

CRITICAL ISSUES IN DENTAL HYGIENE

Perceptions of Dental Hygiene Master's Degree Learners About Dental Hygiene Doctoral Education

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Abstract

Purpose: To determine perceptions about dental hygiene doctoral education among dental hygiene master's degree program enrollees.

Methods: In this cross-sectional national study, all dental hygiene master degree program directors were sent an email requesting they forward an attached consent form and online-survey-link to their graduate learners. The 29-item online survey assessed their perceptions about need for, importance of and interest in applying to proposed dental hygiene doctoral degree programs. A second-request was sent 1 month later to capture non-responders. Frequencies and cross-tabulations of responses were analyzed using the online software program, Qualtrics.™

Results: Of the 255 graduate learners enrolled in 2014 reported by dental hygiene program directors, 159 completed the survey for a 62% response rate. The majority of respondents (77%) indicated that doctoral education in dental hygiene is needed for the advancement of the dental hygiene discipline and such programs are important to the dental hygiene profession (89%). Although most respondents supported both the PhD in dental hygiene and the Doctor of Dental Hygiene Practice (DDHP) degrees, more were interested in applying to a DDHP program (62%) than to a dental hygiene PhD program (38%). In addition, 43% expressed interest in enrolling in a doctoral degree program in the next 1 to 5 years and most preferred a hybrid online/onsite program format. The most frequently reported reasons for pursuing a doctoral degree were: to become a better teacher, to expand clinical practice opportunities, to become a better researcher and to increase salary.

Conclusion: Most dental hygiene master degree learners in this study believed doctoral dental hygiene education is needed and important to the dental hygiene discipline and profession, and were interested in applying to such programs. Future research is needed in this area.

Keywords: doctoral dental hygiene education, doctorate of dental hygiene practice, master's degree in dental hygiene, dental hygiene graduate education

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INTRODUCTION

Nursing, physical therapy and audiology have developed doctoral programs to prepare graduates to engage in discipline-specific research, education and practice (Table I).¹⁻⁴ However, to date there are no dental hygiene doctoral programs in the U.S. Several dental hygiene scholars maintain dental hygiene doctoral programs are needed to prepare dental hygienists to conduct rigorous research to address the discipline's unique perspectives.⁵⁻⁸ They posit dental hygiene doctoral programs are critical to prepare dental hygiene researchers to ask questions related to oral disease prevention and health promotion central to the dental hygiene discipline.⁹ Such research questions not only would increase the discipline's knowledge base, but also would bring dental hygiene's unique perspective to interdisciplinary problem solving to improve the public's oral health.^{4-7,10-12} At present, dental hygienists who wish to pursue a doctoral degree must do so outside the dental hygiene discipline as exemplified by the 29 dental hygienists with doctoral degrees who serve

on the Editorial Review Board of the Journal of dental hygiene.^{4-7,9,13} It is important to applaud these academically-motivated dental hygienists and recognize that the lack of dental hygiene doctoral programs did not stop them from achieving a doctoral degree in another discipline, from making significant contributions to the scientific literature, or from providing a potential pool of faculty for dental hygiene doctoral programs once established. Nevertheless, it also is important to recognize that if the dental hygiene discipline as a whole does not offer a doctoral degree in dental hygiene, then this omission will limit progress in the discipline by resulting in fewer passionate dental hygiene research scholars who ask and answer dental hygiene discipline-specific questions, and depriving them of a formal focused academic context within which to address discipline-specific problems.^{5,6,12} Although one can make a contribution to the scientific literature without holding a doctoral degree, doctoral programs allow time and focused mentoring for the learner to acquire and hone re-

search and grant-writing skills enabling them to conduct research on a larger scale than research conducted by non-doctoral prepared researchers.

