

ATHABASCA UNIVERSITY

A DISTANCE DELIVERY MODEL TO IMPROVE ACCESSIBILITY  
TO POST-DIPLOMA BACCALAUREATE LEVEL  
DENTAL HYGIENE EDUCATION

BY

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A project submitted to the  
Athabasca University Governing Council in partial fulfilment  
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MASTER OF DISTANCE EDUCATION

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# ATHABASCA UNIVERSITY

The undersigned certify that they have read and recommend to the Athabasca University Governing Council for acceptance a project "A Distance Delivery Model to Improve Accessibility to Post-Diploma Baccalaureate Level Dental Hygiene Education" submitted by Sandra Joy Cobban in partial fulfillment of the requirements for the degree of Master of Distance Education.



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## **DEDICATION**

This work is dedicated to my sons Conor and Nigel, and to my parents Bert and Flo Kindzierski who, by example, showed that learning is a lifelong activity.

## ABSTRACT

Dental hygiene practice is grappling with change as it adapts to the rapidly evolving health care delivery system, and dental hygiene education must respond to the changing needs of its graduates. Dental hygienists and the Canadian Dental Hygienists Association see a need for increasing access to baccalaureate degree dental hygiene education in Canada. Changes in student demographics require flexibility in curriculum delivery. A post-diploma baccalaureate degree program for dental hygienists that is available by distance delivery methods is one mechanism by which to increase access to post-diploma baccalaureate educational opportunities. The purposes of this study were to identify the challenges dental hygienists face as potential learners, to propose a model for a post-diploma dental hygiene baccalaureate degree-completion program for delivery by distance methods, and to suggest appropriate distance delivery methods for courses that would lead to a baccalaureate degree. To achieve these purposes, two surveys were undertaken. A survey of a stratified random sample of 668 members of the Canadian Dental Hygienists Association was conducted to identify learning preferences of dental hygienists who would enrol in a post-diploma baccalaureate degree program. Fifty-seven post-diploma dental hygiene baccalaureate degree programs in Canada and the United States were surveyed to determine the curriculum content and delivery mechanisms of these programs. Response rates were 57.6% for the survey of dental hygienists and 57.9% for the survey of the dental hygiene programs. Dental hygienists are motivated to pursue baccalaureate education by a desire for increased knowledge and for personal satisfaction. They are constrained in their pursuits by a need for flexibility in scheduling, and by family and work obligations. Dental hygienists perceive the barriers or

constraints to have a stronger influence than the motivators, as evidenced by higher mean scores in their ratings of these factors. They prefer to pursue baccalaureate education by means of correspondence, computer-based communication/Internet, or evening or weekend classes in their home communities. They are not interested in full-time study or weekend classes in a distant community. They have access to and are comfortable using computers and e-mail. Current dental hygiene post-diploma degree programs are not accessible by the delivery methods that dental hygienists indicate they prefer. Current post-diploma baccalaureate dental hygiene degree programs were most likely to be 120 semester hour credits in length, transfer 60 credits from the diploma, more with an articulation agreement, have a residency requirement of 30 credits, and require a minimum grade point average and National Board exam for admission. They were not likely to require a clinical component but were likely to offer specialization components. They offer a blend of advanced dental hygiene and liberal studies, but were not likely to offer the program by distance delivery methods. A model, including program specifications and a sample curriculum, has been proposed for distance delivery of a post-diploma baccalaureate dental hygiene degree.

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# CHAPTER I

## INTRODUCTION

In January of 1998, the Canadian Dental Hygienists Association (CDHA) adopted a Policy Framework for Dental Hygiene Education in Canada. This document acknowledged that “social, economic, political, and technological forces will influence future dental hygiene practice” (p. 105). It acknowledged the direct relationship between dental hygiene educational outcomes and the evolution of dental hygiene practice. It further acknowledged that “future dental hygiene practice must respond to an expanding body of dental hygiene theory, changing demographics and oral disease patterns, and the increasing need for quality oral health services” (p. 105).

Commensurate with these changes has been an expansion of the knowledge required to provide appropriate oral health services for each client. Dental hygiene entry level curricula have been expanding to include necessary new content to address the many changes, but the credential awarded has not always been consistent with the amount of education required by the program (Mescher, 1984).

Oral health makes an important contribution to total health, and dental hygienists are educationally prepared to aid people in the achievement of optimal oral health. The health care delivery system is undergoing reform, although much of the reform effort has been directed at the financing rather than the specific professional roles in health care delivery. Suggestions have been made for the emergence of the dental hygienist as a primary health care provider (Brand, 1994; Nielsen-Thompson & Brine, 1997), and working in different practice settings with different supervision requirements (Gluch-Scranton & Rigolizzo

Gurenlian, 1985). The authors have suggested that education to at least the baccalaureate level would be necessary to prepare the dental hygiene practitioner for such roles.

### Dental Hygiene as an Emerging Profession

Dental hygiene has been characterized as being a semi-profession, or moving toward the status of a profession (Lautar, 1995). As most of the dental hygiene programs in Canada currently offer only diploma level education, one of the limitations to further development of dental hygiene as a profession is inadequate access to baccalaureate level dental hygiene education.

Some of the characteristics common to a profession are: that there be an organization of members, a code of ethics, a process of certification or licensure, that they provide an important service to society, that there be a specific intellectual component to the practice, autonomy in his/her work, and education at least to the baccalaureate level (Bayles, in Callahan, 1988). At this stage of its development in Canada, dental hygiene has many of these characteristics. Through the Canadian Dental Hygienists Association (CDHA) dental hygienists have a national organization, a code of ethics, and a national certification process. Provincial regulatory bodies have various arrangements for licensure or registration. Darby and Walsh's proposed meta-paradigm for dental hygiene science includes the concept of dental hygiene actions being taken to promote oral wellness and prevent oral disease, an important service to society (Walsh, 1991). Darby and Walsh also compared an occupational model of dental hygiene, which is technology based, to a professional model which is knowledge based and consistent with the direction of current trends in dental hygiene education and practice (Walsh, 1991). Currently in Canada, dental hygiene self-regulation

exists in the provinces of British Columbia, Alberta, Saskatchewan, Ontario and Quebec.

There is, however, limited access to baccalaureate level dental hygiene education that places a constraint upon the development of dental hygiene as a profession.

Other characteristics of a profession include a body of knowledge on which to base the practice (Stamm, 1982; Walsh, 1991) and advanced degrees (Bayles, in Callahan, 1988). Stamm contends that many dental hygiene practitioners do not have the academic background to perform the research necessary to form this body of knowledge, as the great majority of practitioners are prepared only at the diploma level. The dental hygiene diploma is currently the entry level to practice across Canada and the United States, and in the last published report only 5% of Canadian hygienists having additional educational qualifications reported having a bachelor's degree in dental hygiene (Johnson, 1988).

This limited access further inhibits dental hygienists who wish to pursue advanced education at the graduate level, as a bachelor's degree is generally a prerequisite for graduate studies. There are currently no graduate programs in dental hygiene in Canada, although several Master of Science in Dental Hygiene (MScDH) programs do exist in the United States. An accessible post-diploma degree completion program for dental hygienists could provide a means to address the issue of increasing the number of dental hygienists with baccalaureate and graduate level education, in turn contributing to the movement of dental hygiene toward the status of a profession.

### Distance Education

Keegan (1996) has suggested the following theoretical framework for distance education: quasi-permanent separation of the teacher and the learner throughout much of the

learning process; quasi-permanent separation of the learner from the learning group throughout much of the learning process; participation in a bureaucratized form of educational provision; utilization of mechanical or electronic means of communication to carry course content; and provision for a means of two-way communication so that the learner can initiate or participate in dialogue. Distance education can provide educational opportunities for students who are unable to access traditional educational opportunities.

Distance education as a form of educational delivery evolved to meet the needs of learners that were distant from educational settings. From its beginnings as correspondence study to its current evolution incorporating various communication technologies, distance education can help to eliminate geographic and other barriers that affect learners. The nursing profession has been very successful in its uses of distance education to increase access to post-RN baccalaureate education (Cragg, 1991; Calder & Sawatzky, 1993). Distance education can also increase opportunity for employed professionals, who would not otherwise be able to pursue further education. Distance education delivery methods can increase access to educational opportunity for a population of dental hygienists seeking post-diploma baccalaureate dental hygiene education.

### Dental Hygiene Education in Canada

Presently there are twenty-nine dental hygiene programs in Canada. Two of these offer dental hygiene education at the baccalaureate level, both as post-diploma programs. The remaining programs are diploma programs and are offered at colleges and universities across Canada. Most are two-year programs, but those offered in Quebec are three-year programs. University programs in Nova Scotia, Manitoba, and Alberta have a pre-professional year of

studies as a prerequisite, as do the two-year college programs in British Columbia. Ontario and Saskatchewan both have two-year college programs.

The University of British Columbia offers a post-diploma degree completion Bachelor of Dental Science degree and the University of Toronto offers a post-diploma degree completion Bachelor of Science in Dentistry (Dental Hygiene) program. Graduates of both of these programs have successfully entered graduate studies. One limitation of both of these programs is their geographic location. As the majority of dental hygienists are female and both programs have residency requirements, family and financial commitments may limit the ability of many women to relocate to pursue their education at these two institutions. A further limitation is the low enrolment of both programs, with the University of British Columbia having two intakes of seven students per year, and the University of Toronto accepting from one to six students per year. As of the latest published report in 1996, the University of Toronto had thirty-eight graduates and the University of British Columbia had five graduates (Pohlak, 1996). With approximately 13,000 dental hygienists in Canada (Canadian Dental Hygienists Association, personal communication, April 17, 1997) these two programs cannot meet the need for post-diploma education.

Dalhousie University and the University of Manitoba have had proposals for degree completion programs accepted in principle by their respective university senates, but have not received funding support. Dalhousie University and the University of Alberta are currently working on proposals for baccalaureate degrees in dental hygiene, but as these are not completed it is not clear if the emphasis will be on changing the nature of the existing diploma programs to degree programs or on degree completion programs. It is also not

known what provisions will be incorporated into these proposals for increased flexibility or accessibility, for example via distance education delivery methods.

The Canadian Dental Hygienists Association, in their recently released Policy Framework for Dental Hygiene Education in Canada (1998), have suggested that dental hygiene education must be: accessible; accountable; provide graduates with opportunities to be self-directed, critical thinkers; committed to the delivery of quality oral health services; client-centred; collaborative; health and wellness focussed; research-based; capable of assuring quality; and articulated. Currently available educational opportunities are not readily accessible, nor are they articulated.

#### Baccalaureate Dental Hygiene Education

In Canada, the Working Group on the Practice of Dental Hygiene (Health and Welfare Canada, 1988, p.50) identified that “as early as 1968 there had been an expression of need for baccalaureate programs in dental hygiene to prepare dental hygiene and dental assisting educators, senior public health supervisors and consultants, and researchers.” This report made a number of recommendations concerning the establishment of post-diploma baccalaureate education for dental hygienists. To date, many of the recommendations have yet to be implemented.

Dental hygienists are interested in pursuing baccalaureate level dental hygiene education. Brand and Finocchi (1985) found that 70% of certificate and associate degree respondents in a study they conducted were considering pursuing a bachelor’s degree. A certificate or associate degree credential in the United States is comparable to a diploma

credential in Canada. DeBiase (1988) similarly found that 70% of licensed dental hygienists were interested in pursuing a baccalaureate degree in dental hygiene.

Some Canadian dental hygienists wishing to earn degrees in dental hygiene have sought their education in the United States. Kinnear and Forgay (1992) reported that 16.2% of Canadian students attending U.S. dental hygiene schools chose to do so because of the availability of a degree program. Howard (1997) found that the highest international student population in U.S. dental hygiene programs came from Canada (42%).

DeVore (1993) has pointed out the experience in the United States has been that:

Although there has been much discussion about the need to move toward baccalaureate education, the growth of programs at the community and junior college level, coupled with the decline in the number of programs offering the baccalaureate degree, send conflicting messages to the profession and the public. (p. 613)

The Commission on Dental Accreditation (1992, cited in DeVore, 1993) found that approximately 81% of all enrolled dental hygiene students in 1991 had completed at least one year of full or part-time college study before entry in the dental hygiene program. Although there is no published data on the Canadian experience, it is not unreasonable to suspect similar findings. Further, although dental hygienists in Canada and the U.S. complete three or more years of college or university level education, very few earn credentials beyond that common to two year programs.

Dental hygiene practice, as many other health professions, is grappling with change as it adapts to the rapidly evolving health care delivery system, and dental hygiene education must address the changing needs of its graduates. The profession is moving toward evidence-based, patient-centred care. For the dental hygiene practitioner, this means the application of

high-level cognitive skills in assessing the quality of clinical studies and the efficacy of dental hygiene services for each patient (Burke, 1991). Dental hygienists must further adapt to changes in disease patterns in various populations, and to innovations in technology (DeVore, 1993).

Changing demographics will also affect dental hygiene practice settings. The increase in the number of persons over the age of 65, and the increase in the number of persons over the age of 85 will affect the demand for dental hygiene care in alternate practice settings (Fitz, 1991). Can existing dental hygiene curricula continue to add more content without adjusting the credential awarded? This would not seem an effective product to the education consumer. Although some dental hygiene leaders have suggested changing the credential for entry to practice for dental hygienists to a baccalaureate degree, adequate discussion of this subject is beyond the scope of this paper.

Carr and Rubinstein (1989), in a retrospective study, found that the dental hygiene student population had increased slightly in age, become more racially diverse, had a slightly lower mean grade point average, and were more likely to have had their education interrupted. Walsh and Ishida (1990) noted similar trends. This is consistent with trends in university and college enrolment in general (Burke, 1991). This student population requires innovation and flexibility in curriculum delivery, yet Burke (1991) and Bader, Rubinstein, and Friedman (1989) report little curricular innovation in dental hygiene programs.

With the need for access to post-diploma degree completion dental hygiene education to meet the needs of an evolving health care delivery system and for professional credibility, and a changing dental hygiene student population that will require curricular flexibility, distance education delivery methods must be considered as one option for addressing these

needs. This study seeks to propose a model for a distance delivered dental hygiene degree-completion program that can meet these needs.

### Purpose of the Study

The purposes of this study are to identify the challenges dental hygienists face as potential learners, to propose a model for a post-diploma dental hygiene baccalaureate degree-completion program for delivery by distance methods, and to suggest appropriate distance delivery methods for this type of content.

Questions that need to be answered in order to achieve these purposes include:

- a) What are the current requirements for post-diploma baccalaureate degree completion programs for dental hygiene education in Canada and the U.S.?
- b) What are the needs of dental hygienists as learners?
- c) Which distance education delivery methods can meet the needs of dental hygiene learners for baccalaureate level dental hygiene education at a distance?

In summary, what content do they need to learn, what needs do they have as learners, and can distance education provide this content to this group of learners?

### Operational Definitions for Use in This Study

Several terms have been used frequently during this study and are defined below to assist the reader.

Associate degree and certificate dental hygiene education: dental hygiene education programs commonly found in U.S. colleges that prepare the entry-level practitioner. These

may or may not articulate with degree-completion programs depending on the establishment of individual agreements.

Baccalaureate dental hygiene education: a program of study that results in the awarding of a baccalaureate credential, and includes advanced study in the theory of dental hygiene that goes beyond that necessary for entry to practice at the diploma level.

Diploma dental hygiene education: a program of study that is approximately two years of study in length, and prepares the individual for entry into dental hygiene practice.

Distance education delivery methods: methods of facilitating delivery of education that may occur when the teacher and the student are separated in time and space, and students may be separated from each other in similar fashion.

Learner needs: learner needs as used in this study will refer to the constraints placed on students who desire to access further education. Such needs could include distance from place of study, commitments to family or work, or time constraints.

Learning preferences: methods by which dental hygienists prefer to access further education, in this case post-diploma baccalaureate level dental hygiene education.

Motivating factors: those factors that might stimulate a dental hygienist to pursue further education at the baccalaureate level. Such factors could include personal satisfaction, desire for increased knowledge or skills, or job security.

Post-diploma baccalaureate dental hygiene education: a program that enables dental hygienists, who have already earned a diploma, to complete the requirements to earn a baccalaureate degree in dental hygiene.

### Assumptions

Underlying this research are a number of assumptions. It is assumed that dental hygienists are able to perceive factors that will motivate and influence access to further education, and to perceive those factors that will limit or place constraints on their ability to pursue further education. It is assumed that the questionnaires used in this study will be completed honestly and accurately by the respondents.

