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ADHA's Focus on Advancing the Profession: Minnesota's Dental Hygiene Educators' Response

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Purpose. *Developing degree-completion programs to enable associate-prepared dental hygienists to complete a baccalaureate degree is essential to help advance the profession. This study determined current associate degree dental hygiene students' interest in degree completion, preferred educational venue, and examined if current interest in course topics supports the ADHA's Focus on Advancing the Profession.*

Methods. *A 55-item survey was designed and distributed to 296 first-year and second-year dental hygiene students enrolled in 8 Minnesota associate degree programs during fall 2004. Seven of the 8 schools participated for a response rate of 69% (N=206). The survey included items to elicit interest in degree completion, preferred educational venue, and interest in course topics. Researchers grouped course topics according to the ADHA focus areas for advancing the profession (research, education, practice & technology, licensure & regulation, and public health).*

Results. *Results of the survey revealed that 66.0% of dental hygiene students are currently interested in completing their baccalaureate degree. The top 2 educational venues for program delivery include evening classes held in off-site locations near their home communities (50.4% very interested) and complete online class format (35.6% very interested). Students were least interested in completing coursework during traditional daytime hours (12.6% very interested). Interest in course topics related to technology (58.3 highly interested) and advanced clinical hand instrumentation (55.7% highly interested) were the strongest, while students were least interested in the design and implementation of research (8.3% highly interested), evaluating scientific literature (7.6% highly interested), and statistics (7.6% highly interested).*

Conclusion. *This study reveals a strong demand for degree-completion programs, with preferred educational venues in nontraditional formats, such as evening classes in off-site locations or online course delivery, to attract the highest number of applicants. Students indicate the highest interest in course topics in the ADHA focus area of practice and technology, with the least interest in research. Development of degree-completion programs should design curriculum in a format that meets the needs of their targeted population, while including course topics that advance the profession as suggested by the ADHA focus areas.*

Keywords: ADHA's Focus on Advancing the Profession, baccalaureate dental hygiene, degree completion, online education

Introduction

Since its inception, the profession of dental hygiene has been a preventive oral health care provider, primarily focused as clinical providers, health educators, and community health advocates. Nearly 100 years later, the American Dental Hygienists' Association (ADHA) has called for a review of the direction of dental hygiene with direct implications for educational institutions, in recognition of the nation's demand for increased access to oral health care. Specifically, the ADHA has recommended development of degree completion programs to enable licensed hygienists to pursue their baccalaureate degree and prepare hygienists of the future.

The purpose of this research study was to 1) assess and analyze current associate degree dental hygiene students' interest in baccalaureate degree completion; 2) identify students' interest in educational topics; and 3) identify students' interest in various educational venues to support program development and implementation of degree completion programs in dental hygiene. Additionally, the study will examine how current interest in course topics aligns with areas identified in the ADHA report, *Dental Hygiene: Focus on Advancing the Profession*.

Review of the Literature

Database searches using the key phrases of "degree completion," "distance learning," "distance education," "baccalaureate," "online learning," and "online education," combined with "dental," were completed for this review in the following sources: Academic Search Premier, Health and Wellness Resource Center, Medline, CINAHL, and ERIC. Minimal research has been published to determine the demand for dental hygiene baccalaureate degree completion, the desired educational venue, or the educational topics of interest. Topics addressed within this review include: 1) current status of dental hygiene education; 2) need for baccalaureate degree; 3) demand for degree completion; 4) effectiveness of distance education; and 5) distance education for degree completion.

Current Status of Dental Hygiene Education

Currently, the entry-level degree in dental hygiene is the associate degree.¹ Dental hygienists are required to graduate from accredited dental hygiene programs. The dental hygiene accreditation standards state that dental hygiene students are to be prepared in general education, biomedical sciences, dental sciences, and dental hygiene sciences, along with responsibilities for assessment, planning, and implementation of preventative and therapeutic services.² In 2006, 281 accredited entry-level dental hygiene programs existed, with the majority (84%) awarding an associate of applied science degree (164) or an associate of science degree (73).¹ Only 48 dental hygiene programs offered a bachelor of science degree.¹ Currently, there are 56 dental hygiene degree completion programs in the United States, with 7 programs offering course content 100% online.³ Master's level education is provided in 11 universities across the nation while a doctoral degree in dental hygiene has not yet been established.⁴ To support ADHA's goal of advancing the baccalaureate degree as entry-level in the next 5 years, the number of programs offering baccalaureate degrees and/or access to degree completion programs needs to be increased.

