

A Comprehensive Review of Effective Oral Health Education Programs: Interprofessional Collaboration Among Dental Hygienists, Nurses, and Physicians

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Abstract

Background: Oral health is integral to overall health, yet disparities in oral care persist, particularly among vulnerable populations. The interrelationship between oral and systemic health underscores the need for collaborative educational initiatives among dental hygienists, nurses, and physicians to improve health outcomes.

Methods: This review synthesizes current literature on interprofessional oral health education programs, focusing on curriculum integration and collaborative practice. A comprehensive search was conducted across various databases to identify relevant studies highlighting the effectiveness of these programs in enhancing oral health competencies among healthcare professionals.

Results: The findings indicate that interprofessional education (IPE) initiatives significantly improve healthcare providers' knowledge and skills related to oral health. Programs that incorporate case-based learning and focus on the oral-systemic connection have shown promising results in fostering collaboration among dental and medical professionals. Training non-dental health providers in oral health has led to increased confidence and competence in recognizing oral diseases and their systemic implications.

Conclusion: Enhancing oral health education through interprofessional collaboration is crucial for addressing oral health disparities and improving patient care. The integration of oral health topics into the curricula of various health professions is essential for cultivating a workforce capable of delivering comprehensive care. Future efforts should focus on sustaining these educational initiatives and ensuring equitable access to oral health resources across all populations.

Keywords: Oral Health, Interprofessional Education, Collaboration, Healthcare Disparities, Systemic Health.

1. Introduction

The National Academy of Sciences, Engineering and Medicine (NASEM), the Human Resources Service Administration, and the National Institutes of Health (NIH) have confirmed that oral health is a fundamental aspect of overall health [1-3]. The 2016 Global Burden of Disease Study reveals that oral disorders constitute 4 of the top 30 health problems, with untreated adult dental caries being the most widespread disease globally [4]. Partial or full tooth loss resulting from dental and periodontal issues affects mastication, food selections, nutritional intake, self-esteem, social relationships, and mental health. Chronic periodontal infections and persistent inflammation in periodontal pockets are associated with several systemic diseases, including diabetes, cardiovascular disease, unfavorable pregnancy outcomes, stroke, and aspiration pneumonia. Although the basis of this link remains under investigation, a healthy oral cavity is deemed crucial for general health [2,3,5].

Diverse local soft and hard tissue diseases arise in the oral cavity, and the pain associated with these conditions or their treatment may impede nutrient intake and impact general health. Numerous systemic illnesses and behavioral problems may have signs in the mouth cavity. Although orofacial discomfort is mostly associated with dental issues, some instances are of non-odontogenic origin [2]. These may originate from the masticatory muscles or the temporomandibular joint, signify a headache issue, a neuropathic ailment, or maybe referred pain from ischemic heart disease. Orofacial abnormalities may indicate a possible drug use issue or signify negative consequences of medical treatment. instances of the latter include opportunistic infections in transplant patients undergoing immunosuppressive therapy, bleeding tendencies linked to therapeutic anticoagulation, and xerostomia, dysgeusia, mucositis, and osteoradionecrosis arising from cancer treatment [6-8]. Anatomical abnormalities like oropharyngeal congestion may indicate possible systemic consequences, such as obstructive sleep apnea, necessitating additional evaluation [2].

The junction of oral and systemic health occurs during the provision of dental treatment to medically complicated patients. Acute odontogenic infections, although often treatable by medicinal and/or surgical means, may pose a risk of sepsis in immunocompromised individuals and result in considerable morbidity [3]. Certain chronic medical conditions, such as cardiac disease, uncontrolled diabetes, and immunosuppression, may impair a patient's capacity to endure dental treatment or result in detrimental health outcomes; thus, comprehending medical history and implementing suitable modifications are essential for the safe administration of dental care to at-risk individuals [9]. Interventions targeting oral issues may also influence the overall health of individuals. Two examples are *Clostridium difficile* superinfection associated with certain antibiotics, adrenal suppression resulting from prolonged, high-dose corticosteroid therapy, and nutrition impairment due to mucositis linked to chemotherapy or radiation for oral cancer. Furthermore, prescription restricted pharmacotherapeutics for dental patients has individual and public health ramifications, regardless of whether they are inexperienced, currently using, or recovering from illegal substances [6].

