

Program Evaluation of a Distance Master's Degree Dental Hygiene Program: A Program Effectiveness Study

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Abstract

Purpose: The purpose of this study was to conduct a program evaluation of the University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program (MSDH). This evaluation examined long-term outcomes in the context of stakeholders (the profession, the student, and the degree-granting institution).

Methods: A mixed-methods approach was used to gather data from the 28 graduates from the MSDH program. An electronic questionnaire included both open- and closed-ended questions including demographic and practice data, and data related to alumni preparedness to reach their career goals. Virtual focus groups provided valuable insight into whether the program has achieved its goals, and prepared the graduates to meet their program competencies and future goals.

Results: Out of a total of 28 individuals who have successfully completed the distance program (2001-2011), 19 participated in an online survey (67.8%). The majority of the participants (73.7%) participated in one of 3 focus groups. Sixty-three percent of the graduates are currently employed in dental hygiene education. Eighty-four percent of the respondents have published their research conducted while in the program, thereby contributing to the dental hygiene body of knowledge. Sixty-eight percent indicated that had the distance option not existed, they would not have been able to obtain their advanced degree in dental hygiene. Twenty-one percent of the respondents report either being currently enrolled in a doctoral program, or having completed a doctoral degree.

Conclusion: These results suggest that the University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program is meeting its goals from the perspective of all stakeholders and providing its graduates with access to education and educational resources to meet the program competencies and ultimately achieve their career goals.

Keywords: access to care, alternative practice, dental hygiene education/curriculum, e-learning technology, faculty development, qualitative research

This study supports the NDHRA priority research area, **Professional Education and Development**, in the discovery phase of research.

INTRODUCTION

Status of Dental Hygiene Education

A master's degree in dental hygiene education seeks to prepare dental hygienists for careers in education as well as alternative career paths. In the late 1990s there were 260 entry-level dental hygiene programs.¹ Currently there are 335 entry-level dental hygiene programs. With this growth in the number of programs, there is an increased need for dental hygiene educators. According to the 2014 American Dental Hygienists' Association (ADHA) Dental Hygiene Education Program Directors Survey,² the number of master's degree programs in dental hygiene, dental hygiene education, or a related field grew

from 11 programs in the early 2000s to 21 programs in 2014; a 91% increase in MS programs versus a decade ago, with 16 of the programs (76%) offering all or some of their curriculums in a distance format. Of the 335 entry-level dental hygiene programs in 2014, 288 offered an associate's degree, the most commonly attained level of education, which prepares graduates for the clinical practice of dental hygiene. Building on this existing framework for dental hygiene education, distance education is appropriate for degree completion and graduate programs.

In addition to preparing dental hygienists for faculty positions, advanced education also serves to prepare clinicians for mid-level clinical positions, ad-

ministrative roles in education, corporate positions, and careers in research. Although there were a fair number of graduate programs that were geographically dispersed, barriers still existed. Cost, time, and family commitments preventing potential students from moving to the program location were some of the reported major barriers to dental hygienists seeking to advance their education.³

Dental Hygiene Faculty Shortage Predicament

The issue of faculty shortage remains a critical issue in dental hygiene. In 2003, the American Dental Education Association (ADEA) Board of Directors created a task force to investigate the current status of allied health faculty. They surveyed all dental hygiene program directors and found their concerns were related to a greater future shortage for the dental hygiene discipline due to the imminent retirement of current faculty members.⁴ Of those responding, 47% reported that they require a master's degree for a full-time faculty appointment.

Following publication of the 2004 ADEA survey report, several articles also supported that a shortage of dental and allied dental educators exists.^{5,6,7,8,9} To address the dental hygiene educator shortage, a recurring recommendation has been to increase the number of baccalaureate and graduate programs in dental hygiene.⁶

The 2006 Dental Hygiene Education Program Director Survey found that program directors of master's degree programs reported more than three quarters of their current graduate students were interested in teaching dental hygiene upon completion of their graduate education. Future dental hygiene faculty comes, in large part, from the graduate programs. Therefore, distance graduate programs can be a viable option to address the faculty shortage issue, as they overcome some of the barriers to advanced education by providing access to any dental hygienist pursuing further education in preparation for alternative careers.