Need for Baccalaureate Degree

The need for dental hygienists with a baccalaureate degree is demonstrated by the 1) desire to advance the profession, 2) demand for dental hygiene faculty, 3) responsibility to address the oral health needs of the nation, and 4) need for expanded dental hygiene research. In 2005, The American Dental Hygienists' Association (ADHA) report entitled "Dental Hygiene: Focus on Advancing the Profession" provided a framework for dental hygiene education and practice.⁵ ADHA's vision in this document includes "implementing the baccalaureate degree as the entry point for dental hygiene practice".^{5,6} Educational programs are challenged to develop and support didactic and clinical curriculum focusing on 1) Research, 2) Education, 3) Practice and Technology, 4) Licensure and Regulation, 5) Public Health, and 6) Government, to help prepare graduates as oral health professionals of the future.⁵ Requiring a baccalaureate degree as entry-level for dental hygiene provides opportunity to prepare graduates for alternative career opportunities in education, administration, public health, and

research, without overcrowding the curriculum.⁵ A survey of 468 dental hygiene graduates from a baccalaureate program in California revealed that 21% of graduates completed a graduate or professional program, with over half of those graduates pursuing master's degrees related to education.⁷ Twenty percent of graduates currently or have previously held faculty positions and 61% have leadership positions in community organizations.⁷ While unable to compare with other programs, this research supports the concept that graduates of baccalaureate programs do pursue further education and alternative career opportunities in the field of dental hygiene.

As we look at the current number of dental hygiene programs, it becomes apparent that the demand for educators across the nation is strong. Nunn and colleagues found that 68% of dental hygiene faculty will need to be replaced within the next 5 years, primarily due to retirement.⁸ The predicted outcome of faculty shortages in dental hygiene will impact the number of graduates, thus impacting the oral health of the United States. Students who graduate with a baccalaureate degree are further prepared for advanced education such as a master or doctoral level degree.

In an effort to meet the dental health needs of underserved populations in the United States, the ADHA has moved forward with a plan to develop a master's degree for a new middle-tiered profession titled the Advanced Dental Hygiene Practitioner (ADHP).⁵ The ADHP is designed to increase the scope of practice for dental hygienists to include advanced preventive therapies, diagnosis, treatment such as restorative procedures, and appropriate referrals.⁹ Sufficient numbers of baccalaureate prepared dental hygienists are needed as qualified applicants to support implementation of the ADHP curriculum.

The 2001 revised National Dental Hygiene Research Agenda (NDHRA) is the foundation of the dental hygiene profession to establish and guide priorities in research topics in the following areas: 1) Health Services Research, 2) Access to Care/Underserved Populations, and 3) Health Promotion/Disease Prevention.¹⁰ ADHA's research agenda is important as it serves as the framework for achieving the mission of ADHA-to advance the art and science of dental hygiene.¹⁰ A survey of 167 dental hygiene programs revealed that 62% of baccalaureate programs provide a separate course on research, compared to 8% of non-baccalaureate programs.¹¹ Non-baccalaureate programs are forced to incorporate research within other dental hygiene courses. The 4-year baccalaureate dental hygiene education can provide the foundational knowledge and skills required to meet the NDHRA without overcrowding the curriculum.