### Delimitations

This study was delimited to active Canadian Dental Hygiene Association members, excluding those in Quebec. This study was delimited to post-diploma baccalaureate level dental hygiene education programs, and did not seek data from direct entry baccalaureate programs. This study was also delimited to questions about baccalaureate level dental hygiene education specifically, without gathering data on interest in other areas of bachelor degree level study in which dental hygienists might be interested, and without gathering data on graduate education in which dental hygienists might be interested. These two questions, while relevant for the dental hygiene profession, are beyond what was needed to answer the research questions posed.

### Limitations

There are a number of limitations to this study design. The population that will form the basis of this study consists of active members of the Canadian Dental Hygienists Association. A limitation is that these findings may not be representative of practicing dental hygienists who are non-members of the national association.

This study will utilize survey research methods, which have as an inherent limitation the potential for non-response bias. Mechanisms will be implemented to attempt to reduce this, including over-sampling to ensure that a sufficient number of responses are received for confidence in the data, and the use of a reminder postcard, with a design that appeals to dental hygienists.

### Summary

Dental hygienists in Canada are very limited in their access to baccalaureate level dental hygiene education. As an emerging profession, this places further limits on the development of the profession. Ongoing changes in the health care delivery system and settings require dental hygiene professionals that are educationally prepared and can readily respond to these changes.

Dental hygienists and the Canadian Dental Hygienists Association see a need for access to baccalaureate level dental hygiene education. Changes in student demographics will require flexibility in curriculum delivery. Distance education methods are one means by which to increase access to educational opportunities.

The purposes of this study were to identify the challenges faced by dental hygienists as potential students, and to propose a model for a post-diploma dental hygiene baccalaureate degree completion program for delivery by distance methods.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

This chapter presents a review of the literature related to post-diploma baccalaureate dental hygiene education. It begins with a discussion of the access that dental hygienists in Canada have to post-diploma baccalaureate dental hygiene education, followed by a discussion about articulation between dental hygiene diplomas and existing degree programs. Existing models of dental hygiene degree completion education, as found in the literature, are presented, followed by a brief review of professional versus liberal education. A discussion of the distance education literature and barriers concludes the chapter.

#### Accessibility

Dental hygienists are predominantly female, making up 98% of the practitioners. A national study of dental hygienists found that 72% were married and 44.5% of the total respondents had one or more children in the home (Johnson, 1988). Dental hygienists returning to complete a baccalaureate degree will share many of these characteristics. These potential students will have multiple demands on their time and energy, including their family, their studies, and in many cases a job outside the home. In many households women still have the primary responsibility for housework, nurturing, and solving the family crises and emergencies (Burge, 1990).

Many dental hygienists come from middle class backgrounds, so do not face the disadvantages faced by women from other socioeconomic backgrounds. However, as a predominantly female group they face many issues related to lack of power, particularly

within their hierarchical relationships with the dental profession and faculties of dentistry (McIntyre, 1989). Although the practice of dental hygiene is self-regulating in many provinces, the study of dental hygiene remains under the control of dental faculties in some locations, particularly in the university settings. Often it is these groups who have failed to support previous proposals for dental hygiene baccalaureate programs, causing them to stall or fail outright.

In a 1989 study, Newell, Stoltenberg, Osborn, and Peterson found that over 43% of dental hygiene students in associate degree or certificate programs were interested in pursuing a baccalaureate degree completion program, while 32% were not interested and 24% were undecided. This study found that these students identified cost, time, and family commitments as barriers to pursuing advanced education. Over 95% said they wanted to continue their education within five years of graduation. The authors went on to suggest that flexibility in curricular design would be needed to meet the evening and part-time interests of some potential students. Increasing the number of locations for program delivery and expanding articulation agreements were also suggested as mechanisms for meeting the needs of certificate/associate degree graduates wishing to continue their education.

Despite acknowledgement of the need for flexibility, an American Association of Dental Schools task force report (Bader, Rubinstein, & Friedman, 1989) found that less than 25% of dental hygiene programs offered innovative curricular design. The profile of today's applicant pool defined by Walsh and Ishida (1990) finds it to be smaller, more racially diverse and having more previous education than applicants from the three previous decades. This pool, however, is still predominantly female. Walsh confirms both the Bureau of Labour Statistics and other studies that indicate students entering a designated field of study enroll

with one or more years of advanced education as a part-time student that had been obtained prior to beginning the clinical phase of their education.

DeVore (1993), in a review of allied dental education, has indicated that programs must adopt innovative approaches to recruitment and program design. Dental hygiene programs have been locked into traditional approaches in curriculum and scheduling for too long. These factors may be contributing to declining applicant pools. To make these programs more accessible to the changing characteristics of potential applicants for dental hygiene education, whether baccalaureate or diploma level, part-time options, evening or weekend classes, remote site scheduling, and expanded use of instructional technology will be needed. Course content will need to be relevant to and designed for the adult learner, in keeping with the increasing age of the students. The fourth Pew Health Professions Commission Report (1998) recommends that health professions curricula incorporate more interdisciplinary courses and activities, and more outreach into community health care delivery systems.

In a 1989 study of Tennessee dental hygienists who had expressed interest in degree completion education, Waring (1989, 1991) found that geographic location, flexibility in scheduling, and accessibility to course work were the most important features in educational design for those who considered themselves likely participants. Waring found the demographic characteristics of those indicating they were likely to participate in degree completion education were similar to other non-traditional students. Further, those that deemed themselves as likely participants were able to study on a part-time basis only.

## Articulation

Articulation has been defined in the Oxford English dictionary as “the structure whereby two ... parts are connected.” Articulation of dental hygiene educational programs can be defined as the process by which admission into dental hygiene degree completion programs is facilitated by an agreement between the degree granting institution and the diploma granting institution, such that entry and administrative barriers are reduced. This could include recognition of a specified number of semester credits upon application, without the lengthy delays necessary for reviews of course content on an individual basis. Rather, this would apply to all graduates of institutions participating in such agreements. The CDHA’s Policy Framework for Dental Hygiene Education in Canada (1998, p. 105) has identified that one of the guiding principles is that dental hygiene education must be “articulated, in order that the dental hygiene education programs and their credentials facilitate accessibility from entry level to post-doctoral qualifications.”

As dental hygiene diplomas tend to be highly specialized, they do not articulate readily with degrees in other fields, increasing the need for a degree completion program in dental hygiene. Within their Policy Framework for Dental Hygiene Education in Canada, the Canadian Dental Hygienists Association (1998, p. 106) has indicated that “student and graduate mobility must be facilitated by appropriate credentialling and articulation arrangements.” CDHA further advocates that dental hygiene education in Canada should be a comprehensive system that includes baccalaureate and graduate dental hygiene education programs. To facilitate this, they suggest the development of inter-institutional agreements to enhance the transferability of credits.

Currently such systematic agreements are limited, and do not provide sufficient recognition of credits earned. The University of British Columbia's degree completion program grants 30 credits for a dental hygiene diploma in their degree completion program, yet this diploma consists of 99 credits at the University of Alberta (1997-1998 calendar, University of Alberta). There is also a required pre-professional year of 30 credits. When a University of Alberta graduate wishes to pursue a degree completion program at the University of British Columbia they must complete a further sixty credits, completing over 180 credits for an undergraduate degree. This is significant when compared to other Bachelor's degrees offered at these two institutions, which require a mere 120 credits. Many Canadian dental hygienists considering the pursuit of baccalaureate education find this unacceptable, particularly when compared to U.S. dental hygiene degree completion programs and the recognition they grant for entry level education. College dental hygiene diploma programs also consist of significantly more than the thirty credits for which the students receive recognition.

Brutvan (1998) has noted that institutions give little thought as to how students matriculate from the college system to the university; there appears to be little cooperation between the faculty and administrators of community colleges and universities even within the same province. A frequent complaint of dental hygiene graduates from community colleges is that their years of lower-division academic credits do not easily transfer into a university program (Brutvan). At this time there does not appear to be a significant movement to remove barriers to effective transfer among institutions for dental hygiene diploma graduates in Canada. This complaint is also made by university dental hygiene

diploma graduates who wish to enrol in other degree programs, receiving little credit for their years of university level studies.

While there have been some discussions surrounding the issue of which credential should be appropriate for entry level to practice dental hygiene, these discussions bear little relationship to reality if there is little to no access to baccalaureate or post-diploma baccalaureate level dental hygiene education in this country. Paarmann, Herzog, and Christie (1990) suggest that “specific articulation agreements would need to be developed among schools to facilitate the mechanisms for awarding credit and for minimizing duplication of course work” (p. 203).

#### Models of Degree Completion And Baccalaureate Dental Hygiene Education

The American Association of Dental Schools (AADS) Task Force Report on Dental Hygiene Education (1992) has proposed that the Bachelor of Science in Dental Hygiene (BSDH) requirements should be limited to approximately 120-130 semester credit hours. This report recommended that additional hours should be considered inappropriate for the consumer in terms of time, money, or academic credential earned. Further recommendations were that the Dental Hygiene major should constitute 50 to 75% of the course credits, and the general education component of the BSDH program should be a minimum of 25% of the course credits.

The CDHA’s Policy Framework for Dental Hygiene Education in Canada (1998) does not specify parameters for baccalaureate level education, other than that dental hygiene education must be accessible and articulated.

Taub and Levy (1983) identified nine different curricular types for baccalaureate dental hygiene educational programs in the United States. Their classification of curriculum types is delineated in Table 1.

Table 1.

Dental Hygiene Baccalaureate Degree Curriculum Types

Type	Curriculum
Type A	Two years of basic dental hygiene followed by Two years of liberal arts
Type B	Two years of liberal arts followed by Two years of basic dental hygiene
Type C	Two years of basic dental hygiene followed by Two years of liberal arts and advanced clinical dental hygiene
Type D	Two years of basic dental hygiene followed by Two years of liberal arts, dental hygiene education, and advanced clinical dental hygiene education
Type E	One year of liberal arts followed by Two years of basic dental hygiene followed by One year of liberal arts and electives
Type F	One year of liberal arts followed by Two years of basic dental hygiene followed by One year of liberal arts and advanced clinical dental hygiene
Type G	Two years of liberal arts followed by Two years of basic dental hygiene, advanced clinical and dental hygiene education
Type H	Four years of liberal arts and basic dental hygiene combined throughout
Type I	Two years of basic dental hygiene followed by Two years of liberal arts and health electives

Source: Taub and Levy (1983).

Rubenstein and Brand (1986) surveyed thirty-one post-certificate dental hygiene degree completion programs in the United States and found that the range of semester hour

credits was 120 to 134. Seven programs require or strongly recommend an area of specialization and ten programs require clinical education as part of the curriculum. Three programs identified preparing dental hygiene educators as their primary goal and three indicated that their primary goal was to prepare graduates for advanced professional or graduate education. Six programs included advancing students' clinical dental hygiene skills and knowledge as part of the program goal and five programs saw their program goal as developing a well-rounded graduate by providing a liberal arts education. A large number of programs (18) did not include advanced clinical education, and a smaller number of programs did not evaluate post-certificate students' clinical competency.

In Canada, the only model currently in existence is the post-diploma degree completion program. This requires one year of liberal arts pre-requisites, followed by two years of basic dental hygiene education, followed by two years of advanced clinical dental hygiene education and liberal arts and health electives.

Over the years several models have been proposed for baccalaureate dental hygiene education (Sisty, 1980; Gluch-Scranton & Rigolizzo Gurenlian, 1985; Wayman, 1985; Paarmann, Herzog, & Christie, 1990). In 1980, Sisty proposed a four year model incorporating humanities, basic sciences, social sciences, and dental sciences. Gluch-Scranton and Rigolizzo Gurenlian differentiated between the technical application of clinical skills at the associate degree or certificate level, and the increase in responsibility, clinical judgement, and depth of knowledge associated with the baccalaureate level education. Their model differentiates roles, practice settings and supervision levels for the differing educational levels, and describes competencies for clinical and professional skills at the two educational levels. Wayman (1985) looks at the preparation necessary for clinical practice,

recommending that this be standardized in lower division programs and that there be upper division dental hygiene and liberal arts theory leading to baccalaureate education. Wayman also recommends a new accrediting process for this program category.

Paarmann, Herzog, and Christie (1990) propose a curriculum model for future roles. The six roles are researcher, administrator/manager, health promoter/educator, consumer advocate, change agent, and clinician. They delineate a four-year integrated dental hygiene curriculum model designed to prepare graduates for each of the six roles.

Burke (1991) suggested that the future in dental hygiene education may include a residency program to provide the dental hygienist with the knowledge and skills to function in settings where the dentist is not present. Such residency experiences could be for hospitals, nursing homes, independent practice, and other non-dental office settings. Residency programs appropriate to the care of the geriatric individual, in addition to the four year degree in dental hygiene, are suggested as the optimum preparation required for working with the aging population.

Burke has further suggested that new models for dental hygiene education must reveal alterations such as a more flexible academic schedule available at a number of sites. Flexible delivery systems should include “a variety of competency based curriculums offering modules, simulations, and a variety of clinical periods including accelerated and remedial opportunities” (p. 207).

Cameron and Fales (1988) surveyed graduates of both direct-entry degree and degree completion programs. A majority of responding direct-entry and degree completion graduates were considering the pursuit of further education, and the majority of these were interested in pursuing a master’s degree. A greater proportion of degree completion graduates

had completed advanced degrees, but this data is of limited value due to the small sample size in their study. Keeping this limitation in mind, they found rates of current enrolment in academic programs and rates of planned intentions to enrol were comparable among graduates of both programs. Degree completion graduates showed a wider variety of practice settings.

As the predominant dental hygiene program type in Canada is the diploma, the logical type of baccalaureate model to propose is the post-diploma degree completion model. This is consistent with the belief, as aptly stated by Wayman (1985, p. 136), that “inherent in the meaning of baccalaureate dental hygiene education ... is the offering of upper division courses in the theory and practice of dental hygiene itself.” This also conforms with currently existing baccalaureate education for dental hygienists in Canada, which are also post-diploma degree completion models.

### Professional vs Liberal Education

The American Association of Dental Schools (AADS) Task Force Report on Dental Hygiene Education (1992) points out that:

According to the literature in higher education, the baccalaureate degree is designed to educate liberally. Liberal education produces capable thinkers, communicators, problem solvers, and decision makers, individuals who have the capacity for initiation, reflection, and review that enables them to respond to the changing issues they confront. (p. 14)

Literature on the meaning of a baccalaureate degree (Coleman, 1986; Smith & Karelis, 1995; Stewart & Chickering, 1995) supports the AADS Report’s contention that

baccalaureate study requires “multiple dimensions, not merely cumulative exposure to more and more of a specified subject area” (p. 16). A liberal education will foster the development of competencies considered key for dental hygiene practice, such as “critical-thinking skills, cause-and-effect reasoning, intellectual empathy (seeing all sides of an issue), maturity of social-emotional judgement, adaptation to the environment, and increased respect for diversity” (AADS, 1992, p. 15).

The National Commission on Allied Health (Commission Report, as cited in the AADS Report, 1992, p. 16) has recommended that “studies of humanities, social sciences and natural sciences can help allied health students acquire values, knowledge and intellectual skills of great relevance for competent and humanistic practice as health care specialists.” DeVore (1993) posits that programs must go beyond technical training to develop the knowledge and critical thinking skills that the dental hygiene profession requires for professional advancement.

Paarmann, Herzog, and Christie (1990, p. 199) quote the Education Commission of the States (1986) that says, in part, “specialization in undergraduate education has become a source of weakness; where it has made the undergraduate experience little more than vocational preparation, the result has been a disservice to the students and to the nation.” They go on to note that the patient care needs of a changing population will require a professional with a more complex educational background, including more liberal arts courses.

Clearly any proposed model of post-diploma baccalaureate degree-completion dental hygiene education will need to build on the existing diploma level education, incorporating

advanced dental hygiene theory while maintaining an effective balance between professional education and liberal education.

### Distance Education Literature and Barriers

Traditional classroom instruction has the instructor and students together in the classroom at the same time. Distance education, however, can have the instructor and students in different locations, communicating at different times, using a variety of methods. These methods can vary from strictly print-based, as with correspondence study, to incorporating audio or video, either simultaneously or pre-recorded. They can also incorporate other communication technologies such as computers and the Internet, and can be synchronous, or happening at the same time, or asynchronous – happening at different times.

Distance education can make education more accessible to women by providing the opportunity to arrange their study schedules around their work and family schedules. It also provides economic advantages, as the student does not have additional costs for childcare and transportation. Coulter (1989, p. 13) has said “distance education provides a special kind of accessibility by taking into account the realities of many women’s lives.” For many professionals, it is the opportunity costs, those of time away from paid employment and families, rather than direct tuition costs, that pose financial barriers.

