abilities involve the dental hygienist as a: professional, communicator and collaborator, critical thinker, advocate, and coordinator.²⁶ The abilities related to client services involve the dental hygienist as a: clinical therapist, oral health educator, and health promoter.²⁶ This document provides dental hygiene educational programs with overarching ability statements which reflect a

consistent national standard for entry-to-practice into the dental hygiene profession in Canada.

The NDHCs, however, were not linked with a specific credential given that the mandate of the participating organizations varied; linking the competencies to a specific credential would have precluded the collaborative initiative. It was decided to focus the competencies on the abilities required to meet the public healthcare needs of the 21st century, and it was believed that this approach would support the advancement of dental hygiene education. The NDHC document does state that educators and researchers may enhance the competencies as required. Therefore, UBC's dental hygiene degree program expanded on the NDHCs by including 'UBC graduate-specific competencies,' adding such competencies as scientific investigation, research use, policy use, and leadership.²⁷ This initiative may provide a stimulus for the development of credential-specific competencies.

Dental hygiene curriculum and provincial regulatory bodies (which govern scopes of practice) across Canada are inconsistent in their approach. This phenomenon is not unique to dental hygiene, but closely related to the fact that, in Canada, both health care and education fall within provincial legislative jurisdiction. Examples of the provincial variance for dental hygiene practice include discrepancies in the ability to administer local anesthesia, to provide restorative services, to prescribe chemotherapeutic agents, and to practice independently from a dentist. In addition to resistance from organized dentistry, much of this regulatory inconsistency stems from the varying models of entry-

level dental hygiene education between provinces. The NDHCs most likely will be a positive force in supporting not only greater consistency between educational standards, but also regulatory standards across Canada.

2.7 Future Challenges for Dental Hygiene Education

Education is regarded as an important attribute to promote professional development in Canada. The CDHA's policy statements and education agendas over the past decade for baccalaureate education to become entry-to-practice were created to support the continued professional development of dental hygiene. However, the professional, social, and political challenges to advancing education can be more pervasive than the educational ones.

2.7.1 Professional Dominance of Dentistry

The division of labour in the health care sector is hierarchical. Dentistry's professional dominance over dental hygiene has allowed the profession to devolve responsibilities to dental hygienists that have historically placed dental hygiene in a professionally subordinate position.²⁸ Dental hygiene's scope of practice actually maintains dentistry's dominance by requiring that certain procedures be performed under the supervision of a dentist. For example, in the province of British Columbia, clients must have been examined by a dentist within the previous 365 days for a dental hygienist to provide services.²⁹ In addition, dental hygienists in British Columbia may administer local anesthesia, but may only do so under the supervision of a dentist or other emergency-trained professionals.²⁹ Dental hygienists in Manitoba also experience supervision

restrictions: dental hygiene services must be provided under the supervision of a dentist, unless a dental hygienist has practised dental hygiene for more than 3,000 hours and the client does not present with a complex medical condition.³⁰

Even though amendments to these practice restrictions and scopes of practice are generally met with opposition from organized dentistry, some positive changes have still slowly occurred. Examples include dental hygienists in Alberta who, as of 2006, can enroll in a pharmaceutical module to prescribe medications associated with dental hygiene services.^{8,31} Since 2007 in Ontario, registrants who have been approved by the College of Dental Hygienists of Ontario can self-initiate their treatment; dental hygienists can now scale and root plane teeth and curettage surrounding tissues without an order from a dentist.³² The CDHA has focused on self-regulation for the profession over the past few decades, producing encouraging results. With the exception of Prince Edward Island, all provinces in Canada have established self-regulation for dental hygienists, most recently in Newfoundland and Labrador in 2010 (see Table 3).³³ The number of dental hygienists in Canada's three territories is quite small; thus, the government continues to handle the regulation of the profession in those jurisdictions.³³ However, the CDHA is currently lobbying for the ability to practice independently from dentists in those territories.³³ To further advocate for changes in scopes of practice and restrictions, professional associations may be well advised to allocate their resources more so to advancing dental hygiene education.

One of several inherent barriers to challenging dentistry's dominance is the underdeveloped formal knowledge base of dental hygiene in Canada. Education is known to decrease power differentials between individuals and groups.²⁸ The amount of education, the extent to which it is specialized, and the content of what is learned are important components of professionalization theories, such as Pavalko's foundational Attribute Theory of Professions.^{6,34} The inference regarding "amount" is that the greater the education required, the more professional the occupation. The degree of specialization in dental hygiene education is high and is related to dental hygiene serving as the only health profession dedicated to the prevention of oral disease.⁶ The periodontal preventive therapeutic services provided by dental hygienists can be considered uniquely dental hygiene.²⁸ However, dentists may also provide client care typically provided by dental hygienists.

Progress towards more advanced theory development in dental hygiene is limited by the length of current 2-3 year diploma programs which focus heavily on the clinical skill required for entry-level practice. Education in dental hygiene resembles an hour-glass. There is an abundance of diploma programs in Canada, and there are also numerous and various graduate degree programs from which to choose (outside of dental hygiene). The constriction lies with access to baccalaureate education in dental hygiene which will open the pathways to graduate education where dental hygienists can develop more advanced critical thinking and research abilities.⁸

Efforts to further develop the entry-level knowledge foundation which supports dental hygiene practice to meet the public health care needs of the 21st century has potential for securing government recognition.²⁸ Persuading governmental, professional, and public opinion that dental hygienists are uniquely qualified is difficult though when approximately half of the dental hygienists in Canada have received only two years of post-secondary education. Dental hygiene may more easily stake its claim to the oral care preventive body of knowledge if its entry-to-practice credentials were standardized at a higher level, much like other health care professions in Canada such as nursing, physical therapy, occupational therapy, dietetics, and laboratory technology. However, budgetary resistance within dental faculties in universities and political resistance from dental organizations have played a notable role in preventing dental hygiene from advancing its entry-level knowledge foundation to a baccalaureate degree.³ Current baccalaureate opportunities for dental hygiene are located within faculties of dentistry; this may continue to raise questions of power and control from a dominant profession in the educational arena.

2.7.2 Bifurcation Effect

Another challenge to advancing dental hygiene entry-to-practice education is the reported “bifurcation effect” that, for example, baccalaureate education has had on the nursing profession in North America.^{3,35} This bifurcation has resulted in two streams of nurses, one with more education and skill and the other service-oriented and less educated.^{3,35} Nurses in the United States returning to school for their baccalaureate degree in nursing have reported a shift in thinking, from the technical to the professional, from practice that

was automatic to one that centres around problem solving.³⁶ In addition, tensions exist between the public's demand for efficiencies and affordability, and dental hygiene's focus on baccalaureate education and professional recognition and advancement.³ Organized dentistry may use this source of tension and the bifurcation effect to hinder dental hygiene's quest for baccalaureate degree entry-to-practice education in Canada.³ It seems paramount to continue to foster a collaborative relationship between both professions not only to overcome some of the traditional hierarchy, but also to benefit public access to oral health care services.

2.7.3 Governmental Policies and Credential Creep

The structure and policies within government also serve as barriers to advancing dental hygiene education. The governance structure of Canada firmly places education within provincial jurisdictions, thus making a consistent national system of higher education for dental hygiene a challenge. Canadian universities are generally legislated as autonomous institutions, but in times of economic uncertainty and shrinking educational dollars, there are increasing tensions between provincial accountability and institutional autonomy.³⁷ The current focus in government with regard to higher education is directed towards the evaluation of present structures and performance, requiring professional programs such as dental hygiene to provide evidence that the need to change such structures, such as entry-level education, is warranted.³⁷

Related is the 'credential creep' argument. The credentialing process in Canada is becoming increasingly complex.³⁸ The Health Council of Canada states that self-

regulating health professions are setting entry-to-practice standards at higher and higher levels. One view is that credential enhancements are based on concerns about patient safety and reflect the rising expectations of healthcare professionals. Others view the trend as an unnecessary ‘credential creep’ and question whether this quest for higher entry-level standards arises from professional self-interest and whether it may work against the development of team-based interdisciplinary care.³⁸ From the government’s perspective, ‘credential creep’ has other consequences. Public programs will require additional funding, and graduates may seek higher compensation which they feel is justified by the additional education they have received.³⁹

The Health Council also states that increases in credential requirements should occur only when there is evidence that the additional education results in an improvement in the quality of patient care and client outcomes. The provinces and territories in Canada have agreed to a standardized process for reviewing changes to entry-to-practice credentials for health professionals. As of 2004, this complex process involves the collaboration of the Federal and Provincial Ministries of Health and Ministries of Post-Secondary/Advanced Education.⁴⁰ Professions proposing such changes are required to complete a detailed submission outlining the rationale for and evidence supporting the change.^{38,40}

Our recent Canadian study is the first to suggest that dental hygienists who have completed a dental hygiene degree report providing a higher level of dental hygiene care.⁴¹ However, evidence suggesting that this higher level of care translates into improved client outcomes has yet to be investigated. This evidence may start to change

the attitudes of dental hygienists in Canada who continue to practice with a diploma. More research in this genre would provide insight into the education required for the more complex care that many are providing in varied practice environments.

However, conducting such research on outcomes of baccalaureate education on client care is challenging because of the limited number of degree programs and baccalaureate dental hygienists in Canada. Government ministries are requiring evidence of client care after baccalaureate education before a sufficient number of these programs exist – a ‘catch 22.’ The focus for dental hygiene professional associations should perhaps be directed first at increasing the number of baccalaureate programs and advocating for research on outcomes of client care. The goal for degree as entry-to-practice may be too ambitious at this point.