Dental practitioners may enhance their patients' overall health by promptly identifying oral abnormalities of systemic origin, effectively managing oral diseases, and personalizing dental treatment to guarantee patient safety. Point-of-care interventions, including tobacco cessation, nutritional counseling, weight management education, medical screenings (for diabetes, HIV, hepatitis C, osteoporosis, and obstructive sleep apnea), salivary diagnostics, and vaccinations (such as influenza, HPV, and COVID-19), conducted in dental settings, also enhance overall health [2, 3, 5, 7].

2. Developing a cooperative healthcare staff with oral health competencies

An essential measure for mitigating the burden of oral illness and disparities in access is the development of a multidisciplinary healthcare staff equipped with oral health expertise. The oral cavity is easily accessible for examination and screening by non-dental healthcare

providers. This is especially crucial for the impoverished population group without dental insurance yet having access to medical care for treatment. Non-dental health professionals possessing the requisite expertise can instruct patients on the significance of oral health, discern oral indicators of both odontogenic and non-odontogenic pathologies, administer preventive and urgent care, identify oral manifestations of diagnosed or asymptomatic systemic conditions, facilitate appropriate referrals, and accelerate diagnosis and treatment. To address the disparity in oral health equality and more effectively cater to patient requirements, non-dental health workers need to get training on the fundamentals of oral health [10,11]. The Association of American Medical Colleges (AAMC) and NASEM have underscored the need of including oral health-related fundamental knowledge and skills into medical education [1, 12]. Nevertheless, many medical practitioners possess a restricted understanding of the oral-systemic link are not adequately positioned inside the mouth cavity [8, 13-15]. Conversely, enhanced knowledge of oral health and heightened confidence among medical practitioners in doing oral screenings have been recorded after adequate training [16]. The fundamental reason of this insufficiency may be attributed to the inadequacy of non-dental health profession curriculum, as recognized in the Surgeon General's "Oral Health in America" report over twenty-five years ago [3].

While it is essential to address the curricular gap, it is also vital for all health professionals to collaborate in order to enhance health outcomes, optimize efficiency, and use limited resources more effectively [17]. Considering the complexities of the oral-systemic health relationship, this is relevant for dental practitioners who have historically functioned in isolation, concentrating only on patients' oral health requirements. To operate efficiently within integrated care systems and enhance the general health of their communities, dental professionals must also engage in collaboration [7,18]. Despite variations in institutional resources, an effective strategy for incorporating oral health into curriculum is the initiation or enhancement of interprofessional education (IPE), alongside a focus on competences defined by the Interprofessional Education Collaborative (IPEC) [19]. Such programs may familiarize non-dental health workers with oral health information and foster the skills and attitudes essential for collaborative treatment [20,21]. Curricular clinical experiences that include oral health into primary care facilitate communication, collaboration, and shared decision-making among all healthcare team members [22].

3. An innovative interprofessional curriculum focused on oral pharmacotherapy

We established and facilitated weekly interprofessional case conferences focused on oral medicine at our institution to equip dental students for collaborative care and to enhance non-dental students' awareness of the mouth-body connection, especially since oral health topics are not consistently integrated into the curricula of non-dental health professions. The instructional methodology outlined above was developed as an element of a broader Interprofessional Education (IPE) initiative, the Special Populations Interprofessional Care Experiences (SPICE), launched in 2015 [23]. The SPICE program encompasses institutions from Rutgers Biomedical and Health Sciences, including Dental Medicine, Pharmacy, Medicine, Nursing, Health Professions, Social Work, and the Dental Hygiene program at Essex County Community College [24]. Furthermore, integrating didactic ideas into case studies that replicate real-life scenarios often engages learners more effectively [25]. We used contemporary medical and dental literature, together with clinical practice standards, to design scenarios that may foster compelling discussions during interprofessional conferences and include the oral/dental, medical, and social requirements of individuals. The primary objective of the conference was to enhance participants' comprehension of the contributions of various health professionals and to bolster their confidence and ease in consulting and working for best patient care. Faculty from each participating institution evaluated and amended the case to

guarantee that discussions would provide a valuable educational experience for students across all health profession programs.