Calder and Sawatzky (1993) found the primary factors most important to Saskatchewan nurses who did not wish to pursue baccalaureate level nursing education were family obligations and financial constraints. Respondents in their study, including both those who wished to pursue further education and those who did not, expressed a desire for “a

mode of delivery that would facilitate their participation without having to leave home” (p. 25).

Shomaker and Fairbanks (1997) found that a distance education program for nurses had a higher rate of graduation of minority students than a comparable on-campus programs. These students indicated that the availability of the program made it possible to participate; they would not have quit their jobs and relocated in order to study because of their family and work demands. Another finding of this study was that less than 2% of graduates left their rural communities after graduation, suggesting a benefit of distance education to the communities and employers located there.

Dental hygienists are familiar with distance learning methods and currently use distance education methods for continuing education. Wilson (1999), when investigating dental hygienists’ preferences for content and delivery of continuing education, found that distance learning courses were the second most frequently utilized method of formal continuing education activity identified by Alberta and Ontario respondents.

Hezel and Dirr (1991) studied barriers to university attendance identified by students enrolled in television-based distance education. These students, particularly the females, felt that family concerns were a very important barrier to their attendance. They found the barriers identified as most severe were time constraints, and work and family responsibilities. These students felt that time rather than distance was the main constraint.

Gibson and Graff (1992), when comparing those who successfully completed distance education degrees with those who were unsuccessful, found that non-completers had significantly more problems finding sufficient time to study, and balancing home and work responsibilities with studies. Other barriers identified were: “having few opportunities to

meet face-to-face with instructors; deciding how to study; having few opportunities for discussion; the time required to complete a degree; feeling isolated; receiving sufficient guidance from the instructor; and taking responsibility for their own studies” (p. 44).

Cookson (1989), in a review of research and learning in distance education, noted that studies support the addition of interactive methods such as telephone counselling and tutorials, summer school, and computer conferencing as means of raising persistence rates and achievement outcomes of students. Incorporation of interactive strategies would be a valuable component of a distance education degree-completion model.

Kahl and Cropley (1986) compared face to face and distance learners and found that distance learners had more difficult study conditions and greater feelings of isolation. These feelings led to a reduced level of confidence, which in turn led to a greater desire to structure and organize their learning environment and activities.

A distance delivery model for dental hygiene degree completion education will need to take the barriers faced by potential students into consideration, and to be structured around the identified needs. These are expected to be similar to those identified by other groups of health professionals, and to those identified in the above studies. Measures that facilitate success in student achievement will also need to be incorporated into such a model.

### Summary

The literature on dental hygiene education in Canada is limited, consequently much of the literature reviewed was based on American studies or published in American journals.

Dental hygienist practitioners are predominantly female and are constrained in their access to further education by distance, time, family and work commitments, and finances. As adult learners, they need increased flexibility in curricular design and delivery.

There is little articulation between dental hygiene diplomas and baccalaureate dental hygiene or other degrees in Canada, resulting in additional education with little recognition for the time and cost.

While several models of baccalaureate dental hygiene education exist in the United States, with the diploma being the predominant model of dental hygiene education in Canada a post-diploma baccalaureate degree completion model seems most appropriate. This baccalaureate degree completion model should consist of higher level dental hygiene theory complemented by higher level studies in humanities, social and natural sciences. It should also enable a choice of career tracks, providing the opportunity for students to pursue additional studies that will enable them to complement or change their work environment.

Distance education can reduce barriers to further education for female groups such as dental hygienists, and has been effective for other allied health professions, such as with post-RN baccalaureate degree completion programs in nursing. A study of the learning needs of dental hygienists could provide valuable information for the development of a distance delivery model of post-diploma baccalaureate level dental hygiene education.

## CHAPTER III

### METHODOLOGY

The purpose of this study is to determine the challenges faced by diploma-level dental hygienists who wish to access degree-completion education, to propose a model for the components that would need to be included in a degree completion model, and to suggest distance education delivery methods that would be appropriate for delivery of this content. Questions that need to be answered in order to achieve this purpose include:

- a) What are the needs of dental hygienists as learners?
- b) What are the current requirements for post-diploma baccalaureate degree completion programs for dental hygiene education in Canada and the U.S.?
- c) Which distance education delivery methods can meet the needs of dental hygiene learners for baccalaureate level dental hygiene education at a distance?

In summary, what needs do they have as learners? What content do they need to learn? Can distance education provide this content to this group of learners?

In order to answer these questions, a number of complementary research strategies were undertaken. “The purpose of survey research is to describe specific characteristics of a large group of persons, objects, or institutions” (Jaeger, 1988, p. 303). As the purpose of two components of this study were to describe characteristics of dental hygienists seeking baccalaureate education, and to describe components of degree completion dental hygiene programs, survey research methods were determined to be appropriate and consequently were utilized.

A survey of practising dental hygienists, who are currently active members of the Canadian Dental Hygienists Association, was conducted to determine what challenges they face in attempting to access degree completion education. A survey of post-diploma dental hygiene programs in Canada and the United States was conducted to determine the components that are currently included in the curricula. A review of the distance education literature was conducted to suggest distance delivery strategies that are consistent with the learner needs as identified in the first survey, and the content as identified in the second survey. A review of the dental hygiene literature identified existing models of post-diploma dental hygiene education at the baccalaureate level.

This chapter will describe the process of development of the survey instruments, sampling methods, survey implementation, data collection, and data analysis techniques.

### Ethical Considerations

Prior to the commencement of any research activities, ethics approval was obtained from the Athabasca University Ethics Committee. Every effort was made through the design and implementation of this study to ensure confidentiality of respondents, and to ensure that no individual could potentially be hurt by the publication of the results of this survey. A copy of the letter granting ethics approval for this study has been included as Appendix A.

All participants received a covering letter giving a basic description of the study. The letter assured the recipients that their participation in the study was entirely voluntary, and that they could withdraw at any time. They were also assured that responses would remain completely anonymous, and that only aggregated or group data would be reported. A copy of the covering letter for dental hygiene participants has been included as Appendix B. Returned

questionnaires and correspondence resulting from this study will be stored in a secure location for seven years from the date this project is completed, then will be destroyed.

### Survey of Dental Hygienists' Learning Preferences for Baccalaureate Education

The literature on distance education programs for other health professions identifies many of the barriers and challenges faced by practicing professionals when they seek to complete baccalaureate education (Hezel & Dirr, 1991; Calder & Sawatzky, 1993). These include work and family commitments, geographic location, time, and financial factors. Reitsch and Garvin (1986), DeBiase (1988) and Waring (1991) found similar barriers and challenges faced by practising dental hygienists who were interested in pursuing baccalaureate education.

Waring (1991) identified several motivating factors, including career advancement, degree status, personal satisfaction, and to gain entrance into graduate school. She also identified program design factors potential students considered important, including flexibility in scheduling, geographic location, and accessibility to course work.

Development of the survey instrument. Based on the barriers, accessibility issues, and motivating factors identified in these previous studies, a survey questionnaire was developed for use in this study. Two individuals with expertise in distance education reviewed a preliminary draft of this questionnaire, in order to validate the content related to distance education. This survey questionnaire was then reviewed by four dental hygienists to determine clarity of the questions, readability, and ease of completion. Following revision, it was pre-tested on a convenience sample of ten practicing dental hygienists. Minor

adjustments were made to the instrument following the pilot test, prior to mailing. A copy of the survey questionnaire has been included as Appendix C.

Sampling methods. At the time this study was conducted, September, 1999, there were 8386 active members in the Canadian Dental Hygienists Association. In order to have a representative regional sample, the members were stratified based upon geographic region. Due to potential language barriers, and potential costs of translation services to overcome these barriers, the small number of Quebec members of the CDHA (119 members) were not included in the population to be sampled. The regional strata were: British Columbia - 1350 members; Alberta – 1164 members; Ontario - 4737 members; Saskatchewan and Manitoba - 468 members combined into one stratum, and a stratum for the Maritime provinces – 667 members from Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland combined. There were no active CDHA members in either the Northwest Territories or the Yukon Territory.

Several factors were taken into consideration when determining the sample size. As the variability within the population on the survey questions is not known, the case of maximum variability was selected, suggesting that an equal percentage of the population would choose each response. An alpha level of .05 was selected, as it will provide acceptable precision for the intended uses of the data.

The stratified random sampling design chosen would not have any design effect on the sample itself. The strata vary in size, from 428 in Manitoba/Saskatchewan stratum to 4737 in the Ontario stratum, and the desire is to look at the data from a national perspective. Consequently, there was no attempt to ensure that the data accurately reflected the regional

sub-group, merely that a proportional representation was included from that stratum for the national sample.

In order to adjust for non-response, a 55% response rate was chosen based on responses to recent mail-out survey studies of this population (Keenan, 1995; and Wilson, 1999), and an over-sampling was taken to adjust for this. Sample calculations, explained in detail in Appendix D, resulted in a projected sample size of 667. This figure represented approximately 8% of the total active population of the Canadian Dental Hygienists Association, so a random sample of 8% of the active membership of each stratum was selected for inclusion in the survey, resulting in a sample size of 670.

The staff at the Canadian Dental Hygienists Association used a customized software program to generate random mailing labels for 8% of the active members in each stratum. Table 2 presents the active membership in each stratum and the resulting sample size from each cell included in the survey.

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Table 2.

Sample Size for Study Participants from each Regional Stratum

Region	Cell Size	Sample Size
Alberta	1164	93
British Columbia	1350	108
Manitoba & Saskatchewan	468	37
New Brunswick, Newfoundland, Nova Scotia, & Prince Edward Island	667	53
Ontario	4737	379
Totals	8386	670

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Survey implementation. Survey questionnaires were mailed to 668 randomly sampled individuals from the five strata on September 27, 1999. Although 670 labels were generated, only 668 were mailed, as one had an incomplete address and one was known by the researcher and had participated in the pilot test. A pre-addressed stamped envelope was included with each questionnaire, in order to facilitate return of the responses. A follow-up reminder postcard, as found in Appendix E, was sent four weeks following the original mailout to encourage non-responders to complete and forward their response. A style commonly used by dental hygienists was selected in the hope that this would be appealing and would consequently increase response rates. Although a third mailing was planned, this was not implemented as the desired response rate had been achieved by the second mailing.

Data collection. Six questionnaires and four reminder cards were returned as the subjects had moved. Two responses were received too late to be included with the data entry. Three hundred and eighty-five responses were received, for a total response rate of 57.6%. As 367 responses were required by the study to achieve the desired level of significance, this response rate was determined to be satisfactory. Data from 383 questionnaires that had been received within the time frame of this study were entered for data analysis.

Data analysis. Data from 383 completed surveys were entered into the Statistical Package for the Social Sciences (SPSS) software program and analysed using descriptive statistics, including frequencies and measures of central tendency. Descriptive statistics were chosen for this project, as the primary purpose is to describe the characteristics of the population likely to enrol in a distance delivered dental hygiene degree completion program.

## Survey of Post-Diploma Baccalaureate Degree Dental Hygiene Programs

Rubinstein and Brand (1986) surveyed post-certificate dental hygiene programs in the United States. Their survey report guided the investigation conducted for this component of the study.

In order to answer the question about post-diploma baccalaureate degree dental hygiene curriculum content, and to provide sufficient data from which to propose a model for a distance delivered post-diploma baccalaureate degree program for dental hygienists, several categories of information were necessary. These included information about current degree structures and admission requirements, curriculum content, the existence of clinical and specialization components, and current provision for distance delivery of dental hygiene baccalaureate level education available through other institutions. It was necessary for the survey questionnaire to obtain information in each of these categories.

Development of the survey instrument. One of the authors of the Rubinstein and Brand study (1986) was contacted, and a copy of the original survey instrument was obtained, as was permission to modify it for use in this study. The original instrument was modified and was reviewed by one former and two current dental hygiene educators, in order to establish content validity. Feedback was also requested to determine clarity of instructions, readability, and lack of ambiguity. Revisions to the instrument were made as a result of the feedback. A copy of this instrument is included in Appendix F, and a cover letter for the Program Directors of the degree completion programs requesting their participation is included in Appendix G.

Sampling methods. At the time the study was conducted, there were two dental hygiene post-diploma baccalaureate degree programs in Canada, and fifty-five dental

hygiene post-diploma baccalaureate degree programs in the United States. All programs were included in the survey population.

Names of program directors and addresses of U.S. degree completion programs for dental hygienists were obtained from a listing compiled by the American Dental Hygienists Association in March of 1998. Names of program directors and addresses of Canadian degree completion programs for dental hygienists were obtained from the Canadian Dental Hygienists Association in January of 1999.

Survey implementation. Survey questionnaires were mailed to the dental hygiene program directors in May, 1999, requesting return of the completed questionnaires by the end of June. It was important that this survey be completed before the summer break that forms part of the schedule of many schools. It was also important not to wait until September, when most faculty are extremely busy with the new academic year starting up. A pre-addressed envelope for return was enclosed, but these were not stamped as Canadian postage would not be accepted by the U.S. postal service.

Data collection. A total of fifty-seven questionnaires were mailed. Two questionnaires were returned as one program had been revised and was no longer a degree completion, and a second program director indicated that their institution does not offer a dental hygiene degree. Thirty-three questionnaires were returned completed, for a response rate of 57.9%. One questionnaire had been completed with information regarding an associate degree rather than a baccalaureate so was not used. Data analysis is based on thirty-two completed questionnaires.

Data analysis. Data were entered into the SPSS software program. Again, descriptive statistics were chosen as the purpose of this portion of the study was to describe the contents

and characteristics of dental hygiene degree completion programs. Data were analysed using frequencies and measures of central tendency.

### Summary

This chapter has presented a description of the methodology employed in this study. It has described the processes utilized for the development of the two survey instruments used in the study, the methods for determining the sample populations, the processes for implementation of both surveys, the methods for data collection, and the methods for analysis of the data collected through both surveys.

The purpose of the first survey was to obtain a description of the learning preferences of dental hygienists who would enrol in a post-diploma baccalaureate degree program. Survey questionnaires were mailed to a stratified random sample of 668 active members of the Canadian Dental Hygienists Association. Three hundred eighty-three usable questionnaires were returned and entered into the SPSS software program for data analysis.

The purpose of the second survey was to obtain a description of existing dental hygiene post-diploma baccalaureate degree programs in Canada and the United States. Survey questionnaires were mailed to the dental hygiene program directors of 57 programs. Thirty-two usable responses were entered into the SPSS software program for data analysis.

## CHAPTER IV

### RESULTS

The purposes of this study were to identify the challenges dental hygienists face as potential learners for baccalaureate education, to propose a distance delivery model for a post-diploma dental hygiene baccalaureate degree-completion program, and to suggest distance education delivery methods that would be appropriate for delivery of this content. In order to achieve these purposes, two surveys were undertaken.

The first surveyed a national sample of Canadian dental hygienists to identify learning preferences of dental hygienists who would enrol in a post-diploma baccalaureate degree program. Data from completed surveys were entered into the SPSS software program and analysed using descriptive statistics.

The second surveyed existing dental hygiene post-diploma baccalaureate degree programs in Canada and the United States to determine the curriculum content and delivery mechanisms of these programs. Data from these questionnaires were entered into the SPSS software program and analysed using descriptive statistics. This chapter presents the results of both surveys.

This chapter is organized into two sections. The first section presents the results of the national survey of Canadian dental hygienists and their learning preferences for baccalaureate education. This section has been further divided into five sub-sections: a) demographic characteristics; b) interest and intent to enroll; c) motivating factors; d) constraints and barriers; and e) learning needs and preferences. The second section presents the results of the survey of the curriculum contents of dental hygiene post-diploma

baccalaureate degree programs in Canada and the United States, and has been divided into the following sub-sections: a) degree structure and admission; b) curriculum content; c) clinical and specialization components; and d) distance delivery of dental hygiene baccalaureate education.

### Dental Hygienists' Learning Preferences for Baccalaureate Education

A survey questionnaire was developed to determine: demographic characteristics of respondents; interest and intent to enrol in a post-diploma baccalaureate degree program; factors that motivate dental hygienists to seek baccalaureate degree dental hygiene education; factors that may affect participation in baccalaureate degree dental hygiene education; and preferred methods of participation in baccalaureate degree dental hygiene education and access to communication technologies. Survey questionnaires were mailed to a stratified random sample of 668 active members of the Canadian Dental Hygienists Association. Three hundred eighty-three usable questionnaires were returned and entered into the SPSS software program for data analysis.