As in many countries, the dental hygiene profession is additionally challenged by its gender characteristics and the nature of the professional work of dental hygiene compared to that of dentistry’s.^{6,22} Balancing the present and future needs of the dental and dental hygiene professions, individuals within those professions, and the public will be an ongoing professional and political challenge.

2.8 Conclusion

The evolution of dental hygiene education in Canada over the past few decades has been divergent. Numerous new 2-3 year diploma programs have recently emerged, particularly in private institutions across the country. Concurrently, the profession has witnessed a

progressive movement towards baccalaureate education. Dental hygiene education in Canada has come full circle with regard to educational setting since the first programs emerged in the 1950s and 1960s. Universities that saw diploma programs leave for community colleges in the 1970s and 1980s have witnessed the return of dental hygiene programs in the form of baccalaureate education, particularly over this past decade.

While baccalaureate education may provide opportunities and broaden perspectives for dental hygienists, it may also create a divisive climate within the profession that should be acknowledged.

Dental hygiene has a number of national documents which outline the profession's educational goals and needs. These documents compliment each other and provide some forward impetus. Most recently, the development of the dental hygiene national educational competencies provides an important framework to support greater consistency of entry-to-practice educational standards. However, educational reform for the profession will require more than simply the creation of documents and discourse. Research on outcomes of higher education on dental hygiene services is needed. The accountability policies within government require the profession to provide such information. Evidence of improved practice outcomes and client care after baccalaureate education will be more effective in changing governmental and professional perceptions about higher entry-level education for dental hygiene. Dental hygiene professional associations have experienced great success establishing self-regulation across the country. Perhaps it is now time for the associations to allocate more of their resources towards these research and education issues.

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3. DENTAL HYGIENE BACCALAUREATE DEGREE EDUCATION IN CANADA: MOTIVATING INFLUENCES AND EXPERIENCES[†]

3.1 Synopsis

There is little published literature pertaining to motivating influences, experiences, and outcomes of baccalaureate degree education in dental hygiene. Since there are various dental hygiene educational models in Canada, exploring the advancement of dental hygiene education is becoming an increasingly important subject. The purpose of this study was to explore the motivating influences for and experiences in dental hygiene baccalaureate degree-completion education in Canada, from the perspectives of diploma dental hygienists who had continued their education to the bachelor's degree level. This study employed a qualitative phenomenological design, using a maximum variation purposeful sampling strategy. Data generation occurred with 16 dental hygienists across Canada through individual semi-structured interviews. Interviews were audio-recorded, transcribed verbatim, and coded for data analysis, involving pattern recognition and thematic development. Emerging themes regarding motivating influences included: expanding career opportunities in dental hygiene, personal development and a desire for knowledge, remaining competitive, status and recognition, access to graduate education, and third-person influences. Participants' experiences in degree-completion programs included obtaining a broader education, being exposed to a wider scope of knowledge within and outside of dental hygiene theory. They also experienced a more independent learning environment, with a stronger focus on literature review and critical thinking, compared to

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their experiences in their dental hygiene diploma education. These results reveal important insights for those dental hygienists who may be considering additional dental hygiene education.

3.2 Introduction

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

3.3 Background

Dental hygienists with a dental hygiene baccalaureate degree have either continued their formal education in a degree-completion program or have completed a 4-year entry-to-practice university program. The University of Montreal, in 1971, was the first institution in Canada to offer a dental hygiene degree-completion (DH-DC) program, followed by the University of Toronto in 1977.⁴ These two programs have since been discontinued.⁴⁻⁵

The University of British Columbia, the University of Alberta, and Dalhousie University have offered DH-DC programs since 1992, 2000, and 2008 respectively.⁶⁻⁸ The University of Manitoba accepted its first DH-DC students in January 2010.⁹ In addition to its degree-completion options, the University of British Columbia, in 2007, became the first university in Canada to implement a 4-year entry-to-practice dental hygiene baccalaureate option, whereby secondary school graduates or post secondary students with no previous dental hygiene education can enrol, taking all four required years in the Faculty of Dentistry.⁶

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

The CDHA has endorsed baccalaureate level education for dental hygienists for many years. In its 1998 Policy Framework for Dental Hygiene Education, the CDHA recognized that future dental hygiene practice must accommodate to an expanding body

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

Throughout the twentieth century, other healthcare professions in Canada such as Physical Therapy, Occupational Therapy, Dietetics, Laboratory Technology, and Nursing have pressed for baccalaureate degree programs as the entry-to-practice credential.¹⁴⁻¹⁷ This emphasis on higher educational credentials was related to an increasing body of both generalized and specialized knowledge, as is the case with dental hygiene. Increasing the number of baccalaureate degree programs has further enabled these professions to develop specialized discipline specific graduate programs which have created opportunities for practitioners to increase their qualifications in areas such as education, public health, research, and administration.¹⁴⁻¹⁷ All Canadian provinces and territories, except Quebec and the Yukon, now require registered nurses to have a baccalaureate degree education or are in the process of transitioning to this requirement.¹⁸ An articulated system of nursing education between diploma and bachelor degree programs, as well as more entry-to-

practice bachelor degree programs, facilitated movement towards the advancement of education that now includes the graduate level. Nursing's first master's degree program in Canada started in 1959, and 1978 marked the introduction of the graduate "clinical nurse practitioner," resulting in an expanded scope of nursing practice.¹⁷ An even stronger progression has occurred in the Physiotherapy and Occupational Therapy professions. For example, all 14 Physical Therapy programs in Canada have now implemented a professional Master of Science in Physical Therapy degree for entry into practice, achieving the Canadian Physiotherapy Association's entry-level educational requirement goal set forth in its 2007 Position Statement.¹⁹

3.4 Rationale for Study

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

There is a paucity of literature about dental hygienists' motivation for pursuing dental hygiene baccalaureate education. The few studies that do exist have been conducted using quantitative methodologies, using Likert scales and closed-ended surveys. Imai

and Craig's⁵ study of 27 dental hygienists who had graduated from the University of British Columbia's DH-DC program identified the following motivating reasons that diploma dental hygienists may have for pursuing the baccalaureate degree: personal satisfaction (92.6%), increasing knowledge (85.2%), advancing career (55.6%), the status afforded by the degree (37.0%), and for graduate school entrance requirements (7.4%).⁵ In 1991 from the United States, Waring's²¹ analysis of 189 dental hygienists also found that personal satisfaction (97.6%), increasing knowledge and skill (95.1%), career advancement (80.5%), and status of a degree (75.6%) were the primary motivators that associate degree dental hygienists had for pursuing their dental hygiene baccalaureate degree.²¹ Other studies exploring dental hygiene baccalaureate degree education have focused on career outcomes following completion of the degree.

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

According to more general literature regarding experiences in higher education, baccalaureate education is designed to educate broadly and liberally, producing graduates who are proficient critical thinkers, communicators, problem solvers, and decision makers.²⁵⁻²⁸ A liberal education will foster the development of abilities considered key

for expanding dental hygiene practice, such as critical thinking skills, cause and effect reasoning, intellectual empathy, maturity of social–emotional judgement, and increased respect for diversity.²⁸

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

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

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

3.5 Methods

This study employed a qualitative phenomenological design. Phenomenology explores the lived experience of a specific phenomenon and the results of that experience.³⁷ This research method is both descriptive and interpretative. Giorgi's³⁸ approach was adopted, as it describes the participants' experiences in their own words. This approach focuses on two aspects: the data, which is obtained through individual interviews, and its analyses.³⁸

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

(1) initially earned their dental hygiene diploma from an accredited Canadian dental hygiene diploma program, (2) practised dental hygiene for a minimum of two years before starting their degree-completion education, and (3) subsequently earned their dental hygiene baccalaureate degree in Canada through degree completion at either the University of Alberta, the University of British Columbia, or the University of Toronto. Participants were recruited through two rounds of e-mail broadcasts from CDHA and several provincial associations.

Ethics approval was granted by the University of British Columbia's Behavioural Research Ethics Board. A pilot study with 3 participants was conducted to test the research design. Following the pilot study, a maximum variation sample of 16 dental

hygienists was purposefully selected. Purposeful sampling is a deliberate process of selecting participants based on their ability to provide the needed information.³⁷

Participants differed in years of practice experience, area of dental hygiene practice, dental hygiene diploma and degree program of graduation, and degree program delivery method (Table 4). Maximum variation sampling captures the heterogeneity across the sample population.³⁷ When researchers maximize differences at the beginning of a study, they increase the likelihood that the findings will reflect differences and different perspectives – an ideal in qualitative research.³⁹

Data was obtained from 16 individual semi-structured face-to-face and telephone interviews that lasted between 60 and 90 minutes. Each interview was audio-recorded, transcribed verbatim, and coded for data analysis, involving pattern recognition and thematic development. Interviews were conducted until data saturation was achieved; the point at which no new information or themes were generated.^{37,39} The alternative to saturation – an endpoint determined in advance – is a poor fit for qualitative inquiry.³⁷ Transcribed interviews and short interview summaries were given to the participants for review to offer them an opportunity to provide corrections and additional information. 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.^{37,39}

Phenomenological analyses 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 which formed the architecture of the findings. Data was analyzed using Giorgi's³⁸ four-step approach: bracketing, intuiting, describing, and analyzing. Bracketing involved sidelining preconceptions about what may be real while reading the interview transcripts.³⁷⁻³⁸ Intuiting involved re-reading the transcripts which led to the beginning of understanding the phenomenon. Describing communicated the findings in the form of written descriptions and quotes. Analyzing saw the emergence of themes. Common themes emerged with the participants' motivating influences for pursuing DH-DC education and in their perceptions of experiences within these programs.

