

Source: Journal of Dental Hygiene, Vol. 78, No. 3, Summer 2004

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## Practice Trends of Dental Hygiene Students Completing Specialty Tracks

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**Purpose:** *The purpose of this research was to determine the practice trends of dental hygiene baccalaureate degree recipients who participated in a specialty track.*

**Methods:** *A survey was developed, pilot tested, revised, and mailed to a sample of 265 dental hygienists who graduated from the baccalaureate degree dental hygiene program at University of North Carolina (UNC)-Chapel Hill School of Dentistry between 1987 and 1998. Analysis included descriptive statistics, a non-parametric analysis of variance for the ordinal-scaled responses, and a chi-square to compare nominal responses.*

**Results:** *Survey responses along with telephone interviews yielded a response rate of 68% (n=181). Seventy percent of the respondents had been practicing dental hygiene for six or more years. Ninety-six percent had worked in general private dental practice, 29% in a periodontal dental practice, and 18% in a pediatric dental setting. The top three specialty tracks completed were hospital dentistry (24%), periodontology (20%), and pediatric dentistry (19%). Fifty-six percent of respondents would like to obtain a specialty track position if given the opportunity. Forty-four percent (n=16) of those who experienced the periodontal specialty track have worked in a periodontal setting, and 36% (n=12) of those who participated in the pediatric specialty track have worked in a pediatric office. Eighty-eight percent agreed or strongly agreed that the specialty track was an important part of their dental hygiene education.*

**Conclusion:** *The results imply that the specialty track is a positive learning experience for students and should be continued. Data from this survey has implications to other dental hygiene programs offering or planning to offer specialty tracks.*

**Keywords:** Dental hygiene education, specialization, practice trends

### Introduction

The United States population is greatly diverse in culture, race, and ethnicity. This diversity leads to many patients with specialized oral health care needs. The *Healthy People 2010* report verifies that there is an increasing need for clinicians who can work with specialized populations.<sup>1</sup> Many oral health care problems are found in specific population groups. For example, dental caries is prominent in children, with 75% of adolescents having experienced dental decay.<sup>1</sup> The Surgeon General's report on oral health iterates the importance of health care workers providing care to a variety of groups of the

United States population. The report also suggests that curriculum changes and multidisciplinary training may be needed to better prepare health care providers for practice.<sup>2</sup> Dental hygienists may be better prepared to work with specialized patient populations by completing specialty tracks in dental hygiene education programs.

Within the guidelines of the Commission on Dental Accreditation (CODA), basic dental hygiene curricula are uniform and consistent. In addition to the basics, the University of North Carolina at Chapel Hill (UNC-Chapel Hill) School of Dentistry (SOD) dental hygiene program offers a specialty track program for baccalaureate degree dental hygiene students. The specialty track introduces students to various dental hygiene specialties through extra didactic studies and extramural rotations.

Each student may select one of the following dental hygiene specialty areas: pediatric dentistry, dental public health, hospital dentistry, research/oral biology, periodontology, or gerontology. The number of students allowed in each track is limited; therefore, not all students participate in their first choices of tracks. The students enroll in a five credit hour course during the final semester of the program. The faculty member responsible for each specialty organizes the didactic component, which includes guest lecturers, and activities that are specific to the specialty area. Students participate in these classes each week until clinical rotations begin. Clinical rotations consist of a three-week, full-time experience in a dental hygiene environment specific to the specialty track. Some of the rotation sites are hospital dental clinics, pediatric dental practices, periodontal dental practices, and clinics in local and state health departments. The students participate in 60% clinical and 40% non-clinical activities at the site during the three-week rotation. Some examples of non-clinical activities include attending administrative meetings, observing dental procedures, and community service projects. The research track students conduct a small research project under the supervision of a professor. Students must choose a topic relating to their specialties and complete a literature review paper. The goals of specialty tracks in the UNC-Chapel Hill dental hygiene curriculum are to introduce students to specialty dental hygiene career options and potentially influence or enhance their career choices.

In 1983, Rigolizzo, et al, reported that there were no data available on the implementation of specialty tracks in baccalaureate degree dental hygiene programs.<sup>4</sup> A recent review of the literature revealed no published studies. There are no data to show practicing trends in graduates who completed a specialty track. These data may help other dental hygiene programs by providing specialty track information that currently does not exist. Results will also provide other dental hygiene programs with data to utilize when considering the inclusion or revision of specialty track systems.