Demographic Characteristics. A stratified random sample was chosen for this study in order to achieve representation from the various geographic regions of Canada, excluding Quebec. Responses were received from each province included in the sample. The majority of respondents, 51.4%, were from Ontario. Table 3 indicates the frequency and percent of responses from each province of residence. Table 4 indicates the frequency and percent of responses from each of the sampling regions.

Of the 383 respondents, 55.1% were graduates of college-based dental hygiene programs. Forty-one point eight percent were graduates of university-based dental hygiene

Table 3.

Frequency and Percent of Responses from each Province of Residence (n=383)

Province	Frequency	Percent	Cumulative Percent
British Columbia	64	16.7	16.7
Alberta	62	16.2	32.9
Saskatchewan	17	4.4	37.3
Manitoba	10	2.6	39.9
Ontario	197	51.4	91.3
Nova Scotia	18	4.7	96.0
New Brunswick	7	1.8	97.8
Prince Edward Island	3	.8	98.6
Newfoundland	4	1.1	99.7
No Response	1	.3	100.0
Totals	383	100.0	100.0

programs, while 12 individuals did not respond to this question. The current annual cohort of graduating dental hygienists reflects a slightly different distribution from the different educational settings, with approximately 80% of graduates from college-based programs. Table 5 provides the frequency and percent of respondents by type of dental hygiene program for entry to practice.

Respondents reported ages ranging from 20 to 50+ years, with the large majority falling between 25 and 49 years of age. The single largest group, 24%, report ages 30-34 years. Table 6 provides the frequency and percent of respondents by age.

Table 4.

Frequency and Percent of Responses from each Sampling Region (n=383)

Region	Frequency	Percent	Cumulative Percent
Ontario	197	51.4	51.4
British Columbia	64	16.7	68.1
Alberta	62	16.2	84.3
New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island	32	8.4	92.7
Manitoba, Saskatchewan	27	7.0	99.7
No Response	1	0.3	100.0
Total	383	100.0	100.0

Table 5.

Type of Dental Hygiene Program at Entry to Practice (n=383)

Type of Program	Frequency	Percent
College-based dental hygiene program	211	55.1
University-based dental hygiene program	160	41.8
No Response	12	3.1
Totals	383	100.0

A substantial majority of respondents, 72.8%, were married, with smaller proportions reporting other marital statuses as shown in Table 7.

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Table 6.

Frequency and Percent of Respondents by Age (n=383)

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Age	Frequency	Percent
20 – 24 years of age	12	3.2
25 – 29 years of age	69	18.0
30 – 34 years of age	92	24.0
35 – 39 years of age	60	15.7
40 – 44 years of age	77	20.1
45 – 49 years of age	40	10.4
50+ years of age	25	6.5
No Response	8	2.1
Totals	383	100.0

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Table 7.

Marital Status of Respondents (n=383)

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Marital Status	Frequency	Percent
Married	279	72.9
Single/Never Married	64	16.7
Separated/Divorced	29	7.6
Widowed	4	1.0
No Response	7	1.8
Totals	383	100.0

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Two hundred and thirty-six hygienists, or 61.6%, reported having one or more children living at home. Table 8 indicates the frequency and percent of respondents with children living at home.

Table 8.

Frequency and Percent of Respondents with Children Living at Home (n=383)

Number of Children Living at Home	Frequency	Percent
0	138	36.0
1	75	19.6
2	117	30.6
3	38	9.9
4	4	1.0
5	2	.5
No Response	9	2.4
Totals	383	100.0

As financial responsibility for family members may constrain participation in further education, respondents were asked to indicate their status as the primary provider for child dependent(s). Caution should be exercised when interpreting these data, as some written comments suggest the question may have been misinterpreted. For example, one respondent wrote “for care, yes, financially, no” as a comment beside this question, suggesting that this could have been interpreted to refer to provision of care or child care. This possible interpretation was not evident during the pilot test but suggests that greater clarity was

needed with this question. Frequency and percent of responses to the question about the status as primary provider are found in Table 9.

Table 9.

Frequency and Percent of Respondents' Status as Primary Provider for Child Dependents Living at Home (n=383)

Status as Primary Provider	Frequency	Percent
Primary provider	100	26.1
Not primary provider	141	36.8
Not applicable	104	27.2
No response	38	9.9
Totals	383	100.0

More than half of the respondents had completed some academic credit in addition to their basic dental hygiene diploma. Over 25% have two or more years of academic credit in addition to their basic dental hygiene diploma. Table 10 indicates the amount of academic credit earned by respondents in addition to their dental hygiene diploma.

The majority of respondents, 86.4%, indicated that the dental hygiene diploma was the highest level of education credential they had attained. Despite over 25% of respondents having two or more years of additional academic credit, only 13.6% have a credential greater than a diploma. Table 11 shows the frequency and percent distribution of respondents by their highest level of education attained.

Table 10.

Academic Credit Earned in Addition to Dental Hygiene Diploma (n=383)

Amount of Credit Earned	Frequency	Percent
None	178	46.5
Less than one year	35	9.1
One year	55	14.4
More than one year, but less than two years	17	4.4
Two years	30	7.8
More than two years	67	17.5
No response	1	.3
Totals	383	100.0

Table 11.

Highest Level of Education Attained by Respondents (n=383)

Education Level	Frequency	Percent
Dental Hygiene Diploma	331	86.4
Bachelor degree – Dental Hygiene	6	1.6
Bachelor degree - Other	43	11.2
Masters degree – other than dental hygiene	3	0.8
Totals	383	100.0

There were no respondents to this study who had earned a Master’s degree in Dental Hygiene or a doctorate in any discipline.

Nearly half, or 47.5% of the respondents to this survey, have graduated in the previous ten years. Table 12 shows the frequency and percent of respondents by year of graduation from their dental hygiene program for entry into practice.

Table 12.

Year of Graduation From Dental Hygiene Program (n=383)

Year of Graduation	Frequency	Percent	Cumulative Percent
Prior to and including 1964	5	1.3	1.3
1965 – 1969	14	3.7	5.0
1970 – 1974	22	5.7	10.7
1975 – 1979	38	9.9	20.6
1980 – 1984	47	12.3	32.9
1985 – 1989	75	19.6	52.5
1990 – 1994	92	24.0	76.5
1995 - 1999	90	23.5	100.0
Totals	383	100.0	100.0

The majority of respondents, 67.6%, reside in communities with populations of 50,000 or greater. Seventeen point two percent of respondents reside in communities with populations of less than 10,000, and 13.6%, reside in communities with a population between 10,000 and 50,000.

Interest in dental hygiene baccalaureate degree and intent to enrol. One hundred and seventy-two respondents, or 44.9%, answered “yes” to a question that asked “Are you interested in obtaining a baccalaureate degree in dental hygiene?” compared to 49.6%, who responded “no”. Five percent of respondents wrote in “maybe” as a response to this question, and two people did not respond to this question. Table 13 shows the frequency distribution and percent of respondents’ interest in obtaining a baccalaureate degree in dental hygiene.

Table 13.

Interest in Obtaining a Baccalaureate Degree in Dental Hygiene (n=383)

Interest	Frequency	Percent
Yes	172	44.9
No	190	49.6
Maybe	19	5.0
No Response	2	.5
Totals	383	100.0

Eighty-three respondents, or 21.7%, indicated that they were either “very likely to enrol” or “will enrol” in a distance education post-diploma dental hygiene baccalaureate degree program. A large percentage of respondents, at 38.1%, indicated they might “possibly enrol”. Similarly, 38.9% of respondents indicated that they “would not enrol” or were “not likely to enrol”. Table 14 shows the frequency distribution and percent of responses relative to their intent to enrol.

Table 14.

Intent to Enrol in an Accessible (i.e. Distance Education) Dental Hygiene Post-Diploma Baccalaureate Degree Program by Frequency and Percent of Responses (n=383)

Intent to Enrol	Frequency	Percent	Cumulative Percent
Would not enrol	77	20.1	20.1
Not likely to enrol	72	18.8	38.9
Possibly enrol	146	38.1	77.0
Very likely to enrol	57	14.9	91.9
Will enrol	26	6.8	98.7
No Response	5	1.3	100.0
Totals	383	100.0	100.0

Several respondents wrote comments providing additional information for the questions about interest and intent to enrol. Examples of these comments include “not at this time, perhaps in the future” and “I wouldn’t contemplate BSc until my children were much older.” Other comments suggested that respondents may have been interested in pursuing a baccalaureate at a previous time in their career, for example “but may have been interested 15 years ago” and “If I was younger”. Still others indicated that they already have a degree and would be more interested in pursuing graduate studies.

Motivating factors. Several factors may be considered to provide motivation to a dental hygienist to seek a baccalaureate degree. The factors that were most frequently identified to be “very important” by respondents are a desire for increased knowledge (45.2%) and personal satisfaction (44.1%). The factors next most frequently identified as

“very important” are a desired for increased skills (36.0%) and career mobility (25.3%).

Factors such as employer pressure or peer pressure were considered to be “not at all important” by a great majority of respondents (74.2%). Table 15 shows the relative frequencies of responses to a question asking “How important to you are each of the following reasons for seeking bachelor level dental hygiene education?”

Table 15.

Relative Importance of Motivating Factors for Seeking Baccalaureate Level Dental Hygiene Education (n=383)

Motivating Factor*	Not at all important	Not very important	Some-what important	Important	Very Important
Desire increased knowledge	5.5	1.6	15.1	28.7	45.2
Personal satisfaction	8.9	2.6	19.3	21.7	44.1
Desire for increased skills	7.0	2.6	18.0	33.2	36.0
Desire for career mobility	14.9	6.3	27.9	21.9	25.3
Desire for career advancement	17.8	9.4	27.2	21.4	20.4
Job security	29.2	10.7	25.9	14.6	15.4
Status of the degree	26.1	16.7	22.7	17.2	12.8
Gain entrance to grad school	40.2	19.6	19.8	9.4	5.5
Employer pressure	74.2	8.9	7.8	3.7	1.3
Peer pressure	74.2	11.2	6.8	1.8	1.0
Other reason(s)	3.9	0.3	0.3	0.5	1.3

\*Note that row totals will not add up to 100.0% due to non-responses to items, most notably “other reasons”.

Three hundred fifty-nine people (93.7%) did not respond to or add factors to the “other, please specify” portion of this question, perhaps suggesting that the motivating factors identified were considered adequate and comprehensive.

Examples of “other reasons” identified include: “may be necessary in future as professions advance and develop”, “want to do more research”, and “increased income”.

In order to rate the relative importance assigned to each of the motivating factors by respondents, numerical values were assigned to the categories of importance. These ranged from “1” for “not at all important”, “2” for “not very important”, “3” for “somewhat important”, “4” for “important”, to “5” for “very important”. Table 16 illustrates the mean rating of motivating factors. The number of responses to each factor has been included in the table to account to the reader for non-response in each category.

Cross-tabulations were performed to determine how those who intend to enrol perceive different motivating factors. Those who intend to enrol were more likely to perceive personal satisfaction as a “very important reason” for seeking bachelor level dental hygiene education. Those who intend or are very likely to enrol also consider increased knowledge and increased skills as “very important” reasons for seeking bachelor level dental hygiene education. One factor that has been mentioned in previous literature (Waring, 1991) as a reason that dental hygienists would seek bachelor level dental hygiene education, “gain entrance to graduate school”, was not rated as highly by respondents. “Gaining entrance to graduate school” was rated as “somewhat important” by those who were very likely or intended to enroll. Career advancement was considered “important” or “very important” by those more likely to enrol.

Table 16.

Mean Rating of Motivating Factors

Motivating Factor	n=	Mean Score	S.D.
Desire for increased knowledge	368	4.11	1.09
Personal satisfaction	370	3.93	1.26
Desire for increased skills	371	3.91	1.15
Desire for career mobility	369	3.38	1.35
Desire for career advancement	368	3.18	1.37
Job security	367	2.75	1.44
Status of the degree	366	2.73	1.38
Gain entrance to graduate school	362	2.16	1.24
Employer pressure	367	1.43	.90
Peer pressure	364	1.36	.79
Other reasons*	24	2.21	1.72

\*This is based on a small number of responses so is not included in the rank ordering.

Further cross-tabulations were performed to determine if the motivating factors were perceived differently by those who did not have children when compared to those who did have children. Results of these cross-tabulations suggest that there is little difference in the perception of motivators by those with children and those without children, as illustrated in Table 17.

Table 17.

Cross-Tabulation of Relative Importance of Motivating Factors with Children at Home

Motivating Factor	Without Children		With Children	
	n =	Mean Rating of Importance	n =	Mean Rating of Importance
Desire for Increased Knowledge	133	4.20	227	4.05
Personal Satisfaction	133	3.96	230	3.88
Desire for Increased Skills	134	4.08	230	3.82
Desire for Career Mobility	134	3.64	228	3.24
Desire for Career Advancement	134	3.36	226	3.10
Job Security	132	2.96	228	2.66
Status of the degree	131	2.73	228	2.72
Gain entrance to graduate school	128	2.32	227	2.06
Employer pressure	131	1.53	229	1.38
Peer pressure	129	1.43	228	1.33

Note that “Other reasons” have not been included due to the small number of responses.

Perceived constraints or barriers. Factors exist that may be perceived to place constraints on or barriers to a dental hygienist’s ability to participate in university courses or programs for academic credit. The factor that 57.7% of respondents rated as “very important” was “family obligations.” The next factors most likely to be rated as “very important” were “flexibility in scheduling” by 51.2%, “work responsibilities” by 44.6%, “distance from campus” by 39.2%, “time management” by 38.9%, and “childcare concerns” by 37.6%. Three hundred sixty-seven people (95.8%) did not respond to or add factors to the “other, please specify” portion of this question, perhaps suggesting that the constraints or barriers

identified were considered adequate and comprehensive. Table 18 illustrates the relative frequencies of responses to the question “How important are each of the following factors to you in participating in university courses/programs for academic credit?”

Examples of “other” factors identified were “commitment to volunteer organizations (provincial dental hygiene association)”, “health restrictions”, and “internet access for support and instruction”.

In order to rate the relative importance assigned to each of the constraints or barriers perceived by respondents, numerical values were assigned to the categories of importance. These ranged from “1” for “not at all important”, “2” for “not very important”, “3” for “somewhat important”, “4” for “important”, to “5” for “very important”. Table 19 illustrates the mean rating of constraints or barriers. The number of responses to each factor has been included in the table to account to the reader for non-response in each category.

Cross tabulations were performed to determine how the constraints and barriers were perceived by those who intend or are likely to enroll. “Work responsibilities” were considered “very important” by those possibly or intending to enroll, as were “family obligations”. “Restrictive entrance requirements” were likely to be considered “somewhat important” by those considering enrolling. “Flexibility in scheduling” was considered “important” or “very important” by those considering enrolling. “Communication with instructors” was likely to be considered “somewhat important”, “important”, or “very important” by those considering enrolling.

Cross tabulations were further performed to determine if the presence of children in the household influenced the perception of constraints or barriers. While the mean ratings

Table 18.

Relative Importance of Constraints or Barriers to Participating In Courses/Programs for

Academic Credit (n=383)

Constraint/Barrier*	Not at all important	Not very important	Some-what important	Important	Very Important
Family obligations	12.0	5.5	10.2	11.0	57.7
Flexibility in scheduling	4.4	1.0	16.7	23.5	51.2
Work responsibilities	6.8	2.9	19.6	23.2	44.6
Distance from campus	13.6	4.7	23.8	15.4	39.2
Time management	6.3	4.2	22.2	25.5	38.9
Childcare concerns	38.9	5.0	6.5	7.6	37.6
Financial constraints	10.4	4.2	33.2	17.2	32.1
Belief in ability to succeed	17.5	8.6	22.2	18.5	29.0
Length of program	8.1	5.5	31.9	24.3	27.7
Communication with instructors	11.8	5.7	27.2	25.3	26.6
Availability of financial help	14.4	11.0	29.0	18.5	23.8
Transportation concerns	26.6	10.2	23.2	13.1	23.8
Communication with other students	16.4	11.0	31.6	21.9	15.7
Restrictive entrance requirements	20.9	12.8	33.4	14.4	14.4
Other	2.1	.3	.8	.3	.8

\* Note that row totals will not add up to 100.0% due to non-responses to items, most notably "other".

Table 19.