Currently, only Namseoul University in South Korea offers a PhD in dental hygiene. Two other dental hygiene doctoral programs are in the developmental stage: one in the U.S. at Idaho State University (Gurenlian, personal communication, September 2014) and one in Canada at the University of Alberta (Compton, personal communication, September 2014). As dental hygiene doctoral programs become established, it is reasonable to expect a significant part of their applicant pool would come from graduate learners enrolled in current dental hygiene master's degree programs. No published research, however, has been reported on perceptions of dental hygiene master's degree learners about dental hygiene doctoral education. Therefore, the research questions for this study are: What are the perceptions of U.S. dental hygiene master's degree learners about the need for, and importance of, dental hygiene doctoral education to the dental hygiene discipline and their interest in pursuing such a degree? To address these questions, we conducted an on-line survey in 2014 of dental hygienists enrolled in dental hygiene master's degree programs in the U.S.

METHODS AND MATERIALS

Study Design and Population

This cross-sectional study surveyed all graduate learners enrolled in U.S. dental hygiene master's degree programs in 2014 to determine their perceptions of doctoral dental hygiene education. This study was approved by the Institutional Review Board, known as the Committee on Human Research (CHR), at the University of California, San Francisco (UCSF).

The Survey

The 10-minute self-administered confidential on-line survey was developed and delivered using the Qualtrics™ system, a web based software program.¹⁴ The survey was pilot tested for face validity by a panel of 8 dental hygienists and revised based on feedback about clarity and length of survey items, and time required to complete the survey. The final survey consisted of 29 items that included 11 demographic items:

- Current enrollment in a dental hygiene master's program
- Format of their master's program (on-line, on-site or hybrid)
- Age
- Gender
- Race
- Year of graduation from entry-level dental hygiene program

Table I: Research and Professional Doctoral Degrees in Other Health-related Disciplines

	Research Doctoral Degree	Professional Doctoral Degree
Nursing	PhD in Nursing	DNP (Doctorate of Nursing Practice)
Physical Therapy	PhD in Rehabilitation Science Program DPTSc (Doctorate of Physical Therapy Science)	DPT (Doctorate of Physical Therapy)
Audiology	PhD in Audiology	AuD (Doctor of Audiology)

- Type of entry-level dental hygiene credential awarded
- Year received baccalaureate degree
- Type of baccalaureate degree received
- Whether or not currently a dental hygiene educator
- A member of the American Dental Hygienists' Association (ADHA)

All of these items were measured either by yes/no or multiple choice response options.

In addition, 18 items measured attitudes towards doctoral degrees in dental hygiene consisting of declarative statements related to:

- The importance of dental hygiene doctoral programs to the dental hygiene discipline and profession (measured on a 5-point Likert scale ranging from 1=Extremely Important to 5=Not at All Important)
- The need for dental hygiene doctoral programs for discipline progress
- General interest in applying to a dental hygiene doctoral program
- Interest in applying to a program that would award a PhD in dental hygiene or a Doctor of Dental Hygiene Practice (DDHP when the degree was defined, but not the program orientation and length)
- Perceived support by dental hygienists and dentists overall for PhD in dental hygiene and DDHP degree programs (all measured on a 5-point Likert scale ranging from 1=Strongly Agree to 5=Strongly Disagree)

In addition, later in the survey, 2 items asked about interest in applying to potential dental hygiene programs and related degrees that included the following program descriptions: a 3 to 5 year PhD doctoral dental hygiene program that would prepare dental hygiene researchers, and a 1 to 2 year Doctor of

Dental Hygiene Practice (DDHP) program that would prepare mid-level advanced dental hygiene practitioners able to provide care in a variety of settings under general supervision of physicians or dentists. These latter 2 items were measured on a 5-point Likert scale, ranging from 1=Very Likely to 5=Very Unlikely.

Three additional items were measured by multiple choice response options: 2 asked about format preferences for the PhD in dental hygiene and the DDHP programs, respectively (online, onsite or hybrid), and 1 item asked about when they thought they would apply to a doctoral degree program (in the next year, next 5 years, when a doctoral degree in dental hygiene program became available, never and I do not know).