Demand for Degree-completion

A recent survey of 423 dental hygienists from 46 different states, who receive the magazine RDH, identified that hygienists are interested in more information about degree completion programs to help achieve career satisfaction.¹² Development of degree completion programs will be critical if the entry-level degree for dental hygiene is moved to a baccalaureate degree. With associate and certificate programs representing about 84% of all dental hygiene programs, simply closing these schools would severely compromise the ability to meet the oral health needs of the nation. Articulation agreements designed to improve credit transfer between associate/certificate programs and baccalaureate programs have been suggested as one way to promote degree completion.^{5,13} However, successful development of degree completion programs should consider what educational venue (face-to-face versus distance) will enable the largest number of dental hygienists to pursue their baccalaureate degree.

Effectiveness of Distance Education

Effectiveness of distance education has been demonstrated through multiple research studies in dental and dental hygiene education.¹⁴⁻¹⁸ Bearden and colleagues found no statistical differences in course grades and performance on the national board exam for 54 dental hygiene students who self-selected to enroll in either online or face-to-face nutrition courses.¹⁴ Darby compared course grade achievement between on-campus and off-campus interactive television students enrolled in an interdisciplinary research course in the fall of 2000 and found no significant differences.¹⁵ Fleming and associates found no significant difference in post-test scores of 33 first-year dental hygiene students randomly assigned to either the slide/audiotape format or web-based instruction to teach normal intraoral radiographic anatomy.¹⁶ No significant difference

was found in the post-test outcomes of 75 first-year dental students randomly assigned to an interactive CD format, interactive CD plus lecture format, and lecture-only format to teach an introductory radiology course.¹⁷ Gallagher and colleagues compared grades on assignments, student exams, a case study project, final course grades, and content retention between dental hygiene students who self-selected to enroll in a traditional face-to-face course or online course in gerontology.¹⁸ Online students scored significantly higher than traditional students on the second exam, assignments, case study project, and total final points in the course.¹⁸ Similarly, online students scored higher on the content retention questionnaire assessed 6 months after course completion.¹⁸ The literature surveyed provides evidence that distance instructional methods are a viable option for course delivery in dental hygiene.

Distance Education for Degree-completion

Recognizing distance education as an effective teaching strategy, online course delivery in dental hygiene is increasing. Based on a national survey of 172 dental hygiene programs, Grimes reported, "dental hygiene programs (22%) are beginning to implement programs offered through technology-based distance education methods. Dental hygiene is somewhat behind our colleagues in nursing, as 51% of nursing programs had implemented distance education by 1998."¹⁹ Grimes identifies the major themes supporting technology-based education as 1) increasing student access, 2) maintaining regular employment during advanced education completion, and 3) providing flexibility of curriculum while responding to student demand.¹⁹ Distance education methods, including interactive television (ITV), online course delivery with software such as Desire to Learn™ or Black Board™, a mixed-model of face-to-face and online, or a cohort-model located off-site, can be utilized to provide an alternative educational venue for regionally-bound, licensed dental hygienists who desire to complete their baccalaureate degree.

Distance education venues for degree completion programs are also supported by dental hygienists. A random sample of 383 dental hygienists from the Canadian Dental Association indicated correspondence format, online/Internet format, and evening and weekend classes in their home communities as the preferred educational venues for baccalaureate degree completion.²⁰ Barriers to completing their baccalaureate degree included a need for flexibility in scheduling and family and work obligations.²⁰

The limited number of dental hygiene programs offering baccalaureate degrees combined with the demand for further education emphasizes the need for more research examining interest in degree completion in the United States and desired educational venues. Assessing interest in course topics as determined by potential students combined with examining curriculum focus areas determined by the ADHA can help guide design of degree completion programs.

Methods and Materials

A 55-item questionnaire was developed by the authors, with sections addressing demographics, current interest in degree completion, including desired pace, venue, and topics of educational coursework, for this investigation. Human subject approval was obtained from the Institutional Review Board at Minnesota State University, Mankato, Minn. In addition, informed consent was obtained from all participants.

Questionnaires and instructions were distributed to faculty from each of the 8 associate degree-granting educational institutions at a Minnesota Dental Hygiene Educators' meeting. Faculty members were instructed to deliver the consent form and questionnaire to all first-year and second-year students enrolled in their dental hygiene programs. Completed questionnaires were returned to the investigators in the stamped envelope provided.