The purpose of the current study was to determine the practice trends of graduates from a baccalaureate degree dental hygiene program who participated in a specialty track.

## **Review of the Literature**

The increased number of inhabitants and highly diversified groups in the United States population require new and specialized skills in the oral health field. The continuous growth of oral health needs may make it necessary for oral health care providers to have advanced education in special areas. In order to provide students with experience in dental specialty areas, dental hygiene curricula must adapt to meet evolving needs. The Surgeon General's report on oral health suggests that curriculum and multidisciplinary changes are necessary to better prepare health care providers.<sup>2</sup> Continued education that includes nontraditional classes and extramural rotations in addition to standard dental hygiene education is needed.<sup>3</sup>

To provide students with a more diversified and broadened education, dental hygiene programs may offer specialty tracks. The initial design of the specialty tracks in dental hygiene programs were to provide students advanced education that would allow for alternative career roles.<sup>4</sup> The UNC-Chapel Hill SOD dental hygiene program housed the first documented specialty track in a dental hygiene curriculum.<sup>5</sup> This dental hygiene program initiated specialty courses to better prepare dental hygiene students for professional challenges and changes. Goals included educating students to meet workforce demands in the state and in surrounding areas, guiding students in preparing for alternative career options, and helping change the oral health care delivery systems.

Specialty practice areas for allied health disciplines play a dominant role in health care. Specialized areas in nursing have existed since the early days of the professional nurse.<sup>6</sup> Specialty nursing practice began because of the increased knowledge and skills needed in patient care. Nursing specialty training has continued to emerge to meet health care needs and is leading the way for other allied health care fields. Most undergraduate registered nursing programs include rotations such as obstetrics, pediatrics, and geriatrics to provide nursing students with a broad overview of specialty education and practice.<sup>7</sup>

Public health was the first area of specialization in dental hygiene. When Alfred E. Fones founded the first dental hygiene school in 1913, he realized there was a need for "auxiliary personnel to assist the dental profession in educating the public about proper dental health practices in order to maintain children's mouths in a state of cleanliness and good oral health."<sup>8</sup> While dental hygiene has been an integral part of public health over the years, it has been projected that the need for public health dental hygienists will increase as the health care system changes.<sup>9</sup> There are additional specialized responsibilities and duties in public health beyond career entry-level education. Therefore, it has been suggested that public health dental hygienists have at least residency-type training.<sup>9</sup>

Pediatric dental hygienists are required to work with children and diseases specific to that population. Although dental hygienists are not required to complete advanced education for working with pediatric patients, there may be significant benefits to having prior training because specific diseases and birth defects affect children's oral health.<sup>2</sup>

Geriatric oral health care is an area that is growing in importance for dental hygienists. It is estimated that 23% of 65 to 74 year-olds have severe periodontal disease and 30% of adults over 65 are edentulous.<sup>2</sup> Over the past 20 years, there has been a continuing increase in the number of older adults in the United States who are retaining their natural dentition.<sup>2</sup> Dental hygienists may benefit from additional education and training in caring for elderly patients. A study in 1996 surveyed dental hygiene program directors to assess geriatric education in dental hygiene curricula.<sup>10</sup> Results showed that 89% of the responding programs had a didactic geriatric component and 54.2% included a clinical component. The didactic portion was shown to be lacking with only 18.8% having specific geriatric courses and 81.2% presenting the geriatric curriculum as a part of other courses. Dental hygiene faculty members were responsible for presenting the information, with 77.8% relying on general dental hygiene textbooks. The average clinical time providing geriatric care was 27.7 hours, and 49.5% of the respondents felt that the geriatric curriculum in their program was less than in the past. Aspects such as the clinical needs of geriatric patients, pharmacological considerations, cognitive functions in the elderly, geriatric oncology, disorders arising from old age, functional psychiatric disorders, learned helplessness, communication, nutritional needs, and stereotypes of aging must be included in educational programs to understand the population. These needs may not be included in the professional entry level dental hygiene curricula.<sup>2,11</sup>

Dental departments in hospital settings have increased in number and patient demand, offering new challenges for dental hygienists.<sup>12</sup> Hospital dental hygienists have responsibilities that include patient care, instructing and directing staff, organizing student internships, scheduling doctors, and developing treatment guidelines for patients with infectious diseases.<sup>13</sup> A study published in 1990 surveyed hospital dental clinics to assess the status of dental hygienists practicing in the clinics. Out of the 1,755 hospitals that responded, 33.9% (n= 594) stated that they had a separate dental department within the hospital that employed at least one dental hygienist.<sup>12</sup> The study revealed that dental hygienists were employed in the hospital clinics to contribute to delivery of care, patient population treatment needs, teaching and research projects, and cost-effectiveness of treatment.

