Status of Current Dental Hygiene Faculty and Perceptions of Important Qualifications for Future Faculty

Amy E. Coplen, RDH, MS; Christine P. Klausner, RDH, MS; Linda S. Taichman, RDH, MS, MPH, PhD

Abstract

Purpose: Dental hygiene educators are expressing concerns about faculty retirement causing an educator shortage. The primary objective of this study was to investigate current dental hygiene faculty demographic characteristics, future plans and perceptions of important skills for future faculty.

Methods: A Web–based survey instrument was designed after reviewing the literature and consulting with dental hygiene faculty. Permission to conduct this study was obtained from the University of Michigan. The survey investigated demographic characteristics, future plans and perceptions of important skills of future faculty. A cover letter was sent via e–mail to dental hygiene program directors requesting them to forward the link to faculty. Data were analyzed using descriptive statistics and chi–square testing in SPSS.

Results: The response rate was 65%. Program directors provided 24% of responses while non–directors provided 76%. The average age of faculty was 50 years. Within 5 years, 60 of the responding faculty will retire, which includes 20 program directors. Eight percent were in their first year of teaching. Greater than 90% of faculty perceived clinical, educational and technological skills as important for future faculty. Only 53% believed research skills were important, a significantly lower result ($p<0.0001$). Responses for research skills differed significantly by institution type ($p<0.0001$) and credentials ($p=0.013$). Older faculty ranked educational and clinical skills significantly higher than younger faculty ($p=0.005$, and $p=.018$ respectively).

Conclusion: Future dental hygiene faculty will need strong educational backgrounds, clinical skills and technological skills. University and highly credentialed faculty place greater importance on research skills than community college/technical school faculty and those with fewer credentials. Ways to engage current faculty in research should be investigated. Nearly 10% of this sample will retire within 5 years, so ways to attract qualified individuals in the field of dental hygiene education should also be investigated.

Keywords: dental hygiene faculty, retirement, qualifications, education

This study supports the NDHRA priority area, **Professional Education and Development:** Identify the factors that affect recruitment and retention of faculty

Introduction

The dental hygiene profession experienced a period of major growth in the 1960s and 1970s, and its popularity has continued ever since. With that growth, the need for programs in dental hygiene increased, along with need for faculty. A number of dental hygienists entered the profession of dental hygiene education and have remained in those positions for several years. At this time, many of those same faculty members are nearing retirement age.[1]

Health care education, in general, has experienced a shortage of educators due to large numbers of faculty reaching retirement age. This has fueled a growing concern about filling open positions in the future.[1–3] This issue has become increasingly important in dental and allied dental health education.[3–5] The results of a national survey of dental hygiene program directors which examined faculty openings reported this concern in the literature as early as 1992.[6] As a result, several ways of coping with the educator shortage have been implemented, such as increasing the numbers of part–time faculty, increasing the workload of current faculty and hiring faculty with less than preferred credentials.[4] The prestige of a profession has always been directly linked to the academic qualifications of its faculty. Dental hygiene as a profession will need to acquire more qualified educators in order to continue to move forward. In addition, studies to date examin-

ing desired qualities and credentials of future faculty have often surveyed program directors rather than all dental hygiene faculty.[4,6–8] The purpose of this study was to survey dental hygiene faculty nationwide, examining their demographics, academic profile and perceptions on the important qualifications of future faculty. In addition, this study included items exploring the importance of technological skills needed for teaching in the 21st century, an area not assessed in previous surveys.

Review of the Literature

Faculty Demographics and Academic Profile

Very little information is readily available on the current demographics and academic profiles of U.S. dental hygiene faculty. In 2007, Collins et al studied full–time baccalaureate faculty and found that 71.1% held a master's degree, 13.2% a doctorate degree and 6.1% a DDS.[1] In 1998, program directors were surveyed to identify the highest degree earned for those holding a position of director. The highest degree earned was a master's degree (64.5%), followed by DDS (12.3%), doctorate degree (10.9%) and bachelor's (10.1%). Of those holding a master's degree, the majority held it in the area of education (47.7%).[9] Both of these studies chose to limit their sample to faculty in baccalaureate programs or program directors. Considering that associate degree–granting programs continue to supply the majority of practicing dental hygienists nationwide, it appears that many faculty members have not been surveyed.

