

Beyond the Tongue: Integrating Oral Health into Medical Curricula for Systemic Impact

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ABSTRACT

Oral health connects directly with the systemic well-being of an individual; however, medical education continues to neglect this important aspect of care. In this article, a synthesis of current evidence linking oral health with systemic health in areas ranging from cardiovascular disease, and diabetes to respiratory and obstetric complications is presented, advocating for the inclusion of dental literacy into medical curricula. The gaps in the teaching of physicians are depicted and the role of structured exposure to dentistry in improving such aspects as diagnostic accuracy, referral patterns, and patient outcome, especially among underserved populations, is highlighted within the text. Interprofessional collaboration is named a means toward holistic health care delivery, within this text. Therefore, the review calls upon reforming a curriculum; wherein dentistry is seen not as a peripheral concern but as an integral part of medical competence in the 21st century. Oral health is vital for overall health and should therefore be reflected in the medical curriculum. By integrating oral-systemic content, physicians would be better equipped to detect and manage associated conditions.

KEYWORDS: Dental curriculum, Interprofessional education, Medical education, Oral-systemic health, Public health.

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INTRODUCTION

Oral health can now be recognized as an integral part of systemic health, with chronic oral infections forming phenomena such as chronic low-grade inflammation and conditions like atherosclerosis, diabetes, respiratory infection, and adverse pregnancy outcomes.^{1,2} Meta-analysis findings show that basic oral hygiene interventions reduce levels of systemic inflammation and improve outcomes for the vulnerable population.³

In spite of all these, oral health is quite marginal in medical training. Many patients first go to general physicians for dental problems.⁴ Most physicians however do not have the appropriate skills needed to assess, diagnose, or refer such conditions. Effectively, this leads to missed opportunities for early intervention and delayed treatment, with an exacerbation of systemic comorbidities.⁵ This review discusses biological associations between oral and systemic health; gaps in existing medical training include proposing integration strategies. It indeed focuses on IPE and offers strategy guidelines to incorporate oral health into mainstream medical training.

ORAL-SYSTEMIC HEALTH CONNECTIONS

The bi-directionality of oral diseases, mainly periodontitis, and systemic illnesses are well known. For instance, the inflammation of periodontal disease worsens insulin resistance diabetic patients get, and poorly controlled

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diabetes hastens the periodontal breakdown.^{6,7} Likewise, oral pathogens enter the bloodstream contributing to atherosclerosis and increasing cardiovascular events risk.⁸

Relevant links have been made with providers of maternal periodontal disease during preterm births and low birth weights.⁹ Particularly among the elderly, poor oral hygiene seems to link aspiration pneumonia and malnutrition.¹⁰ These mechanisms further intensify the need for systemic health professionals to become aware of the oral signs as part of a comprehensive care approach.

Oral health education is not well developed in medical schools across the world, regardless of these compelling connections. The scoping review found that less than 10% of the programs have obligatory dental modules.¹¹ A survey conducted in the U.S. found that less than five hours of oral health instruction is being offered by 69% of medical schools.¹² Moreover, a study from the U.K. reported that though most medical students recognized oral-systemic relationships, less than one-third could accurately select them in clinical scenarios.¹³

Table 1: Selected Models and Interventions Integrating Oral Health into Medical Education.

Study / Program	Country	Integration Strategy	Key Outcomes
Ferullo <i>et al.</i> (12)	USA	National curriculum survey	Exposed lack of oral health content
Smiles for Life (15)	USA	Online modules, CME	Improved knowledge and comfort with oral exams
Mouradian <i>et al.</i> (16)	USA	Paediatric rotation integration	Enhanced awareness and referral behaviour
Tandon <i>et al.</i> (17)	India	Lecture series + cases	Improved student knowledge
Hein <i>et al.</i> (18)	USA	Longitudinal integration	Better retention and collaboration
IPE Report (19)	Global	IPE framework	Facilitated interdisciplinary learning

Table 2: Curriculum Design Framework for Integrating Oral Health into Medical Education.

Component	Description	Example
Learning Objectives	Core competencies	Recognize oral signs; refer appropriately
Content Areas	Key topics	Diabetes-oral link, pregnancy, geriatrics
Teaching Methods	Delivery formats	Case-based learning, e-learning
Clinical Integration	Practical exposure	Oral exams during rotations
Faculty Involvement	Cross-disciplinary teams	Joint lectures, faculty workshops
Assessment Strategies	Evaluation methods	OSCEs, MCQs, case write-ups
IPE Collaboration	Team-based training	Joint sessions with dental students
Evaluation & Feedback	Program improvement	Surveys, audits, longitudinal follow-up

The situation is all the more serious in low- and middle-income countries (LMICs). A lack of trained faculty, overcrowded syllabi, and minimal mandate from regulators impede the inclusion of oral health topics.¹⁴ This perpetuates the myth that dentistry is somehow separate from general health, a myth with far-reaching clinical implications.

Models of Integration and Interprofessional Education

There is an increasing body of evidence to support the effectiveness of IPE-based integration of oral health. Table 1 summarizes key initiatives and outcomes:

Simulation exercises, community rotations, and collaborative projects have proven particularly effective at improving both knowledge and attitudes toward oral-systemic care.

Framework for Curriculum Design

A structured framework can guide integration at both undergraduate and postgraduate levels. Table 2 outlines recommended components:

DISCUSSION

Very importantly, this review sheds light on the global gap between the known importance of oral-systemic health and its practical integration in medical education. Until now, a widely accepted finding is that most medical students feel relatively unprepared to either diagnose oral conditions or to refer patients for treatment probably due to inadequate training.^{4,12,13} By contrast, those institutions that have

integrated oral health, in particular with inter-professional case-based learning activities, showed better education outcomes including competence, communication, and collaboration.¹⁵⁻¹⁸

From a policy standpoint, it would be useful if national bodies such as the National Medical Commission of India had a mandate for oral health integration within competency-based curricula.²⁰ Development of faculty with competency in oral health matters, as well as sharing experiences through joint sessions with dental educators, present avenues for overcoming these common obstacles of time and expertise.

In practice, teaching physicians to conduct oral-systemic assessments can lead to improved early detection especially in the underserved where dentists are not readily available. Physicians with training in oral health can more confidently provide preventive care and act as primary responders for dental complaints in these distant areas.²¹

LIMITATIONS

Despite the need for integration, evidence is still lacking. Most studies were small, pilot projects without long-term tracking of outcomes. Evaluation tools vary from one institution to another, and few studies come from settings that can be considered resource-poor.^{14,22} In addition, there is no global consensus on the relevant competencies for oral health for inclusion in the medical curriculum.

CONCLUSION

Oral health should be considered an integral part of general

health—and medical education must affirm this reality. Integrating oral-systemic content into medical curricula will provide them with the knowledge and skills needed to detect, prevent, and manage oral conditions directly affecting systemic disease progression.

Recommendations

- Make mandatory oral health modules in medical education both undergraduate and postgraduate.
- Engender interprofessional education alongside dental and nursing students.
- Train medical faculty on core concepts of oral-systemic health.
- At the school level, implement mandatory dental hygiene clearance certificates every three years to ensure early detection and instilling awareness in children.

FUTURE DIRECTIONS

- Launch longitudinal trials looking into the effects of oral health education on patient outcomes.
- Develop standardized, competency-based oral health curricula for medical schools.
- Support training and education in low-resource settings using tele-dentistry tools and AI.

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