Specialty practice is more than adaptation to a new environment; it involves learning about the clinician's patients in order to give the best, most knowledgeable care. Through specialty educational tracks, students learn about caring for specific populations, different ways to promote oral care, and independence through clinical rotations. Active learning is facilitated by students gaining knowledge and experience through diverse clinical rotations outside the college setting. Students must also learn how to obtain and critique published research reports in the process of writing a literature review paper. These activities facilitate students' development as critical thinkers by presenting them with challenging environments and experiences beyond the basic curriculum.<sup>14</sup> Developers of a specialty-nursing program in Australia suggest that formal

specialty education must be created using the basic curriculum that includes aspects for building life-long learning skills.<sup>15</sup> Including activities inside and outside the classroom, creating challenging goals for students, and providing feedback are all shown to teach students to become critical thinkers.<sup>14</sup> The specialty track has the potential for utilizing all of these tools to produce graduates who are life-long learners.

Previous studies in dental hygiene show that a vast majority of clinicians work in private practice.<sup>16-18</sup> The American Dental Hygienists' Association (ADHA) conducted a national membership census survey in 2001. Results showed that 83% of respondents worked in private clinical practice as their primary employment setting, 6% in a college or university setting, 3% in business, 2% in dental specialty practice, and 1% in government.<sup>17</sup> In 1991, the ADHA conducted a survey assessing the retention of dental hygienists in the workforce. Eighty-eight percent of the dental hygienists who responded were currently employed.<sup>18</sup> Ninety-two percent were employed by a dentist in a private dental practice, 1.7% in a governmental agency, 2.3% in an educational institution, and 4.3 % reported other work environments.<sup>18</sup>

In 1984, the ADHA published results of a dental health initiative that aimed to provide suggestions for better access to dental care for populations with special needs. Recommendations based on initiative results included developing a practice model for dental hygienists to provide oral health care to special populations, increasing utilization of dental hygienists in federal health care programs, creating new guidelines for the dental hygiene curriculum to prepare dental hygienists to provide primary preventive services, and research into finding more effective ways to use dental hygienists to deliver preventive oral health care.<sup>19</sup>

Specializations in health care careers are highly utilized in order to provide patients the most effective care. Because there are no studies analyzing specialty tracks in dental hygiene education, there are no existing data regarding the number of programs that include specialty tracks in the undergraduate curricula. There also are no published studies reporting results of research or the outcomes of offering specialty tracks to dental hygiene students. There is a need to know whether or not providing specialty tracks in undergraduate dental hygiene for future dental hygienists. This study assessed a current specialty track program and determined the outcomes. Results of this study may assist other dental hygiene programs in evaluating their current policies and deciding if integrating specialty tracks into their curricula would result in better preparing students for alternative career roles in dental hygiene.

## **Methods and Materials**

In June 2002, dental hygienists, who graduated between 1987 and 1998 (n=265) from the baccalaureate degree dental hygiene program at UNC-Chapel Hill, were surveyed using a mailed questionnaire. The questionnaire was specifically designed to evaluate the specialty track aspect of the curriculum. Prior to the mailing, a convenience sample of four dental hygiene professors at UNC-Chapel Hill and six UNC-Chapel Hill dental hygiene alumni pilot tested the survey instrument. The recommendations from the pilot test were reviewed, and the survey instrument was completed with necessary revisions.

Stamped, pre-addressed survey packets were mailed, including a cover letter explaining the purpose of the research study and the importance of participation. Identification numbers were placed on the individual questionnaires to ensure subject confidentiality while permitting a second mailing to non-respondents to the first mailing. Subjects were asked to return the completed questionnaires three weeks after it was mailed. Telephone calls were made to non-respondents to the two mailings of the survey. Participants were surveyed by telephone. The telephone interviews were included in the research design because the mail response rate was lower than desired.