3.6 Results

3.6.1 Motivating Influences

Six themes emerged related to motivating influences for pursuing DH-DC education based on the 16 participants' responses (Table 5). These six themes included: expanding career opportunities in dental hygiene, personal development and a desire for knowledge, remaining competitive, status and recognition, access to graduate education, and third-person influences.

Career Opportunities

All the participants interviewed stated that they believed earning a dental hygiene baccalaureate degree would increase their career opportunities in dental hygiene.

Although research, public health, and sales were mentioned as career options of interest, the strongest interest pertained to teaching. Participants commented:

“More career opportunities would be available to me with my degree.”

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

Another interviewee stated:

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

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

Personal Development

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

One participant’s thoughts were:

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

Remaining Competitive

The third theme that emerged regarding motivating influences was to remain competitive. Many participants expressed not only their concern over the growing competitiveness in

the employment market, but many also explicitly commented on their belief that dental hygiene would inevitably evolve into a degree for entry-into-practice profession in Canada, and they "...didn't want to be left behind."

Participants commented:

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

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

Status / Recognition

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

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

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

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

"I really think that dental hygiene would be better recognized and our skills and knowledge would be more appreciated if we had a degree." Other participants commented on their wanting to feel more respected: "I felt that I could be more respected with a Bachelor of Science." Implied by many participant responses was a sense of slight inadequacy practising dental hygiene with a diploma.

Access to Graduate Education

Access to graduate education was the fifth theme to emerge regarding motivating influences. Only a few participants had an interest in pursuing a graduate degree, but most participants wanted that option to be available to them in the future. “If I ever wanted to do a master’s degree in the future, it is essential to start with my bachelor’s degree.”

Third-Person Influences

The sixth theme that emerged regarding motivating influences for pursuing DH-DC education was third person influences. Previous dental hygiene instructors, family members, and friends with degrees were these third person influences, either directly or indirectly. “I had a lot of friends who had degrees. And I think I was envious of those who had that education. I always thought deep down that they were a step above me.” Some participants were motivated to complete their degree because their family members also had degrees. “A lot of people in my family had degrees. It was just something that I wanted to accomplish. It was important to me personally and for my family.” “I come from a family who’s well educated.” Conversely, some participants were motivated because no one in their family had degrees; they wanted to be the first. “My parents didn’t have a university education...” “Nobody in my family had a degree.”

3.6.2 Experiences

There were a few notable differences in the participants’ experiences within their DH-DC education. These differences were based primarily on the different degree program

delivery options (classroom based versus online) and the participants' ages and time since enrolment in formal studies. However, acknowledging these variables, three common themes regarding experiences emerged from these participants' narratives. These emerging themes included: a broad education, an independent learning environment, and a strong focus on literature review and critical thinking (Table 6).

Program Delivery Options

The degree program delivery options experienced by these participants were either classroom based, online, or a combination of both. Participants who experienced their DH-DC education online stated that this delivery option was extremely convenient. Many participants believed that this additional education would not have been possible through the traditional classroom based format because of their location of residence and employment schedules. "The online components were convenient and flexible. It increased access to education." "I liked online education because I could fit it in where it worked for me."

However, these participants also disclosed that online learning had its challenges.

Participants commented on the challenges confronted with online group work.

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

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

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

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

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

Broad Education

Despite a few notable differences, participants shared common experiences in their DH-DC programs. Firstly, all participants commented that they valued the

diversity of courses which they undertook. They experienced a broad education which participants reported they did not have in their previous dental hygiene diploma education. Courses specified included: literature review, oral pathology, microbiology and immunology, oral epidemiology, research methodology, health and social psychology, biomedical ethics, philosophy, nursing, anthropology, interdisciplinary studies, adult education, and the business of dental hygiene. Participants expressed: “The diversity of elective courses provided me with an exposure to a wider academic field outside of dental hygiene.” “I found the diversity of the coursework far more interesting. There was more flexibility in the learning.” “I really enjoyed the variety of courses because you can actually put your dental hygiene education into a much broader interdisciplinary context.”

Independent learning environment

Secondly, participants commented on how they experienced a more independent learning environment compared to their dental hygiene diploma education. “It took quite a bit of self-discipline to try to do all of the readings and stay on track... it was all independent study.” Participants commented on the transitional challenge between diploma education and degree education, where the latter involved less perceived institutional and faculty support but greater self responsibility and accountability.

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

Another participant expressed a similar experience:

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

Literature Review and Critical Thinking

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

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

In comparing experiences, another participant stated: “... the analysis of the studies was at a much more comprehensive level which required much more critical thought than in the diploma.”

All 16 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.

3.7 Discussion

3.7.1 Motivating Influences

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

Upon further analysis, several participants desired to expand their career opportunities beyond clinical practice in large part because of the redundancy which they experienced in this practice environment. "I found clinical dental hygiene repetitive, clerical, and quite production-based. I wasn't happy." "I was getting sort of stagnant. I wanted more out of my professional experience than solely clinical dental hygiene." Participants in this study were interested in pursuing careers in dental hygiene education, public health, research, and sales. This interest was also found in Imai's study⁵ where participants undertaking DH-DC education were interested in pursuing careers in the areas of education, community health, residential care, and research.⁵ Most of the participants in this study who were interested in alternate dental hygiene practice settings expressed interest in teaching. A study conducted by Cameron and Fales⁴⁰ supported this finding, reporting that 70% of dental hygienists who had completed a dental hygiene degree were interested in preparing for teaching as a career option.⁴⁰

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

Research also supports the outcome that baccalaureate dental hygienists are likely to further their formal education to the graduate degree level. From the 34 dental hygiene baccalaureate degree graduates of the University of Toronto contacted in Pohlak's study, 14 (41%) continued their formal education in a graduate degree, including two doctoral degrees.⁴¹ In addition, 25% of the University of British Columbia dental hygiene

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

Of interest, no participants in this study indicated that an increase in salary was a motivating influence for pursuing DH-DC education. The absence of this theme is not unexpected, given other findings in relevant research. According to Imai's⁵ study, 55.6% of survey respondents cited that a salary increase was a "not important" motivating reason for pursuing degree education.⁵ Only 3.7% of the survey respondents thought that the dental hygiene degree would increase their salary potential.⁵ According to Rigolizzo and Finocchi,⁴⁶ baccalaureate dental hygienists employed in clinical practice were not paid a higher salary than non baccalaureate hygienists.⁴⁶ Imai's study supported this finding, as 74.0% of respondents reported that the dental hygiene degree did not increase their income.⁵

3.7.2 Experiences

Due to the absence of previously published literature on experiences within DH-DC education, much of the discussion presented is generic and placed in context with relevant nursing literature. The results regarding experiences are somewhat limited due to the number of variables affecting participants' experiences in DH-DC programs in Canada. These variables included the program delivery method (classroom based versus online) and participants' age and time away from formal studies. Therefore, the saturation

point for this data is not particularly strong. However, common themes did emerge regarding experiences from the participants' narratives.

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

Participants in this study experienced a broader education in their DH-DC programs, compared to their previous dental hygiene diploma experiences. This finding was also reported in Imai's survey, where one respondent indicated that the degree program: "...was very applicable and had great depth and exposure to a number of areas of dental hygiene practice as well as other areas of health care. It gave a broad, global perspective."⁵

These findings support more general literature on the meaning of baccalaureate degree education.²⁵⁻²⁷ Baccalaureate study requires multiple dimensions, not merely cumulative exposure to more and more of a specified subject area.²⁵⁻²⁸ Such a model is designed to

educate broadly and liberally, graduating professionals with more diverse backgrounds.²⁵⁻

28,35-36

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

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

Another participant stated: “The diploma was almost a parent-child relationship, and in the degree, I experienced a more collegial relationship. The learning was more mature... you had to be self-motivated.” This independent learning environment was also experienced by nurses completing their degree, who reported that professors facilitated instruction.⁴⁹ Faculty at the baccalaureate degree level expect students to assume more responsibility for active learning through guided independent study.⁴⁷⁻⁴⁹ Many students in these studies were found to be unfamiliar with the responsibilities of an active learning environment.⁴⁷⁻⁴⁹ This unfamiliarity may have contributed to the participants’ transitional challenges between dental hygiene diploma and DH-DC education as reported in this study. Exploring how diploma education prepares one for baccalaureate education in dental hygiene may warrant further investigation.