The University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program started in 2001, was the first program in the country to offer an online master's degree curriculum.^{10,11} At the initiation of the online program, University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program had a 30-year history of offering a traditional, or face-to-face (F2F), graduate program. In determining the model of distance education that would be adopted to replace the traditional F2F program, the goal was to provide students with the same educational experience in terms of quality that the F2F students had experienced through the years. Hence, an innovative delivery system uti-

lizing a hybrid (blended) model was adopted, with online courses and F2F delivery/on-campus experiences. The coursework is accomplished using both asynchronous and synchronous technology. The F2F components involve students coming to campus to participate in an initial orientation as they begin their studies, as well as potential additional onsite visits if needed to bring their research projects to completion. A full description of the model used for the delivery of the MSDH program is found in Gadbury-Amyot et al. 2007.¹¹ Since the inception of the program, all courses delivered through the MSDH program are taught online by full-time tenured faculty.¹⁰ The program has always required its students to conduct an original research project as part of the students' graduation requirements, and this requirement has not changed with the conversion to a distance program. It is of note that the online graduate program was created without additional resources, including no release time or additional compensation to faculty who develop and implement the online courses.¹²

Addressing the Faculty Shortage Predicament

Although there are plenty of studies to demonstrate positive student learning outcomes in distance education, program effectiveness, and equivalence to traditional educational methods, there are few studies to demonstrate that programs are addressing the issues they were designed to address. For instance, many of the distance education programs in dental hygiene were established to provide access to advanced education in response to demand for dental hygiene faculty members, to address the oral health needs of the nation, and to meet the needs for expanded dental hygiene research.¹³ In addition to access, Kansas City Dental Hygiene Education distance programs (degree completion and graduate) were initiated to increase enrollment, to increase student convenience, and to increase service to adult learners.¹⁰

The distance education program was designed to be of equivalent quality to the traditional program, and the goal was to educate dental hygiene educators, researchers, and dental hygienists prepared to assume alternative careers. Converting to a distance program made that education more accessible to many dental hygienists seeking an advanced degree from a highly regarded dental hygiene program.

University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program Effectiveness

This study was designed to explore program effectiveness of the first distance graduate dental hygiene program in the United States via program evalua-

tion using a mixed-methods design. Program evaluation has been defined by Chen¹⁴ as the application of evaluation approaches, techniques, and knowledge to systematically assess and improve the planning, implementation, and effectiveness of programs. In the end, program evaluation should produce useful information that can be used to improve the program.

According to Chen¹⁴ there are 4 stages of a program's growth, and each stage has different program evaluation requirements. The stages are as follows: 1) Program Planning Stage, 2) Initial Implementation Stage, 3) Mature Implementation Stage, and 4) Outcome Stage. In its 14th year of delivering the program via a distance education hybrid model, the MSDH program lies in the Outcome Stage. Following a period of program maturity, stakeholders both inside and outside the program want to know whether or not the program is achieving its goals. Chen notes that evaluation at this point can serve any of the five primary evaluation needs: 1) stakeholders may want to know if the program is ready for outcomes evaluation, 2) stakeholders may want to monitor progress, 3) stakeholders may ask for information on what the program would be achieving if it existed in the ideal environment, 4) stakeholders may seek to know in detail the program's effects in its real-world setting, or 5) stakeholders may want an evaluation that serves both accountability and program improvement needs. It is the fifth purpose that this study will be focused on, and, in accordance with Chen, the conceptual framework for this study is effectiveness program evaluation. Chen states that at the very least effectiveness evaluation must involve collection of data about intervention and outcomes.

PURPOSE

With more than 10 years of historical data, a retrospective look at the program was utilized to determine if this program is achieving its goals, which may be found at http://dentistry.umkc.edu/Future_Students/DHMasterScience.shtml#mission. An effectiveness evaluation was conducted to help determine how this program is performing and if it is providing educational access to dental hygienists looking to advance their education. The research questions guiding this program evaluation include:

- Is the MSDH program achieving its goals in the following areas?
- Addressing faculty shortage
- Preparing students for alternative careers, research, and lifelong learning
- Did this program increase access for students

to earn advanced degrees in dental hygiene to meet their career goals?