The questionnaire data were collected and analyzed by SPSS Version 10.0, with 10.0% of entries rechecked for accurate data entry. Given the nature of the data, descriptive statistical methods were used including percentages and frequencies.

Results

Dental hygiene students from 8 associate degree-granting institutions consisting of Century College, Herzing College, Lake Superior College, Normandale College, Northwest Technical College, St. Cloud Technical College, Rochester Community and Technical College, and Argosy (N=296) were invited to participate in a volunteer baccalaureate degree-completion survey. Seven institutions chose to participate resulting in a final sample of 204 (69.0%) students. Fifty-four percent of participants were in their final year of dental hygiene school, with 46.0 percent in their first year. The majority (75.4%) of students intended to pursue a career in a general private practice, with 14.4% interested in group private practice, 7.7% interested in specialty practices (orthodontics, pediatrics, periodontics), 1.5% in community practice, and 1% interested in education.

Interest in Degree

Sixty-six percent of students identified they were currently interested in completing a Bachelor of Science degree in dental hygiene. Of those interested, the majority (52.3%) indicated they would begin taking coursework in 1-2 years, while 37.1% indicated they would begin taking coursework in 3-5 years. The remaining students were unsure when they would begin coursework (6.1%), or indicated it would be more than 5 years (4.5%).

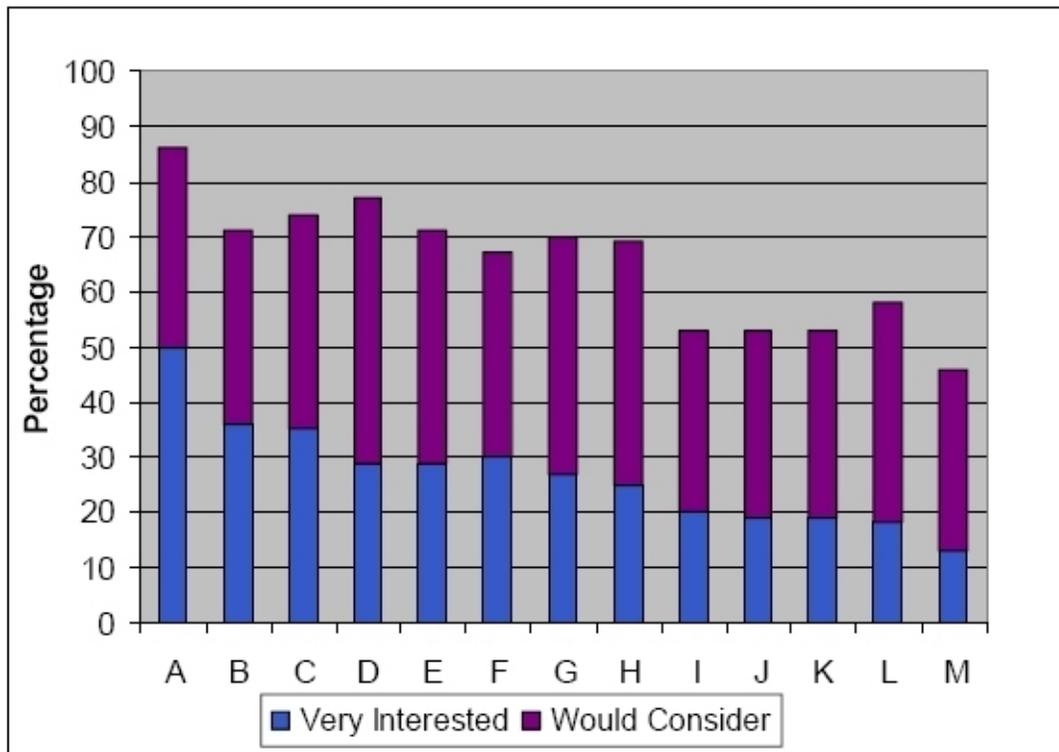
Over half of those interested (57.6%) intended to take 2 classes per semester. Others intended to take 3 to 4 classes per semester (26.5%), or only 1 class per semester (15.9%).