Recruitment and Informed Consent

Initially, an email was sent to all 16 graduate dental hygiene program directors in the U.S. listed on the ADHA website, requesting the number of graduate learners enrolled in their program. All dental hygiene program directors responded reporting a combined total of 255 graduate dental hygiene learners enrolled in 2014. A subsequent email was sent to the same program directors to explain the study purpose and to request that they forward to their graduate dental hygiene learners an attached "learner recruitment/consent letter" with the survey link to complete the survey.

The "learner-recruitment/consent letter" explained the study purpose, methods, risks and benefits, and included the investigator's contact information to answer any study questions. It also instructed the graduate learner that clicking on the survey link within the letter would indicate their consent to participate in the study and allow them access to the survey.

The learner recruitment email also explained that as a token of appreciation for study participation, the researcher at the completion of the study would hold a raffle for a \$100 Starbucks gift card. If they wished to participate in the raffle, the respondents were asked to include their email address in the last survey item.

Data Analysis

Responses to the surveys were tabulated for each respondent using Microsoft Excel, and the mean response frequency for each survey item was calculated. "Strongly Agree" and "Agree" response options were collapsed into one response category for analysis as were the response options "Strongly Disagree" and "Disagree" responses. In addition, "Extremely Important" and "Important" response options, and

"Very Likely" and "Likely" responses similarly also were collapsed respectively for analysis as were "Extremely Unimportant" and "Unimportant" and "Very Unlikely" and "Unlikely" responses.

Using the online software program Qualtrics™, cross-tabulations of participants who stated they were "Very Likely" or "Likely" to apply to a specific doctoral degree program when available by respondent demographic characteristics were analyzed. Cross-tabulations of responses with "age" and "when the respondent thought they would apply to a doctoral program" also were analyzed.

RESULTS

Of the 255 eligible graduate learners enrolled in 2014 reported by the program directors, 159 completed the online survey for a 62% response rate. Most respondents were female, Caucasian, ADHA members, received their baccalaureate degree in dental hygiene and attended an online master's program. Less than half were full-time or part-time dental hygiene educators. The largest age group was 24 to 34 years old (Table II).

The majority of respondents strongly agreed or agreed that the establishment of dental hygiene doctoral degree programs is important to the dental hygiene discipline and profession (Table III), that doctoral education in dental hygiene is needed, and they perceived that overall most dental hygienists would support a DDHP program or a PhD in dental hygiene program. In contrast, only 13% of respondents agreed that dentists would support a DDHP degree, and less than half (43%) agreed that dentists would be supportive of a PhD degree in dental hygiene (Table IV).

When asked a global question regarding interest in applying to a DDHP program or a PhD program in dental hygiene, 61% expressed interest in applying to a DDHP program, and 60% also expressed interest in applying to a PhD program. Only 15% of respondents had no interest in attaining any type of doctoral degree (Table IV). Half (50%) of respondents indicated that they would pursue a doctoral degree even if no dental hygiene doctoral degree program became available. Once descriptions of the DDHP programs and PhD in dental hygiene programs were provided later in the survey, however, the percentage of those likely to apply to a DDHP program slightly increased to 62%, but the likelihood of applying to a PhD program dropped to 38% (Table V).

Younger respondents, more recent dental hygiene entry-level graduates, and those with a baccalaureate degree in dental hygiene were more interested in applying to dental hygiene doctoral programs than older respondents, less recent graduates and those

with non-dental hygiene baccalaureate degrees respectively (Table VI). In addition, when asked reasons for pursuing a dental hygiene doctoral degree (Table VI), about one third of those "Very Likely or "Likely" to apply to the dental hygiene PhD program stated, "to become a better teacher" (31%) and "to become a better researcher" (27%). Reasons stated by almost half of those "Very Likely or "Likely" to apply to the DDHP program stated "to become a better teacher (44%), "to expand my clinical practice opportunities" (43%), and "to increase my salary" (39%). One-third stated "to become a better researcher" and to become a dental hygiene program director (31%).

For PhD in dental hygiene programs, most respondents (47%) preferred a hybrid online/onsite format; whereas for DDHP programs, two thirds (76%) of all respondents preferred a hybrid online/onsite format with clinical experience in a variety of settings (Table VII).