- Did the program provide appropriate resources for students to reach established program competencies to meet their goals?
- Based on feedback from various stakeholders, what are the recommendations for the future for the MSDH program?

METHODS AND MATERIALS

This study design included a combination of quantitative and qualitative research methods as suggested by Chen with the intent that using mixed-methods would enhance the validity of the study and provide deeper insights into program effectiveness.¹⁴ Further, this is in line with Chen's recommendation that program evaluation follow scientific principles in order to lend credibility to the findings.¹⁴ The program evaluation research project was approved by the AHSIRB at the University of Missouri-Kansas City (#13891).

Sample

Since the conversion from a traditional F2F to a distance program, the MSDH program accepted 45 students between 2001 and 2011. At the time of the start of this study, 28 have completed their degrees. The U.S. Department of Education's Integrated Post-secondary Education Data System (IPEDS) reports graduation rates based on full-time students who are first-time college attendees. While this is the most recognized measure of the graduation rate in use today, these criteria are not inclusive of adult learners who are returning to education. To address this shortcoming, Transparency by Design (TBD) has created student cohorts that include "full-time and part-time degree-seeking students entering the institution or the degree level for the first time" and "do not exclude students who are part-time or have transferred into the institution."¹⁵ The Transparency by Design initiative is a "collaborative collection of regionally-accredited, adult-serving, distance education institutions with a mission to help adult learners become informed consumers of distance education."¹⁵

Like many of the TBD institutions, the student population in the MSDH program does not reflect the undergraduate student population captured in the U.S. Department of Education's IPEDS reports. Because of the MSDH program's purposeful design, students enrolled are, in most instances, part-time students wishing to take courses in the evening while they continue to work full-time during the day. The methodology used to determine the study population for this study is based on the Transparency by De-

Table I: Learner Completion Metrics

Enrolled (2001-2011)	Completed Degree	Noncompleters (learners returning to institution from their first year of enrollment to second year of enrollment)*	Noncompleters (students withdrawing from the institution within the first year of the program)*
45	28	6	5

* Based on Learner Progress Methodology: Transparency by Design. Available at <http://wcet.wiche.edu/advance/transparency-by-design> [Accessed 10 Apr 2015].

sign Learner Progress Methodology¹⁵ metrics, which consist of Learner Retention and Learner Completion. Learner Retention is the percentage of students who remain enrolled or completed a degree after one year in the program. There are two categories of noncompleters: 1) those who drop out before the end of the first year in the program and 2) those who return to the institution from their first year of enrollment to second year of enrollment and drop out after that time.

Out of the 45 students accepted and enrolled in the MSDH program, 5 noncompleters dropped out before the end of the first year in the program. Following the methodology set forth by TBD, these 5 students are excluded from the total count of students enrolled. There were 6 students who progressed into the second year but did not earn their degree, resulting in an overall dropout rate of 15% (6/40). According to the U.S. Department of Education, of the students who had enrolled in a graduate degree program between 1993 and 2003, 60% earned their master's degree.¹⁶ Using the TBD methodology as described above, the MSDH program completion rates (85%) far exceed those reported by the U.S. Department of Education.

Of the remaining 34 students, 28 have graduated from the program (Table I). Six students from the 34 were enrolled at the time the research proposal was submitted to the IRB and therefore were not included in the study. The remaining 28 graduates were contacted via email, utilizing the most recent email addresses from the Division of Dental Hygiene. Of the 28 graduates' email addresses, 26 were valid email addresses. Attempts were made to locate the 2 graduates for which no valid email address were available, without success.

Instrument/Data Collection—Quantitative

The quantitative data collection instrument was an electronic questionnaire (SurveyMonkey) utilized to capture demographic data, practice data, and data related to competencies and preparedness to reach career goals, which are directly related to the research questions. Additionally, the questionnaire incorporated questions aimed at seeking participants' opinions on goals and strategies for the program moving forward. Effective program evaluation is most

useful when stakeholders understand what is working and what is not working well. The questionnaire was designed to capture the graduate's opinions to be able to address problems and improve the program. Content validity was established through the combined efforts of the coauthors, who collectively have more than 75 years of experience in dental hygiene education, and who have extensive involvement with the online MSDH program and the senior author who conceptualized and developed the online MSDH program. The questionnaire was pilot tested using 10 graduates of the program prior to 2001, and revisions were made based on feedback for the purpose of providing better clarity.