The American Dental Association sponsors an annual survey of Allied Dental Education (ADA–ADE), which collects detailed information from all dental hygiene programs about dental hygiene faculty, including the number of full and part–time faculty, rank and highest degree earned.[10] The ADA–ADE report indicates that approximately 28.2% of dental hygienist educators hold a master's degree, however, information on the area of specialization is not provided.[10] Recent information is lacking on the areas of masters specialization for dental hygiene faculty.

Faculty Shortage Due to Retirement

Results of a recent survey of dental hygiene faculty indicated that in 2006 to 2007, 33% of all dental hygiene faculty were between the ages of 50 to 59, and 11% were over the age of 60.[10] In 2007, Collins et al reported half of full–time faculty in bachelor's programs plan to retire within 10 years, and approximately 31 of those faculty members plan to retire in the next 5 years (the study had a total sample of 114 individuals).[1] In 2004, an American Dental Education Association task force on the current status of allied dental faculty found that nearly 70% of all dental hygiene programs would need to fill current full–time faculty positions by 2009.[4] Likewise, a study of Canadian dental hygiene programs found that 47% of faculty were over the age of 49, and that almost half of programs anticipate 1 or more faculty openings by 2010.[8] Based on this information, there appears to be a consensus that a significant need for qualified faculty in the profession of dental hygiene is imminent.

Qualifications of Future Faculty

Not only has dental hygiene been experiencing an issue with aging of current faculty, but there has been difficulty finding new faculty with the desired skills and credentials to fill open positions. The reasons given for faculty vacancies included: only a few qualified individuals applied, candidates lacked required academic qualifications or there were no qualified candidates.[11] Two thirds of program director's describe recruitment of faculty as either very difficult (22%) or somewhat difficult (44%).[12] Because of this situation, the American Dental Hygienists' Association (ADHA), in their 2007 research agenda, called for research examining recruitment and retention of faculty and promoting graduate education and career path options.[13]

Over the past 20 years, program directors have been surveyed to determine desired credentials for new faculty appointments, qualifications of future faculty and the number of faculty openings. Some programs require a master's degree for full–time tenure track faculty. Many programs do not require a master's degree, but would prefer a candidate with a master's degree.[4,7] Program directors have also reported important qualifications of future faculty. They identified 5 desired qualifications for future faculty, including experience in teaching, research, patient care, administration and sales/marketing.[6,7]

The importance of technological skills in future faculty has not been addressed in previous studies. This is important because of the current environment in which students learn. Technology is being incorporated into the classroom and clinical environment in a variety of ways. Faculty members have the opportunity to use advanced Web–based course and collaboration sites for placement of course handouts, assignments and grades. Students have access to a number of communication tools and collaboration methods that are also Web–based. In the clinical setting, chair side state–of–the–art computer set–ups include programs with

digital patient radiographs, records and programs for clinical grading.

Distance education is becoming increasingly popular in higher education as well, and dental hygiene is following suit. In 2002, 22% of programs taught a portion of their curriculum using distance education, and 13% of schools had future plans to do so. That same year, the majority of programs with distance education had been using it for 5 years or less. In 2007, 41 dental hygiene programs reported offering online study.[10,14] In addition, all but 5 of these programs required formal training for their faculty in distance education and delivery. It is clear that online education is the wave of the future, but current faculty members often require significant training to utilize these new technologies.

The most common usage of distance education in dental hygiene courses is through asynchronous learning.[14,15] This type of instruction makes it possible for students to complete work on their own schedules, with course materials available around the clock. The most common courses being placed online are periodontology, oral pathology, dental anatomy, nutrition, radiology and pharmacology, and 4 programs currently have all their didactic coursework online.[14]

In addition to the roles of educator and clinician, dental hygiene faculty members also need technological skills. The importance of these skills has not been addressed in previous surveys of desired qualifications in future faculty. If faculty vacancies are not filled with qualified individuals, there is a potentially negative impact on dental hygiene education and the profession of dental hygiene. Based on these issues, this study addressed the assessment of the current status of dental hygiene faculty, and the identification of current faculty perceptions on the important qualifications of future faculty in the areas of education, technology, research and patient care.