This endeavor is distinctive because of its fundamental oral medicine component, which, to our knowledge, has not been before used for this purpose. The American Academy of Oral Medicine (AAOM) defines oral medicine as a dental specialty dedicated to the oral health care of medically complicated patients and the diagnosis and therapy of medically associated illnesses or ailments impacting the oral and maxillofacial area [25,26]. Oral medicine experts have undergone formal postdoctoral training relevant to the management of patients whose medical conditions impact oral health and dental care delivery. They provide oral health care in hospitals, teach in dentistry schools, and engage in research. The subject of oral medicine, grounded on the oral-systemic link, operates at the intersection of dentistry and medicine, creating an optimal environment for interprofessional education (IPE).

The prototype case mostly used in weekly conferences and addressed in this work pertains to a dental patient with HIV, cardiovascular illness, social challenges, and dietary difficulties [27]. This example exemplifies individual uniqueness and specific health care requirements, emphasizes the mouth cavity as an anatomical area that may reflect and influence overall health, and showcases the extensive function of dental practitioners within the health care team. It also offers a chance to teach and/or reinforce relevant themes previously addressed in the health profession or social work courses. Moreover, it enables interactions that allow prospective dental professionals to expand their understanding of medicine, pharmacology, nutrition, health literacy, social determinants of health, and collaborative care [28].

The historical isolation of oral health from general health may result in the misconception that oral health is only the responsibility of dental experts. Patients consult doctors and nurse practitioners for many reasons, including oral and dental issues [10, 13]. In a study of physicians and nurses, 36% of respondents indicated having office meetings with patients with urgent dental issues, however less than 20% had received instruction on oral health [13]. While medical professionals may not foresee a future role in mitigating oral health inequities, they may be tasked with this obligation, especially when operating in resource-limited settings [10, 13].

The need for heightened awareness of oral symptoms of systemic diseases and the systemic consequence of untreated oral pathology is prevalent across health professions, several of which now demand interprofessional education for accreditation. Published educational materials aimed at enhancing oral health competence among non-dental health professionals include the notable Smiles for Life oral health curriculum, produced in 2005 by the Society of Teachers of Family Medicine [29,30]. A recent assessment of curricular integration strategies used by five medical schools delineates optimal practices and essential stages for linking oral health to current material across all health professions [8]. Identifying and supporting an experienced faculty who advocates for oral health, along with establishing formal partnership with local stakeholders, such as co-located dental schools, are reported essential stages for organizational success in this endeavor [8, 11, 14, 28].

Conversely, elements such as time limitations, conflicting goals, and insufficient faculty knowledge have been identified as significant obstacles to remedial curricular interventions [8 28]. The individual initiatives of dental schoolteachers at our institution have resulted in the incorporation of formal or enrichment oral health modules into the curriculum of medical, physician assistant, and nursing programs. Nevertheless, the participants' proficiency in the content or their application of knowledge in clinical practice remains uncertain due to restricted curricular engagement. Developing a health profession workforce with oral health proficiency requires adequate and continuous exposure to relevant knowledge and clinical encounters that highlight IPEC abilities. Institutional support for educational initiatives that emphasize the

significance of oral health in non-dental health profession curriculum is essential for their sustainability and growth [8,11,14].

4. CONCLUSION

The integration of oral health education across various healthcare professions is essential for improving patient outcomes and addressing the significant disparities in oral health access and quality of care. As evidenced by this review, interprofessional education (IPE) initiatives that bring together dental hygienists, nurses, and physicians can foster a comprehensive understanding of the oral-systemic health connection. This approach not only enhances the competencies of individual healthcare providers but also encourages collaborative practice that can lead to more effective and holistic patient care.