Along with the invitation to participate in the program evaluation research, a cover letter and an informed statement for participation were included. Graduates willing to participate agreed to the terms stated in the Informed Statement. After agreement to participate was attained, a link to the questionnaire was sent in an email to study participants. The questionnaire was accessible between July 1 and July 31, 2014. In the cover letter, the graduates were informed that participation in program evaluation was voluntary and that overall research project consisted of two elements of data collection: electronic questionnaire and focus groups using an online secure meeting room. Participants who agreed to participate in the electronic questionnaire were also asked to participate in the focus groups. To minimize bias in responses, participants were not compensated for their participation in either element of data collection.

Instrument/Data Collection—Qualitative

For the qualitative element of data collection 3 focus group interview sessions were conducted between August 11 and September 12, 2014. Focus groups help to provide a deeper understanding of the topic and give insights into how people think, while allowing for group interaction. According to Barnett¹⁷ focus groups are used for program evaluation because focus group interviews can provide valuable insight into whether a program has achieved its goals. The focus group addressed how the program has achieved its goals, building on the questionnaire results addressing whether it achieved them. This holistic approach¹⁴ helps in understanding the rel-

Table II: Demographic Data

	Total Respondents	Number	Valid Percent
Age	n=19		
31-40		4	21.1%
41-50		2	10.5%
Over 50		13	68.4%
Gender	n=19		
Female		19	100%
Ethnicity	n=19		
Caucasian		16	84.2%
Black/African-American		1	5.3%
Hispanic		1	5.3%
Native American/Alaska Native		1	5.3%
Practice Setting Prior to Enrollment*	n=19		
Private Practice Dental Hygienist		14	46.7%
Dental Hygiene Educator in the Clinic		5	16.7%
Dental Hygiene Educator in Clinic and Classroom		4	13.3%
Community/Public Health Clinical Practice		1	3.3%
Administrator in a Dental Hygiene Program		1	3.3%
Researcher		1	3.3%
Other		4	13.3%
Change in Practice Setting Since Graduation	n=19		
Yes		11	57.9%
No		8	42.1%
Had the University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program Distance Option Not Existed Would You Have Been Able to Complete Your Degree?	n=19		
No		13	68.4%
Yes	(not sure)	5	26.3%
No response		1	5.3%
Characteristics for Selecting University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program+	n=19		
No Need to Relocate		18	94.7%
Could Maintain Current Work Position		16	84.2%
Online Curriculum Provider		15	78.9%
National Reputation		13	68.4%
In-State Tuition		13	68.4%
Faculty Reputation		12	63.2%
Synchronous Delivery		8	42.1%
Alumni Recommendation		4	21.1%
Research Requirement		4	21.1%
If Dental Hygiene Education Was a Goal of Yours Following Your Graduation, Have You Been Able to Realize That Goal?	19		
Yes		12	63.2%
No		4	21%
DH Education Was Not a Goal		3	15.8%

*Total >19 due to multiple responses

evance of the program.

Three focus group sessions were conducted with 4-8 participants per group. Graduates of the distance program, already familiar with virtual meetings as the method of synchronous learning, were invited to participate in one of the focus group sessions using Blackboard Collaborate Classroom. Each participant could choose from one of the 3 offered sessions choosing the one that best fit their schedules. The 3 sessions were recorded and archived. Recordings

were transcribed for analysis.

Each focus group session was structured around predetermined open-ended questions to encourage discussion. The focus group questions consisted of 3 distinct types: *engagement questions* to make participants comfortable discussing their opinions, *exploration questions* to help get to the core of discussion, and *exit questions* to check to make sure that nothing was missed in the discussion.¹⁸

Statistical Analysis

Data analysis utilized descriptive statistics including frequency distributions, central tendency, measures of variability, and association. The results were entered in SPSS version 22. Analysis of focus group transcripts followed principles of thematic analysis.^{19,20} Thematic analysis is conventionally used in qualitative research to search through data to identify recurrent themes.