Methods and Materials

Data Collection Instrument

This study examined dental hygiene faculty in the U.S. by way of an electronic survey. The survey instrument was developed using information obtained from a comprehensive literature review and in consultation with faculty from the University of Michigan Dental Hygiene Program and faculty from the University of Michigan, School of Education. Due to the nature of the research study, this project received exempt status from a full review by the Institutional Review Board of the University of Michigan.

Since there is no current database containing e–mail addresses of all dental hygiene faculty, an invitation to participate in this survey was sent via e–mail by the director of the University of Michigan's dental hygiene program to dental hygiene program directors nationwide. Dental hygiene program director e–mail addresses were obtained using the ADHA's 2008 list of Entry Level Dental Hygiene Education Programs.[16]

The invitation was sent to 297 entry–level programs. The invitation letter requested participation in the survey and for program directors to forward the forthcoming electronic survey link to all dental hygiene faculty members associated with their program. One week after the initial invitation was sent, a cover letter with a link was sent to directors asking them to forward it to all dental hygiene faculty members. The survey was distributed in October 2008, and a follow–up e–mail was sent 3 weeks after the initial e–mail to non–respondents.

The 40 item anonymous questionnaire was distributed using SurveyMonkey™ software and included 3 sections. Section 1 addressed questions regarding demographics related to teaching, including institution type, current age, years of experience and faculty position. Section 2 included items of personal information and future plans of the faculty members. The question about a faculty member's future plans was adopted from the National Study of Postsecondary Faculty.[17] In section 3, faculty were given a list of skills and qualifications relating to education, clinical, technology and research skills in dental hygiene education, and asked to rank their level of importance for future dental hygiene and research.

Statistical Analysis

The data were collected with SurveyMonkey™ and downloaded into an excel file. This file was then imported into SPSS (Version 16.0) for analysis. All data were aggregated before to ensure confidentiality. Data analysis consisted of computing descriptive statistics such as frequency distributions, percentages and measures of variability. Continuous variables such as year born, years of experience and days worked were converted to categorical variables. Bivariate relationships (chi–square coefficients for categorical and ordinal data, Pearson correlation and Fisher's exact test) between faculty demographics and importance of skill categories were then examined. In all cases, alpha=0.05 was used for testing significance. All statistical steps

were completed in consultation with a statistician.

Results

Respondents

The letter of invitation, along with the link to the electronic survey, was sent to 297 active dental hygiene programs in the U.S. Six surveys were returned for incorrect e–mail addresses. Of the remaining 291 hygiene programs directors, 149 program directors responded "yes" when asked if they were the program director, but only 87 directors sent return e–mails with the requested information on the number of faculty associated with their program (n=978). Using this information, we calculated the response rate of faculty receiving the survey via e–mail 65% (631 of 978).

Demographics

Faculty demographic data are summarized in Table I. The majority of faculty worked in community colleges or technical school settings (65.7%), and the remaining faculty taught in a university setting (34.3%), with 18.5% being associated with a dental school. The average age of faculty members being surveyed was 50 years. The largest number of faculty were between the age of 50 to 59 years (45%), followed by faculty members aged 40 to 49 years (24.5%). Forty–two faculty members (6.7%) had more than 30 years of experience, and 30.4% of faculty (n=191) had 5 years of experience or less. Fifty–two faculty members (8.1%) were in their first year of teaching. Most faculty members taught didactic courses (76%, n=478), and 24% taught exclusively in the clinic (n=147). Directors represented 26% (n=149) of the sample, and 74% (n=476) of the sample held traditional faculty positions.

Table I. Faculty Demographics

	Number of Faculty	Percent of Faculty
Institution Type	(N=631)	
Community College	364	57.6%
Technical/Vocational School	51	8.1%
University associated with a Dental School	117	18.5%
University not associated with a Dental School	99	15.7%
Current Age of Faculty	(N=605)	
29 and under	25	4.1%
30–39	82	13.6%
40–49	148	24.5%
50–59	272	45%
60 or older	78	12.9%
Average Age of Faculty	50 years	
Faculty Years of Experience	(N=628)	
0–5 years	191	30.4%
6–10 years	143	22.8%
11–20 years	154	24.5%
21–30 years	98	15.6%
31–40 years	42	6.7%
Faculty Position	(N=628)	
Director	149	24%
Non–director	476	76%
Didactic Teaching Responsibilities	478	76%
Clinical Teaching Only	147	24%