Mean Rating of Constraints or Barriers as Perceived by Respondents

Constraint/Barrier	n=	Mean Score	S.D.
Flexibility in scheduling	371	4.20	1.06
Family obligations	369	4.01	1.44
Work responsibilities	372	3.99	1.19
Time management	372	3.89	1.17
Distance from campus	370	3.64	1.41
Length of program	373	3.60	1.19
Financial constraints	372	3.58	1.28
Communication with instructors	370	3.51	1.29
Belief in ability to succeed	367	3.34	1.45
Availability of financial help	370	3.27	1.35
Communication with other students	370	3.09	1.29
Childcare concerns	366	3.00	1.83
Transportation concerns	371	2.97	1.53
Restrictive entrance requirements	367	2.88	1.32
Other*	16	2.38	1.63

\*This is based on a small number of responses so is not included in the rank ordering.

of importance of the factors “Family Obligations” and “Childcare Concerns” were higher for those with children than for those without children, Table 20 suggests that there is little difference in the perception of other barriers by these two groups.

Table 20.

Cross-Tabulation of Relative Importance of Constraints and Barriers with Children at Home

Constraints or Barriers	Without Children		With Children	
	n =	Mean Rating of Importance	n =	Mean Rating of Importance
Flexibility in Scheduling	135	4.05	229	4.31
Work Responsibilities	134	3.92	230	4.01
Family Obligations	133	3.02	229	4.60
Time Management	134	3.87	231	3.91
Financial Constraints	134	3.62	231	3.56
Communication with Instructors	134	3.63	228	3.43
Distance from Campus	133	3.44	229	3.76
Length of Program	135	3.44	230	3.70
Availability of Financial Help	134	3.73	229	3.21
Belief in Ability to Succeed	133	3.32	227	3.36
Childcare Concerns	131	1.53	228	3.88
Communication with Other Students	134	3.28	229	2.99
Transportation Concerns	133	2.90	230	3.02
Restrictive Entrance Requirements	131	2.68	229	3.00

Note that “Other reasons” have not been included due to the small number of responses.

The mean ratings of perceived constraints and barriers are higher than the mean ratings of motivating factors, suggesting that their inhibiting influence may outweigh the influence of motivating factors.

Learning needs and preferences. Learning needs and preferences were investigated as they will play an important role in the development of the post-diploma baccalaureate degree completion model. Distance from educational institutions, preferred modes of course delivery, and access to and comfort with information technology suitable for educational purposes were investigated.

The majority of respondents (82.0%) live within 100 kilometres of a college or university that offers university level credit courses. A high percentage (43.9%) also report living within 100 kilometres of an existing dental hygiene degree completion program, but these data must be viewed with some caution. Just prior to the data collection period, a Bachelor of Science degree with a specialization in dental hygiene had been approved at the University of Alberta. Shortly afterward, the approval was rescinded. However, some Alberta respondents indicated that they lived within 100 kilometres of an existing degree completion program although such a program had not been approved or implemented at the time of data collection.

In response to a question that asked “How many hours per week would you be willing to devote to coursework and study?”, respondents were evenly split between “0-5 hours” and “6-10 hours”, at 41.8% each. Ten point seven percent of respondents were willing to spend 11-20 hours, with 1.6% percent willing to spend greater than 20 hours.

Study participants were asked to select a “yes” or “no” response to the question “Which of the following ways would you be willing to take courses toward a dental hygiene degree?” Preferred methods of study, as indicated by a “yes” response, were correspondence (71.0%), computer-based communication/Internet (70.0%), evening or weekend classes in the home community (66.8%), or correspondence plus telephone conferencing (59.9%). The

least preferred methods of study were weekend classes in a distant community (13.2%) and full-time study (7.4%). Table 21 presents the respondents' preferred methods of study.

Table 21.

Frequency of Responses to Preferred Methods of Study

Method of Study	% Yes	% No	% No Response
Correspondence study	71.0	20.1	8.9
Computer-based communication/Internet	70.0	20.1	9.9
Evening/weekend class in home community	66.8	23.5	9.7
Correspondence study plus telephone	59.8	27.9	12.3
Weekend class in a distant community	13.3	72.1	14.6
Full-time study	7.3	79.6	13.1

Cross-tabulations were performed to determine the preferred methods of study of those likely to enrol. Those more likely to enrol were willing to spend a higher number of hours studying. Those more likely to enrol preferred computer communication/Internet, correspondence study, correspondence study plus telephone conferencing, and evening/weekend classes in their home community. Those more likely to enrol were not willing to take courses by full-time study or by weekend classes in a distance community. Table 22 presents the learning preferences for those indicating they were most likely to enrol. The total number of people who responded “yes” to the preferred method question is included in each row, to enable the reader to develop a clearer picture of the learning preferences expressed by this group.

Table 22.

Learning Preferences for Those Most Likely to Enrol

Preferred Learning Method	n=Yes	Possibly Enrol	Very Likely to Enrol	Will Enrol
Correspondence study	272	122	50	26
Computer communication/Internet	268	120	52	22
Evening/weekend class home community	255	109	42	23
Correspondence plus phone conferencing	229	105	42	22
Weekend class in a distant community	51	24	10	5
Full time study	28	8	7	1

Access to media suitable for educational purposes was investigated to help select modes of delivery for a proposed post-diploma baccalaureate degree model. The majority of respondents had access to cable television (84.2%), a videocassette recorder (93.9%), a facsimile machine (66.0%), a computer at home (74.1%), and a computer at work (54.6%). A majority of dental hygienist respondents self-report that they feel comfortable using the computer (63.9%). A majority of respondents have Internet access at home (59.1%) and similarly 55.2% report having e-mail at home. The majority of respondents (57.5%) self-report that they are comfortable using e-mail. Table 23 presents respondents' access to media suitable for educational purposes.

A number of comments were added near the questions about internet access and email suggesting that respondents were considering acquiring this in the near future. Examples of such comments include “but will have soon” and “but soon to have”. Another

Table 23.

Access to Media Suitable for Educational Purposes

Medium	% Yes	% No	% No Response
Video cassette recorder	93.7	2.9	3.4
Cable television	84.1	13.1	2.9
Computer at home	74.2	19.3	6.5
Fax machine	66.1	26.4	7.6
Internet at home	59.3	38.1	2.6
E-mail at home	55.1	42.0	2.9
Computer at work	54.6	33.9	11.5
Internet at work	16.4	80.2	3.4
E-mail at work	11.2	85.6	96.9

respondent indicated that access to both was available at the local library, yet another indicated that all were possibilities if the need existed.

While access to communication technology is an important factor to consider, discomfort with its use may place an additional constraint on the learner. In order to determine whether potential candidates for a distance delivered dental hygiene degree completion program would have difficulties, questions were asked about comfort using computers and e-mail. The majority of respondents reported comfort using both computers and e-mail. Table 24 presents the respondents' self-reported comfort with the use of computers and e-mail.

Table 24.

Frequency of Self-Reported Comfort with Use of Communication Technology

Comfort with Technology	% Yes	% No	% No Response
Computer*	63.7	29.5	4.4
E-mail**	57.7	37.1	4.2

\*Note that the row total will not add up to 100.0% as a number of respondents (4.4%) wrote “somewhat” in response the question.

\*\* Note that the row total will not add up to 100.0% as several respondents (1.0%) wrote “somewhat” in response to the question.

Cross-tabulations were performed on the learning preference variables with the variable “intent to enroll”. Those that are more likely to enroll are also more likely to have a computer in the home and to be comfortable using it. They are also more likely to be comfortable using e-mail.

Post-Diploma Dental Hygiene Bacallaureate Degree Programs

The purpose of this survey was to determine the curriculum content and structure of existing post-diploma dental hygiene bacallaureate degree completion programs. A 1986 study of post-certificate dental hygiene programs in the United States by Rubinstein and Brand formed the framework of this survey. Fifty-seven surveys were mailed to dental hygiene degree completion programs in Canada and the United States. Thirty-two usable responses were entered into SPSS and analysed using descriptive statistics. This survey obtained content that described the structure of the degree and entrance requirements, curriculum content, clinical and specialization components, and future plans of the institution to deliver this content via distance methods. The results are presented in the following

sections: a) degree structure and admission; b) curriculum content; c) clinical and specialization components; and d) distance education offerings.

Degree structure and admission. The most frequently granted type of degree from the responding institutions was the Bachelor of Science in Dental Hygiene (B.Sc.D.H.), granted by 68.8% of these institutions. Other degree types granted by at least two of the responding institutions included the Bachelor of Science, the Bachelor of Science in Health Science, and the Bachelor of General Studies. Still other degree types included the Bachelor of Science in Dental Health Education, Bachelor of Applied Science in Dental Hygiene, Bachelor of Science in Dentistry (Dental Hygiene), and the Bachelor of Dental Science. One institutional respondent noted that the diploma in dental hygiene articulated with many degree types at their institution.

The number of semester hour credits required for the degree ranged from 120 credits to 132 credits, with the most common response being 120 credit hours, reported by 34.4% of respondents. The mean response was 124 semester credit hours. The majority of responding institutions, 84.4%, had a residency requirement, or required that a portion of the credits be earned at the degree-granting institution. The requirement periods varied from 15 semester credit hours to 45 semester credit hours, with a mode of 30 credits reported by 62.5% of responding institutions, and a mean of 30.5 semester hour credits.

Institutions varied in the amount of credit they permitted to be transferred from the associate/certificate program. Some institutions divided this among dental hygiene credits and general credits, other institutions transferred this as a combined block and reported this as a combined figure. The range was from a low of 30 semester credit hours to a high of 90 semester credit hours, with a mean of 59.4 and the mode being 60 semester credit hours. One

institution reported that the number of credits accepted for transfer was higher for graduates of programs with an articulation agreement. Transfer credit for general credits varied from a low of 12 semester hour credits to a high of 64 semester hour credits. Some institutions did not report this number separately, as they had included this within their reported number for a block transfer of credits including both dental hygiene and general credits.

The number of full-time students accepted for admission varied from a low of one to a high of 46. The mean number of students admitted was 10, and the median was four. The mode was two, at 15.6%. Some institutions reported that this figure could vary from year to year, depending on the number of qualified applicants. The number of part-time students accepted for admission varied from a low of two to a high of 15. The mean was five, the median three, and the mode two, at 21.9%. Again, reporting institutions noted that this figure could vary from year to year. Only three institutions reported accepting distance students for admission into a degree completion program. The numbers of distance students admitted were three, five, and 15 at these institutions. The institution admitting 15 students reported admitting 15 at each site, although it was not reported how many sites were involved.

The majority of institutions (81.3%) reported having admission requirements. These included a minimum grade point average (81.3%), the National Board Examination (53.1%), a letter or letters of recommendation (31.3%), state or regional board examinations (25.0%), and clinical practice experience (9.4%). Other admission requirements included graduation from an accredited dental hygiene program (12.5%), an associate of applied science in dental hygiene (6.3%), an interview (6.3%), a personal statement, and a prerequisite year. Twenty-two of the reporting institutions required two or more criteria for admission.

Curriculum content. The majority of responding institutions (87.5%) indicated that they offer courses in the discipline of dental hygiene in their post-certificate program. The survey questionnaire presented a list of choices, and respondents were asked to indicate if the courses were “Required”, “Elective”, or “Not Offered”. Research Methods was the most frequently required course, followed by Fieldwork/Internships, Trends & Issues in Dental Hygiene, and Periodontics. Table 25 presents dental hygiene courses included in the survey questionnaire, and indicates the frequencies of those that are required courses, elective courses, or not offered at the responding institution.

The questionnaire included a category for “Other” courses, asking respondents to specify other courses that may not have been included in the course listings. Other dental hygiene courses indicated by respondents included forensic dentistry, oral medicine, geriatric dentistry, paedodontics, oral microbiology and immunology, dental epidemiology, oral pathology, teaching experience, and periodontal clinic courses.

Responding dental hygiene institutions were asked to indicate if choices from a list of non-dental hygiene courses were “Required” or “Not Required” for the dental hygiene degree completion program. Some respondents commented that certain courses were usually transferred in with the diploma or associate degree, and indicated these as required. As the questionnaire did not ask for this information, and others did not have an opportunity to address it, these have been included in the non-response category. Table 26 presents the frequency with which respondents indicated that listed non-dental hygiene courses were required or not required.

Table 25.

Dental Hygiene Courses Offered in Post-Diploma Baccalaureate Degree Curriculum (n=32)

Course Name	% Required	% Elective	Not Offered	No Response
Research methods	75.0	6.3	6.3	12.5
Field work/internship*	53.1	34.4	6.3	6.3
Periodontics	50.0	18.8	15.6	15.6
Trends & issues in dental hygiene	50.0	12.5	25.0	12.5
Research projects	46.9	31.3	6.3	15.6
Principles of education*	40.6	34.4	12.5	12.5
Management/administration*	21.9	46.9	12.5	18.8
Public health*	21.9	40.7	18.8	18.8
Independent study	18.8	59.4	6.3	15.6
Local anesthetic - didactic	18.8	25.0	34.4	21.9
Practical experience*	18.8	21.9	21.9	37.5
Radiology	18.8	15.6	37.5	28.1
Hospital dental hygiene*	6.3	46.9	21.9	25.0
Entrepreneurship*	6.3	25.0	46.9	21.9
Local anesthetic - clinical	6.3	12.5	59.4	21.9
Restorative functions	3.1	12.5	53.1	31.3

\*These courses could be required if part of a chosen specialization track.

Table 26.

Non-Dental Hygiene Courses Required in Post-Diploma Baccalaureate Degree Curriculum

Course	% Required	% Not Required	No Response
Math	68.8	9.4	21.9
English	65.6	3.1	31.2
Speech or communication	65.6	9.4	15.6
Humanities, junior credits	62.5	9.4	28.2
Microbiology	62.5	9.4	28.2
Chemistry	59.4	6.3	34.4
Social sciences, junior credits	59.4	9.4	31.2
Anatomy & physiology	56.3	6.3	37.6
Nutrition	56.3	9.4	34.4
General electives, junior credits	50.0	12.5	37.5
Statistics	46.9	21.9	31.3
Psychology, junior credits	46.9	21.9	31.3
General electives, senior credits	40.6	15.6	43.8
Sociology, junior credits	40.6	21.9	37.5
Humanities, senior credits	37.5	25.0	37.5
Social sciences, senior credits	28.1	28.1	43.8
Biology	25.0	31.3	43.7
Psychology, senior credits	18.8	40.6	40.6
Sociology, senior credits	9.4	46.9	43.7
Physics	0	56.3	43.8

Other non-dental hygiene courses indicated by respondents included research design, a Capstone course, a senior writing course, history, composition, literature, a foreign language, interactive communication, allied health administration, survey of economics, health care finance, management information systems, and computers.

Some confusion may have arisen with the use of the term “junior credits”. In the Canadian education system, this term is most often used to refer to first and second year courses. In the U.S. education system, this can refer to third year courses. Two of the respondents commented on the potential for confusion with the use of this term. Caution must be used when examining the responses to questions using this term, as it is not clear which interpretation was used by the respondents. Another note is that many questionnaires were completed with the “R” for Required opposite the course name and other choices left blank. As these were not marked “N” for Not Required as indicated in the instructions, they were included in the non-response category. However, it could be suggested that the response areas were left blank because they were not required courses.

Clinical and specialization components. Nearly half of the responding programs, 46.9%, offered a specialization component. These specialization components varied in length from 5 to 40 semester credit hours, with a mean of 15.5, a median of 11.0 and a mode of 9.0 semester credit hours.

Twenty-two of the responding institutions, 68.8%, indicated that they do not evaluate clinical competency. Of the seven that do, faculty assessment was the most common method of performing this. One program added a comment that they also used portfolio assessment as a mechanism for clinical assessment. Table 27 indicates the frequency of responses for each of the various methods used to evaluate clinical competency.

Table 27.

Frequency of Methods Used to Evaluate Clinical Competency

Evaluation Method	Used	Not Used	No Response
Faculty assessment	25.0	0	75.0
Licensure	15.6	6.3	78.1
Self assessment	12.5	3.1	84.4
Challenge exam, written	9.4	6.3	84.4
Challenge exam, clinical	9.4	6.3	84.4
Peer assessment	0	12.5	87.5

Seventy-five percent of the responding institutions indicated that their students are not required to provide traditional clinical dental hygiene services to patients in a clinical setting. Three programs indicated that clinical services would be provided if such a specialization was chosen, and one program indicated that this was an option for the students.

Distance education offerings. Seven of the responding institutions, 21.9%, indicated that they offered some dental hygiene courses via distance education. One program indicated that all courses were offered this way, and others listed examples of courses available. One course that was frequently noted was research, others included oral pathology, clinical issues, and dental hygiene issues.