Another experience reported was a stronger focus on literature review and critical thinking in DH-DC education. Although Imai’s⁵ study did not explore learning experiences, 96.2% of her survey respondents reported that the dental hygiene degree

enhanced their analytical skills for problem solving and further developed their scientific skills for gathering information and evaluating results.⁵ Enhancement of research use, knowledge translation, and critical thinking, attributed to the dental hygiene degree, are key abilities that are needed by health professionals to provide quality and safe care for citizens in the 21st century.²⁹⁻³¹

No participant in this study reported that DH-DC education to be repetitive, compared to his or her learning experiences during his or her dental hygiene diploma education. Participants commented that they learned core subjects in more detail, building on their prior knowledge. “The courses you take in the degree go further beyond what you learn in the diploma.” This experience aligns with Wayman’s³⁶ foundational proposition from her 1985 study that DH-DC education needs to build on the existing diploma-level education, incorporating advanced dental hygiene theory while encouraging a more liberal education.³⁶

An important finding was the overall support the study participants expressed for recommending the dental hygiene baccalaureate degree to other diploma dental hygienists in Canada. All 16 participants recommended this degree not only for personal and career development, but also for the professionalization of dental hygiene in Canada. Participants supported the baccalaureate degree becoming the entry-to-practice credential. Similarly, Imai⁵ found that degree graduates expressed overwhelming support for the baccalaureate dental hygiene degree as the entry to practice credential in Canada.⁵

3.8 Conclusion

This study explored motivating influences and experiences during DH-DC education with 16 dental hygienists across Canada. Similar to what has been documented through surveys and questionnaires in previous research, themes which emerged for motivating influences for pursuing DH-DC education included: expanding career opportunities, personal development and a desire for additional knowledge, status and recognition, and access to graduate education. Remaining competitive and third person influences (from previous dental hygiene instructors, family, and friends) were also motivating influences for these dental hygienists, providing new undocumented insights in this area of literature.

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

Areas of future research include exploring motivating influences for not pursuing (or barriers to pursuing) DH-DC education. Investigating personal outcomes and dental hygiene practice outcomes of DH-DC education was also a component of this study that will be published separately. Outcomes of dental hygienists in Canada who have continued their education to the master's and doctorate levels also warrants investigation. Overall, the

participants valued their degree education and recommended the dental hygiene degree to other diploma dental hygienists in Canada. This study may provide valuable insights for those dental hygienists considering additional education, and may also provide further impetus for discussions surrounding the value of dental hygiene baccalaureate degree education in Canada.

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4. OUTCOMES OF DENTAL HYGIENE BACCALAUREATE DEGREE EDUCATION IN CANADA[‡]

4.1 Synopsis

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 had continued their education to the bachelor's degree level. This study employed a qualitative phenomenological design, using a maximum variation purposeful sampling strategy. Data generation occurred with sixteen dental hygienists across Canada through individual semi-structured interviews. Interviews were audio-recorded, transcribed verbatim, and coded for data analysis, involving pattern recognition and thematic development. Themes which emerged about outcomes of dental hygiene degree-completion education included changes in: self-perception, values, and knowledge base. 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

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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.

4.2 Introduction

Dental hygienists in Canada are educated primarily through entry-level 2-year and 3-year diploma programs in approximately 50 institutions across the country, comparable to associate degree programs in the United States.¹ 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 University of British Columbia, in 2007, implemented Canada's first and only 4-year entry-to-practice dental hygiene baccalaureate program, whereby students with no previous dental hygiene education may enroll.² The scope of professional practice does not change whether one has a 2-year diploma, 3-year diploma, or a 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.³

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.⁴ Dental hygiene diploma curricula remains focused on the clinical skill required for entry-level practice.⁴ This clinical practice model of education provides

little opportunity to socialize dental hygienists beyond the traditional role of clinical client advocate.⁵ 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.^{3,6} Dental hygiene baccalaureate education uses a more professional model with emphasis on preparing graduates for expanded roles.⁵ 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.^{3,6}

The Canadian Dental Hygienists Association (CDHA) states that increasing opportunities at the baccalaureate degree level is needed to open educational pathways to graduate programs which would provide dental hygienists with opportunities to develop proficient research abilities.³ Similarly, the American Dental Hygienists' Association (ADHA) states 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.⁷ Both the CDHA and the ADHA have goals to see the baccalaureate degree as the entry-to-practice credential for dental hygiene.^{3,7} The American Dental Education Association (ADEA) has also discussed several strategies to address access to care issues and to foster research at the graduate level.⁸ These strategies included 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.⁸

4.3 Rationale for Study

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 outcome 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 (BScD) dental hygiene graduates have assumed roles as educators, administrators, researchers, or students in graduate programs.⁹ Similarly, the University of British Columbia's Bachelor of Dental Science in Dental Hygiene graduates were successful in securing employment with educational institutions, regulatory authorities, and community-based programs.¹⁰ According to Brand and Finocchi's study in 1985, 54.2% of baccalaureate degree dental hygienists continued to work in the clinical private practice setting, 23.7% became employed as dental hygiene educators, 4.6% became employed as public health hygienists, 3% as institution or hospital hygienists, and 2.3% as dental practice managers.¹¹ The majority (63.6%) of the baccalaureate dental hygiene survey respondents stated that their employment opportunities had increased as a result of the dental hygiene degree.¹¹ More recently, in 2008, Rowe et al's study indicated that more baccalaureate degree dental hygienists (30.3%) held dental hygiene faculty positions than associate degree dental hygienists (4.3%) in the United States. Baccalaureate degree hygienists (8.0%) also had greater involvement with research than associate degree hygienists (3.6%).¹²

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 the public needs of the 21st century is an issue of increasing importance.¹³⁻¹⁴ This need reflects the rising prevalence of chronic and preventable diseases.¹³⁻¹⁴ The abilities required in dental hygiene to support 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 healthcare delivery.³ 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.¹⁵

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.^{3,7} 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.³

Within nursing literature, a study conducted by Aiken et al. in 2003 demonstrated that nurses with education beyond an associate degree showed a significant difference in clinical competency.¹⁶ 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.¹⁶ No such relationship between additional dental hygiene education and client outcomes exists within dental hygiene literature.

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 continued their dental hygiene education to the bachelor's degree level.

4.4 Methods

Refer to Section 3.5 for the study's methodology.

4.5 Results

From the participant interviews, three main themes emerged about outcomes of dental hygiene baccalaureate degree-completion education. These themes included 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.

4.5.1 Self-Perception

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

Confidence

Firstly, all the participants interviewed stated that completing a dental hygiene baccalaureate degree had increased their self-confidence. Participants 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 environment experienced by these participants during the degree program also contributed to this increase in self-confidence. One participant shared: "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. Participants stated: "Now I feel that I'm more on par with other health care professionals in terms of education." "The degree gave me a sense of legitimacy."

Credibility

Secondly, 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.”

Another participant stated: “Having a degree validates the additional knowledge that I have.” Participants also believed that their colleagues and, to a lesser extent, their clients treated them with more respect and credibility if it were known that they had continued their education. “I have a higher level of confidence when talking with other professionals... 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 shared:

“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 judgement 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. 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: “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 from other dental colleagues or clients after earning this degree.

4.5.2 Values

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

Appreciation for Lifelong Learning

Participants had indicated that they held a greater appreciation for lifelong learning. Many participants self-assessed that, before entering the degree program, 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. Participants shared: “You don’t realize what you don’t know until you learn more.” “I have a better appreciation that you just never know everything.” In providing a summary on how she felt she had changed after completing this degree, one participant shared:

“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 masters than I was previously... 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 ever desired to return to school in the future: “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 that avenue to pursue a master's degree is closed.”

4.5.3 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 specified included: literature review, oral pathology, microbiology and immunology, oral epidemiology, research methodology, health and social psychology, biomedical ethics, philosophy, nursing, anthropology, interdisciplinary studies, adult education, and the business of dental hygiene. One participant's thoughts are expressed below:

“You gain a broader perspective of 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 participants stated: “The courses you take in the degree go further 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 an exposure to a wider academic field outside of dental hygiene.” “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 which were enhanced further through the pursuit of earning 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 that these participants practise 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. Participants stated: “I’m more of a critical thinker than I used to be.” “I’m a lot more critical of research now.” “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 shared:

“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 commented:

“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.”

A third participant stated: “I learned to think more broadly and critically... I ask ‘why’ more.”

Evidence-Based Decision Making

Participants stated that the courses undertaken in the degree helped further develop their evidence-based decision making abilities. They expressed that completing this degree increased their confidence with critiquing literature. Many participants articulated that the volume of scientific literature through which they read and evaluated was significantly higher in the degree program compared to their previous dental hygiene diploma education. “I am now more confident with reading literature, critiquing it, and using research more effectively to make decisions.”

“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. Participants stated: “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.” “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

Participants felt that, after completing a degree, they were able to provide more comprehensive dental hygiene care to their clients. This feeling was related primarily to having learned more detailed dental hygiene theory in the degree program and increasing their familiarity with current research. 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 on a technical level, but rather the degree had broadened their perspectives on oral health. “I’m delivering a higher level of care in clinical practice.” “The extra knowledge has made me so much more of a comprehensive hygienist.” More specifically, participants shared that the degree “...has helped with talking with clients about the broader aspects of health promotion, not simply brushing and flossing.”

“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.”

“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 that you’re just able to better explain the disease process...”

Career Opportunities

Participants felt that the acquisition of additional knowledge and the additional credential has opened the door 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.” “The degree has opened the door for me to work in education and in my current position in sales.”

All 16 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.

4.6 Discussion

The paucity of available literature in this area makes placing this study in context with relevant dental hygiene research quite challenging. The most relevant study was a survey conducted by Imai and Craig in 2005 on graduates from the University of British Columbia’s dental hygiene degree-completion program.²⁰ Several of their participants may have also participated in this 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 context with relevant nursing literature.

4.6.1 Self-Perception

Participants in this study found 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.²⁰ 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.”²⁰ In Osterman, Asselin, and Cullen’s

2009 study of nurses returning for a baccalaureate, familiarity with research (staying current with published literature and learning how to critique and to apply it) was identified as an element of their education that increased nurses' perceptions of themselves as professionals.²¹ 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 this study perceived that completing a dental hygiene baccalaureate degree had increased their professional credibility from 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."²⁰ 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.