Academic Profile

The faculty academic profile is summarized in Table II. The highest degree earned by most dental hygiene faculty was a master's degree (53%, n=330), followed by a bachelor's degree (31%, n=196), doctorate or DDS (13%, n=78) and an associates (3%, n=18). Faculty with a bachelor's degree concentrated their education in dental hygiene (21.3%), health education/administration (2.5%) and allied health (1%). All other disciplines studied were less than 1%. Among faculty indicating a master's degree, the most common area of study was education/educational administration (19.2%), dental hygiene (9.8%) or health education (4.5%). Four percent of faculty members were currently in progress toward a master's degree. Faculty holding a doctorate degree most commonly indicated DDS (7.6%), education (1.7%) or educational administration/leadership (1.5%) as their area of concentration. One percent of faculty members were in progress toward a doctorate degree. All other areas studied for a master's or doctorate degree were less than 1% for each discipline. The majority of respondents who indicated the direc-

Table II. Highest Degree Earned by Faculty (N=622)

Highest Degree Earned	N	%	Degree Discipline
Associate's	18	2.9%	• Dental Hygiene– 100% (N=18)
Bachelor's	196	31.5%	• Dental Hygiene – 67% (N=132) • Health Education/Administration – 8% (N=15) • Allied Heath – 3% (N=6) • All other areas <1% per discipline – 22% (N=43)
Master's	330	53.1%	• Education/Educational Administration – 37% (N=121) • Dental Hygiene – 18% (N=61) • Health Education – 10% (N=32) • In Progress – 8% (N=25) • MPH – 4% (N=14) • All other areas <1% per discipline – 23% (N=77)
DDS/Doctorate	78	12.5%	• DDS – 62% (N=48) • Education – 13% (N=10) • Educational Leadership/Higher Education – 11% (N=9) • In Progress – 14% (N=11)

tor position held a master's degree (67.1%), with fewer holding a doctoral degree (22.8%) or baccalaureate degree (10.1%).

Faculty Retirement

Faculty members were asked about their plans in the next 5 years (Table III). The majority of faculty (81.2%) plan to continue in their current position. The next most frequent response was to retire from the workforce (9.5%, 60 faculty members). Of those faculty, 22 are directors of dental hygiene programs. Faculty were also asked a separate question on whether or not they would elect to draw on their retirement and continue working on a part–time basis. Fifty percent (n=312) said they would.

Table III: Faculty Career Pathway in Next Five Years (N=616)

	Number of Faculty	Percent of Faculty
Continue in my current position	513	81.2%
Retire from the workforce	60	9.5%
Accept a full–time job at another educational institution	21	3.3%
Accept a full–time job not in an educational institution	12	1.9%
Accept a part–time job at another educational institution	10	1.4%

Skills and Characteristics for Future Faculty

Faculty were given 21 qualifications relating to education, clinical, technology and research skills in dental hygiene education and asked to rank their level of importance for future dental hygiene faculty on a 4 point Likert–type scale. For each of the 4 categories, education, technology, research and clinical skill responses were consolidated. If a faculty ranked a category as either very important of moderately important, it was considered to be important. If faculty gave a rank of not very important or not important at all, it was considered to be unimportant. The responses were further consolidated so that if a faculty considered half or more of the individual questions in a given category as important, the response was recorded as indicating the category, as a whole, being important. If faculty considered half or more of the individual questions in a given category as unimportant, the response was recorded as indicating that category, as a whole, was unimportant.

The perceived important skills needed among future dental hygiene faculty as rated by current faculty were clinical dental hygiene (99%), followed by educational skills (97%), technology skills (94%) and research skills (53%). Chi–square tests of significance were used to compare differences in preference of specific skills categories. Research skills were rated significantly lower as an important qualification of future faculty ($p<.0001$).