Almost 40% of students were willing to commit as many years as needed to complete their baccalaureate degree at their desired pace. About 32% of those interested were willing to commit 2 years for completion of coursework, with 16% desiring only one year of additional education. The remaining 12% were willing to commit 3-4 years.

Educational Venue

To determine preferred educational venues for degree completion, students who identified an interest in degree completion were asked to indicate their interest (very interested, would consider, no opinion, not interested) in a variety of settings. The complete summary of student interest in educational venues can be found in Table 1. Examining strong interest, 50.4% of students were very interested in evening classes held in off-site locations near their home communities, 35.6% were very interested in online-only coursework, 34.8% were very interested in online coursework with a maximum of 3 face-to-face meetings, and 28.9% were very interested in a mixture of face-to-face and online coursework. Students were least interested in completing coursework during traditional day time hours at Minnesota State University, Mankato, Minn (12.6% very interested).

Table 1. Interest in Educational Settings (Interested students only)



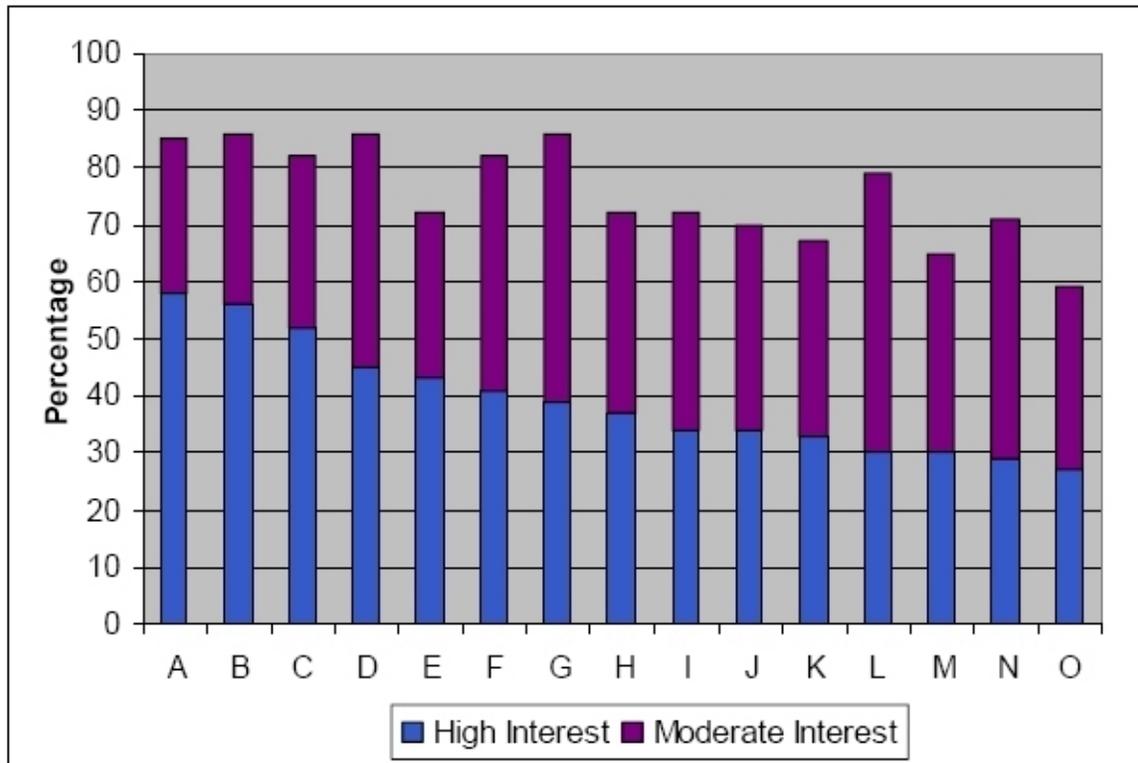
Key	
A	Evening classes in off-site locations
B	100% online classes
C	Online with a maximum of 3 face-to-face meetings
D	Hybrid of online and face-to-face classes
E	Evening classes at Minnesota State University (MSU)
F	Weekend classes in off-site locations
G	Evening classes through Interactive Television (ITV)
H	Monthly classes in off-site locations
I	Weekend classes through ITV
J	Weekend classes at MSU
K	Monthly classes through ITV
L	Monthly classes at MSU
M	Traditional day-time classes at MSU