When asked about when respondents would apply to some type of doctoral degree program, 10% stated in the next year, 33% stated in the next 5 years, and 17% stated they would wait until a doctoral program in dental hygiene was established. Half (50%) of respondents indicated that they would pursue a doctoral degree even if no dental hygiene doctoral degree program became available. Of those interested in applying to a doctoral program in the next year to 5 years, 15% were between the ages of 24 to 34, 12% were between the ages of 35 to 44, 12% were between the ages of 45 to 54, and 3% were between the ages of 55 to 64 (Table VIII).

DISCUSSION

In this study, the majority of U.S. dental hygiene master's degree learners enrolled in graduate programs in 2014 agreed that dental hygiene doctoral education is needed and is important to the dental hygiene profession. Moreover, over half of the respondents were interested in applying to a dental hygiene doctoral degree program when one became available, and almost half were interested in applying to such a program in the next 1 to 5 years. This interest in pursuing a doctoral degree was not limited to a specific age group since those interested ranged in age from 24 to 64 years. Although 17% of respondents reported willingness to wait until a dental hygiene doctorate degree program became available, 50% stated they would seek doctoral level education in another discipline if the dental hygiene discipline did not offer a doctoral degree.

Recently Namseoul University in Korea established the first PhD in dental hygiene program with 6 dental hygiene doctoral students currently enrolled.¹⁵ With so many other professions moving to

Table II: Percent and Number Related to Characteristics of Study Population

	Percent	n
Age (years) (n= 150)		
24 to 34	34	51
35 to 44	30	45
45 to 54	30	45
55 to 64	6	9
Gender (n=150)		
Male	3	5
Female	97	145
DH Educator (n=150)		
Yes	37	56
No	63	94
Race (n=149)		
White/Caucasian	87	130
African American	1	2
Hispanic	2	3
Asian	5	8
Native American	0	0
Pacific Islander	1	1
Other*	3	5
ADHA (n=150)		
Member	81	122
Non-Member	19	28
Type of Graduate Program (n=159)		
On-site	8	12
On-line	79	125
Hybrid on-site and on-line	14	22
Entry-level DH Credential (n=150)		
Certificate	3	4
Associate	63	94
Bachelors	35	52
DH entry-level graduation (year) (n=149)		
1970 to 1979	1	2
1980 to 1989	11	17
1990 to 1999	25	37
2000 to 2009	46	69
2010 to 2013	16	24
Year of Baccalaureate Degree (n=137)		
1980 to 1989	3	4
1990 to 1999	18	24
2000 to 2009	37	51
2010 to 2013	42	58
Type of Baccalaureate Degree (n=146)		
DH	66	97
Non-DH	27	39
No Baccalaureate Degree**	7	10

n values may vary due to missing data.

*Other included: Bi-racial, Arab, Asian Indian.

**One graduate program is a bridge program, which bypasses a baccalaureate degree.

Table III: Percent, Number and Mean Responses related to Respondents' Level of Perceived Importance* of Dental Hygiene Doctoral Education to Dental Hygiene Profession

Statement	Extremely important		Somewhat important		No opinion		Somewhat unimportant		Not important at all		Mean
	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	
How important to the dental hygiene profession is the establishment of dental hygiene doctoral degree programs? (n=154)	53	81	36	56	6	10	3	4	2	3	1.65

*Measured on a 5-point Likert scale where a score of 1="Extremely Important" and a score of 5="Not Important at All"

Table IV: Percent, Number and Mean Responses Related to Respondents' Level of Agreement** with Statements Related to Doctoral Dental Hygiene-Related Statements