RESULTS

Quantitative

Of the 28 graduates of the MSDH program, 19 completed the questionnaire, yielding a 67% response rate. Demographic data are provided in Table II, along with data regarding practice setting, goals, and reasons for selecting the MSDH program. Participants were exclusively female, a majority Caucasian (84%), and over the age of 50 years old (68%). The most dominant practice setting prior to enrollment was private practice (47%), followed by dental hygiene clinical instructor. Approximately 58% reported a change in practice setting following graduation from the MSDH program. When asked if they could have obtained their master's degree without the MSDH distance option, 68% said no. When asked to identify reasons for selecting the MSDH program, several of the choices centered around advantages to online education: did not require relocation (95%), they could maintain their current work position (84%), and a preference for the synchronous delivery model (42%). Other characteristics identified were related to the reputation of the program: national reputation (68%), and faculty reputation (63%). Alumni recommendation and the fact that there was a research requirement were identified by 21%, respectively.

To address the first research question, whether the MSDH program is achieving its goals of addressing faculty shortages and preparing students for alternative careers, the questionnaire captured practice settings before and following graduation. A majority of respondents (16/19 or 84%) shared a goal of becoming a dental hygiene educator as a reason for furthering their education. When asked if they have been able to realize that goal, 12 (63%) indicated their graduation helped them to realize that goal. Four respondents (21%) indicated that their graduation did not help them realize their goal, but did not comment as to why it did not.

When asked if graduation from the MSDH program was instrumental in the attainment of their current position, 12/19 (63%) responded affirmatively, 6/19 (32%) indicated it was not, and 1/19 (5%) did not answer but noted she moved from manager to director while attending University of Missouri-Kansas

City Master of Science in Dental Hygiene Education Program. Four have transitioned from clinical practice or a combination of clinical practice and part-time education positions to full-time employment as dental hygiene educators. Three have moved to full-time education administrations positions. In addition to dental hygiene education, the program also prepares graduates for alternative careers. The sample included 3 dental hygienists with positions in corporate, public health, and professional association management. Given the above results, it would appear that the program is addressing faculty shortages in dental hygiene education, in addition to preparing dental hygienists for alternative career settings beyond traditional clinical dental hygiene.

Research question two addressed the issue of whether online delivery of the graduate program increased access for students to earn advanced degrees in dental hygiene to meet their career goals. The majority of respondents (13/19 or 68%) indicated that had the University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program distance option not existed, they would not have been able to complete their degree. Therefore, the data support the conclusion that the program is meeting its goal to provide access to students to earn an advanced degree in dental hygiene to meet their career goals through the online hybrid delivery model.

Research question three addressed whether or not participants perceived that the program provided appropriate resources for students to achieve the program competencies. Fourteen respondents (73.7%) indicated that the program had provided them with the necessary resources and educational experiences to achieve the 6 program competencies. In those instances, of the remaining 3 respondents, they indicated that they believed they came into the program already possessing some of the program competencies. Communicating was the one competency that all felt the program helped them achieve. These results indicate that the MSDH program is providing the curricular and educational experiences that assist students in meeting required program competencies.

One of the overarching, capstone goals of the MSDH program is the conduct of original research and preparation of a manuscript for submission to a refereed journal. Sixteen (84%) of the respondents have published their research, and two have submitted and are waiting notification.

Pursuing higher education is an aspect of lifelong learning, one of the goals of the MSDH program. To date 4/19 (21%) of the respondents are either currently enrolled in, or have completed, a doctoral program. Eleven reported that they have considered en-

rolling with barriers such as cost and time identified.

The fourth research question sought recommendations from the program evaluation participants for the future for the MSDH program. Some of the strengths identified include: 1) quality of the faculty, 2) quality of the distance platform and distance education model, 3) flexibility, 4) strong curriculum, and 5) opportunities for financial assistance. Areas identified by the respondents as needing further consideration by the program include: 1) the length of the program (time to complete degree), 2) not all courses available as distance courses through University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program (viewed as a disadvantage, as other courses were not consistently strong or of the level students expected given their experiences with the MSDH program course work), and 3) challenges of student teaching at other institutions in order to meet program requirements.

