Exploring Current and Future Roles of Non-Dental Professionals: Implications for Dental Hygiene Education

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Abstract: The health care system is undergoing transformation in which oral health is not only valued as an aspect of overall health, but health care delivery systems are aligning to better deliver total patient care. As a result of this transformation, education for many non-dental professionals incorporates oral health content to prepare them to practice in comprehensive delivery models. While some non-dental professionals already incorporate oral health care in their service, many opportunities exist for expansion of oral health care delivery by other non-dental professionals, including radiologic technicians, nursing staff, and human services professionals. As non-dental professionals take on expanded roles in oral health care, the dental hygiene workforce must be prepared to practice in settings with new types of professionals. Dental hygiene curricula should prioritize interprofessional education to best prepare these students for practice in evolved delivery models. This article was written as part of the project "Advancing Dental Education in the 21st Century."

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As a vital component of overall health, oral health care is part of comprehensive health care. Although oral health care is most commonly associated with licensed dental professionals, other members of the health care workforce can be and are contributors. Non-dental professionals engaged in oral health care generally perform activities such as initial risk assessment, health promotion and education, and care coordination, all of which are largely focused on identifying needs and activating and engaging patients. These services may include oral screening, nutritional counseling, preventive interventions such as fluoride varnish, and referral for dental care.[1] Non-dental professionals typically provide oral health care services that do not require the extensive dental training that dental professionals receive.

Members of the non-dental workforce involved in oral health care possess various levels of training and credentials and work in diverse settings across the health care system. Understanding the role of the non-dental workforce in oral health care delivery and the contributions of specific professions is critical to determining health system capacity to support oral health and projecting dental workforce needs. This article aligns with and builds on the article by Glick and Greenberg in this project,[2] by exploring those oral health care services that are currently and/or may be delivered by health care professionals other than dental professionals and considering how new service delivery models will affect the roles and education of dental hygienists. This article was written as part of the project "Advancing Dental Education in the 21st Century."

Health Care System: Past, Present, and Future

Despite spending more money per capita on health care than any other country in the world, health outcomes in the United States are still poorer than in other developed countries.[3] One key problem is the fragmentation of health care delivery into subsectors. Fragmentation has separated oral health from the larger health care delivery system. This separation

has fostered a culture that places limited value on oral health as a part of overall health, which is exemplified by a traditional lack of oral health-related content in the education of non-dental health care providers.

In recent years, the U.S. health system has strived to achieve the "Triple Aim" in health care, which is focused on improving patient care, reducing health system costs, and improving population health.[4] In order to realize this vision, the fragmented system is being restructured to support total patient health. Integrating oral health with primary care and promoting interdisciplinary collaboration have been identified as priorities for ensuring comprehensive health care delivery and total patient care.[5,6]

In 2040, the U.S. health system will look different from how it looks today. Oral health care services will likely be integrated into health care delivery, and primary care will be integrated into dental service delivery. Oral health care services delivered as a standard part of primary health care will include health promotion, disease prevention, and chronic disease management. The primary health care services provided as part of routine dental care will expand. Comprehensive health information systems will enable data access and sharing among health care providers that will support care coordination.

Health Care Workforce Considerations

Historically, non-dental professionals have received little training and experience outside of that required for their focus area. In recent years, interprofessional education and collaborative practice have been recognized as critical for health system integration and comprehensive health care delivery. Interprofessional health education, both clinically and didactically, will likely become standard in health professions' curricula. Students from multiple disciplines such as medicine, dentistry, nursing, dental hygiene, pharmacy, and public health will learn and practice collaboratively.

Oral health competencies will be embedded into the curricula of non-dental health professions educational programs such as medicine and nursing. These competencies possibly will mirror those defined by the U.S. Health Resources and Services Administration (HRSA) in the Integration of Oral Health and Primary Care Practice (IOHPCP).[6] To meet these competencies, students will receive additional oral health content as part of their education through learning modules or free-standing courses. IOHPCP competencies will be included in residency training requirements for physicians and nurse practitioners.