The survey questionnaire contained three sections: Section I- Demographics; Section II- Specialty tracks at UNC-Chapel Hill SOD; Section III- Future of specialty tracks.

The types of questions included: demographic questions; closed-ended questions to assess specialty tracks at UNC-Chapel Hill SOD including career opportunities, career selection, and satisfaction levels; and open-ended items to determine the future educational recommendations for the specialty track systems at UNC-Chapel Hill.

Data from the completed questionnaires were entered into an Excel database. The data were transferred to SAS for Windows for complete analysis. Responses were compiled using descriptive statistics. A non-parametric analysis of variance was used for the ordinal-scaled responses. For nominal responses, specialty tracks were compared using chi-square analysis.

The UNC-Chapel Hill Institutional Review Board, Human Subjects committee, reviewed and approved the research project. There was no consent form because consent was assumed when participants completed and returned the survey.

## Results

Surveys were received from 181 (n=265) respondents after two complete mailings and telephone calls to non-respondents for a response rate of 68%. One hundred fifty-nine responses (60%) were from mailed surveys and 22 responses (8%) were telephone interviews. The statistical analysis revealed no significant differences between the responses from telephone interviews and mailed surveys. Table I displays the distribution of graduation dates for the respondents. All of the respondents (n=181) were female. The sample included four males, none of whom responded. Thirteen (7%) of the respondents were in the baccalaureate degree completion program. Five percent of the respondents had a master's degree, and 8% had completed dental school. Forty-five percent (n=82) of the respondents had worked as a dental hygienist for at least nine years. The distribution of the remaining 55% is as follows: 0-2 years, 9%; 3-5 years, 21%; 6-8 years, 25%.

**TABLE I Year of Graduation from Baccalaureate Degree Dental Hygiene Program**

<b>Year of Graduation</b>	<b>Percent</b>	<b>N</b>
<b>1987</b>	<b>6%</b>	<b>11</b>
<b>1988</b>	<b>11%</b>	<b>20</b>
<b>1989</b>	<b>7%</b>	<b>12</b>
<b>1990</b>	<b>7%</b>	<b>13</b>
<b>1991</b>	<b>7%</b>	<b>13</b>
<b>1992</b>	<b>5%</b>	<b>9</b>
<b>1993</b>	<b>8%</b>	<b>14</b>
<b>1994</b>	<b>9%</b>	<b>16</b>
<b>1995</b>	<b>9%</b>	<b>16</b>
<b>1996</b>	<b>9%</b>	<b>17</b>
<b>1997</b>	<b>11%</b>	<b>20</b>
<b>1998</b>	<b>11%</b>	<b>20</b>
<b>Total</b>	<b>100%</b>	<b>181</b>

When asked about work setting, 96% reported having worked in a general private dental practice, 29% in a periodontal dental practice, and 18% in a pediatric dental practice (Table II). Thirteen percent of the respondents stated that they had worked in "other" office environments, including prosthodontics, dental hygiene education, prison dental clinics, and dental software company.

**TABLE II Respondents' Past and Present Office Setting**

<b>Office Environment</b>	<b>Percent</b>	<b>N</b>
<b>General Private Dental Practice</b>	<b>96%</b>	<b>174</b>
<b>Dental Public Health</b>	<b>14%</b>	<b>25</b>
<b>Pediatric Dental Practice</b>	<b>18%</b>	<b>33</b>
<b>Periodontal Dental Practice</b>	<b>29%</b>	<b>53</b>
<b>Geriatric Dental Practice</b>	<b>4%</b>	<b>8</b>
<b>Dental Research</b>	<b>4%</b>	<b>7</b>
<b>Hospital Dentistry</b>	<b>7%</b>	<b>13</b>
<b>Other</b>	<b>13%</b>	<b>23</b>

The specialty tracks most experienced by respondents were hospital dentistry, periodontology, and pediatric dentistry. Table III shows the distribution of specialty track experience by respondents. Eighty-eight percent were assigned to their requested specialty track, 10% were assigned to their second or third choice, and 2% could not remember. Of those who experienced the specialty track they requested (n=158), 92% agreed or strongly agreed that the specialty track was an important part of dental hygiene education. Conversely, 70% of those who did not get the specialty track they requested (n=17) agreed or strongly agreed that the specialty track was an important part of the dental hygiene education. No statistically significant differences existed between the responses from individuals who experienced the first choice of specialty track and those who did not receive their first choice.