A major theme for weakness was also considered a strength: the research component. The research process, while valuable, was lengthy. Completing the thesis was frustrating, and there were delays due to waiting for feedback and processes (survey distribution). Two respondents commented that the faculty had too much responsibility.

Two graduates commented, under the weakness question, that they thought it would be better to be closer, to have more face-to-face time with faculty and to be more exposed to the University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program environment. Interestingly, both students indicated a distance program made it possible to get their MSDH degree.

Qualitative

Using thematic analysis, four key themes emerged: career advancement, distance education vital to advancing education, support from faculty, and unique characteristics of the MSDH program. The first theme of career advancement is best captured by the following comments:

"Almost as soon as I got my diploma I had a full time job teaching in the program."

"I'm doing the thing that I had hoped I would be able to do, which is to teach full time."

A second theme that emerged was regarding how distance delivery of education made advancing one's education possible. The following comments illustrate this point:

"I would have a master's in education but not in dental hygiene which has been truly a better fit for

what I'm doing. So it's really made a difference in allowing me to do what I'm doing today."

"...had it not been there, I would not have had the opportunity to have pursued that degree in that field without moving and changing my whole life."

A third theme emerged around appreciation for the faculty mentorship in the program. Mentorship and support provided by the faculty was, largely, a positive impression for the graduates.

"...the faculty, the professors were role models. They were phenomenal."

"I just always felt like they (the faculty) had my back. They were willing to make the program work for what I need...I'm very thankful for their support."

The fourth and final theme that emerged was related to characteristics unique to this particular graduate dental hygiene program. Participants noted that not all graduate dental hygiene programs are as flexible and also require students to conduct original research.

"It was really unique to meet your needs and to help you grow to get to your maximum capacity."

"In my opinion, I think it kind of surpasses the other programs. And let me justify my answer. I think it's because of the research requirements and the different resources you have available."

"One of the things that I really thought was an unbelievable experience was the portfolio...making me more of a reflective type of individual, an educator as well. And I hope I bring that to my students as well."

Table III provides additional insight into the 4 themes gleaned from the qualitative data.

DISCUSSION

Current issues facing the dental hygiene profession are the lack of qualified faculty to teach in dental hygiene programs and preparedness of dental hygienists to take on alternative careers, such as researchers and mid-level providers. To address these issues the University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program was the first MSDH program to move to an online format in 2001, chiefly to provide access for dental hygienists seeking advanced degrees to teach in dental hygiene programs or take on other alternative roles within the profession.

This program evaluation was conducted to determine if program outcomes are consistent with the goals of the program and to produce useful infor-

mation to improve the program.¹⁴ The investigation provides evidence that the MSDH program in the outcomes stage is achieving its goals, specifically for three distinct stakeholder groups: the profession, the graduates, and the university.

Stakeholder: The Profession

A shortage of dental hygiene faculty has been well documented since 2004⁵⁻⁹ with the recommendation to increase the number of baccalaureate and graduate programs in dental hygiene as one solution.⁶ The majority of students entering the MSDH program have a career goal of dental hygiene education. The results of this study provide evidence that the program is preparing students for those roles, and, as a result, is helping to address the faculty shortage.

A theoretical body of knowledge is a commonly accepted characteristic of any discipline.²¹ Although the research component of the program is one of the more difficult aspects according to graduates, it is still considered a strength of the program. The process of conducting original research and writing and submitting a scholarly manuscript for publication not only prepares graduates for education positions, but the publication requirement also serves to build the body of knowledge by contributing published research related to the field of dental hygiene.

Stakeholder: The Students/Graduates

The MSDH program evaluation resulted in positive outcomes when it comes to the students/graduates as stakeholders. First, the distance option provided access for students to attain their graduate degree in dental hygiene. Had it not been for MSDH program, students would have continued their studies in other areas such as public health or education at either local or other institutions with distance options. The program offered the majority of graduates in the study access to the degree most appropriate for their career goals. Additionally, the flexibility of the program worked well considering that all the students were nontraditional and employed during the course of their studies. Satisfaction with the distance program compared to that in published literature, including positive comments on the learning environment, interaction with peers, and interaction with faculty.²²

The experience of conducting original research is extremely valuable and is a characteristic highly sought after in education, including a requirement for tenure. Anecdotally, the program has been told that it was because of the rigor of the research process that graduates felt confident in their ability to advance their education. Program evaluation outcomes provide us with hard data that 21% of the respondents reported being enrolled or having com-

pleted a doctoral degree, with 58% indicating that they have considered advancing their degrees.