4.6.2 Values

Participants expressed that the dental hygiene degree had increased their appreciation for lifelong learning. This finding was supported in Imai and Craig's survey, where 100% of survey respondents indicated that the University of British Columbia's dental hygiene degree-completion program encouraged lifelong learning.²⁰ Lifelong learning plays a critical role in enhancing dental hygienists' knowledge base and in the care and treatment

they provide to their clients.²²⁻²³ Lifelong learning allows dental hygienists to maintain professional competence and affirms dental hygienists' responsibility to be critical thinkers.²²⁻²³ 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.²¹

Several participants in this study expressed that earning this degree had resulted in a greater interest in pursuing additional formal education. Six of the sixteen participants in this study were either currently enrolled in a master's degree program or had already earned a master's degree. Research supports the outcome that baccalaureate dental hygienists are likely to further their formal education to the graduate degree level. From the 34 University of Toronto dental hygiene baccalaureate degree graduates contacted in Pohlak's study, 14 (41%) continued their formal education in a graduate degree, including two doctoral degrees.⁹ In addition, 25% of the University of British Columbia dental hygiene baccalaureate degree graduates have continued their education in graduate studies.¹⁰ Rowe et. al found that 21% of their baccalaureate respondents continued on to complete a graduate program with most degrees being a master's degree in education (53%) and in dental science/dental hygiene (28%).¹²

4.6.3 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 this 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.²⁴⁻²⁶ 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.²⁴⁻²⁶

Respondents in Imai and Craig's survey also commented on receiving a broader education and acquiring more detailed knowledge in the 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."²⁰ In their survey, 80.8% of respondents either "strongly agreed" or "agreed" that the dental hygiene degree enhanced their knowledge for dental hygiene practice. Advancing education to the baccalaureate degree makes a difference in nursing practice by broadening knowledge, enriching understanding, and sharpening expertise.^{21,27} Nurses have commented retrospectively that their diploma education focused on disease and the physiological aspects of patient care.²¹ The nursing baccalaureate degree focused on more global issues, offering broader perspectives where nursing theory and leadership were of paramount importance.^{21,27} The baccalaureate degree provided nurses with a greater awareness that enabled them to focus on holistic care.^{20,27}

Critical Thinking

Participants in this study found that completing a dental hygiene degree had enhanced their critical thinking ability. This finding was also supported in Imai and Craig's survey.²⁰ With regard to professional expertise, 80.4% of their respondents "strongly agreed" and another

15.4% “agreed” that the degree-completion education enhanced their scientific skills for gathering information, planning and implementing strategies, and evaluating results. In addition, 96.2% 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.²¹ Nurses who completed a baccalaureate degree 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.²¹

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.²⁸⁻²⁹ 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.³⁰

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 utilization³¹, was enhanced after completing a dental hygiene degree. Participants in Osterman, Asselin, and Cullen’s study also commented: “You use evidence-based practice and get the best patient outcomes.”²¹ “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].”²¹ The literature review and transfer of knowledge skills that accompany baccalaureate nursing education are critical to applying evidence-based practice changes with patients.²¹

In 2002 in the United States, a descriptive study was conducted to determine the curricular utilization of evidence-based decision making in dental hygiene education in both baccalaureate and non-baccalaureate programs.³² The results indicated that 86% of baccalaureate programs and 61% of non-baccalaureate programs encouraged their students to make evidence-based recommendations to patients and to educate their students 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 it, critique it, and implement research findings into practice require learning experiences that can more easily be obtained through longer educational programs.³

Comprehensive Care

Participants 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. 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.”²⁰ 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.⁸ Osterman, Asselin, and Cullen 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.²¹ 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.³³

Career Opportunities

Many participants 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.⁹⁻¹²

An important finding was the overall support the study participants expressed for recommending the dental hygiene baccalaureate degree to other diploma dental hygienists in Canada. All 16 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, Anderson, and Hanlon administered a survey to the directors of 300 accredited

U.S. dental hygiene programs: three-quarters of these directors supported advancing dental hygiene entry-level educational requirements to a bachelor's degree.³⁴ 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.²⁰

4.7 Conclusion

This study qualitatively explored the personal outcomes and dental hygiene practice outcomes of completing a dental hygiene baccalaureate degree with 16 dental hygienists across Canada.

This study provided new insights, revealing that completing a dental hygiene baccalaureate degree positively impacted participants' self-perception, values, and the way they practise dental hygiene. The dental hygienists in this study reported that earning a baccalaureate degree had increased their self-confidence, perceived credibility, and appreciation for lifelong learning. Participants also shared outcomes which directly affected their dental hygiene practice. These outcomes included an expanded knowledge base which underpinned a furthered proficiency with critical thinking, evidence-based decision making, and comprehensiveness of client care. As previously documented in relevant research, participants also 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 healthcare needs of the 21st century such as research use and integration into

practice, transfer of new knowledge to other professionals and to 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 dental hygiene graduates to care for a public with increasing health complexities in varied practice environments. Future studies should focus on exploring the outcomes of dental hygienists who have continued their education to the masters and doctorate levels. This study may provide the impetus for further discussions surrounding advancing dental hygiene entry-to-practice education.

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5. CONCLUSION

5.1 Thesis Conclusions

This study explored motivating influences, experiences, and outcomes of dental hygiene baccalaureate education with sixteen dental hygienists across Canada. Motivating influences for pursuing baccalaureate education included: expanding career opportunities, personal development and a desire for additional knowledge, status and recognition, and access to graduate education. Similar findings have also been documented in previous related surveys and questionnaires.^{1,2} Remaining competitive and third-person influences (from previous dental hygiene instructors, family, and friends) also served as motivating influences for these dental hygienists, providing new undocumented insights in this genre.

Participants' learning experiences during their degree-completion education included a broader education, a more independent learning environment, and a stronger focus on literature review and critical thinking, compared to their experiences in prior dental hygiene diploma programs. This analysis into learning experiences in baccalaureate education had not been previously explored within a dental hygiene context. However, more general literature regarding experiences in baccalaureate education aligns with this study's findings. Such literature indicates that baccalaureate programs are designed to educate more broadly and liberally.³⁻⁶ Professors in baccalaureate education facilitate instruction in a more independent learning environment, thereby fostering graduates who are capable decision makers and critical thinkers.⁷⁻⁹

Previous research on outcomes focused specifically on career outcomes after completing a degree, demonstrating that baccalaureate dental hygienists are more likely to practice outside of the private clinical practice setting.¹⁰⁻¹³ Likewise, participants in this study reported having more career opportunities available to them outside of clinical practice.

In addition, this study provided new insights about outcomes. Completing a dental hygiene degree positively impacted participants' self-perception, values, and the way they practise dental hygiene. The dental hygienists in this study reported an increased level of self-confidence, perceived credibility, and appreciation for lifelong learning. Participants also shared outcomes which directly affected their dental hygiene practice. These outcomes included an expanded knowledge base which underpinned a furthered proficiency with critical thinking, evidence-based decision making and use of research in practice, transfer of knowledge to clients, and overall comprehensiveness of client care. All the participants in the study recommended the dental hygiene degree for other diploma dental hygienists across Canada.

5.2 Implications

The reported learning experiences and outcomes in this study strongly correlate with the abilities considered essential to better meet the public healthcare needs of the 21st century. These abilities include research use and integration into practice, transfer of new knowledge to other professionals and to clients, and critical thinking.¹⁴ Therefore, this study provides empirical evidence to suggest that dental hygiene education may need to be

aligned at the baccalaureate degree level to develop the abilities of graduates to care for a public with increasing health complexities in varied practice environments.

The conclusions demonstrate that dental hygienists who complete a dental hygiene baccalaureate degree have improved the way that they provide dental hygiene care. The participants indicated they are providing a higher level of care based on the enhancement of the reported abilities. This study provides insights for dental hygienists considering additional education. Furthermore, such evidence may also change the attitudes of dental hygienists in Canada who continue to practise with a diploma because the practice outcomes of dental hygiene baccalaureate education were largely unknown.

Given these new insights, this study may provide the impetus for further discussions surrounding advancing dental hygiene entry-to-practice education. To support a credential change within the healthcare professions, the Federal and Provincial Ministries of Health and Ministries of Post-Secondary/Advanced Education require evidence of improved quality of care and client outcomes as a result of the higher credential.¹⁵⁻¹⁶ This study does provide evidence that dental hygienists report providing a higher quality of dental hygiene care due to the knowledge and abilities which were strengthened in the dental hygiene degree-completion programs. However, the client outcomes piece is still missing. Evidence is still needed to demonstrate that this higher quality of dental hygiene care results in improvements in clients' health.

5.3 Strengths and Limitations

Strategies used in this study such as maximum variation sampling, transcribing interviews verbatim (compared with note taking or thematic transcriptions), collecting data until saturation, and respondent validation enhanced this study's validity. In addition, the primary researcher did not complete a dental hygiene baccalaureate degree. Having never experienced the phenomenon under investigation did help control researcher expectations and bias.

A limitation of this study was that the dental hygienists who voluntarily chose to participate 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 partly attributed to the participants' inherent bias.

In addition, the results regarding the participants' learning experiences are somewhat limited due to the number of influencing external variables. These variables included the degree program delivery method experienced (classroom-based versus online format), participants' age, and time away from formal studies. The saturation point for the data regarding experiences, therefore, is not extremely strong.

5.4 Future Studies

Areas of future research directions include exploring motivating influences for not pursuing (or barriers to pursuing) dental hygiene baccalaureate education. Future researchers who repeat this study and investigate experiences and outcomes of dental hygiene baccalaureate education in Canada may also wish to include graduates of Dalhousie University and the University of Manitoba. At the time of this research study, these two newer programs had not yet graduated baccalaureate dental hygienists. Outcomes of dental hygienists in Canada who have continued their education to the masters and doctorate levels also warrants investigation.