Thirty-seven point five percent of responding institutions indicate that they offer non-dental hygiene courses at a distance, while 56.3% indicate that they don't. Examples of general courses offered via distance education include statistics and business courses, while some institutions indicated that all of their general courses were available at a distance.

Respondents were questioned about their institution’s current and future plans to offer all or part of their program via distance education methods. Table 28 presents the frequency of responses regarding current and future plans to offer dental hygiene degree level courses using distance education delivery methods.

Table 28.

Institutional Plans to Offer Dental Hygiene Education by Distance Delivery Methods

Institution’s Plans	Frequency	Percent	Cumulative Percent
Not at this time	10	31.3	31.3
Planning to do so in the future	8	25.0	93.8
Have some courses in development	6	18.8	50.0
Eventually offer all program via distance	6	18.8	68.8
No Response	2	6.2	100.0
Totals	32	100.0	100.0

Summary

The purpose of this study was to identify the challenges dental hygienists face as potential learners for baccalaureate education, and to propose a distance delivery model for a post-diploma dental hygiene baccalaureate degree-completion program. This chapter has presented the results of two surveys. The first survey identified learning preferences of dental hygienists that would enrol in a post-diploma baccalaureate degree-completion program, the second survey identified characteristics of existing dental hygiene degree completion programs in Canada and the United States. The findings of these two surveys can provide the

basis for a proposal for a post-diploma dental hygiene baccalaureate degree model for distance delivery.

## CHAPTER V

### A DISTANCE DELIVERY DENTAL HYGIENE MODEL

Dental hygienists in Canada have limited access to opportunities for baccalaureate education. As practicing professionals with work, and in many cases family, responsibilities, they face many barriers to achieving baccalaureate education. A distance delivery model for post-diploma baccalaureate dental hygiene education may reduce the effect of constraints and barriers for dental hygienists. To define the parameters for such a model, a survey of dental hygienists' learning preferences and a survey of the components of existing dental hygiene post-diploma degree programs were conducted. Results of these two surveys have been presented in Chapter IV.

A survey of a stratified random sample of members of the Canadian Dental Hygienists Association was conducted, with 383 usable responses and a response rate of 57.6%. This survey found that nearly half of the responding dental hygienists (44.9%) are interested in obtaining a baccalaureate degree in dental hygiene. Their main reasons for seeking a baccalaureate degree are a desire for increased knowledge and personal satisfaction. The main constraints are perceived to be a need for flexibility in scheduling and family obligations. The mean ratings for constraints exceeded the mean ratings for motivators, suggesting that these may play a stronger role in affecting dental hygienists' decisions to pursue post-diploma baccalaureate degree education. In this survey dental hygienists identified that their preferred methods of study for obtaining baccalaureate education were correspondence study, computer communication/Internet, and evening or weekend classes in their home community. These findings suggest a need for a combination

of delivery options, including distance delivery methods and transfer of credit from accredited local institutions.

A further survey of post-diploma baccalaureate degree programs for dental hygienists in Canada and the United States identified common characteristics of these programs, including admission and residency requirements, curriculum contents, specialization and clinical components, and limited distance education offerings.

The findings of these two surveys provide the foundation for a Distance Delivery Dental Hygiene Model for post-diploma baccalaureate degree education (DDDH Model). The DDDH Model is described below and is graphically depicted in Figure 1.

#### Dental Hygiene Diploma

The point of entry into the post-diploma baccalaureate degree program would be upon graduation from an accredited dental hygiene diploma program. The survey of existing post-diploma dental hygiene degree programs found the number of semester credit hours required for awarding the degree credential ranged from 120 semester credit hours to 132 semester credit hours, with 34.4% reporting the mode of 120 semester credit hours. The survey further found that transfer credit from diploma/associate degree programs ranged from a low of 30 semester credit hours (one program) to a high of 90 semester credit hours, with a mean of 59.4 semester credit hours and a mode of 60 semester credit hours. The proposed DDDH Model recommends a minimum of 60 semester credit hours be granted upon admission for completion of dental hygiene diploma requirements.

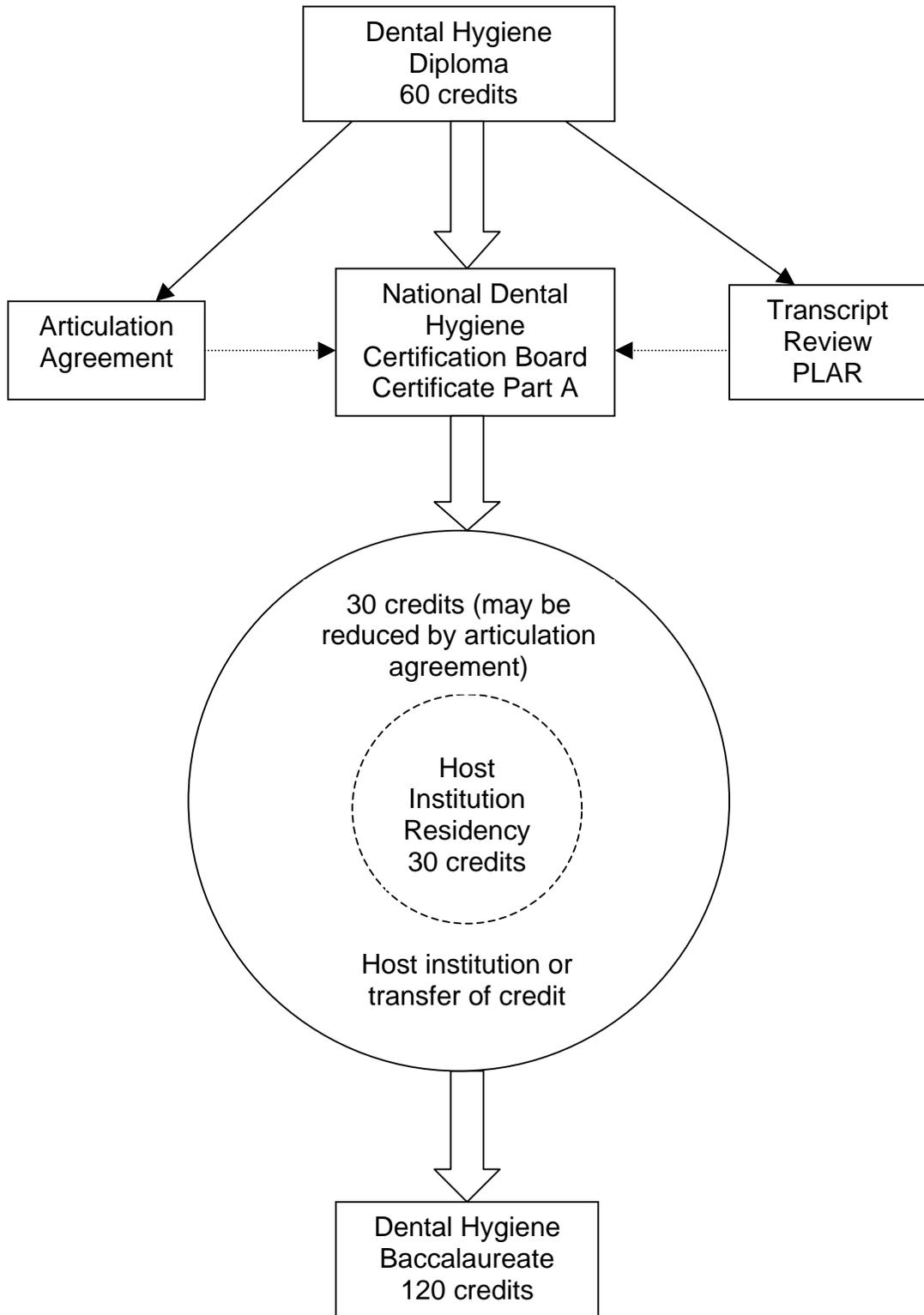


Figure 1. A Distance Delivery Dental Hygiene Model for a Post-Diploma Baccalaureate Degree (DDDH Model)

The majority of institutions report having admission requirements, including National Dental Hygiene Board examinations, minimum grade point averages, and letters of recommendation. The proposed DDDH Model recommends that one of the admission requirements be that candidates hold the National Dental Hygiene Certification Board Certificate Part A, as evidence of meeting the requirements for National Certification in Canada. Admission requirements for minimum grade point averages should be consistent with admission requirement policies established by the host institution.

#### Articulation Agreement/Transcript Review

The DDDH Model recommends that program candidates be eligible for admission via one of two streams – articulation agreement or transcript review/prior learning assessment and recognition (PLAR).

The survey of existing dental hygiene degree completion programs found evidence that suggested the number of semester credits accepted for transfer was higher for graduates of diploma/associate degree programs with an articulation agreement. Many dental hygiene diploma programs in Canada have pre-professional requirements, in addition to longer programs of study than found in traditional diploma programs. This suggests a need to establish articulation agreements that carefully consider course content in order to ensure that the length and scope of the program of study is consistent with the baccalaureate credential. The DDDH Model recommends an admission stream via an articulation agreement between the baccalaureate degree host institution and individual dental hygiene diploma programs of study.

For graduates of programs without articulation agreements, the alternate stream proposed by the DDDH Model is a process of transcript review to assist candidates in planning their program of study. This would include a process of prior learning assessment and recognition (PLAR), particularly for those candidates with extensive work and life experience that may render some curriculum content redundant. The DDDH Model recommends an alternate stream of transcript review, accompanied by PLAR as suitable for individual cases.

### Host Institution Residency

The survey of existing post-diploma dental hygiene degree programs found that most responding institutions (84.4%) had residency requirements, or require that the credits actually be earned from the host institution, with a mode of 30 semester credit hours and a mean of 30.5 semester credit hours. The proposed DDDH Model also recommends a residency of 30 semester credit hours, but does not stipulate specific courses in order to provide maximum flexibility to meet identified student needs for access. It is recommended that the core component of the DDDH Model for distance delivery of post-diploma baccalaureate degree dental hygiene education be a residency requirement at the host institution of 30 semester credit hours.

### Curriculum Content

The survey of existing post-diploma dental hygiene degree completion programs of study found that curriculum content included both dental hygiene and liberal studies courses. The most frequent dental hygiene courses required included research methods, field

work/internships, periodontics, and trends and issues in dental hygiene. The most frequent non-dental hygiene courses required included math, english, speech or communication, humanities and microbiology. The DDDH Model curriculum should include a blend of upper level dental hygiene courses and liberal studies.

Nearly half of the post-diploma dental hygiene degree programs surveyed offered a specialization component, varying in length from 5 to 40 semester credit hours, with a mean of 15.5, a median of 11.0, and a mode of 9.0 semester credit hours. The DDDH Model should be able to accommodate fieldwork and internships that could be developed for specialization tracks. Specialization components are recommended to be at least 9 semester credit hours in length.

Seventy-five percent of the responding institutions do not require their students to provide traditional clinical dental hygiene services to clients in a clinical setting. Over two-thirds (68.8%) do not evaluate clinical competency. Of those that do, faculty assessment was the most common method of evaluation. The survey of dental hygienists' learning preferences found that the third highest ranked motivating factor, as evidenced by the mean rankings, was a desire for increased skill. As dental hygiene practice involves delivery of specialized clinical skills, a DDDH Model for baccalaureate dental hygiene education should include provision for development of advanced clinical skills for specific candidates who so desire. This poses some problems for a distance delivered program but other health professions, most notably nursing, have addressed this by developing collaborative arrangements with community agencies and health facilities for practicum components to be delivered at their sites. A clinical component should not be required in this DDDH Model, although provision should be made to accept transfer credit for advanced clinical dental

hygiene credits from other institutions and for fieldwork/internships to be located in approved community and health facility sites.

This study did not obtain a sufficient level of detail to determine the balance between professional and liberal studies offered by existing post-diploma programs. While the AADS Report of the Task Force on Dental Hygiene Education (1992) suggests as a guideline that the professional content of a Bachelor of Science Dental Hygiene curriculum consist of 50-75% of course credits, they do not have any specific guidelines for a post-diploma degree completion program of study.

The DDDH Model recommends a flexible program with a core requirement of a host institution residency or requirement that 30 semester hour credits be earned from the host institution, with a further 30 semester hour credits to be earned from a variety of sources including: the host institution, recognition of additional credit specified in articulation agreements, PLAR, and transfer of credits earned at other institutions. This can provide the opportunity for students to select specialization and clinical components to meet career needs. The maximum flexibility incorporated into the DDDH Model is designed to suit the needs of adult learners.

### Delivery Mechanisms

The survey of dental hygienists' learning preferences found that the majority of respondents live within 100 kilometres of a college or university offering university level credit courses, and many live within 100 kilometres of an existing dental hygiene degree completion program. Despite the proximity, they indicated that they did not wish to pursue full-time study, nor did they wish to attend weekend classes in a distant community. The

preferred methods of study were correspondence, computer-based communication/Internet, evening/weekend classes in their home community, and correspondence study plus telephone conferencing. They were willing to spend at least 6-10 hours per week on their studies.

Respondents indicating that they would enrol in a distance delivered degree completion program have access to media suitable for educational purposes, including videocassette recorders, cable television, computers at home, and Internet and email access at home. They report comfort using the computer and email.

This evidence suggests that this population would benefit from access to a distance delivered model of educational delivery. However, existing dental hygiene degree completion models in Canada and the United States are delivered primarily in a face to face mode, with the main concession to flexibility being part-time enrolment. Few of the responding institutions (21.9%) indicated that they offered some dental hygiene courses via distance education, with the most common course offering being research methods. Only one program was entirely available via distance methods.

The primary entry to practice model for dental hygiene education in Canada is the diploma, and the majority of diploma graduates come from college-based rather than university-based programs. This suggests that an appropriate model for a distance delivered baccalaureate degree for Canadian dental hygienists would be a post-diploma baccalaureate degree completion program. A modification of Taub and Levy's curriculum classification Type D (1983) suggests a suitable approach. This describes two years of liberal arts, dental hygiene education, and advanced clinical dental hygiene following upon two years of basic dental hygiene.

Preferred learning methods reported by this group include correspondence study, computer-based communication/Internet, evening or weekend classes in the home community, and correspondence study plus telephone conferencing. All of these preferred learning methods can be addressed by current distance education delivery methods. As this group did not wish weekend classes in a distant community, this does not appear in the proposed DDDH Model.

The proposed DDDH Model for a post-diploma baccalaureate dental hygiene degree must be entirely available by methods that include correspondence study, computer communication/Internet, evening or weekend classes in the home community, and/or correspondence study plus telephone conferencing. Learning materials can include print-based materials, video-cassettes, television programs accessible by cable, and resources accessed via the Internet. The use of e-mail and computer mediated conferencing can address student preferences for contact with instructors and other students. It is recommended that the baccalaureate dental hygiene program, consisting of a core residency requirement of 30 semester hour credits, supplemented by 30 semester hour credits obtained via methods determined by student need, be entirely accessible by the distance delivery methods outlined above.

#### Sample Distance Delivery Curriculum

The curriculum for this DDDH Model should include a blend of upper level dental hygiene and liberal studies courses, plus the opportunity for specialization. Because it is the intent of this DDDH Model to increase accessibility of educational opportunities, it must be entirely available by distance delivery methods. Consequently the sample curriculum has

been selected from courses that are already in existence at accredited Canadian post-secondary institutions (Athabasca University Calendar, 1999-2000; University of British Columbia Continuing Studies Credit Courses, 1999). These courses could be delivered in their current form or with modifications to change the course emphasis from one health profession (nursing) to another (dental hygiene). This curriculum is designed to be consistent with the findings of the survey of the curriculum content of post-diploma dental hygiene degree programs. To be consistent with the CDHA's Framework for Dental Hygiene Education in Canada (1998) and its focus on wellness, the sample curriculum content reflects a strong health promotion approach. This sample curriculum is found in Table 29.

This sample curriculum can meet the identified needs of dental hygienists for distance delivery methods, program specialization opportunities, and a balance between professional and liberal studies. Advanced dental hygiene clinical studies can fulfil fieldwork/internship or elective requirements.

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Table 29.

Sample Curriculum for a Proposed Distance Delivery Model for Post-Diploma Dental Hygiene Baccalaureate Degree Education.