By 2040, certain regulatory barriers will have to be addressed to achieve a comprehensive, coordinated health care system that includes oral health. Health professions education is overseen at the national level by accrediting bodies for each profession—for example, the Commission on Dental Accreditation (CODA), Accreditation Commission for Education in Nursing, and Liaison Committee on Medical Education. Educational programs are already responding to changes in the health care system by promoting interprofessional education. The Interprofessional Education Collaborative (IPEC) has developed domains and competencies to move the collaborative education and practice agenda forward.[7,8]

State licensing boards determine the scope of practice, supervision requirements, and other aspects of practice that have a direct impact on the practice environment of health care professionals. The integration of oral health care services into the practice of non-dental professionals (or integration of primary care services into dental practice) may require changes in state statutes and regulations. Presently, health professions education and state practice policies do not necessarily align. State policies should support efficiency in the delivery of safe, high-quality health services that promote total patient health. Monitoring state policies to ensure alignment with health system priorities and population health needs will be important in the coming decades.

Reimbursements also regulate health care delivery and have a direct impact on professional practice. Currently, the majority of reimbursements for oral health care services are directed toward dentists. Minimal reimbursements for oral health care services are offered to non-dental professionals, with the exception of fluoride varnish applications in medical settings, which is permitted in almost every state. To achieve the vision of comprehensive, coordinated health care, reforms to reimbursement policy, both governmental and private, will be necessary.

Oral Health Care Delivery

Since the Institute of Medicine (IOM) called for the integration of oral health into primary care practice in 2011,[5] numerous initiatives have begun with resources allocated. HRSA's IOHPCP initiative identified key domains (Table 1) and associated competencies required to support integration of oral

Table 1. Core clinical domains in the Health Resources and Services Administration's Integration of Oral Health and Primary Care Practice (IOHPCP) initiative

IOHPCP Core Clinical Domain	Definition
Risk Assessment	Identification of factors that impact oral health and overall health.
Oral Health Evaluation	Integrating subjective and objective findings based on completion of a focused oral health history, risk assessment, and performance of a clinical oral health screening.
Preventive Intervention	Recognition of options and strategies to address oral health needs identified by risk assessment and evaluation.
Communication and Education	Targeting of individuals and groups regarding the relationship between oral and systemic health, risk factors for oral health disorders, effect of nutrition on oral health, and preventive measures appropriate to mitigate risk on both individual and population levels.
Interprofessional Collaborative Practice	Sharing of responsibility and collaboration among health care professionals in the care of patients and populations with, or at risk of, oral disorders to ensure optimal health outcomes.

Source: Health Resources and Services Administration. Integration of oral health and primary care practice. Rockville, MD: U.S. Department of Health and Human Services, 2014.

health into primary care practice.[6] The purpose of the IOHPCP initiative is to enable changes in primary care, specifically in underserved communities, to increase access to oral health care services.

Other efforts include the National Interprofessional Initiative on Oral Health (NIIOH), which is focused on the integration of oral health instruction into primary care clinician education.[9] NIIOH is working to develop a common oral health curriculum for primary care clinicians, including physicians, physician assistants, and nurses, to prepare them to play an active role in oral health care. NIIOH supports Smiles for Life, a web-based oral health curriculum for non-dental primary care clinicians developed by the Society for Teachers in Family Medicine.[10] While a number of efforts are under way to integrate oral health with primary care, some non-dental professionals are already engaged in this practice.

Roles of Non-Dental Health Professionals

A number of standard activities in the dental hygiene scope of practice may currently be provided by non-dental health professionals. These services include health history review, intraoral and extraoral screening, imaging/radiography, impressions/mouthguard fabrications, fluoride treatments, nutrition counseling, health education, care coordination and social support, charting of soft and hard tissues, suture removal, pulp testing, application of desensitizing agents, caries risk assessments, and use of adjunctive technology for oral cancer screening. In addition, emerging oral health care services such as chemical/pharmaceutical management of disease and new diagnostics such as salivary testing, which are being increasingly incorporated into dental hygiene practice, are likely to be provided by non-dental professionals in the future.