Finally, and perhaps most importantly, future research on the impact of dental hygiene baccalaureate education on client outcomes specifically is required. This study demonstrates that dental hygienists with a dental hygiene baccalaureate degree feel that they provide a higher quality of dental hygiene care. However, does this higher level of care translate into measurable improvements in clients' oral health or quality of life? The focus of future outcomes research about dental hygiene baccalaureate education needs to address this question to provide further impetus for political and regulatory changes.

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TABLES

Educational Model	Province
2-year Diploma	New Brunswick Ontario Saskatchewan
3-year Diploma	Alberta British Columbia Manitoba Nova Scotia Quebec
Baccalaureate Degree-Completion	Alberta British Columbia Manitoba Nova Scotia
4-year Entry-to-Practice Baccalaureate Degree	British Columbia

Table 1. Dental hygiene education program models in Canada

National Dental Hygiene Competencies for Entry-to-Practice	
Core Abilities The dental hygienist as a...	Professional
	Communicator and Collaborator
	Critical Thinker
	Advocate
	Coordinator
Dental Hygiene Services The dental hygienist as a...	Clinical Therapist
	Oral Health Educator
	Health Promoter

Table 2. The 2010 Canadian National Dental Hygiene Competencies for Entry-to-Practice which are divided into core abilities and dental hygiene services provided by the dental hygienist.

Province	Self-Regulation
Quebec	1975
Alberta	1990
Ontario	1994
British Columbia	1995
Saskatchewan	1998
Manitoba	2008
New Brunswick	2009
Nova Scotia	2009
Newfoundland & Labrador	2010
Prince Edward Island	----
Northwest Territories	----
Nunavut	----
Yukon	----

Table 3. Years in which the dental hygiene profession established self-regulation in the different provinces in Canada

Table 4. Profile of participants (N = 16)	
<u>Characteristics</u>	<u># of participants</u>
<u>Years of Practice Experience</u>	
5-10	3
11-15	5
16-20	5
21+	3
<u>Area of Dental Hygiene Practice</u>	
Clinical	5
Education	2
Clinical & Education	6
Other (Public Health, Admin, Sales)	3
<u>Diploma Education</u>	
3-year diploma	7
2-year diploma	6
1+1 (1 year DA; 1 year DH)	3
<u>Degree-Completion Program of Graduation</u>	
University of Alberta	4
University of British Columbia	9
University of Toronto	3
<u>Degree Delivery Option Experienced</u>	
Classroom-based	6
Online	5
Both classroom-based & online	5

Table 5. Identified common motivating influences for pursuing dental hygiene degree-completion (DH-DC) education
Expanding career opportunities
Personal development/desire for knowledge
Remaining competitive
Status/recognition
Access to graduate education
Third-person influences (instructors, family, and friends)

Table 6. Identified common experiences in dental hygiene degree-completion education
Broad education
Independent learning environment
Focus on literature review and critical thinking

FIGURES

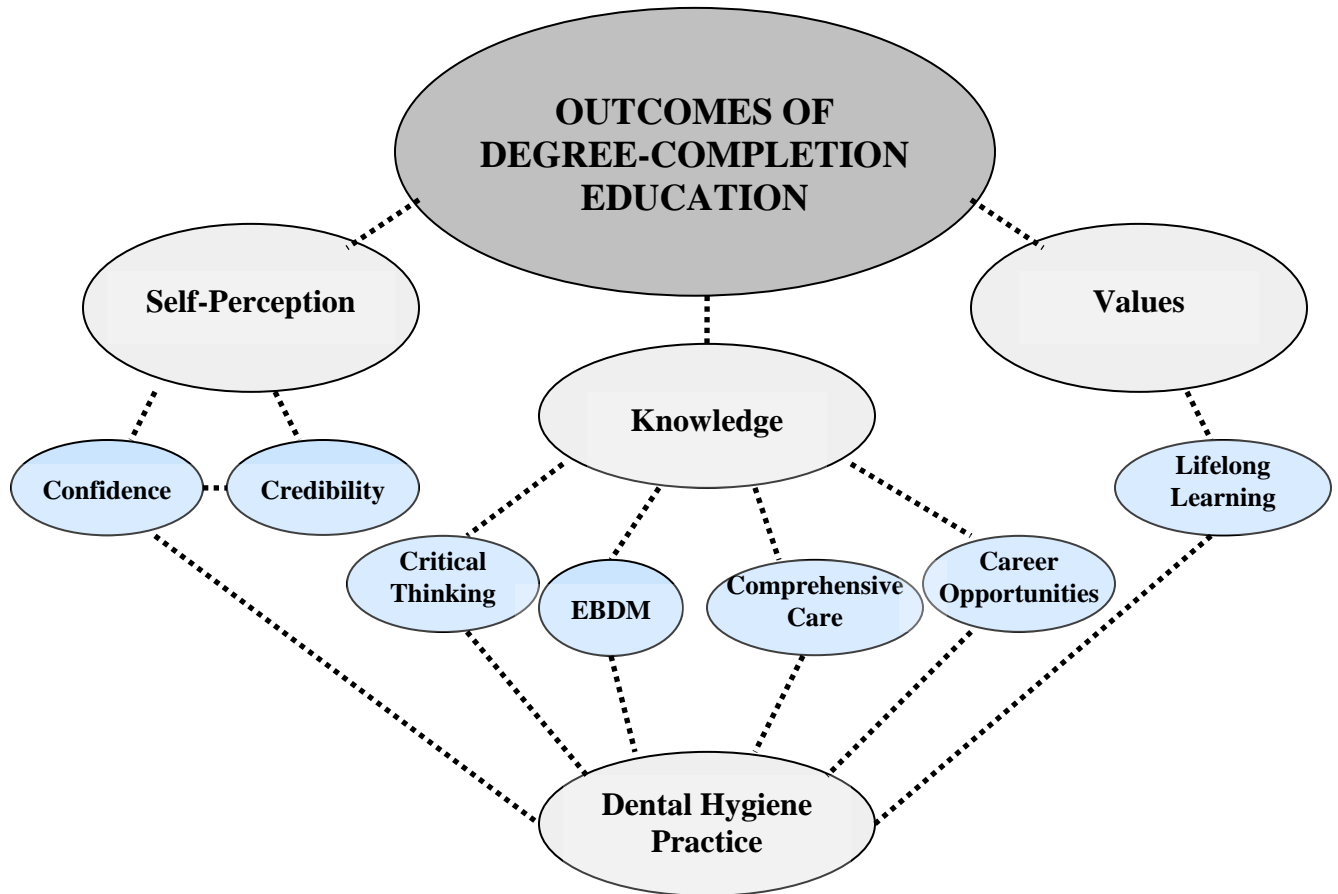


Figure 1. Outcomes of dental hygiene baccalaureate degree-completion education in Canada. Completing a degree influenced participants' self-perception, values, and knowledge base which ultimately impacted their dental hygiene practice.

APPENDICES

Appendix A – Detailed Methodology

A.1 Research Approach

This study employed a qualitative research design, which was predicated on an inductive approach to generate data that was reflective of the phenomenon under investigation. The focus of this research involved exploring the motivating influences, experiences, and outcomes of dental hygiene baccalaureate degree-completion education. The researcher was not only interested in the meaning and experience of having earned the dental hygiene baccalaureate degree, but also the perceived outcomes associated with earning this degree.

This study adopted a phenomenological approach. Phenomenology explores the lived experience of a phenomenon.¹ The phenomenon under investigation, which all study participants experienced, was a dental hygiene baccalaureate degree. Phenomenological findings explore not only what participants experience, but also the situations that result from those experiences.¹ Hence, this study used a phenomenological approach to explore the motivating influences, experiences and outcomes of earning a dental hygiene baccalaureate degree. Analysis of the data was conducted to find what Padgett¹ refers to as “the essence” or emerging themes in the participants’ narratives, while also making explicit the diverse elements of the phenomenon.

A.2 Sampling

After conducting a pilot study on a convenience sample of 3 participants to test the research design, the researcher selected study participants using a maximum variation purposeful sampling strategy. Purposeful sampling is a deliberate process of selecting participants based on their ability to provide the needed information and is the preferred method of sampling in qualitative inquiry.^{1,2} Maximum variation sampling captures the heterogeneity across the sample population.^{1,2} Maximum variation purposeful sampling is often selected because when a researcher maximizes differences at the beginning of the study, it increases the likelihood that the findings will reflect differences and different perspectives – an ideal in qualitative research.³

The inclusion criteria for this study's sample population involved dental hygienists who initially earned their dental hygiene diploma from an accredited Canadian dental hygiene program and then subsequently earned their dental hygiene baccalaureate degree in Canada through a degree-completion program. In addition, the study participants were required to have practised as a dental hygienist with their dental hygiene diploma for a minimum of two years before starting their baccalaureate education. After earning their dental hygiene degree, the participants must have continued to practise dental hygiene.

Dental hygienists who have practised dental hygiene with their diploma for a few years prior to earning their degree would be able to comment more thoughtfully on if and how the baccalaureate degree in dental hygiene may have impacted their personal and professional lives. In contrast, dental hygienists who completed their dental hygiene degree

immediately after earning their diploma may not be able to offer as much depth of information regarding how the degree affected their personal lives and their dental hygiene practice.