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Curriculum Area	Proposed Courses
Dental hygiene required courses	<ul style="list-style-type: none"> <li>• Understanding Research in Dental Hygiene</li> <li>• Theoretical Concepts in Dental Hygiene Practice</li> <li>• Fieldwork/Internship</li> <li>• Health Promotion: Assessment of the Individual</li> </ul>

Curriculum Area	Proposed Course
Dental hygiene required courses (cont.)	<ul style="list-style-type: none"> <li>• One of:               <ul style="list-style-type: none"> <li>• Periodontal focus</li> <li>• Health Promotion: Assessment of the Family</li> </ul> </li> <li>• One of:               <ul style="list-style-type: none"> <li>• Oral Pathology</li> <li>• Senior Focus Study</li> <li>• Entrepreneurship for Dental Hygienists</li> </ul> </li> <li>• Trends and Issues in Dental Hygiene</li> <li>• Informatics</li> <li>• Principles of Teaching and Learning for Health Professionals</li> </ul>
Non-Dental Hygiene Required Courses	<ul style="list-style-type: none"> <li>• Introduction to Statistics</li> <li>• Introduction to Child Development</li> <li>• Sociology of the Family</li> <li>• Introduction to Cultural Anthropology</li> <li>• And four of the following:               <ul style="list-style-type: none"> <li>• Psychology of Adult Development</li> <li>• Professional Ethics</li> <li>• Medical Anthropology</li> <li>• Economics of Health Care</li> <li>• Contemporary Native Health Issues: Health and Healing</li> </ul> </li> </ul>

Curriculum Area	Proposed Course
Non-Dental Hygiene Required Courses (cont.)	<ul style="list-style-type: none"> <li>• continued from previous list for selection of four courses:</li> <li>• Learning</li> <li>• Aging and You: Introduction to Gerontology I</li> <li>• Aging and You: Introduction to Gerontology II</li> <li>• Issues in Women’s Health</li> <li>• Community Health Planning</li> <li>• Organization of the Canadian Health System</li> </ul>
Electives	<ul style="list-style-type: none"> <li>• One senior level Humanities course</li> <li>• One senior level Science or Social Science course</li> <li>• Two open options (1 junior and 1 senior or 2 senior)</li> </ul>
Future Development	<ul style="list-style-type: none"> <li>• Health Promotion: Assessment of the Community</li> <li>• Management &amp; Administration in Dental Hygiene</li> </ul>

Baccalaureate Degree Credential

The survey of existing post-diploma degree completion programs found that the main credential granted by these programs is a Bachelor of Science in Dental Hygiene, with other types being Bachelor degrees in Health Science, Health Education, or Dental Science. To recognize the professional nature of the degree, and acknowledge the specialized diploma level studies at the point of entry into the baccalaureate program, it is suggested that the credential awarded by the host institution be a professional credential. It is recommended that

the baccalaureate program culminate with the awarding of a Bachelor of Dental Hygiene credential.

#### Program Specifications for the DDDH Model

Based on the findings of this study, a DDDH Model for post-diploma baccalaureate degree completion dental hygiene education should: be 120 semester credit hours in total, accepting a minimum of 60 semester credit hours transfer credit for the dental hygiene diploma, possibly more with an articulation agreement that acknowledges the scope of the diploma program content. Admission streams should be via articulation agreements or transcript review with the potential for PLAR. Admission requirements should include the National Dental Hygiene Certification Board Certificate Part A and graduation from an accredited dental hygiene diploma program. There should be a residency requirement of approximately 30 semester credit hours to be completed with the host institution, plus a requirement for an additional 30 semester hour credits to be earned by methods that meet student needs for access and flexibility. Courses must be available by correspondence and computer-based delivery methods, including the Internet. There should be provision for transfer of credit from local universities and colleges, including advanced clinical studies at other locations. Candidates that successfully complete program requirements should be awarded a Bachelor of Dental Hygiene degree. Program specifications for the proposed DDDH Model must address articulation agreements, a balance between dental hygiene and liberal studies courses, a residency requirement, and specify distance delivery methods appropriate for this population. Recommended program specifications can be found in Table 30.

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Table 30.

Program Specifications for a Proposed Distance Delivery Model for Post-Diploma Dental Hygiene Baccalaureate Degree Completion Education

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Issue	Specification
Articulation	Articulation agreements may reduce the number of credits required for the degree completion by acknowledging the scope of the diploma program of study, and should reduce administrative barriers to admission.
Distance delivery	All required courses must be available by distance delivery methods, specifically correspondence and/or computer-based communication/Internet.
Residency	A residency requirement of 30 credits to be completed at the host institution is recommended.
Curriculum	A balance between professional education, specifically upper level dental hygiene courses, and liberal studies must be maintained.
Specialization	The curriculum must provide for specialization, in order that students can pursue areas of interest and graduates can achieve career mobility.
Transfer credit	Provision to accept transfer credit must be part of the program, to provide students the opportunity to obtain educational credits in their home community, and credit for other courses that may not be available at the host institution.

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## Summary

It is argued that this DDDH Model for post-diploma baccalaureate degree dental hygiene education for distance delivery, as depicted in Figure 1, can meet identified dental hygiene educational needs for increased access and flexibility. It can permit students to remain with their families in their home communities, while enabling them to pursue the increased knowledge and personal satisfaction that they seek. Distance education delivery methods can be matched to dental hygienists' preferred methods of learning. By meeting the need for increased knowledge, it can prepare graduates for the increasingly complex health care needs of clients and the changing health care delivery system, while contributing to the development of dental hygiene as a profession. The sample curriculum illustrated in Table 29, derived from currently available distance delivery courses, albeit some with modifications, demonstrates that implementation of the proposed DDDH Model is achievable.

## CHAPTER VI

### CONCLUSIONS AND RECOMMENDATIONS

Dental hygiene practice is grappling with change as it adapts to the rapidly evolving health care delivery system, and dental hygiene education must respond to the changing needs of its graduates. Dental hygienists and the Canadian Dental Hygienists Association see a need for increasing access to baccalaureate degree dental hygiene education in Canada. Changes in student demographics require flexibility in curriculum delivery. A post-diploma baccalaureate degree program for dental hygienists that is available by distance delivery methods is one mechanism by which to increase access to post-diploma baccalaureate educational opportunities.

#### Summary of the Study

The purposes of this study were to identify the challenges dental hygienists face as potential learners, to propose a model for a post-diploma dental hygiene baccalaureate degree-completion program for delivery by distance methods, and to suggest appropriate distance delivery methods for this type of content. To guide this study, the following research questions were posed:

- a) What are the current requirements for post-diploma baccalaureate degree completion programs for dental hygiene education in Canada and the U.S.?
- b) What are the needs of dental hygienists as learners?
- c) Which distance education delivery methods can meet the needs of dental hygiene learners for baccalaureate level dental hygiene education at a distance?

In summary, what content do they need to learn? What needs do they have as learners? Can distance education provide this content to this group of learners?

To provide answers to these questions, two surveys were undertaken. One surveyed a national sample of Canadian dental hygienists to identify learning preferences of dental hygienists that would enrol in a post-diploma baccalaureate degree program. The second surveyed existing dental hygiene degree completion programs in Canada and the United States to determine the curriculum content and delivery mechanisms of these programs. Detailed results of both surveys have been presented in Chapter IV.

Question 1. What are the current requirements for post-diploma baccalaureate degree completion programs for dental hygiene education in Canada and the U.S.?

The number of semester credit hours required to confer a degree credential was most likely to be 120 credit hours, with a mean of 124 credit hours. Most responding institutions had residency requirements, with a mode of 30 semester credit hours. Transfer credit from diploma/associate degree programs was most likely to be 60 semester credit hours. The number of semester credits accepted for transfer was higher for graduates of programs with an articulation agreement. The majority of institutions report having admission requirements, including National Dental Hygiene Board examinations, minimum grade point averages, and letters of recommendation.

Curriculum content included both dental hygiene and liberal studies courses. The most frequent dental hygiene courses required included research methods, field work/internships, periodontics, and trends and issues in dental hygiene. The most frequent non-dental hygiene courses required included math, english, speech or communication, humanities and microbiology. Nearly half of the programs offered a specialization

component. Seventy-five percent of the responding institutions do not require their students to provide traditional clinical dental hygiene services to clients in a clinical setting, and most do not evaluate clinical competency.

Question 2. What are the needs of dental hygienists as learners?

Dental hygienists considering pursuing post-diploma baccalaureate degree education are most likely to be between the ages of 25 and 44, married, having one or more children, with family and work-related commitments. Most have a diploma in dental hygiene, some education beyond the diploma, and even some with a bachelor's degree in another field were interested in pursuing a baccalaureate degree in dental hygiene. Most have graduated within the previous decade, and live in communities with a population of 50,000 or greater. Respondents were fairly evenly split over whether or not they were interested in pursuing a baccalaureate degree in dental hygiene.

Dental hygienists are motivated to pursue post-diploma baccalaureate education by a desire for increased knowledge, for personal satisfaction, and the desire for increased skills, career mobility and career advancement. They are constrained by a need for flexibility in scheduling, family obligations, work responsibilities, time management concerns, and the distance from campus. Dental hygienists perceive the barriers or constraints to have a stronger influence than the motivators, as evidenced by higher mean scores in their ratings of these factors.

Question 3. Which distance education delivery methods can meet the needs of dental hygiene learners for baccalaureate level dental hygiene education at a distance?

Dental hygienists' preferred methods of study for baccalaureate degree education were correspondence study, computer-based communication/Internet, evening or weekend

classes in their home community, and correspondence study plus telephone conferencing. Those more likely to enrol were willing to devote at least 6-10 hours per week to their studies. They have access to video-cassette recorders, cable television, computers at home, fax machines, the Internet at home, and email at home. These media can play an important role in supporting distance learning. This group self-reports comfort with the use of computers and email.

In summary, what content do they need to learn? What needs do they have as learners? Can distance education provide this content to this group of learners? This group is interested in pursuing post-diploma baccalaureate degree dental hygiene education. A balance between professional education, specifically dental hygiene courses, and liberal studies must form part of the curriculum of a distance delivered post-diploma baccalaureate dental hygiene degree. This group requires flexibility in scheduling to accommodate their family obligations and work commitments. All required courses must be available by distance delivery methods, specifically correspondence and/or computer-based communication/Internet. The curriculum must provide for specialization, in order that students can pursue areas of interest and graduates can achieve career mobility and advancement. Provision to accept transfer credit must be part of the program, in order to provide students the opportunity to obtain educational credits in their home community, and credit for other courses that may not be available at the host institution. A residency requirement of 30 credits to be completed at the host institution is reasonable. Articulation agreements may reduce the number of credits required for the degree completion, and must reduce administrative barriers to admission.

## Conclusions

Dental hygienists seem to perceive constraints or barriers to access to baccalaureate education as greater than motivating factors. This suggests a need to provide greater access to post-diploma baccalaureate education, and dental hygienists' preferred learning methods indicate that distance delivery methods can reduce these barriers.

The primary entry to practice model for dental hygiene education in Canada is the diploma, and the majority of diploma graduates come from colleges rather than university programs. This suggests that an appropriate model for a distance delivered baccalaureate degree for Canadian dental hygienists would be a post-diploma baccalaureate degree completion program. Current Canadian degree completion models require substantially more than the 124 credit average found in this study. The American Association of Dental Schools Report of the Task Force on Dental Hygiene Education (1992, p.15) recommends 120-130 credits, suggesting that "Additional semester credit hours lengthen and intensify the program beyond the normal academic load and should be considered inappropriate for the consumer in terms of time, money, or academic credential earned." This suggests that an appropriate program length would be approximately 120 semester credit hours.

In Canada, there are no specific articulation agreements between dental hygiene diploma programs and dental hygiene baccalaureate degree programs. Dental hygiene diploma programs at Canadian universities and some colleges require a pre-professional year of 30 semester credit hours. A post-diploma baccalaureate degree model would need to provide some form of recognition for this additional education, while acknowledging the junior level of these studies, during the development of articulation agreements.

This study found that over 25% of responding dental hygienists have two or more years of university level academic credit in addition to their basic dental hygiene education, yet only 13.6% hold a credential greater than a diploma. Currently six dental hygiene programs in Canada require a pre-professional year of studies, and at least one requires a summer session; it could be questioned whether a diploma is an appropriate credential for this length of study. These findings support Mescher's contention that dental hygienists do not have academic credentials that are consistent with their length of studies (1984). Dental hygienists need appropriate recognition for their education, particularly upon admission to a post-diploma baccalaureate degree program.

Waring (1989) found strong support among dental hygienists for an external post-diploma baccalaureate degree. Despite over a decade having passed since her work, very few such programs have come into existence. Distance delivery programs for post-diploma baccalaureate degrees in other health professions, most prominently nursing, have become readily available in Canada, and meet needs similar to those identified in this study. Reitsch and Garvin (1986) suggest that research of the target market must be done prior to the design of new dental hygiene degree programs. Waring (1989, p.84) also noted that "For external degree completion programs to succeed in terms of adequate participation, program requirements and courses should match reasons for participation."

This study has determined the preferred learning methods of dental hygienists for post-diploma baccalaureate degree education, has identified curriculum content for such a program, has suggested distance delivery strategies appropriate for this group, and has proposed a suitable model for this degree.

## Recommendations for Further Research

This study was delimited to Canadian Dental Hygiene Association members. Some provinces require CDHA membership for licensure, so all hygienists in those provinces would have formed the population from which the sample was drawn. In other provinces, most notably Quebec, membership is voluntary and hygienists who choose to purchase membership may have characteristics that differ from those who do not. These findings may not be representative of those who do not choose to become members of the CDHA. Further study is necessary to determine the learning preferences of those Canadian dental hygienists who are not members of the CDHA.

This study was also delimited to questions about the curriculum of post-diploma baccalaureate degree programs, and did not examine the curriculum contents of direct entry dental hygiene baccalaureate degree programs. Some differences may be evident upon closer examination and comparison of these two curriculum formats.

This study did not examine the curriculum content of Canadian dental hygiene diploma programs prior to proposing the model for a post-diploma baccalaureate degree. It is acknowledged that there are differences, making articulation agreements a necessity to accommodate these differences. This study did not examine differences in the number of semester credit hours granted to graduates of programs without articulation agreements compared to graduates of programs with articulation agreements. Some respondents voluntarily advised that the amount of credit granted was greater with an articulation agreement. Further study is necessary in this area.

This study was also delimited to questions about baccalaureate level dental hygiene education, and did not gather data on interest in other fields of degree level education that

dental hygienists may be interested in. Some respondents volunteered comments that they were interested in other fields of study, suggesting the potential need for research in this area.

This study did not gather data on graduate education that dental hygienists might be interested in. Some respondents indicating they already had a degree commented that they were interested in distance education opportunities for graduate level education. This suggests the need for research in this area.

There have been suggestions that the baccalaureate degree may be the appropriate credential for entry into dental hygiene practice. There is a need to study factors that may be perceived to facilitate this transition for practitioners, such as legislation and financial incentives.

The most salient finding of this study is that the respondents seem to perceive the constraints and barriers to be greater than the motivating factors. Following implementation of a post-diploma baccalaureate dental hygiene degree by distance delivery, it would be relevant to study this population again to determine if increasing access to education via distance methods reduces the perception of barriers.

### Recommendations for Dental Hygiene Education in Canada

Dental hygienists seemed to perceive constraints or barriers to access to baccalaureate education as greater than motivating factors. There is a need to provide greater access to post-diploma baccalaureate education, and dental hygienists' preferred learning methods indicate that distance delivery methods can reduce these barriers. The following recommendations for dental hygiene education in Canada are offered for consideration.

1. Dental hygienists say that they prefer to pursue post-diploma baccalaureate degree education by correspondence, with or without telephone conferences, and computer-based communications/Internet. Post-diploma baccalaureate dental hygiene degree programs need to provide courses leading to a degree credential via these modes of study.
2. Dental hygienists wish to take evening and weekend courses in their home community to apply towards a post-diploma baccalaureate dental hygiene degree. Such baccalaureate degree programs need to be structured to accommodate this request, either through advance credit or letters of permission.
3. Canadian baccalaureate dental hygiene degree programs currently do not provide sufficient recognition of the amount and level of academic preparation of diploma dental hygienists seeking a baccalaureate degree. These programs should be encouraged to modify their current program structure and transfer credit arrangements to provide sufficient recognition.
4. Baccalaureate dental hygiene degree programs in Canada should pursue articulation agreements with diploma dental hygiene programs to reduce administrative barriers to admission. This can help to provide adequate recognition of current education.
5. Baccalaureate dental hygiene degree education in Canada is not currently structured to meet documented needs of potential candidates for flexibility and access. These needs can probably be met by distance delivery of educational requirements. Educational institutions capable of meeting these needs should be encouraged to offer post-diploma baccalaureate dental hygiene degrees for these candidates. A model has been proposed for such a program.