Challenges with distance programs are consistent with published data in that identifying sites for clinical experience/teaching may be difficult.²² While the length of the program, or the pipeline from entry to graduation, was noted by students as an area for further study and consideration, it must be acknowledged that the vast majority of students enrolling in the program continue to work full-time jobs while attending school part-time. This is naturally going to extend that pipeline, and program data show that to be the case with the average time from entry to completion being 4.52 years with a standard deviation of 1.67.

Stakeholder: The University

The issue of student retention in higher education has been examined extensively. The U.S. Department of Education data show graduation rates of 60%.¹⁶ Outcomes from this program evaluation show an 85% retention rate, critical outcomes to be able to show in the current higher education environment. However, even with these types of retention data, the program remains under a microscope due to a low number of graduates. In 2011 the Missouri Department of Higher Education staff accepted the justifications provided by University of Missouri-Kansas City Master of Science in Dental Hygiene Education Program graduate studies for continuing including student demand, shared courses/faculty, and unique need.

Recommendations for Improvement and Strategies for Addressing Identified Areas of Need

The student participants identified that although the required research component was a strength of the program, additional resources are needed to assist students. During the conduct of this study, the University of Missouri-Kansas City's School of Graduate Studies launched a Writing Resources for Graduate Students website (<http://sgs.X.edu/current-students/graduate-writing-resources/>). This online resource is available 24/7, providing the foundation for graduate writing resources and development opportunities. Additionally, University of Missouri-Kansas City Online has contracted with a 24/7 tutoring service called Net Tutor that can help provide writing assistance for students.

Another issue identified by graduates is that not all required classes are available at the University of Missouri-Kansas City in an online format, requiring the director and students to seek out courses from other institutions. Students reported that in many instances courses taken at other institutions are not

at the quality of the coursework offered through the University of Missouri-Kansas City Dental Hygiene program. The university has recognized this and has been working to bring additional courses online. In 2013, an Associate Vice-Provost of Online Education was hired. This demonstrates that the university has identified this as an opportunity and is investing in resources to improve its online course offerings. Additionally, the University of Missouri-Kansas City has created an online website, <http://info.X.edu/online/>, to highlight distance education options and resources.

Limitations and Future Research Suggestions

Limitations to this study include the fact that it was restricted to one graduate dental hygiene program in one dental school and therefore the results may not be generalized. However, because this was the first MSDH Education program to deliver an online curriculum, longitudinal data (2001-2011) were available for this type of analysis. So while this study is not generalizable, the authors believe it can be instructive for other graduate dental hygiene programs in conducting program evaluations, regardless of the delivery modality.

Future research could include examination of external stakeholders, such as dental hygiene program directors and other employers, to determine if the program is meeting their needs by providing well-qualified dental hygiene graduates for the workforce. Another area for future research as suggested by Chen for programs that have had time to mature, is to examine what the program would be achieving if it existed in an ideal environment. As noted earlier, the transition of the graduate program from F2F to online was accomplished in the absence of any additional resources, including additional faculty.

In 2012 the MSDH program modified the competencies to align with the recommendations for graduate dental hygiene (DH) program competencies published by ADEA, working in collaboration with the ADHA. The development of the core competencies reflects current trends in the profession and the educational and health care system needs of the future. Further research could investigate whether the change to the competencies have addressed ADEA's intent.²³

CONCLUSION

Through the use of theory, and following the concepts suggested in the literature for program evaluation, this study might serve as an example of how to design and conduct a comprehensive program evaluation for educational programs in the outcomes stage.

Based on the results of this program effectiveness study, the outcomes support that the MSDH program is meeting its goals. The suggestions for strengthening the program provide valuable insight to the educational institution and should be utilized for continuous improvement.

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ACKNOWLEDGMENTS

The authors would like to thank Nancy Keselyak, RDH, MA for her contributions to this research and the University of Missouri-Kansas City Research Support Committee for their generous financial support to this research.

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