Exclusion criteria included dental hygienists who earned a baccalaureate degree in any field prior to their dental hygiene diploma education. What these particular graduates value about degree education may be attributed to their first baccalaureate degree (prior to their dental hygiene diploma) rather than their dental hygiene baccalaureate degree after their dental hygiene diploma. Establishing a distinction between the experiences and perceived outcomes from both baccalaureate degrees may have been difficult and confounding.

Three dental hygiene degree programs in Canada, the University of Alberta, the University of British Columbia, and the University of Toronto, have graduated baccalaureate degree dental hygienists through a degree-completion process in time for this study. Therefore, participants were selected from each of these three programs to gain a general Canadian perspective on baccalaureate dental hygiene education. Even though the primary intent of qualitative research is not to generalize the information,³ sampling from each of these degree programs can be more inferable to a larger population and enhances the heterogeneity of the sample compared to focusing solely on one Canadian baccalaureate program.

Padgett¹ and Creswell³ state that the focus of sample size considerations in qualitative research is on flexibility and depth rather than on breadth. The phrase that quantitative

research is “a mile wide and an inch deep” and qualitative research is “an inch wide and a mile deep” holds truth when sampling.¹ Similarly, phenomenological studies aim for depth. Sample sizes of between 6 to 10 participants are common, but may be somewhat larger if resources permit.¹⁻³ In qualitative research, researchers sample not to maximize breadth or reach, but to become saturated with information about a specific topic, meaning the point at which no new information or themes are generated.¹

Given the flexibility inherent in qualitative sampling, a study may end up with fewer participants than originally proposed and anticipated (because the data became saturated earlier), or it may end up with a larger sample because of the need to pursue new unexpected leads from the analysis.¹ Based on the methodology consistent with phenomenology, the researcher recruited 16 participants to participate in this study, as this was the point of data saturation. The alternative to saturation – an endpoint determined in advance – is a poor fit for qualitative inquiry.¹

A.3 Recruitment

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 agreed to serve as third-party recruiters. The third-party recruiters distributed an email broadcast to all of its members with a brief message with a description of the study including the study’s purpose, the inclusion and exclusion criteria, and an invitation to participate. The brief email message also included the researcher’s email address so that interested participants could contact the researcher.

After approximately one month, the third-party recruiters distributed another email broadcast to its members, serving as a reminder to participate if interested. The brief message in these email broadcasts was written by the researcher, approved through the ethics review process, and was not altered by the third-party recruiters once it had received ethics approval. The interested participants who contacted the researcher and who met the inclusion and exclusion criteria were then electronically sent the full invitation message (introductory letter and participant consent form – see appendices B and C). The third-party recruiters were not informed of whether a potential participant decided to participate or not.

The introductory letter also requested the interested participants to respond to the researcher indicating in what years they obtained their dental hygiene diploma and dental hygiene degree, from which college and/or university they obtained their dental hygiene diploma and baccalaureate degree, and in what area of dental hygiene practice they are primarily involved (clinical, education, administration, public health/community, other). To adhere to the concept of maximum variation purposeful sampling, the researcher then selected participants based on a variety of differing factors involving years of practice experience, diploma and degree programs of graduation, and area of practice in order to capture the heterogeneity across the sample population.

Interested participants then returned the introductory letter with the requested information and the signed participant consent form through fax to the researcher. The first contact with each selected participant was made through email by the researcher and included a review of the research purpose and process, confidentiality procedures, and eligibility

criteria. A location, date, and time for an interview was then determined together through email according to what was most convenient and comfortable for the participant.

A.4 Data Generation

Data was obtained from 16 individual semi-structured in-person and telephone interviews between 60 and 90 minutes in duration. The in-person interviews occurred at a time and location of the participant's choosing. The telephone interviews occurred with those participants who resided outside of the Greater Vancouver Regional District at a time of their choosing. All interviews were audio-recorded with the participants' informed consent and were subsequently transcribed verbatim by the researcher. Transcriptions and short interview summaries were offered to the participants to review to provide them with an opportunity to add any information and to ensure the accuracy of the researcher's transcriptions and interpretations. Refer to appendix D for the interview guide. The participants were given these interview questions one day prior to the interview to allow time for reflection and consequently to provide the most thoughtful responses.

A.5 Data Analysis

Data analysis began immediately after completing the first interview and continued throughout the data generation phase. Data analysis primarily involved reading the transcripts, memo-writing, coding, and thematic analysis which arised from pattern recognition and thematic development. Phenomenological data analysis involved several steps, including a synopsis of each participant's experiences (textual description), an examination of the context of these experiences (structural description), and finally a

condensation and categorization of the major patterns and themes associated with these experiences. Through a continuous comparative analysis, the researcher remained cognizant of similar incidents between interviews, searching for patterns and themes while also remaining alert to irregularities.

The researcher transcribed the interviews verbatim to truly immerse himself in the research and to more easily allow for this analysis. The best approach to data analysis is to transcribe one's own interviews as much as possible.¹ The process of transcribing interviews allows for the immediate opportunity to write memos based on the audio-recordings and to develop subsequently tentative ideas about emerging categories and themes in the data.²

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 which formed the architecture of the findings. More specifically, Giorgi's approach was adopted, as it describes the participants' experiences in their own words.⁴ This approach focuses on two aspects: the data, which is obtained through individual interviews, and its analysis.⁴ Data was analyzed using Giorgi's four-step approach: bracketing, intuiting, describing, and analyzing.⁴ The first step, bracketing, involved sidelining preconceptions about what may be real while reading the interview transcripts. The second step, intuiting, involved re-readings 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.

In addition, after each interview was read in its entirety, the researcher created short interview summaries. These summaries allowed the researcher to see threads that ran through the interviews and thereby maintained the context for the quotes which were lifted out of the interviews and used as examples when discussing the results of this research. The researcher ‘cut and pasted’ quotes from all the interviews into new a separate word document for each code/category that emerged from the analysis. This compilation of quotes, as well as written memos, was then used to appreciate similarities and contrasts between all interviews.

A.6 Ethical and Validity Considerations

Ethical approval for this study was received from the Behavioural Research Ethics Board at the University of British Columbia. In this study, participants were provided with a letter of introduction which included information on the participant selection criteria, data collection methods, expected time commitment to the study, confidentiality considerations, and a request to participate. Interested participants who contacted the researcher through email also received a participant consent form. The researcher avoided using coercive or persuasive language in both the introductory letter and the consent form.

Strategies were implemented to ensure confidentiality and anonymity. The researcher used third-party recruiters to solicit the interest of participants across the country. At the beginning of the recruitment phase, the researcher did not have access to participants’ personal contact information. Only the interested participants who chose to send the researcher an email expressing their interest to participate allowed their personal email

address to be disclosed. The third-party recruiters were not informed of whether or not a potential participant decided to participate. In other efforts to ensure confidentiality, the interviews were transcribed by the researcher rather than a third-party transcriber. In addition, once the interviews were transcribed, the audio-recordings, including all identifying information, were erased. Finally, no identifying information was included in the final reports of the research.

Validity refers to the correctness or credibility of a description, interpretation, or conclusion, and a key concept for validity is the “validity threat” - a way that the researcher may be wrong.¹⁻³ Specific strategies were implemented by the researcher to ensure that possible validity threats were minimized. Firstly, to ensure that the descriptions of participants’ experiences were as accurate as possible, the interviews were audio-recorded and subsequently transcribed verbatim rather than transcribing the interviews thematically or having the interviews documented solely through note-taking. Secondly, the researcher ensured the validity of the recorded information and interpretation of that information through the process of “member checking” or “respondent validation.”

Qualitative researchers may seek verification of findings by going back to the study participants through a process referred to as “member checking,” an important step in guarding against researcher bias.^{1,2} Member checks shift the authority towards the study participants, thereby properly challenging the status of the researcher as an infallible observer.¹ Maxwell² refers to this member checking process as “respondent validation.”

He states that systematically soliciting feedback about the data from the people being studied is the single most important way of ruling out the possibility of misinterpreting the meaning of what participants say.

The researcher conducted two separate member checks in this study. The first member check occurred after the interviews had been completely transcribed. The participants were offered the opportunity to review their transcript to revisit what was discussed for accuracy purposes and to allow the participant to add any information. For the second member check, the researcher created brief interview summaries comprising his interpretation of the interview – this summary was then given to each participant for review to ensure that the researcher's interpretations were accurate and valid.