The activities most frequently shared by non-dental health professionals fall under the categories of assessment, triage, and prevention and management. The first area to consider is assessment. Radiology is an example of an assessment technique that non-dental professionals may utilize. Radiology technicians routinely take radiographs and perform diagnostic imaging in service locations such as outpatient hospital settings, ambulatory surgery centers, and rural health clinics. With the proper instruction, radiology technicians could expand their scope to include dental radiographs. Dental radiographs are an important part of the comprehensive dental examination. Dental radiographs taken by radiology technicians could be read and used for diagnosis by co-located or remote medical and/or dental professionals. Expanding the role of radiology technologists is a viable means of increasing access to dental radiographs in a number of settings but may be especially useful in rural areas where significant travel times may be required to reach the nearest dental professional.

The second area in which non-dental professionals can and do play a role in oral health care delivery is triage. Triage of oral health-related con-

ditions is already incorporated into multiple settings such as hospitals, nursing facilities, and medical clinics, but will likely be expanded in the future. For example, as a part of the standard intake processes, emergency department staff could be trained in the proper procedures/techniques required for oral health triage. Protocols regarding dental treatment needs could be created or expanded to assist in determining non-emergent, emergent, and urgent dental needs. By incorporating these activities into routine patient care, non-dental professionals would be able to determine treatment needs and degree of urgency for a dental referral, allowing discharge personnel to be more effective with instructions, care coordination, and follow-up.

In addition to emergency departments, oral health triage protocols may be implemented by non-dental professionals in inpatient settings and as a part of specialty health services. Lengthy inpatient stays at a hospital are associated with increased risk for hospital- and ventilator-acquired pneumonia. Establishing protocols for nursing staff to determine if patients are at risk during their hospital stay may reduce readmissions. Discharge staff and nursing staff could provide referrals and instructions for dental care follow-up when discharged. Oncology treatments have side effects such as decreased salivary flow, which impacts oral health and increases risk for dental disease.[11] Health professionals working in oncology could incorporate oral health assessments, fluoride treatments, desensitizing agents, and antimicrobial rinses to mitigate risks to oral health associated with selected treatments.

Prevention and management, the third area in which non-dental professionals participate in oral health care delivery, occurs in a wide array of health care settings and is supported by many health professionals and health occupations. In perinatal and obstetrical programs, health professionals can and do provide oral health services such as assessments (including caries risk assessments), education, nutrition counseling, tobacco cessation counseling, and application of desensitizing agents. In alignment with the IOHPCP, many pediatric and family medicine practices provide fluoride varnish treatments as a preventive intervention for young children as part of standard patient care. Some practices have begun to incorporate oral health assessments into their well-child exams, as well as nutritional counseling, tobacco counseling, discussion on oral piercings, and mouthguard fabrications for sports physicals. These oral health care services will likely become a standard part of primary care in the future. Bright Futures is already incorporating many oral health components into well-child exams with certain oral health assessment performed at age milestones.[12] Oral health materials should also be incorporated into the education modules of public health workers who do home visits and provide case management services for mothers and infants, especially those at higher risk for dental disease.

Increasing awareness of the social determinants of health have and will continue to impact health care delivery. Human services professionals such as social workers, case managers, and care coordinators/patient navigators/community health workers will also likely play an expanded role in supporting the oral health of patients and communities by addressing social determinants of health often identified during the dental hygienist's assessment.[13,14] Dental hygienists play a critical role in linking patients to social support services. For example, they frequently either initiate or link patients to tobacco cessation and other support programs.[15] As oral health is integrated into overall health care and health programs, human services professionals will play an increasing role in providing social support to patients that is focused on oral health maintenance and improvement. In some cases, this is already occurring. For example, case workers with a Women, Infants, and Children (WIC) program in a health center in Washington state have been trained and are providing health education and nutritional counseling and linking patients to services focused on oral health.[1]

Oral health care as a part of routine primary care will likely be expanded to adults in the future. As the population ages and chronic disease rates rise, primary care professionals will need to incorporate oral health into routine patient care. Caries risk assessments, oral evaluations, patient education, the effects of polypharmacy, and dental referral protocols will be essential. Dietitians and health educators, especially those in diabetes self-management programs, also could play an active role.

While some non-dental health professionals are incorporating oral health into overall patient care, dental professionals are incorporating primary care and chronic disease management into their practices. Dental professionals currently provide tobacco cessation, screenings for diabetes, HPV, and HIV, and nutritional counseling services; additional diagnostic screenings and procedures, chronic disease management, immunizations, and other services will likely be added.