The historical isolation of oral health from general health has contributed to a lack of awareness among non-dental health professionals regarding the importance of oral health in overall well-being. By incorporating oral health topics into medical and nursing curricula, educational institutions can equip future healthcare providers with the knowledge and skills necessary to identify and manage oral health issues. This training is particularly vital in resource-limited settings, where dental care may be inaccessible, and healthcare providers may frequently encounter patients with urgent dental needs.

The case-based learning approach highlighted in the reviewed programs has proven particularly effective in facilitating engagement and collaborative learning among healthcare students. By presenting real-world scenarios that incorporate oral health considerations, these educational initiatives promote critical thinking and improve the ability of healthcare providers to work as part of a multidisciplinary team. Furthermore, they underscore the shared responsibility of various health professionals in addressing oral health issues, thus enhancing the overall quality of care delivered to patients.

Future research should focus on the long-term impact of these educational programs on patient outcomes and healthcare practices. Additionally, it is crucial to explore strategies for sustaining interprofessional collaboration beyond educational settings, ensuring that healthcare providers continue to work together in clinical practice to address the multifaceted nature of health care.

In conclusion, the need for interprofessional collaboration in oral health education is more pressing than ever. As the healthcare landscape continues to evolve, fostering a culture of teamwork and shared learning among dental professionals and other healthcare providers will be key to improving health outcomes and reducing disparities. By prioritizing oral health within the broader context of health education and practice, we can create a more integrated and effective healthcare system that ultimately benefits all patients.

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مراجعة شاملة للبرامج الفعالة لتثقيف صحة الفم: التعاون بين اختصاصيي صحة الفم والمرضى والأطباء الملخص

الخلفية: تُعد صحة الفم جزءًا لا يتجزأ من الصحة العامة، ومع ذلك، لا تزال هناك تفاوتات كبيرة في تقديم رعاية الفم، خاصة بين الفئات السكانية الضعيفة. تؤكد العلاقة بين صحة الفم والصحة العامة على الحاجة إلى مبادرات تعليمية تعاونية بين اختصاصيي صحة الفم والمرضى والأطباء لتحسين النتائج الصحية.

الطرق: تُجمع هذه المراجعة الأدبيات الحالية حول برامج التثقيف الصحي للفم القائمة على التعليم بين المهنيين، مع التركيز على تكامل المناهج والممارسات التعاونية. تم إجراء بحث شامل عبر قواعد بيانات مختلفة لتحديد الدراسات ذات الصلة التي تسلط الضوء على فعالية هذه البرامج في تعزيز كفاءات صحة الفم بين العاملين في مجال الرعاية الصحية.

النتائج: تشير النتائج إلى أن مبادرات التعليم بين المهنيين (IPE) تُحسن بشكل كبير من معرفة ومهارات مقدمي الرعاية الصحية المتعلقة بصحة الفم. أظهرت البرامج التي تشمل التعلم القائم على الحالات وتركز على العلاقة بين الفم والجسم نتائج واعدة في تعزيز التعاون بين المهنيين الطبيين وطب الأسنان. أدى تدريب مقدمي الرعاية الصحية غير المتخصصين في طب الأسنان على صحة الفم إلى زيادة الثقة والكفاءة في التعرف على أمراض الفم وأثارها الجهازية.

الاستنتاج: تعزيز تعليم صحة الفم من خلال التعاون بين المهنيين ضروري لمعالجة التفاوتات في صحة الفم وتحسين رعاية المرضى. يُعد دمج موضوعات صحة الفم في مناهج مختلف المهن الصحية أمرًا أساسيًا لبناء قوة عاملة قادرة على تقديم رعاية شاملة. يجب أن تركز الجهود المستقبلية على استدامة هذه المبادرات التعليمية وضمان الوصول العادل إلى موارد صحة الفم لجميع السكان.

الكلمات المفتاحية: صحة الفم، التعليم بين المهنيين، التعاون، تفاوتات الرعاية الصحية، الصحة العامة.