**TABLE III Specialty Track Participated in While in Baccalaureate Degree Program**

<b>Specialty Track</b>	<b>Percent</b>	<b>N</b>
<b>Pediatric Dentistry</b>	<b>19%</b>	<b>35</b>
<b>Dental Public Health</b>	<b>17%</b>	<b>31</b>
<b>Hospital Dentistry</b>	<b>24%</b>	<b>42</b>
<b>Research/Oral Biology</b>	<b>3%</b>	<b>6</b>
<b>Periodontology</b>	<b>20%</b>	<b>36</b>
<b>Gerontology</b>	<b>17%</b>	<b>31</b>

Table IV lists questions and responses related to specialty track satisfaction. Eighty-eight percent of respondents agreed that the specialty track was an important part of their dental hygiene education. Eighty percent stated that the specialty track provided important content that has been valuable in their dental hygiene career. Although 90% agreed that the specialty track should be continued, only 10% stated that the ability to participate in a specialty track program factored into their reason for attending the UNC-Chapel Hill baccalaureate degree program. Thirteen percent agreed that the specialty track prepared them for alternative careers and also felt that it prepared them for general clinical dental hygiene practice.

**TABLE IV Dental Hygiene Graduate Opinions of the Specialty Track**

Strongly Agree=5	Agree=4	Neutral=3		Disagree=2		Strongly Disagree=1
		5	4	3	2	
		5	4	3	2	1
The specialty track was an important part of my dental hygiene education.	41%	47%	10%	1%	1%	
The specialty track provided important content that has been valuable to my dental hygiene career.	35%	45%	16%	3%	1%	
Routine patient care, post-graduation was improved by the specialty track experience	23%	47%	21%	9%	0%	
The clinical rotation included in the specialty track improved my clinical skills.	28%	34%	23%	12%	3%	
The specialty tracks at UNC-Chapel Hill should be continued.	60%	30%	9%	0%	1%	
The specialty tracks at UNC-Chapel Hill should be replaced by more general dental hygiene clinical time.	3%	6%	20%	41%	30%	
The specialty track experience made me more likely to practice in an alternative setting.	13%	33%	35%	17%	2%	
The ability to participate in a specialty track program factored into my reason for attending UNC-Chapel Hill.	4%	6%	19%	36%	35%	
The literature review paper was an important part of the specialty track program.	13%	33%	36%	12%	6%	
It was easy to access research papers for the literature review paper.	20%	43%	31%	6%	0%	
The literature review enhanced my knowledge in my specialty track.	17%	43%	27%	11%	2%	

When asked their opinions concerning the literature review paper component of the specialty track, 60% felt that it enhanced their knowledge in the specialty track and 46% agreed that it was an important part of the specialty track program. Seventy-one percent of graduates between 1997 and 1998 strongly agreed or agreed that it was easy to access research papers for the literature review versus 60% of pre-1997 graduates. Graduates pre-1997 did not have online computer databases that advanced access to research.

Forty-six percent of the respondents agreed that the specialty track experience influenced them to more likely practice in an alternative setting. For respondents who had reported working in public health (n=25), 68% agreed or strongly agree that the specialty track experience resulted in them being more likely to practice in an alternative setting. Similarly, 54% of those who worked in a periodontal practice setting (n=52) agreed or strongly agreed that the experience of a specialty track influenced their choice of work environment.

Table V compares the specialty area participation in the dental hygiene program with the employment in the specialty area. The comparison shows that some of the graduates entered into that specialty field during their dental hygiene careers. There was no correlation between the number of years employed in dental hygiene and the level of experience in different practice settings.

**TABLE V Specialty Area Participation in Dental Hygiene Program Compared to Employment in Specialty Area**

Specialty Track Experience in Dental Hygiene Program	Specialty Area Employment	
	Percent	N
Pediatric Dentistry	36%	12
Dental Public Health	19%	6
Hospital Dentistry	14%	6
Research	50%	3
Periodontology	44%	16
Gerontology	13%	4

Respondents with education beyond a baccalaureate dental hygiene degree (N= 23) had a high percentage of work experience in alternative settings. For respondents that earned master's degrees (N=9), six reported working in a periodontal practice at some point, two in public health, and two in a pediatric dental setting. For respondents who earned a DDS/DMD (N=14), five reported ever having worked in public health, five in a periodontal practice, and two had worked in a pediatric dental practice.