Educational Topics

To determine interest in educational topics for degree completion courses, students who identified an interest in degree completion were asked to indicate their interest (high interest, moderate interest, a little interest, no interest) in 29 different topics. The highest percentages of student interest in educational topics were reported in technology (58.3% highly interested), advanced clinical hand instrumentation (55.7% highly interested), restorative functions (51.5% highly interested), and current issues in dental hygiene (45.0% highly interested). Students were least interested in the design and implementation of research (8.3% highly interested), scientific writing (8.3% highly interested), evaluating scientific

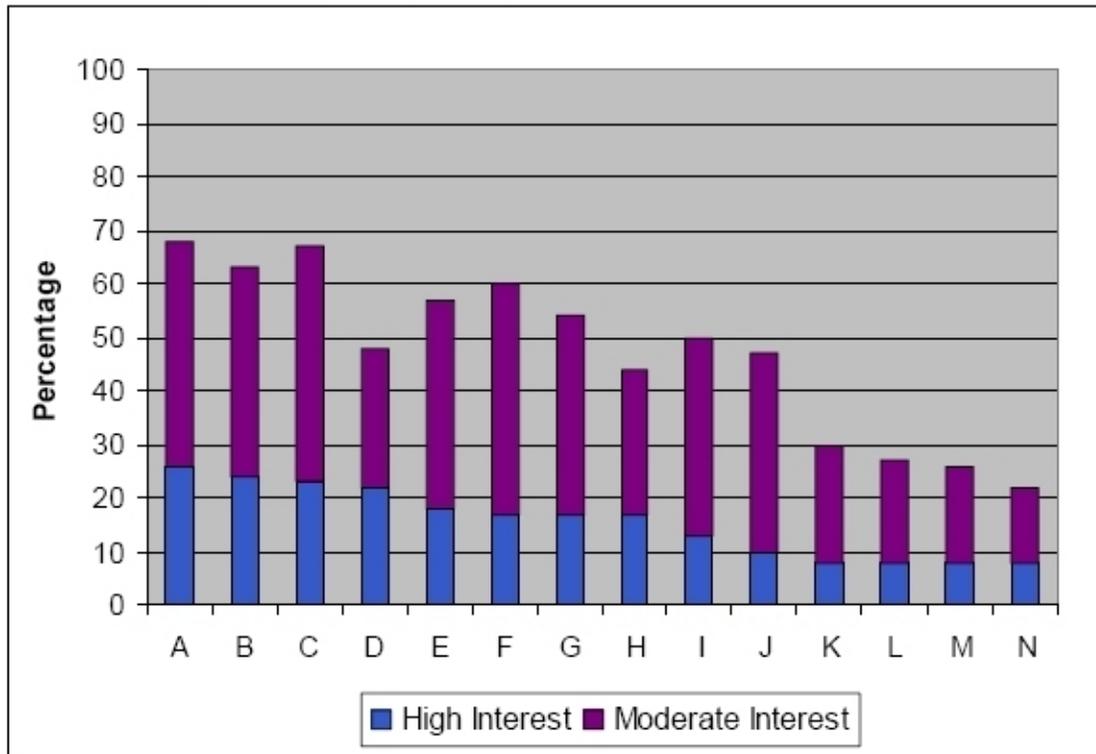
literature (7.6% highly interested), grant writing (7.6% highly interested), and statistics (7.6% highly interested). A complete summary of interest in educational topics can be found in Tables 2 and 3.