Chi–square tests of significance were used to examine differences between institution type, highest degree earned, faculty position, level of experience

Table IV. Faculty Ranking of Skill Categories Comparing Highest Degree Earned (N=628)

	Associates (N=18)	Bachelor's (N=197)	Master's (N=335)	DDS/PhD (N=78)	P–value
Placed Importance on Technological Skills	83.3%	92.9%	96.1%	93.6%	P=.066
Placed Importance on Educational Skills	88.9%	97.0%	98.2%	96.2%	P=.082
Placed Importance on Clinical Skills	93.8%	98.4%	99.7%	95.9%	*P=.011
Placed Importance on Research Skills	50.0%	44.7%	59.1%	50%	*P=.012

Table V. Faculty Ranking of Skill Categories Comparing Age Ranges (N=592)

	29 and younger (N=24)	30–39 (N=79)	40–49 (N=144)	50–59 (N=267)	60 and older (N=78)	P–value
Placed Importance on Technological Skills	92.0%	93.9%	93.2%	95.2%	97.4%	P=.578
Placed Importance on Educational Skills	92.0%	93.9%	97.3%	99.3%	100%	*P=.005
Placed Importance on Clinical Skills	91.7%	96.2%	99.3%	99.3%	100%	*P=.018
Placed Importance on Research Skills	52.0%	46.3%	54.1%	52.2%	62.8%	P=.328

and ranking of skill categories. Table IV examined differences in faculty ranking of skill categories according to highest degree earned. Faculty holding a bachelor's or master's degree placed a higher importance on clinical skills and experience than faculty with an associates or doctorate degree (p=0.011). Faculty holding a master's degree rated research skills higher than any other degree categories (p=0.012).

Table V shows differences in faculty ranking of skill categories by age. When faculty were divided into age categories, older faculty ranked educational skills and clinical skills significantly higher than younger faculty (p=0.005, p=0.018 respectively). Faculty that teach didactic courses ranked educational skills significantly higher than faculty who teach in the clinic environment exclusively (98.3% compared to 93.9%, p=0.007).

When comparing directors vs. non–directors in terms of ranking of skill categories, directors were more likely to believe that technological skills were important than clinical and didactic faculty (p=0.003, Table VI). Faculty with higher level credentials believed that research skills were more important (p=0.012). Research skills were also significantly more important to university faculty than community college/technical school faculty at 73.6% and 42.2%, respectively (p<0.0001, Table VII).

Discussion

The intent of this study was to survey all U.S. dental hygiene educators to determine their perceptions of important skills needed in the development and recruitment of future faculty. However, it appears that almost half of dental hygiene faculty did not get the opportunity to complete the survey, presenting the possibility of response bias. Only 87 out of the 149 program directors who responded sent a return e–mail indicating the number of faculty associated with their programs. Of the 987 faculty indicated, nearly 65% (631 of 987) responded to the survey. Still, the discrepancy between the number of respondents indicating director status and the number of returned e–mails stating the number of faculty associated with their program decreases the total response rate, but the amount of decrease is unknown.

It is important to note that at the time the survey instrument was administered, the ADA–ADE survey reported there were 4,237 part and full–time faculty teaching nationwide in dental hygiene programs.[10] Assuming these numbers truly reflect the size of the pool of available dental hygiene educators in the U.S., the survey captured the opinions of nearly 15% of these individuals, which represents a larger response rate than would a randomized sample of 10% of faculty been taken.

Faculty ages in this study compared favorably

to Collins et al,[1] who reported in 2007 the average age of faculty being 50.2 years over a younger average age (46 years) reported by Nunn et al[4] in 2004 and Haden et al in 2002.[18] While 21% of faculty surveyed indicated they have more than 20 years of experience, over half of current faculty surveyed had 10 years or less. This study found that 8% of respondents in the sample are in their first year of teaching, a survey item which has not been measured in previous studies, indicating there is a large number of faculty entering or returning to dental hygiene education. Interestingly, over half of the sample in this study was over the age of 50, yet 53.2% of faculty had 10 years or less experience. These results suggest that these newer dental hygiene educators are not necessarily younger.

A surprising finding in the study, considering the average age of the sampled faculty, was the observation that fewer than 10% of faculty respondents indicated their intent to retire within the next 5 years. This figure is significantly less than the 23.2% reported in a 2007 study, and 68% in a 2002 study.[1,4] Possible differences in the results could be that the Collins et al sample was one–fifth the size of the sample that was used in this study and focused only on baccalaureate institutions.[1] Another possibility, as suggested by the 8% of respondents in their first year of teaching, is that many positions that have become open due to faculty retirement have now been filled with new faculty members. An important finding of this study is that in the next 5 years, over one–third of individuals planning to retire are dental hygiene program directors. This finding agrees with the Nunn et al report that indicated a significant number of dental hygiene program directors plan to retire in the near future.[4] Of interest is the current economic downturn and its effect on the retirement plans for both faculty and directors.