Implications for Dental Hygiene Education

In order to achieve the Triple Aim, the health care delivery system is emphasizing increased access, coordination of care, and connecting patients to health resources in their communities.[4,16] As licensed professionals, dental hygienists have the clinical expertise to assist in achieving these aims; they also have an extensive background in biomedical and psychosocial sciences. The expanding role of non-dental health professionals in oral health care delivery will impact the educational needs and role of the future dental hygiene workforce. To apply these skill sets, dental hygienists' services must be effectively integrated in an interprofessional team environment. To prepare dental hygienists to function in multidisciplinary, collaborative settings, students must be exposed to and participate in interprofessional education (IPE) throughout their education.[17] The IPEC competency domains of teamwork, communication, professional responsibilities, and ethics and values provide an effective educational framework to make interprofessional practice part of the health care delivery system.[9,18]

To prioritize IPE in their curricula, dental hygiene and other health professions educators must realize its value to their programs and institutions.[19] Courses in interprofessional practice and leadership, expanded course content in primary care medical assessments, and risk analysis will need to be part of dental hygiene curricula if dental hygienists are to function in integrated health care environments. Course content that includes case management skills, a full understanding of public health core functions, and the ability to contribute in the areas of assessment, policy development, and assurance will be critical.[20] As interprofessional practice evolves, strategic changes in practice acts may be necessary to expand the dental hygiene scope of practice. These changes will improve comprehensive care for the public and allow for dental hygienists to be co-therapists with health care professionals other than dentists. By permitting non-dental professionals to supervise dental hygienists and with the expansion of their education, knowledge, and skills, dental hygienists will be able to assume expanded roles in the evolving health care delivery system.

Basic sciences and foundational instruction for dental hygiene generally aligns with the same areas in nursing education. As oral health is integrated across the health care delivery system and dental hygienists take on new roles, members of the workforce will require enhanced training to help them understand the mission and goals of the various settings (primary care, oncology, etc.). In alignment with their non-dental colleagues, dental hygiene education will need to adopt a systems-based approach that exposes them to and provides them with enhanced knowledge of physiology. This enhanced training would require a minimum of a baccalaureate degree, but could be better provided as part of graduate training. Multidisciplinary educational settings situated in academic health centers would be ideal to provide this enhanced training and successfully prepare dental hygienists for new and expanded roles in the health care system.

Finally, it is critical that all curricular changes for the health professions, dental and non-dental alike, be subject to comprehensive evaluation to determine their impact on educational outcomes, professional practice patterns, and patient/populations outcomes. Doing so will require the development of evaluation strategies concurrent with curricular reform. To date, such evaluations have been elusive, largely due to challenges associated with tracking students from educational programs into practice and with accounting for varying environmental factors such as reimbursement of services. To ensure health professionals are provided with evidence-based education, such evaluations must be a priority, and resources must be allocated appropriately.

Conclusion

Health care delivery in the U.S. is undergoing a transformation. As part of this process, a historically reactive health system is adopting a proactive stance that supports more comprehensive patient and population health. New initiatives seek to provide comprehensive, coordinated health services that promote total patient health. In response to system changes and to address the oral health needs of the U.S. population, initiatives to integrate oral health into overall patient care across the health system are ongoing. Initiatives include the establishment of oral health competencies and curricula for non-dental professionals and the development of interprofessional education and collaborative practice models that promote shared responsibility for oral health and enhanced care coordination.

A diverse group of health professionals are and will be involved in providing oral health care. Non-dental professionals will provide services that include risk assessment, health promotion and education, and care coordination. Although oral health care is already being integrated as part of primary care services for pediatric patients, it likely will be incorporated into primary care services for adults and across multiple specialties, especially in areas such as oncology in which patients may have increased risk for dental disease. Sharing the responsibility of oral health care with non-dental health colleagues will strengthen the health system's ability to support population oral health. Dental hygiene education must respond to the changing health system environment. Future dental hygiene graduates will need to understand and value the contributions of non-dental health professionals in oral health care, and they must be prepared to practice collaboratively with multiple disciplines in various settings.

Disclosure

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