

Guest Commentary



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Advancing the Dental Hygiene Research Foundation

Early career researchers are important contributors to advancing the scientific foundation of all health professions and serve as future leaders in research, education, and policy. Research is a part of every facet of dental hygiene clinical decision making and education, and a strong research basis is essential to the profession's continued growth. Research shapes clinical guidelines, advances the delivery of oral health care, expands access to care, creates innovations that help dental hygienists deliver optimal oral health care, and drives the evolution of dental hygiene education.

Dental hygiene has stood at the forefront of prevention of oral disease and promotion of oral health since its inception, yet the evidence for much of how we practice was generated by researchers outside of the profession. The National Dental Hygiene Research Agenda was created to not only drive advances in oral health care, but to advance the research in dental hygiene, by dental hygienists.¹ Dental hygiene education programs, like other health professions, have naturally become the epicenter of dental hygiene research.

This commentary explores the role of research preparation across the undergraduate and graduate curricula and highlights challenges the profession faces in regard to research capacity.

Undergraduate Foundation for Graduate Research

While the Commission on Dental Accreditation standards for dental hygiene education require competence in evidence-based care (Standard

2-13), ethics related to research (Standard 2-19), and evaluation of current scientific literature (Standard 2-22),² the standards do not require a formal course or participation in research. As a result, undergraduate students have reported that the lack of a formal research course in the curriculum was a barrier to engaging in research.³ In addition, only 56% of faculty reported mentoring undergraduate students in research.⁴ These factors all lead to graduates of entry-level dental hygiene programs being underprepared to develop and conduct research in graduate education.

Role of Graduate Research

A key role of research at the graduate level is to prepare future leaders, educators, and researchers with a solid foundation in evidence-based decision making. The National Dental Hygiene Research Agenda calls on all dental hygienists to embrace research to advance the profession.¹ Graduate dental hygiene programs with a thesis research component answer this call.

Research in graduate education develops "...the dental hygiene scholars who are necessary to lead the development of theory and knowledge unique to the discipline of dental hygiene."⁵ The students and faculty of graduate dental hygiene programs are therefore critical contributors to the infrastructure of dental hygiene research. By contributing to the unique body of knowledge in dental hygiene, graduate research helps to establish the importance of the profession to society, advancing the discipline.⁶ The

American Dental Education Association (ADEA) and the American Dental Hygienists' Association (ADHA) Graduate Dental Hygiene Program Aims and Outcomes call for expansion of the dental hygiene body of knowledge via conducting and disseminating original research. This document also includes a definition of the dental hygienist with a graduate level education. The definition clearly includes research as a hallmark identifier by stating, "Graduates conduct translational research to improve teaching and practice, the health care industry, and oral health care delivery models."⁷

Learning to conduct research requires a mixture of formal and informal learning.⁸ Graduate dental hygiene programs with a thesis component provide both types of learning by placing the student in the role of researcher with guidance from experienced faculty mentors. Through this process, students pursue an area of interest to begin to establish subject specific expertise and gain competence in research design, literature reviews, data analysis, interpretation, synthesis, translation of results, and ultimately the dissemination of findings.⁸ All are considered to be integral components for developing competence as a researcher.⁸ These experiences, under the guidance of a supportive mentor, provide formative feedback, and perspectives that help the graduate student gain confidence, learn resilience, and a deeper understanding of the profession to create a foundation for continued research as they begin their careers. Opportunities to disseminate their research at institutional events and professional associations including the ADHA and ADEA provide further support development of their research skills and engage the in networking with colleagues and other experts in the field.

The experience of engagement in research within graduate education also creates future faculty who can support research in entry-level programs and prepare undergraduate students for graduate studies. As research and evidence-based care and the evaluation of scientific evidence are key components of entry-level education, faculty must be prepared to mentor students and recruit the next generation of leaders, educators and researchers.

Additionally, the experience of conducting research in graduate programs creates professional development opportunities for junior faculty or faculty who wish to enhance their research skills as part of their faculty role. Participation on thesis committees also offers a 'safe space' for seasoned faculty to role model and mentor new faculty and novice researchers.

Another role of graduate education at the master's level is as a pathway to doctoral education. While master's level research is key to expanding the existing knowledge base in the profession, doctoral level education moves the research a step further by focusing on original research to create new theory and knowledge in the profession. While no doctoral degree in dental hygiene is available in the United States, a strong cadre of doctoral prepared dental hygiene educators is essential to realize this goal.

Challenges in Graduate Research

While research in graduate education programs is important to elevate the dental hygiene profession, a variety of challenges exist. Of over 339 entry-level programs,⁹ most are associate degree level, making the pathway to graduate level programs longer and more costly. Why does this matter? Twice as many of those with an entry-level bachelor's degree reported experience with research and were three times more likely to go on to complete a master's degree.¹⁰

Barriers to dental hygienists pursuing graduate education include cost, family responsibilities, time, lack of confidence, uncertainty about job opportunities with an advanced degree, and fear/lack of understanding about thesis research.¹¹⁻¹³ These barriers have led to decreased enrollment in graduate dental hygiene programs. They have also led potential applicants to pursue graduate degrees outside the field, contributing to the discontinuation of some dental hygiene master's programs.¹⁴⁻¹⁶ This is despite the literature showing overall satisfaction with obtaining an advanced degree to expand opportunities and enhance personal and professional growth.¹⁵

An additional challenge encountered in graduate dental hygiene education is lack of a cadre of faculty

with experience in conducting research and guiding graduate students in the research process. Research has shown the greatest need for mentoring reported by graduate dental hygiene faculty was for research design and methodology along with scientific writing.¹⁷ From the graduate student perspective, mentoring of faculty guiding thesis research was also identified as a need to ensure successful and timely completion of a research project.¹³ Support for research design and statistical analysis is also needed to conduct high quality research.

The landscape of graduate education, including dental hygiene, is also changing, creating new challenges for graduate research and ultimately the dental hygiene profession. One significant shift has been the increasing use of capstone projects rather than research-based theses as a culminating graduate experience. Although the purpose of the capstone varies across higher education, it typically emphasizes practice based or applied projects, while thesis (or dissertation) research is designed to generate and contribute new knowledge to the profession and oral health of communities.^{6,18} While some capstone projects may include collecting data, it is unclear if capstone projects are consistently robust enough to prepare graduates to design and conduct research to address the NDHRA intent to advance dental hygiene research or meet the ADEA/ADHA scholarship and research aim and outcomes for graduate programs.^{1,7} Evidence from nursing education suggests the shift may have implications for knowledge dissemination with doctoral capstone projects being less likely to be disseminated beyond the institution.¹⁹ In contrast, graduate nursing programs have shown that graduate research is more likely to be disseminated when an alternative capstone or thesis format that includes a manuscript for publication are required as part of process.²⁰

Concluding Thoughts

It is not a stretch to say that graduate research is the lifeblood of the profession. It is necessary to keep the profession moving forward by continuous contribution to the body of knowledge. It is also an area that creates space for the development of future researchers and

mentors, paying it forward into the dental hygiene profession and education. If dental hygiene is to continue advancing as a profession, it is critical to continue to develop the research framework starting in entry-level programs and firmly anchored in robust, graduate programs that require original thesis research.

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