Statement	Strongly Agree/ Agree		No Opinion		Disagree/Strongly Disagree		Mean
	Percent	n	Percent	n	Percent	n	
Doctoral dental hygiene education is needed (n=154)	77	118	14	21	10	15	1.97
If dental hygiene doctoral degree available, I would be interested in applying (n=154)	62	95	19	30	19	29	2.34
Most dental hygienists would support a DDHP program* (n=153)	78	118	13	20	9	15	1.95
Most dentists would support a DDHP program (n=152)	13	19	26	40	61	93	3.66
Most dental hygienists would support a PhD in dental hygiene program (n=151)	83	125	11	17	6	9	1.80
Most dentists would support a PhD in dental hygiene program (n=151)	43	65	26	40	31	46	2.97
If a DDHP program was available, I would be interested in applying (n=151)	61	92	21	31	18	28	2.35
If a PhD in dental hygiene program was available, I would be interested in applying (n=150)	60	91	19	28	21	31	2.35
Not interested in any type of doctoral degree (n=150)	15	23	17	25	68	102	3.87
If dental hygiene doctoral available, interested in doctoral degree other than dental hygiene (n=151)	22	32	26	40	52	79	3.44
If no dental hygiene doctoral available, interested in doctoral degree other than dental hygiene (n=150)	50	75	23	35	27	40	2.66

n values may vary due to missing data

*=Doctor of Dental Hygiene Practice

**Measured on a 5-point Likert scale where a score of 1="Strongly Agree" and a score of 5="Strongly Disagree"

wards doctoral education as their terminal degree, it is gratifying to see that dental hygiene has opened its first doctoral program. The findings support the need and demand for dental hygiene doctoral education in the U.S. and are consistent with published ideas related to the need for advanced education in dental hygiene beyond the master's degree.^{4-10,16} For example, the 2005 ADHA report entitled, "Dental Hygiene Focus on Advancing the Profession," concluded that creating a doctoral degree program in dental hygiene was a major goal for dental hygiene education to assist in the advancement of the profession and to help meet the needs of the public.¹⁷

Other reports in the literature have presented curriculum content needed for developing doctoral dental hygiene programs and have recommend that the ADHA create a task force to create such a curriculum, just as it did for the Advanced Dental Hygiene Practitioner (ADHP) model.^{10,11,16,18}

Indeed, dental hygiene scholars have pointed out in the literature that dental hygiene doctoral degree programs would benefit the public's oral health not only by providing well qualified mid-level practitioners, but also highly qualified educators and researchers who would contribute to the knowledge-

Table V: Percent, Number and Mean Responses Related to Respondent Level of Likelihood*** of Applying to PhD or DDHP Programs Once Program Description Was Provided

Statement	Very Likely/Likely		Undecided		Unlikely/Very Unlikely		Mean
	Percent	n	Percent	n	Percent	n	
Application to PhD in DH program* (n=150)	38	57	27	40	35	53	2.95
Application to DDHP program** (n=150)	62	93	20	30	18	27	2.37

*3 to 5 year PhD doctoral dental hygiene program that would prepare dental hygiene researchers, would be research based, and have online and on-site components, and take 3-5 years to complete

**1 to 2 year Doctor of Dental Hygiene Practice (DDHP) program that would prepare mid-level advanced dental hygiene practitioners able to provide care in a variety of settings (medical, dental, public health) under general supervision of physicians or dentists

***Measured on a 5-point Likert scale where a score of 1="Very Likely" and a score of 5="Very Unlikely"

Table VI: Participant Data Regarding Application to an Available Dental Hygiene PhD Program or an Available Doctorate in Dental Hygiene Practice (DDHP)

Characteristic	PhD in dental hygiene Percent (n) Responding "Very Likely/Likely"	DDHP Percent (n) Responding "Very Likely/Likely"
Age (n=150)		
24 to 34	15 (23)	25 (37)
35 to 44	11 (16)	17 (26)
45 to 54	10 (15)	15 (23)
55 to 64	2 (3)	5 (7)
Current dental hygiene Educator (n=150)		
Yes	15 (22)	23 (34)
No	23 (35)	39 (59)
Year of dental hygiene entry level Graduation (n=149)		
1970 to 1979	0 (0)	.6 (1)
1980 to 1989	4 (6)	7 (11)
1990 to 1999	10 (15)	13 (19)
2000 to 2009	17 (25)	29 (43)
2010 to 2013	7 (10)	12 (18)
Type of Baccalaureate Degree (n=150)		
dental hygiene	25 (37)	41 (61)
Non-dental hygiene	13 (19)	20 (29)
Reasons for pursuing a doctoral degree in dental hygiene*		
To become a better Teacher	31 (45)	44 (65)
To become a better Researcher	27 (39)	31 (46)
To increase my salary	21 (31)	39 (57)
To become employed in the oral health product industry	9 (13)	13 (19)
To become a dental hygienists program director	22 (33)	31 (46)
To expand my clinical practice opportunities	23 (34)	43 (63)