Comparing faculty academic profiles from this study to the ADA–ADE survey performed in 2007–2008,[10] the results indicate a similar number of faculty hold a bachelor's degree as their highest degree (31.5% in this study compared to 33.8% in the ADA–ADE survey). The number of total faculty holding a doctorate or DDS was significantly lower in this survey (12.5% compared to 25.6% in the ADA–ADE survey). This may be due to the fact that the ADA–ADE survey is one in which directors reported on faculty, and many universities associated with dental schools utilize dentists to teach didactic courses in the biological sciences. This study sought to capture both part and full–time dental hygiene faculty, and it is not certain if faculty with DDS credentials were included in all cases when director's forwarded the survey. In the sample used for this survey, the number of faculty who hold a master's degree was significantly higher than the ADA–ADE survey (53.1% to 33.8%, respectively).

The majority of faculty in this study who held a master's degree held it in an area other than dental hygiene. This study indicates a lower number of faculty with a master's in dental hygiene working in academia (9.8%, n=61) compared to what Jevack et al reported in 2000 when looking specifically at master's in dental hygiene graduates (68%, n=119).[19] One reason for the discrepancy in results

Table VI. Faculty Ranking of Skill Categories Comparing Directors vs. Non–directors (N=625)

	Directors (N=149)	Non–Directors (N=476)	P–value
Placed Importance on Technological Skills	98.7%	92.4%	*P=.003
Placed Importance on Educational Skills	96.2%	99.3%	P=.057
Placed Importance on Clinical Skills	99.3%	98.5%	P=.687
Placed Importance on Research Skills	47.7%	54.6%	P=.158

Table VII: Faculty Ranking of Skill Categories Comparing University vs. Community College/ Technical School (N=598)

	University (N=202) %	Community College/ Technical (N=396) %	P–value
Placed Importance on Technological Skills	93.5%	94%	P=.862
Placed Importance on Educational Skills	96.8%	96.9%	P=1.00
Placed Importance on Clinical Skills	98.1%	99%	P=.456
Placed Importance on Research Skills	73.6%	42.2%	*P<.0001

may be that graduate dental hygiene programs are not geographically accessible.[20] Although there has been a 30% increase in master's programs in the last decade, there are still only 18 programs in the U.S. currently offering a master's degree in dental hygiene.[20,21] The reality is that most dental hygienists enter the field with an associate's degree. This requires individuals to first complete a bachelor's degree before pursuing a master's degree. Moreover, the master's programs vary greatly according to content, and they take only a small number of students each year as compared to the number of clinical dental hygiene graduates. It is unclear whether the number of doctorate degrees obtained by those holding the position of program director has increased in the last decade. In the current sample, twice the percentage of directors held a doctorate degree compared to the Wilder et al study in 2000, which also included directors in Canadian dental hygiene programs.[7] On the other hand, a similar number of directors holding a doctorate degree was found when compared to a study done 10 years ago on program directors' demographic and academic profile.[3] This would indicate that the number of dental hygiene program directors who hold a doctorate degree has held steady over the last 10 years and not increased.

This study found that more than 90% of all dental hygiene faculty believe that clinical skills, educational skills and technological skills are important qualifications for future faculty. Only half of all dental hygiene faculty reported that they believed research skills are important for future faculty, which was significantly lower than the other 3 skill categories. The reason for this could not be determined from the results, however, it may be due to the fact that the majority of dental hygiene faculty work in community colleges or technical school settings where demands for scholarly activity related to research are not routinely emphasized. Faculty of bachelor degree programs tend to have more requirements relating to research/scholarship, mentoring graduate students and professional growth when compared to community college faculty.[22] Even bachelor's degree program faculty report that "no pressure to publish" is an important factor in deciding whether or not to stay at their current position or take a new position in another institution.[1] However, this study found that research skills are more highly valued by faculty in university settings compared to those in technical/associates degree settings. Ultimately, faculty with higher levels of education and faculty teaching in the university setting, including program directors, still routinely placed less importance on research skills compared with other skills.

As might be expected, faculty who teach didactic courses place a higher importance on educational skills than faculty who teach exclusively in the clinical setting (98.3% compared to 93.9%). However, this study found didactic and clinical faculty members place an equal importance on clinical skills. Faculty who teach didactic courses often teach in the clinical environment as well, which may contribute to this result. In general, faculty tend to place a high importance on clinical competence of all faculty teaching in the dental hygiene program.