Fifty-six percent of respondents stated that they would like to work in a specialty track position if given the opportunity. Respondents were asked an open-ended question regarding the reason for not working in the specialty area. Table VI gives narratives from responses to this question from selected surveys. An open-ended question asked respondents to include suggestions for adding specialties offered in the specialty track program at UNC-Chapel Hill. Table VII shows some of the ideas for additional specialty offerings.

**TABLE VI. Respondents' Reasons for Not Working in a Specialty Area**

Availability	"Availability is limited."
	"I found that there are very few opportunities in hospital dentistry and the salary is much lower than private practice."
Prefers General Practice Setting	"I have found that I enjoy working with all age patients. By working in a general dentistry office I can maintain the skills learned in my perio track as well as work with children. I do feel that of all the tracks offered perio helped me most clinically."
	"I enjoy general dentistry because I continuously see something different everyday I work."
	"Initially, it was due to the fact that there were not public health openings available in my area. Now, I would not pursue a public health position due to the fact that I enjoy a part-time position in a general dentistry practice."
Other	"I received my DDS degree in 1997 and have been in public health dentistry since graduation. I only treat children and feel the specialty track was very beneficial in preparing me for the population I work with."

**TABLE VII. Respondents' Suggestions for Additional Specialties Offered**

<b>Prosthodontics</b>	“Prosthodontics is an important area to know about, including implants. I've also found that my expertise was limited in crown and bridgework. Having more real life experiences related to these areas would be beneficial.”
<b>Product Sales</b>	“Dental product knowledge, research, or sales. General health, nutrition, specialized health for women, pregnant women, compromised health patients, i.e. cancer.”  “I would like a track in dental hygiene product sales with Hu-Friedy, Oral-B, etc.”
<b>Orthodontics</b>	“I feel an orthodontic specialty track would be very useful in a general dental practice for hygienists. At the time I attended UNC, the hygiene program offered very little information regarding orthodontics.”
<b>Cosmetic Dentistry</b>	“ I hope the dental school progresses toward teaching more esthetic (cosmetic) dentistry, this area may be appropriate for a track experience.”

Finally, the survey included an open-ended question asking for suggested modifications to the specialty tracks in undergraduate dental hygiene education to more appropriately prepare graduates for the future. Sixty-five respondents completed this section of the questionnaire. Thirty-two percent (n=21) responded with the common theme of allowing students to experience more than one specialty track. Other suggestions included lengthening rotations and adding more clinical experience during internships.

## **Discussion**

This survey was created in an attempt to find out if there is a relationship between baccalaureate degree dental hygiene students who complete undergraduate specialty tracks and their choice of working environment. Comparing the results with a control group who did not complete a specialty track would have been ideal for this research project. However, funding and time did not permit this comparison. Therefore, the results must be assessed by frequencies and comparisons to past studies indicating the locations and trends of working dental hygienists. While a larger response rate was anticipated, the response rate of 68% is sufficient to assess attitudes and opinions about the specialty track, and to try to evaluate working trends within the group. The response rate was lower due to individuals moving without notifying the alumni association of their new addresses, low interest in participation in the study, or inability to recall the specialty track in their dental hygiene curricula.

The gender response of 100% female is not the optimal sample to show true representation of the population. In the sample, there were four males; all were unresponsive to first and second mailings and phone calls. However, the response is similar to the gender distribution in the 2001 ADHA National Membership Census Survey, where 99.2% of the respondents were women.<sup>17</sup>

In assessing the work settings as reported by respondents, it is important to note outside factors that may have influenced the outcome. For example, 13% of the respondents have furthered their education by earning master's degrees or completing dental school. These individuals may no longer be practicing dental hygiene. Also, there are respondents to the survey who are no longer working in dental hygiene for other reasons such as pursuing different careers or for family reasons. The fact that a percentage of the sample no longer works in dental hygiene, may limit the number of individuals practicing in alternative specialty settings.