*Respondents were allowed to select more than one answer (n=147)

base related to oral disease prevention and health promotion.⁹ In addition, by virtue of their advanced degree, dental hygienists with a doctoral degree in dental hygiene may have greater opportunity to participate on oral healthcare policy development committees at the local, state and national level. Bringing the doctoral-level dental hygiene perspective to the decision-making table would provide salient information to assist with addressing oral health care challenges associated with oral health disparities.

Study participants were asked about their perceptions in general of dentists' and dental hygienists' support of the proposed dental hygiene doctoral degree programs to explore potential perceived barriers. Although over half of the respondents believed dental hygienists would support both PhD in dental hygiene and DDHP programs, less than half agreed that most dentists would support the PhD in dental hygiene and only 13% agreed that most dentists would support DDHP programs. These findings of perceived less dentists' support for DDHP programs needs to be further explored in future qualitative studies of dentists and dental hygienists. A possible explanation for the finding of respondents' perceived lower support for DDHP programs by dentists may be due to expectations that dentists would perceive dental hygienists with a DDHP degree as unwanted competition. Indeed, the goal of DDHP programs would be to prepare advanced dental hygiene practitioners able to provide care in a variety of settings under general supervision of physicians or dentists. For example, graduates of DDHP programs could be educated to act as liaisons between medicine and dentistry in medical settings and thus could function as a source of new referrals to dentists. The literature supports profitability for dentists as a result of collaborating with dental hygienists in clinical practice.¹⁹ It is important to note that about a quarter of respondents had no opinion about whether or not most dentists would support either the PhD or the DDHP programs suggesting a lack of an opportunity to discuss dental hygiene doctoral education with the dentists they know.

Findings from the current research also showed that most respondents were more interested in applying to a DDHP program than a research-focused PhD program once each type of degree program was described later in the survey. This finding might be explained by the fact that the DDHP would take less time than the PhD, and is consistent with our findings that almost half of the respondents reported pursuing a dental hygiene doctoral degree to expand their clinical practice opportunities.

The findings support the literature on the need to expand the role of dental hygienists and on the ever increasing need for evidence-based mid-level oral health care providers to help meet the oral

Table VII: Percent and Number of Responses Related to Participants' Preferences for Format of PhD in Dental Hygiene and DDHP (n=159)

	PhD in Dental Hygiene (n=152)	DDHP (n=152)
Program Formats*	Percent (n)	Percent (n)
On-line only	40 (61)	10 (15)
On-site	7 (11)	10 (15)
Hybrid on-line/on-site	47 (72)	76 (115)
I do not support	3 (4)	3 (5)
No opinion	3 (4)	1 (2)

*Measured by multiple choice items

health needs of the public.^{4,6,8,16,18} The potential of a DDHP program to provide a new highly qualified midlevel oral health care provider is promising and is consistent with the need posed by the ADHA in 2008 for some type of midlevel provider, which they called the ADHP.¹⁸ Since 2008, Minnesota and Maine both have approved midlevel oral health care provider categories, which require education beyond a basic preparation dental hygiene program required for a RDH license.^{16,19} Yet each of these mid-level oral health care licenses is very different. Creating a DDHP program could help standardize mid-level provider educational standards for ADHP programs. Having both the PhD and the DDHP degrees available is consistent with research-oriented and applied degrees awarded in other disciplines such as the PhD and EdD in Education, the PhD and the Doctor of Nursing Practice (DNP) for Nursing, and the PhD and the Doctor of Physical Therapy (DPT) in Physical Therapy.