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## APPENDIX A

### LETTER GRANTING ETHICS APPROVAL



March 26, 1999

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## Memorandum

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To: Sandra Cobban  
From: Lisa Carter, Chair, Ethics Committee  
Cc: Deborah Zornes, Dr. Mohamed Ally  
Subject: Submission: A Distance Delivery Model to Improve Accessibility to Post-Diploma Baccalaureate Dental Hygiene Education

Thank you for your resubmission of your proposal to the Human Subjects Subcommittee. You have addressed the points brought up by the Committee. Therefore please find this document as approval of your proposal.

**APPENDIX B**  
**COVER LETTER FOR SURVEY OF DENTAL HYGIENISTS' LEARNING**  
**PREFERENCES**

20 Deslauriers Crescent  
St. Albert, Alberta T8N 5Y6  
1-780-458-3325  
27 September 1999

Dear Colleague,

I am a dental hygienist and a graduate student in the Master of Distance Education program at Athabasca University in Alberta. I am conducting a research study that will lead to the development of a model for a post-diploma dental hygiene baccalaureate degree completion program for delivery by distance education methods. Traditional classroom instruction has the instructor and students together in the classroom at the same time, whereas distance education can have the instructor and students in different locations, communicating at different times using a variety of methods.

One phase of this study consists of surveying a stratified random sample of dental hygiene practitioners across Canada to determine their needs as learners. I am asking you to take a few minutes of your time to complete the attached survey. This should take you approximately five to ten minutes. Your participation in this study is entirely voluntary and you may withdraw at any time. Please be assured that all responses will remain completely anonymous, and that only group data by geographic location will be reported.

This data will make a significant contribution to the body of knowledge about dental hygienists' educational needs. The success of this research study depends on the responses of dental hygienists. I would greatly appreciate your co-operation in completing this questionnaire. If you have any questions about the questionnaire or the study please email me at [scobban@compusmart.ab.ca](mailto:scobban@compusmart.ab.ca) .

I have enclosed a self-addressed stamped envelope for your convenience, and ask that the completed questionnaire be returned by October 22, 1999. If it is more convenient, you may fax the response to 1-780-437-0946.

Please accept my thanks in anticipation of your response. You, too, through your participation, will be making a contribution to the dental hygiene body of knowledge.

Sincerely,

Sandy Cobban, R.D.H.

**APPENDIX C**  
**SURVEY OF DENTAL HYGIENISTS' LEARNING PREFERENCES FOR**  
**BACCALAUREATE EDUCATION**

Your answers to these questions will help to determine the need for a dental hygiene baccalaureate degree that is accessible to practitioners in non-traditional ways (i.e. distance education). Please answer these questions to the best of your ability by placing a check mark **3** in the box for your desired responses.

1. In what year did you graduate with your dental hygiene diploma? \_\_\_\_\_

2. From which dental hygiene program did you graduate? \_\_\_\_\_

3. What is the highest level of education you completed?

- |                                     |  |
|-------------------------------------|--|
| Dental hygiene diploma              | <input type="checkbox"/>                                 |
| Bachelor's degree in dental hygiene | <input type="checkbox"/>                                 |
| Bachelor's degree other field       | <input type="checkbox"/> please specify _____            |
| Masters degree in dental hygiene    | <input type="checkbox"/>                                 |
| Masters degree other                | <input type="checkbox"/> please specify _____            |
| Doctorate                           | <input type="checkbox"/> please specify discipline _____ |

4. How much university level education have you earned in addition to your basic dental hygiene preparation (either before or after), but not including your basic dental hygiene education?

- |  |                          |
|--|--------------------------|
| None                                       | <input type="checkbox"/> |
| Less than one year                         | <input type="checkbox"/> |
| One year                                   | <input type="checkbox"/> |
| More than one year but less than two years | <input type="checkbox"/> |
| Two years                                  | <input type="checkbox"/> |
| More than two years                        | <input type="checkbox"/> |

5. Are you interested in obtaining a baccalaureate degree in dental hygiene?

- Yes       No      *Please continue to complete and return this questionnaire even if you have answered No to this question.*

6. How likely would you be to enroll in an accessible (i.e. distance education) Dental Hygiene Degree Completion program?

- |                       |                          |
|-----------------------|--------------------------|
| Would not enroll      | <input type="checkbox"/> |
| Not likely to enroll  | <input type="checkbox"/> |
| Possibly enroll       | <input type="checkbox"/> |
| Very likely to enroll | <input type="checkbox"/> |
| Will enroll           | <input type="checkbox"/> |

7. How important to you are each of the following reasons for seeking bachelor level dental hygiene education?

	Not at all Important		Somewhat Important		Very Important
Personal satisfaction	<input type="checkbox"/>				
Desire for increased knowledge	<input type="checkbox"/>				
Desire for increased skills	<input type="checkbox"/>				
Desire for career mobility	<input type="checkbox"/>				
Status of the degree	<input type="checkbox"/>				
Gain entrance to graduate school	<input type="checkbox"/>				
Desire for career advancement	<input type="checkbox"/>				
Job security	<input type="checkbox"/>				
Employer pressure	<input type="checkbox"/>				
Peer pressure	<input type="checkbox"/>				
Other (specify) _____	<input type="checkbox"/>				

8. How important are each of the following factors to you in participating in university courses/programs for academic credit?

	Not at all Important		Somewhat Important		Very Important
Financial constraints	<input type="checkbox"/>				
Distance from campus	<input type="checkbox"/>				
Transportation concerns	<input type="checkbox"/>				
Work responsibilities	<input type="checkbox"/>				
Availability of financial help	<input type="checkbox"/>				
Family obligations	<input type="checkbox"/>				
Childcare concerns	<input type="checkbox"/>				
Restrictive entrance requirements	<input type="checkbox"/>				
Length of program	<input type="checkbox"/>				
Flexibility in scheduling	<input type="checkbox"/>				
Belief in ability to succeed	<input type="checkbox"/>				
Time management	<input type="checkbox"/>				
Communication with other students	<input type="checkbox"/>				
Communication with instructors	<input type="checkbox"/>				
Other (specify) _____	<input type="checkbox"/>				

9. How many hours per week would you be willing to devote to coursework and study?

0 – 5 hours

6 – 10 hours

11 – 20 hours

greater than 20 hours

10. How far do you live from an existing dental hygiene degree completion program?  
 Less than 100 km;                       101-500 km;                       greater than 500 km

11. How far do you live from an accredited college or university that offers university level credit courses?  
 Less than 100 km;                       101-500 km;                       greater than 500 km

12. Which of the following ways would you be willing to take courses toward a dental hygiene degree:

	<b>Yes</b>	<b>No</b>
Correspondence study	<input type="checkbox"/>	<input type="checkbox"/>
Correspondence study plus telephone conference	<input type="checkbox"/>	<input type="checkbox"/>
Computer-based communication/Internet	<input type="checkbox"/>	<input type="checkbox"/>
Evening/weekend classes in your own community	<input type="checkbox"/>	<input type="checkbox"/>
Weekend classes in a distant community	<input type="checkbox"/>	<input type="checkbox"/>
Full-time study	<input type="checkbox"/>	<input type="checkbox"/>

13. Please indicate which of the following you have access to:

	<b>Yes</b>	<b>No</b>
Cable television	<input type="checkbox"/>	<input type="checkbox"/>
Video Cassette Recorder	<input type="checkbox"/>	<input type="checkbox"/>
Fax machine	<input type="checkbox"/>	<input type="checkbox"/>
Computer	<input type="checkbox"/>	<input type="checkbox"/>
IBM type Personal Computer	<input type="checkbox"/>	<input type="checkbox"/>
Apple/Macintosh Computer	<input type="checkbox"/>	<input type="checkbox"/>
Computer at home	<input type="checkbox"/>	<input type="checkbox"/>
Computer at work	<input type="checkbox"/>	<input type="checkbox"/>

14. Are you comfortable using the computer? **Yes**  **No**

15. Do you have Internet access?  **Yes**  **No**  
 If yes, is this at:             home     work

16. Do you have E-mail?  **Yes**  **No**  
 If yes, is this at:             home     work

17. Are you comfortable using e-mail?  **Yes**  **No**



## **APPENDIX D**

### **PROCESS FOR CALCULATION OF SAMPLE SIZE**

A z-score of 1.96 was selected for a 95% confidence interval, and maximum variability of  $p = 50\%$  of the population having the characteristic of interest was chosen. The z-score was squared, and multiplied by  $p$  and by  $1-p$ . The resultant number was divided by the alpha level squared. This initial sample size of 384 was then adjusted for the population size of 8386, resulting in a adjusted sample size of 367. This figure was further adjusted for the projected response rate of 55%, resulting in a sample size of 667.

**APPENDIX E**  
**FOLLOW-UP REMINDER POSTCARD**



**Sandy Cobban**  
20 Deslauriers Cres.  
St. Albert, AB T8N 5Y6  
(780) 458-3325



**Hi!** If you have already completed and returned the survey on Dental Hygienist Learning Preferences for Baccalaureate Education, please accept my thanks.

If not, could you please take 10 minutes of your time to do so?

Your reply is an important part of this work.

Thank You.

THE ULTRA GROUP 1-800-265-2644

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## APPENDIX F

### Survey of Post-Certificate Dental Hygiene Program Components

Please indicate the desired response to the following questions by placing a check mark ✓ or an “X” in the box  next to your choice. Note that some of the questions may have specific instructions requiring you to place a particular letter in the box. If any of the instructions are unclear, please don’t hesitate to email [scobban@compusmart.ab.ca](mailto:scobban@compusmart.ab.ca) for clarification.

1. What is the title of the degree granted by your institution?  
 Bachelor of Science in Dental Hygiene                       Bachelor of Science  
 Bachelor of Science in Allied Health                       Bachelor of Science in Public Health  
 Bachelor of Arts     Bachelor of Dental Hygiene  
 Other (please specify) \_\_\_\_\_
2. Is your institutional setting:  public    or  private.
3. Which of the following best describes your program’s location within the institution?  
 Dental School         University or College (specify school or division) \_\_\_\_\_  
 Other (please specify) \_\_\_\_\_
4. How many credits are required for the Bachelor’s degree?  
\_\_\_\_\_ Semester hour credits    OR    \_\_\_\_\_ Quarter hour credits.
5. Does your program have a residency requirement?  Yes                       No  
How many credits must be completed in residence at your institution?  
\_\_\_\_\_ Semester hour credits    OR    \_\_\_\_\_ Quarter hour credits
6. How many dental hygiene credits from the certificate or associate degree program can be applied to the baccalaureate? \_\_\_\_\_ Semester hour credits    OR    \_\_\_\_\_ Quarter hour credits  
How many general or other credits from the certificate or associate degree program can be applied to the baccalaureate? \_\_\_\_\_ Semester hour credits    OR    \_\_\_\_\_ Quarter hour credits
7. How many students do you admit annually:  
\_\_\_\_\_ Full-time                      \_\_\_\_\_ Part-time                      \_\_\_\_\_ Distance
8. Are admissions requirements used?                       Yes                       No  
If so, which of the following are used? Please use a check mark ✓ to indicate those used.  
 National Board Examination                       State or Regional Board Examination  
 Licensure in your state or province                       Licensure in any state or province  
 Minimum grade point average                       Clinical practice experience  
 Letters of recommendation  
 Other (please specify) \_\_\_\_\_  
 Other (please specify) \_\_\_\_\_
9. Does your post-certificate dental hygiene program offer courses in the discipline of dental hygiene?                       Yes                       No

10. Please indicate which of the following Dental Hygiene courses are required, elective, or not offered, by placing an “R” for Required, an “E” for Elective, or an “N” for Not offered.

- |   |                                   |
|---|-----------------------------------|
| _____ Trends & Issues in Dental Hygiene | _____ Restorative Functions       |
| _____ Local Anaesthesia (didactic)      | _____ Local Anaesthesia(clinical) |
| _____ Periodontics                      | _____ Hospital Dental Hygiene     |
| _____ Radiology                         | _____ Public Health               |
| _____ Principles of Education           | _____ Management/Administration   |
| _____ Research Methods                  | _____ Research Projects           |
| _____ Entrepreneurship                  | _____ Field Work or Internship    |
| _____ Independent Study                 | _____ Practical Experience        |
| _____ Other (please specify) _____      |                                   |

11. Please indicate if the following General courses are required or not required by placing an “R” for Required, or an “N” for Not required.

- |  |  |
|--|--|
| _____ English                            | _____ Speech or Communication            |
| _____ Psychology (junior credits)        | _____ Psychology (senior credits)        |
| _____ Sociology (junior credits)         | _____ Sociology (senior credits)         |
| _____ Math                               | _____ Statistics                         |
| _____ Chemistry                          | _____ Physics                            |
| _____ Nutrition                          | _____ Biology                            |
| _____ Anatomy & Physiology               | _____ Microbiology                       |
| _____ Humanities (junior credits)        | _____ Humanities (senior credits)        |
| _____ Social Sciences (junior credits)   | _____ Social Sciences (senior credits)   |
| _____ General electives (junior credits) | _____ General electives (senior credits) |
| _____ Other (please specify) _____       |  |
| _____ Other (please specify) _____       |  |

12. Are students required to select an area of specialization?  Yes  No

If so, how many credit hours are required in the area of specialization?

\_\_\_\_\_ Semester credit hours OR \_\_\_\_\_ Quarter credit hours

13. Are post-certificate students evaluated for clinical competency in traditional dental hygiene services?  Yes  No

If so, which of the following methods are used? Please place a “U” for methods Used, and an “N” for methods Not used.

- |                                       |  |
|---------------------------------------|--|
| _____ Challenge examination (written) | _____ Challenge examination (clinical) |
| _____ Faculty assessment              | _____ Self assessment                  |
| _____ Peer assessment                 | _____ Licensure                        |
| _____ Other (please specify) _____    |  |
| _____ Other (please specify) _____    |  |

Are post-certificate students required to provide traditional dental hygiene services to patients in a clinical setting?  Yes  No

14. Does your institution currently offer any of the Dental Hygiene courses for the degree completion program by distance education methods?  Yes  No  
Which of these courses does your institution currently offer by distance methods?

---

---

15. Does your institution currently offer any of the General study courses for the degree completion program by distance education methods?  Yes  No  
Which of these courses does your institution currently offer by distance methods?

---

---

16. Do you have any plans to offer all or part of your program by distance education methods?  
 not at this time  we are planning to do so in the future  
 we have some courses in development currently  
 we would like to eventually offer all of the program by distance delivery methods.

I thank you for your time spent completing this questionnaire. If there is anything further you would like to share with me, please comment below. Feel free to use the back of this page, or add another page if you wish.

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Thank you so much for your time and effort contributing to my project. If you wish to receive a copy of the final report of this part of the study, please let me know and I will forward one upon completion.

Sandy Cobban, R.D.H.

**APPENDIX G**  
**LETTER TO DIRECTORS OF DEGREE COMPLETION PROGRAMS**

20 Deslauriers Crescent, St. Albert, Alberta  
Canada, T8N 5Y6 telephone 1-780-458-3325

Director  
Xxxx Program  
Xxxx Location

Dear xxxx,

I am a Clinical Assistant Professor in the Dental Hygiene Program at the University of Alberta, and am currently completing my Master of Distance Education with Athabasca University in Alberta, Canada. I am conducting a research study that will lead to the development of a model for a post-diploma dental hygiene baccalaureate degree-completion for delivery by distance education methods.

One part of this study involves conducting a survey of all dental hygiene baccalaureate degree completion programs in Canada and the United States to determine the components of the degree completion programs. The second part involves having a stratified random sample of Canadian dental hygienists complete a questionnaire to determine the learning needs of potential students for such a program. A third part will include proposing distance education delivery strategies that are most appropriate for the curriculum content, as per the proposed model, and that are most consistent with the learning needs of dental hygienists, as per the findings of part one of this study.

I am asking that you complete the enclosed questionnaire that seeks information about the curriculum components of your degree completion program. The data that you provide will be used to develop the proposed model for a post-diploma baccalaureate degree-completion program for distance delivery. I have enclosed a self-addressed envelope for your convenience, and ask that the completed questionnaire be returned by mail or fax (1-780-437-0946) by May 31, 1999.

The success of this research study depends on the responses of Program Directors such as yourself. I would greatly appreciate your support through your participation. If you have any questions about this study, please email me at [scobban@compusmart.ab.ca](mailto:scobban@compusmart.ab.ca) or telephone me collect. Please accept my thanks in anticipation of your response.

Sincerely,

Sandy Cobban, R.D.H.