Trends in dental hygiene practice show that a vast majority of clinicians work in private practice.<sup>16-18</sup> The 2001 ADHA National Membership Census report showed 83% of respondents worked in private clinical practice as their primary employment setting, 6% in a college or university setting, 3% in business, 1% in government, and 2% in specialty practice.<sup>17</sup> The 1991 ADHA study reported only 4.3% as ever working in office environments other than a general dental practice, whereas results from this sample show that 29% reported working in a periodontal dental practice, 18% in pediatric dental practice, 14% public health, 13% other dental hygiene environments, 7% in hospital dentistry, 4% geriatric dentistry, and 4% in dental research.<sup>18</sup> In comparison with the 1991 ADHA study and 2001 ADHA report, there was a stronger trend for the UNC specialty track graduates to have worked in a setting other than a general dental practice. Even though 96% of the specialty track graduates had worked in general private dental practice, many had explored other aspects of dental hygiene and had worked in specialty dental practice environments.

There was no correlation between the number of years employed in dental hygiene and the level of experience in different work environments. An assumption that more time in dental hygiene practice would produce more experience in alternative environments was not true in this sample.

The tendency for those who participated in a specialty track and sought work in that field may have been influenced by the specialty track education. With 44% of respondents in periodontal practices and 36% of respondents in pediatric dental practices participating in those specific tracks, it is evident that individuals may have chosen an alternative dental hygiene environment because of specialty track experience.

Respondents included various reasons for not working in a specialty practice. Dental hygienists' employment depends on the dental practices in their vicinity, and specialty practices are not in abundance in all locations. In rural locations, there may not be opportunities other than general private dental practices. Respondents also noted that, many times, pay is significantly higher in general dental practice than in some specialty areas. For example, public health dental hygienists' salary is generally notably lower than that in private dental practice.<sup>20</sup> Having more responsibilities and additional stress from the job, yet with pay that does not reflect the increase in challenges may play a significant role in job decisions.<sup>20</sup>

Although students did not feel the specialty track program was a reason to attend the UNC-Chapel Hill dental hygiene program, the responses and attitudes were positive. At least 70% agreed or strongly agreed that the specialty track was important, provided valuable dental hygiene content, and improved overall patient care. This demonstrates that graduates, regardless of practicing environment, feel the specialty track is an exceptional experience giving students innovative learning practices.

Students positively responded and expressed that the literature review project was an important aspect to their education. Sixty percent of the respondents agreed that the literature review enhanced their knowledge in the specialty area. The literature review assignment was designed to give students a more in-depth relationship with the information available in published research literature. Ironically, much educational research now shows the importance of combining dental hygiene education and research for evidence-based learning.<sup>14</sup> Some dental hygiene educators believe that awareness of research and ability to critique and appraise literature are necessary objectives in all accredited dental hygiene education programs.<sup>14</sup> Possessing the skills to critique published reports may aid dental hygienists in providing appropriate and timely patient care in all situations. Graduates between 1997 and 1998 had access to computer databases, such as Medline, to perform literature searches. This may have allowed students easier access to literature, giving them a more positive experience when researching topics.

Respondents included helpful and creative suggestions that may influence changes in current or new specialty track programs. Some suggestions for other specialty tracks included prosthodontics and orthodontics. The most common

modification suggested was the opportunity to participate in more than one specialty track. This would allow students a chance to explore more than one area that may interest them. If students were able to experience areas of specialization in undergraduate training, they may feel more confident to explore these areas after graduation.

This study would have been enhanced if a control group that had not participated in the specialty track was included. By not including a control group, it was difficult to compare this sample population with current trends nationally.

## **Conclusion**

A large majority of the respondents (88%) felt that the specialty track curriculum was a beneficial and significant part of their dental hygiene education. Regardless of the outcome results' measurement of practice trends, results of this study show the program to be popular among graduates. The specialty track program is unique in the UNC-Chapel Hill dental hygiene curriculum in that it offers students various learning experiences and opportunities that they might not receive in other dental hygiene programs. Many extrinsic factors may influence the practice trends of dental hygienists. With such positive feedback in regards to the specialty track program, a track experience for students should be continued or included in the dental hygiene curriculum.

Additional studies need to be conducted with greater numbers of students and schools in order to verify if undergraduate specialty track experience positively correlates to dental hygienists working in alternative oral health care settings.

## **Acknowledgements**

*This research project was funded by The American Dental Hygienists' Association, Institute for Oral Health.*

## **Notes**

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