In another attempt to minimize researcher bias, the researcher remained aware and acknowledged discrepant evidence and negative cases in the interview data. The researcher read and interpreted the interview transcripts with a critical eye, ensuring that he searched for information that was outside of what may fit with his expectations and beliefs. Searching for negative cases and discrepant information enhances fairness, giving equitable attention to differing viewpoints and avoiding favouritism and lopsided and biased interpretations.¹

Throughout the data generation and analyses phases, the researcher attempted to bracket out his own personal beliefs about the phenomenon under investigation. In phenomenological studies, the researcher explores his personal beliefs and experiences

with the phenomenon and seeks to “bracket” or sideline them.¹ The researcher acknowledged his own personal beliefs and biases pertaining to the dental hygiene baccalaureate education and sought to bracket out these preconceptions through limiting the use of leading questions in the interview. In addition, the researcher used caution when reacting (verbally and non-verbally) to the participant during the interview. If researchers hear something they agree with during interview and subsequently start reacting favourably (a nod or a smile), then the participant may continue to emphasize these points.^{1,2} Attempting to eliminate the researcher’s effect on the interview is not a meaningful goal for qualitative research as the researcher has a powerful and inescapable influence; however, acting professionally and impartially and avoiding leading questions can help prevent the more undesirable consequences of this effect.²

Another validity threat in this study may be respondent bias where respondents may withhold information or lie to protect their privacy or to avoid revealing unpleasant truths.¹ At the other extreme, participants may try to be helpful and offer answers that they believe the researcher wants to hear.¹ The researcher attempted to address this respondent bias by starting each interview with several statements reiterating that confidentiality will be strictly maintained and by explicitly reinforcing the need to answer each question genuinely rather than answering according to what they think the researcher wants to hear. Finally, to ensure fullness and completion of the data, the researcher continued to conduct interviews until data saturation was achieved – the point at which no new information or themes were generated.¹

A.7 References

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Appendix B – Introductory Letter

THE UNIVERSITY OF BRITISH COLUMBIA



Faculty of Dentistry
J.B. Macdonald Building
The University of British Columbia
2199 Wesbrook Mall
Vancouver, BC V6T 1Z3
www.dentistry.ubc.ca

Dear Dental Hygiene Degree Graduate,

I am a master's student at the University of British Columbia (UBC) in the Faculty of Dentistry under the supervision of the principal investigator, Professor Bonnie J. Craig. As part of my MSc. requirements, I will be conducting a research study. The intention of this letter is to request your participation in this study. The primary research question to be addressed in this study is: What are the experiences and outcomes of those diploma dental hygienists who have completed a dental hygiene bachelor's degree?

The purpose of this research is to explore and understand the value, if any, of earning a dental hygiene/dental science bachelor's degree, from the perspective of diploma dental hygienists who have advanced their formal education to the baccalaureate degree level. Specifically, I am interested in exploring themes related to your experiences, opinions, and outcomes of the dental hygiene bachelor's degree program.

Previous studies have gathered and analyzed data using quantitative methodologies through the implementation of surveys or closed-ended questionnaires, which have focused primarily on motivating reasons for pursuing the degree and career outcomes associated with earning the degree. Missing from the literature are in-depth qualitative studies that critically explore the values that diploma dental hygienists hold, if any, in having completed their dental hygiene bachelor's degree.

Inclusion and Exclusion Criteria:

To participate in this study, you must be a practicing dental hygienist who initially earned a dental hygiene diploma from a Canadian accredited dental hygiene program and then subsequently earned a dental hygiene bachelor's degree through a degree-completion program in Canada. In addition, you must have practised dental hygiene for a minimum of **two years** before starting the dental hygiene bachelor's degree. You are not eligible to participate in this study if you earned a bachelor's degree prior to your dental hygiene diploma education.

Participant Commitment and Benefits:

If you are selected for this study, you will be invited to be involved in an in-person or telephone interview with myself for approximately sixty to ninety minutes. You will be asked to discuss your thoughts and views pertaining to your experiences and perceived outcomes of your

baccalaureate degree. This interview will be audio-recorded with your consent, after which it will be transcribed verbatim. You may be asked to participate in a second brief interview if clarification and/or elaboration is required. The interview(s) will take place at a time and location at your convenience. You will be eligible to receive hour-for-hour credit towards your continuing competency for your participation in this study.

If, during the course of the interview, you find that you do not wish to answer a particular question, you may decline to answer at any time. As well, you are free to withdraw from participating in this study at any time. Any information that you provide during the course of this study will be kept anonymous, meaning there will be no information linking your name to the information you provide.

If you meet the criteria for this study and are still interested in participating, please contact me through e-mail at _____ or via telephone at _____.

Please include the following demographic information about yourself in your reply:

- In what years did you obtain your dental hygiene diploma and dental hygiene bachelor's degree?

Year of graduation from diploma program: _____

Length (in years) of the diploma program: _____

Year of graduation from degree program: _____

- From which Canadian university did you obtain your dental hygiene bachelor's degree?

___ University of Alberta

___ University of British Columbia

___ University of Toronto

- Do you have any other education besides your dental hygiene diploma and dental hygiene bachelor's degree?

___ No

___ Yes – please specify: _____

- In what area of dental hygiene practice are you primarily involved? (check all that apply)

___ clinical practice

___ public health/community

___ residential care

___ education

___ administration

___ other (please specify) _____

- Please also indicate your province of practice and your contact information (email and/or telephone number).

You will be contacted shortly if you are selected to participate. In addition to this introductory letter, you will receive a participant consent form with further information. You will be able to keep a copy of that form as well for your records.

Thank you for considering this request. I look forward to hearing your reply.

Sincerely,

Zul Kanji, BSc, Dip.DH, RDH

Zul Kanji has been a registered dental hygienist in British Columbia for 4 years where he is a part-time clinical dental hygienist in a general dental practice and a part-time faculty member in Vancouver Community College's dental hygiene diploma program. He is not associated with any dental hygiene bachelor's degree program in Canada.

Appendix C – Participant Consent Form

THE UNIVERSITY OF BRITISH COLUMBIA



Faculty of Dentistry
J.B. Macdonald Building
The University of British Columbia
2199 Wesbrook Mall
Vancouver, BC V6T 1Z3
www.dentistry.ubc.ca

Project Title: Dental Hygiene Baccalaureate Degree Education

Participant Consent Form

The purpose of this study is to explore and understand the experiences of earning a dental hygiene bachelor's degree, from the perspective of diploma dental hygienists who have subsequently earned a degree. This research is important as little attention has been given to gaining degree graduates' views regarding their experiences of degree education. We believe this experience has provided you with a unique perspective from which to share your experiences and views about degree education. We anticipate that this study will contribute to the dental hygiene profession's understanding of the impact of dental hygiene baccalaureate degree education.

If you decide to participate in this study, you will be interviewed in-person or through the telephone by the co-investigator to discuss your experiences and perceived outcomes related to the dental hygiene bachelor's degree. This interview will take approximately sixty to ninety minutes. If needed, there may be a second follow-up interview of shorter duration to clarify or elaborate on what was discussed. All meetings will take place at a time and location of your choice. The interview(s) will be audio-taped and transcribed by the co-investigator / graduate student researcher.

Your participation in this study is voluntary; therefore, you are free to withdraw from the study at any time. You have the right to refuse to answer any questions, to request that recording be stopped at any time, and to withdraw any information you do not wish to be included in this study. Should you withdraw, the information you have provided up to the point of your withdrawal will not be used in the data analysis, unless you consent to have it included.

Confidentiality will be maintained by removing all identifying information from the audio-recording device and interview transcripts. Once the interviews have been transcribed, the audio-recordings will be erased. The transcriptions will be kept in a secured locked filing cabinet to which only the research team will have access. Upon completion of the study, the interview transcripts will be turned over to the principal investigator where they will be

stored for the required minimum of five years at a UBC locked facility. After this five year period, the data will be shredded to ensure that confidentiality will not be breached.

Information shared in this study will be used in the graduate student's thesis and, thus, may form part of a public document if published. All information generated in this study will remain anonymous to all outside of the research team. Your personal information and identity will be kept confidential. All efforts will be made to ensure that you are not identified by others by changing or removing information that might otherwise identify you.

If you have any questions or desire further information with respect to this study, please contact me or my graduate supervisor, Professor Bonnie Craig. Furthermore, should you have any concerns about your treatment or rights as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598 or via email to RSIL@ors.ubc.ca.

Thank you for considering involvement in this study. Your signature below indicates your consent to participate in this study.

If you consent to participate in this study, please print this form, sign it in ink, and return it to the co-investigator via fax at _____. Please attach a cover sheet with attention to Zul Kanji. You will be contacted shortly if you are selected to participate.

Thank you for expressing your interest.

Sincerely,

Bonnie J. Craig, Dip.DH, M.Ed Principal Investigator Faculty of Dentistry, UBC Professor, Graduate Student Supervisor Telephone: Email:	Zul Kanji, BSc, Dip.DH, MSc.(cand) Co-Investigator Faculty of Dentistry, UBC Graduate Student Telephone: Email:
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I understand what I have read in this consent form and hereby consent to participate in the study described above. I have received a copy of this consent form for my own records.

Name (please print)

Signature

Date

Appendix D – Interview Guide

Interview Protocol: Dental Hygiene Baccalaureate Degree Education

Date of Interview:

Interviewer:

Interviewee:

(Briefly describe the project and review consent form)

Interview Questions:

1. Please tell me how you made the decision to undertake dental hygiene degree education.
- Probe: Motivating reasons? What were your feelings of having a diploma?

2. Please tell me about your experiences during the dental hygiene degree-completion program.
Probes: What was it like to be in the program?
What did you think of the program?
What were some interesting or surprising experiences?
What worked for you in the program? What didn't?

3. What are your thoughts about the outcomes of your degree education?

Probes: How has earning this degree impacted you personally?

How has completion of this degree affected your dental hygiene practice or other professional activities?

How has completion of this degree affected your interaction with other professionals?

With clients?

Has this degree influenced your decision-making regarding pursuing further education?

4. Thinking back, what are your thoughts about the outcomes of your diploma education?

5. What are your thoughts about recommending this degree to other diploma dental hygienists?

6. Is there anything else that you would like to add or emphasize that would enhance my understanding of your degree experience?

7. Collect relevant demographic information:

- When and from where did you complete your dental hygiene diploma?
- When and from where did you complete your dental hygiene degree?
- Other education besides your dental hygiene education?
- What are your areas of practice? Clinical? Education? Administrative? Community?

Other?

(Thank the individual for participating in this interview. Assure him/her of confidentiality of the responses and potential future interview)