Table 2. Interest in Topics, Top 15



Key	
A	Advanced Technology
B	Advanced Clinical Instrumentation
C	Restorative Functions
D	Current Issues in Dental Hygiene
E	Study Abroad
F	Assessment of Risk Factors
G	Advanced Periodontal Clinical Skills
H	Assessing Community Health Needs
I	Advanced Radiography Interpretation
J	Clinical Teaching
K	Classroom Teaching
L	Advanced Periodontal Knowledge
M	Planning Community Health Programs
N	Community Practice
O	Teaching Methods

Table 3. Interest in Topics, Bottom 14



Key	
A	Medically Compromised Patients
B	Independent Study
C	Evaluating Oral Health Programs
D	Medical Ethics
E	Gerontology
F	Advanced Pharmacology
G	Business Management
H	Multicultural Issues
I	Oral Health Outcomes
J	Design/Implementation of Research
K	Analyzing Literature
L	Grant Writing
M	Scientific Writing
N	Statistics

Discussion

This research study explored the demand for baccalaureate degree completion by current 2-year dental hygiene students while measuring interest in curriculum topics supporting the American Dental Hygienists' Association (ADHA) document *Dental Hygiene: Focus on Advancing the Profession* (2005). There is a general belief by dental hygiene educators and ADHA leadership that the profession of dental hygiene is in position to address the lack of access to oral health care in the United States.⁶ In addition, the ADHA report, *Dental Hygiene: Focus on Advancing the Profession*, challenges the nation's educators to "revise the dental hygiene educational curriculum to prepare future dental hygienists to deliver quality oral health care to all segments of the U.S. population and to be responsive to an evolving health care delivery system".⁵

Results of this study support the data collected by *RDH* magazine, stating that dental hygienists do have interest in degree completion programs.¹² This investigation revealed strong support for degree completion with 66.0% of participants currently interested in completing their baccalaureate degree. Since participants were current 2-year students enrolled in Minnesota dental hygiene programs, results cannot be generalized to other regions or to previous graduates in dental hygiene. However, this research supports development of degree-completion programs in the Midwest.

Barriers to completing a baccalaureate degree, such as the need for flexibility in scheduling and family and work obligations, were identified in a Canadian research study as.²⁰ Results from the current study suggest that degree-completion programs need to recognize these barriers and enable students to enroll part time. Similar to the findings of Cobban and Clovis²⁰, students in the current study identified evening classes in off-site locations near their residence, 100% online class offerings, and a blend of online and face-to-face courses as the preferred educational venues. In Minnesota, the 8 associate degree programs are located throughout the state, across a span of 250 miles. Developing individual off-site locations near each of the 8 associate programs is not feasible. Studies conclude that distance education is an effective educational methodology and applicable for dental hygiene degree completion programs.¹⁴⁻¹⁸ It is the interpretation of the authors of this study to recommend implementation of online education supporting degree completion students that are regionally bound without close access to a degree completion program.

A strong degree-completion program supports the ADHA's action plan to "implement the baccalaureate degree as the entry point for dental hygiene practice within five years", and should incorporate coursework from each of the six focus areas to develop dental hygienists of the future.⁹ The curriculum topics in this study were grouped by the authors and compared to five of ADHA's six focus areas to advance the profession. The survey did not include any specific items directly related to government. Some of the survey items such as *Current Issues in Dental Hygiene and Restorative Functions* could have been placed in multiple categories, but only one category was selected for purposes of this discussion. Survey items with the percentage of students who indicated a high interest in the specified topic are organized within each focus area in Table 4.