To date, there have been no studies identified that survey current faculty opinions on the need for technological skills as a qualification in future dental hygiene faculty. When comparing the opinions of dental hygiene directors with that of faculty, this study found that program directors placed significantly higher importance on technological skills than traditional faculty. Directors may be more inclined to seek skills in technology because most new innovative teaching practices involve some aspect of technology.

A survey of community college faculty of all disciplines nearing retirement age conducted in 2001 found that older faculty believe the ability to teach using distance learning and ability to conduct research were the least important skills/qualifications necessary for future faculty.[23] In contrast, this study found that faculty over the age of 60 placed a higher importance on technology and research skills than all other age groups. Although this difference was not statistically significant based on the limited sample of participants over the age of 60, it is an important observation in comparison to the community college faculty survey, which included faculty of all disciplines. Faculty over the age of 60 still placed the highest level of importance on educational and clinical skills, with 100% believing these skills and experiences are important for future faculty. One reason for the differences in these results may be the increased use of the internet during the preceding 9 years, where educators have become more familiar with distance learning and the technology has become more user friendly along with the capacity to reach a wider range of students.

As faculty members continue to age and retire, there is the challenge to educate, recruit and train new dental hygiene faculty. While only 10% of faculty in this samples plan to retire in the next 5 years, there are still 60 projected faculty vacancies by 2013. This study identified current faculty expectations for skills and qualifications considered to be important for future faculty. In addition to the preference for new faculty having master's de-

gree,[4,7] this study has shown that faculty place a high importance on clinical, educational and technological skills.

By ranking each skill so highly, it appears that current dental hygiene programs are unwilling to compromise their high standards when hiring future faculty, even though there is a clear indication of a dental hygiene faculty shortage nationwide. If the dental hygiene profession is to achieve recognition and status in the dental and medical professions, there must be continued effort to contribute to a body of research in dental hygiene. It is clear from the results of this study that new ways of engaging faculty in the area of research should be explored.

A strength of this study was that the total sample size is greater than any other sample of dental hygiene faculty members taken to date. However, due to the sampling scheme, there is a possibility of response bias and as such the sample does not reflect the real distribution of full to part–time faculty in dental hygiene institutions. This could have impacted the data in several ways – if more part–time faculty responded, it would likely decrease the number of master's degree respondents since part–time faculty tend to have more bachelor's degrees than master's. It may have further decreased the importance of research since most part–time faculty members teach exclusively in the clinic. Finally, it is important to note that the survey did not request that the respondent indicate which state in which they resided, so it is uncertain as to whether each state has adequate representation in the sample and results may not be generalized to every state.

Conclusion

This study is the first to indicate a large number of faculty members who hold the director position planning to retire in the next 5 years. Information regarding the status of retirement plans for dental hygiene directors is important for long term plans of dental hygiene programs and for ADHA leaders who monitor professional education of the dental hygienist. The retirement of faculty directors will contribute to the shortage of experienced teaching faculty. Program directors assume responsibilities of leadership and administration that may affect their availability for teaching courses. Studies examining desired leadership and administration skills for future program directors will be an important factor to explore in future studies. Another area for further investigation would be exploring reasons for entering the field of education. With a high number of predicted faculty vacancies, and the need to recruit more faculty members, it would be important to know the reasons why they are entering the field.

The present study has identified that clinical, teaching and technology skills are important characteristics for future dental hygiene faculty. Information on this topic is potentially important to graduate program directors regarding key curriculum content or focus areas for dental hygiene master's programs. For those individuals who achieve a master's degree in areas other than dental hygiene with the goal of entering the field of education, the results of this study are valuable in preparing them to obtain faculty positions in dental hygiene programs.

Amy E. Coplen, RDH, MS, is an Assistant Professor at the Pacific University, School of Dental Health Science; Christine P. Klausner, RDH, MS is an Assistant Clinical Professor in the Department of Periodontics and Oral Medicine, School of Dentistry, University of Michigan; Linda S. Taichman, RDH, MS, MPH, PhD is an Assistant Professor in the Department of Periodontics and Oral Medicine, School of Dentistry, University of Michigan

Acknowledgments

This paper is dedicated to the memory of our mentor and colleague, Christine Klausner, who made a significant contribution to this project before she passed away on September 5, 2010.