Indeed, the ADHA has provided workshops such as "Dental Hygiene in a Changing World," that focus on expanded roles for dental hygienists requiring advanced education to augment their scope of clinical practice.²⁰ Others have described the need to develop a scholarly identity through doctoral dental hygiene programs that would provide more time for mentoring to develop skills and experiences needed to evolve into independent researchers, and leaders required for the continued development of the dental hygiene discipline.¹⁰ Others also have highlighted potential roles for doctoral prepared dental hygienists to contribute to the advancement of the profession and the public's oral health by exercising leadership skills in research, education, private industry, health care administration and policy development.^{4-6,8,9}

These study findings add to the current literature regarding doctoral education in dental hygiene and

Table VIII: Percent, Age and Number of Participant Responses to the Question “When Do You Think You Might Apply to a Doctoral Degree Program?” (n=150)

Statement	Age (years) of Respondents								Total	
	24 to 34		35 to 44		44 to 54		55 to 64		Percent	n
	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n
In the next year	2	(3)	3	(4)	3	(5)	2	(3)	10	(15)
In the next 5 years	13	(20)	9	(14)	9	(13)	1	(2)	33	(49)
When a doctoral program in DH becomes available	6	(9)	5	(8)	4	(6)	1	(2)	17	(25)
I am not planning on applying to a doctoral degree program ever	4	(6)	6	(9)	7	(10)	1	(1)	17	(26)
I don't know	9	(13)	7	(10)	7	(11)	1	(1)	23	(35)

contribute to the rich context that informs the doctoral education discussion moving forward. To add to this on-going discussion, future qualitative research is needed to explore reasons dental hygiene masters degree students would be interested in applying to either a PhD in dental hygiene or DDHP program. Our findings indicate that about a quarter of the respondents were undecided about applying to any doctoral program; and when asked why they would apply to a dental hygiene doctoral program, less than half (48%) stated “to become a better researcher.” Moreover, future research is needed among current dental hygienists with doctoral degrees in other disciplines to explore their perceptions about doctoral dental hygiene education.

In the current study, most respondents preferred a hybrid on-line/on-site format for both the PhD in dental hygiene and DDHP programs. This finding is interesting because most respondents were enrolled in on-line masters degree programs. Additional research is needed to identify program formats that would be appropriate.

Limitations: There are several limitations. First, although the entire population of U.S. learners in dental hygiene master’s degree programs enrolled in 2014 were surveyed, the findings are limited to that specific group and cannot be generalized to other dental hygienists who may have very different thoughts about doctoral dental hygiene education. In addition, although there was a 62% response rate, individuals who responded may have been more positively disposed toward dental hygiene doctoral education than those who did not respond. These findings also may be limited by the methodology that relied on the master’s degree program directors to forward the study survey to their learners.

The biggest challenge to conducting the study was not being able to have direct e-mail contact with the population attempting to be surveyed. The authors relied on the master’s program directors to forward the survey twice and may have added to the burden of the program directors such that some may have not had time to send out the survey especially for a second time. Finally, although the survey was pilot tested for face validity and clarity of the items, it was not measured for reliability and therefore is unable to account for the effects of fatigue or guessing related to responses.

CONCLUSION

The findings indicate that dental hygiene master’s degree learners enrolled in 2014 were interested in and supported dental hygiene doctoral education and thought it is very important to progress in the dental hygiene discipline. These findings also suggest that DDHP programs may be more popular than PhD programs since many study participants were interested in expanding clinical practice through doctoral education. Future qualitative research is needed to explore reasons dental hygiene masters degree learners would apply to either a PhD in dental hygiene or DDHP program, and to explain their perceptions of dentists support for these programs. Moreover, future research is needed among current dental hygiene educators, clinicians and dental hygienists with doctoral degrees to explore their perceptions about doctoral dental hygiene education.

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