Table 4. Interest in Educational Topics within ADHA's Focus Areas

Focus Area:	Survey Item:	High interest %:
Research	Design/implementation of Research	8.3%
	Scientific Writing	8.3%
	Evaluating Scientific Literature	7.6%
	Grant Writing	7.6%
	Statistics	7.6%
Education	Teaching Methods	27.3%
	Faculty Responsibilities and Issues	22.7%
	Clinical DHYG Practicum	34.1%
	Classroom DHYG Practicum	33.3%
Practice & Technology	Adv. Periodontal Clinical Skills	39.1%
	Adv. Periodontal Knowledge	30.1%
	Assessing Patient Risk Factors	41.4%
	Adv. Clinical Hand Instrumentation	55.7%
	Technology	58.3%
	Adv. Radiographic Interpretation	34.1%
	Adv. Pharmacology	17.6%
Restorative Functions	51.5%	
Licensure & Regulation	Medical Ethics	18.2%
	Business Management	16.7%
	Current Issues in DHYG	45.0%
Public health	Assess Need for Comm. Hlth Programs	36.8%
	Design & Imple. Comm. Hlth Programs	30.1%
	Evaluate Comm. Hlth Programs	23.3%
	Medically Compromised Patients	25.8%
	Gerontology	16.8%
	Community Practice	28.8%
	Health Outcomes	9.9%
	Multicultural Issues	13.0%

Students indicated the highest interest in individual topics related to technology, advanced clinical instruction/skills, restorative functions, and current issues in dental hygiene. When grouped within each focus area, students demonstrated the highest interest in topics related to Practice & Technology (17.6%-58.3%) and aspects of Licensure and Regulation (16.7%-45.0%). Moderate interest was also demonstrated in the areas of Education (22.7%-34.1%) and Public Health (9.9%-36.8%).

Of significant concern is the lack of student interest in design and implementation of research, scientific writing, evaluating scientific literature, grant writing, and statistics. Developing a body of dental hygiene research to advance the profession is contingent on developing research skills and interest in graduates. A recent national survey identified that 62% of baccalaureate programs and 8% of non-baccalaureate programs provide a separate course on research. Despite the lack of

interest identified in this study, it is critical that degree-completion programs incorporate a research course and evidence-based decision making into course offerings. The ADHA's National Dental Hygiene Research Agenda is dependent on baccalaureate and degree-completion programs providing ample opportunities for graduates to develop and implement research skills.

A limitation of this study is that the sample included current first-year and second-year dental hygiene students located in Minnesota. Future studies should utilize a larger stratified random sample to include both current students and dental hygiene graduates from multiple regions and age groups. Descriptions of interest in each of ADHA's Focus Areas were limited by the survey items. Future studies may want to expand on the number of items utilized to describe interest in each of ADHA's 6 focus areas. Reasons for and barriers to completing a baccalaureate degree after licensure were not identified in this study, and may provide further guidance to development of user-friendly degree-completion programs. Additionally, future studies may want to compare the identified reasons for baccalaureate degree completion with ADHA's goals for the future of the profession.

Conclusion

Increased numbers of dental hygienists with baccalaureate degrees are necessary to support ADHA's plan to advance the profession, address the future dental hygiene faculty shortage, and expand the body of dental hygiene research. With associate and certificate programs representing about 84% of all dental hygiene programs, the development of user-friendly degree-completion programs is essential to enable licensed dental hygienists to complete their baccalaureate degree.

This Minnesota study found that 66.0% of current associate degree students were interested in completing a Bachelor of Science degree in dental hygiene. The majority of students in this study desired a part-time pace, and were willing to dedicate as many years as needed to complete their degree at that desired pace. According to strong interest, the top 3 desired educational venues included 1) evening classes held in off-site locations near their home communities, 2) complete online coursework, and 3) online coursework with a maximum of 3 face-to-face meetings. Moderate to strong interest was identified by students in educational topics that support ADHA's focus areas of 1) Practice and Technology, 2) Licensure and Regulation, 3) Education, and 4) Public Health. Despite the lack of interest in topics related to research identified in this study, it is critical that degree-completion programs incorporate a research course and evidence-based decision making into their programs to support ADHA's National Dental Hygiene Research Agenda. It is recommended that degree-completion programs design curriculum in a format that meets the needs of their targeted population while including course topics that support the ADHA's report, *Dental Hygiene: Focus on Advancing the Profession*, and the priorities established by the ADHA's National Dental Hygiene Research Agenda.

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Notes

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