References

1. Collins MA, Zinske CD, Keskula PT, Thompson AL. Characteristics of full–time faculty in baccalaureate dental hygiene programs and their perceptions of the academic work environment. *J Dent Educ*. 2007;71(11):1385–1402.

2. Kowalski SD, Dalley K, Weigand T. When will faculty retire? factors influencing retirement decisions of nurse educators. *J Nurs Educ*. 2006;45(9):349–355.

3. Livingston HM, Dellinger TM, Hyde JC, Holder R. The aging and diminishing dental faculty. *J Dent Educ*. 2004;68(3):345–354.

4. Nunn P, Gadbury–Amyot CC, Battrell A, et al. The current status of allied dental faculty: a survey report. *J Dent Educ*. 2004(3):329–344.

5. Haden NK, Beemsterboer PL, Weaver RG, Valachovic RW. Dental school faculty shortages increase: an update on future dental school faculty. *J Dent Educ*. 2000;64(9):657–673.

6. Keevil JM. Faculty openings and recruitment in dental hygiene education. J Dent Hyg. 1992;66(6):254–258.

7. Wilder RS, Mann G, Tishk M. Dental hygiene program directors' perceptions of graduate dental hygiene education and future faculty needs. *J Dent Educ*. 1999;63(6):479–483.

8. Mitchell TL, Lavigne SE. A survey of canadian dental hygiene faculty needs and credentials. *J Dent Educ*. 2005;69(8):179–889.

9. Holt MP. A national survey of dental hygiene education administrators: demographics, characteristics, and academic profile. *J Dent Hyg*. 1998;72(4):17–23.

10. American Dental Association Survey Center. Survey of allied dental education: 2007–08. American Dental Association [Internet]. 2009 November. Available from: www.ada.org/sections/professionalResources/pdfs/survey_allied.pdf

11. Glick NL. Characteristics of dental hygienists who are faculty members in baccalaureate dental hygiene programs. *J Dent Educ*. 1990;54(6):323–325.

12. American Dental Hygienists' Association. Research Brief: Dental hygiene education program director survey. 2006.

13. American Dental Hygienists' Association. National Dental Hygiene Research Agenda: Revised March 2007. American Dental Hygienists' Association [Internet]. 2007 March. Available from: www.adha.org/downloads/Research_agenda%20-ADHA_Final_Report.pdf

14. Grimes EB. Use of distance education in dental hygiene programs. *J Dent Educ*. 2002;66(10):1136–1145.

15. Gussy MG, Knevel RJ, Sigurdson V, Karlberg G. Theoretical and practical considerations for the development of online international collaborative learning for dental hygiene students. *Int J Dent Hyg*. 2006;4(3):154–159.

16. Entry level dental hygiene programs. American Dental Hygienists Association [Internet]. [cited 2008 May 5]. Available from: http://www.adha.org/downloads/edu/Entry_Level_Schools_for_Web_Site.pdf

17. National Center for Education Statistics. 1999 National study of postsecondary faculty: faculty instrument. Washington, D.C. U.S. Department of Education. 1999.

18. Haden NK, Morr KE, Valachovic RW. Trends in allied dental education: an analysis of the past and a look to the future. *J Dent Educ*. 2001;65(5):480–495.

19. Jevack JE, Wilder RS, Mann G, Hunt RJ. Career satisfaction and job characteristics of dental hygiene master's degree graduates. *J Dent Hyg*. 2000;74(3):219–229.

20. Gaston M. Graduate education in dental hygiene. *J Dent Hyg*. 1999;73(1):36–39.

21. Master's of science degree in dental hygiene and related disciplines. American Dental Hygienists Association [Internet]. [cited 2009 March 29]. Available from: http://www.adha.org/careerinfo/masters.htm

22. Collins MA, Zinskie CD, Keskula DR, Thompson AL. Institutional responsibilities and workload of faculty in baccalaureate dental hygiene programs. *J Dent Educ.* 2007;71(11):1403–1413.

23. Berry LH, Hammons JO, Denny GS. Faculty retirement turnover in community colleges: a real or imagined problem? *Comm Col J Res Prac*. 2001;25(2):123–136.