

The Impact of Integrating Oral Health Education into a Medical Curriculum

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Keywords

Oral health · Medical education · Interprofessional education · Predoctoral education

Abstract

Objective: The purpose of this study was to evaluate our pilot program incorporating oral health education into the medical curriculum by evaluating students' perspectives on the oral health curriculum. **Subjects and Methods:** Two hundred second-year students were asked to fill in a pre-session survey online regarding their familiarity with basic oral health concepts and their comfort level with performing oral examinations, and a postsession survey on paper that repeated the pre-session questions and added questions on the effectiveness of the session. **Results:** Of the 200 students, 164 (82%) participated in the surveys. The pre- and postsurvey results showed that the session helped students become more comfortable with performing oral examinations and recognizing risks for periodontal disease, with an increase from 40 (27%) to 119 (82%) and 51 (35%) to 124 (86%), respectively. **Conclusion:** In this study, the oral health education session contributed to an increase in student awareness and understanding of oral health. Considering the reported effectiveness of the interactive session on student comfort with performing a basic clinical examination, this model shows promise for further use in other institutions.

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Introduction

An education process should include a learning environment that encourages students to learn collaboratively by applying basic biomedical foundations to solving patient cases [1]. As patient care involves a multidisciplinary and interprofessional environment with a team of health care providers, it is critical in early medical and dental education to introduce students to an interprofessional education program [1].

Primary care medical professionals – which include primary care physicians, nurse practitioners, behavioral care providers, pharmacists, physician assistants, and registered nurses – receive very little training in the treatment of oral health problems or the maintenance of good oral health even though they are more numerous than dentists and should be trained to address oral care disparities [2–4]. Clinicians across the entire medical profession can play a major role in improving access to oral care for vulnerable populations by providing preventive care, such as oral hygiene instructions, nutrition counseling, smoking cessation assistance, and even fluoride applications [5, 6]. The integration of oral health into medical care will reduce health care costs as well as improve the quality of life for many, especially for patients with chronic diseases [7].

Separation of medical and dental education has serious negative implications in terms of delivery of care.

Oral health education has been lacking in medical school curricula historically [8, 9]. A national survey of 88 medical schools in the USA showed that 10.2% did not offer any curriculum in oral health [10]. In that study, medical schools with a dental school or residency were not related to the number of hours of oral health education. Mouradian et al. [6] stated that physicians could be instrumental in preventing oral diseases but lack the knowledge to play an active role. It is important to expose students to patients with oral and systemic medical conditions throughout the entire curriculum. The educational experience could help provide the tools for our future health care professions to serve the oral health needs of our patient population and furthermore the general public.

The Harvard School of Dental Medicine (HSDM) and Harvard Medical School (HMS) offered a central oral health program in the medical school curriculum as part of the Patient-Doctor course, beginning a new initiative to expose medical students to the concept of oral health. The course teaches the fundamental skills of the medical interview and physical examination across several different branches of medicine to prepare students for their clinical clerkships. Medical and dental students at Harvard take courses together as part of their education; however, in previous years, the focus of the combined courses was on providing the dental students with foundational medical knowledge before they began to concentrate on dentistry. The pilot program sought to incorporate oral health into one session of the Patient-Doctor course by introducing the medical students to the intraoral and extraoral examination as performed by dental professionals and raise the students' awareness of the increasingly evident links between oral health and systemic health. In this effort, the HSDM and HMS offered a central oral health program in the medical school curriculum as part of the Patient-Doctor course to develop an oral health intervention training program. The purpose of this study was to evaluate our pilot program by evaluating students' perspectives on the oral health curriculum at HMS.

Subjects and Methods

This study was approved by the Institutional Review Board at HMS and the HSDM. In the fall of 2014, HMS and the HSDM presented the first Oral Health Session in the Patient-Doctor II course.

The Oral Health Session was designed to include the entire second-year class at HMS, comprising 165 second-year medical students and 35 second-year dental students. We do not separate the medical and dental students in the courses they take together, and the data were collected as part of their course feedback. An overview of oral anatomy and the experience of performing an oral

Table 1. Learning objectives for the central session on oral health

1. Introduction to causes, prevention, and signs of dental caries
2. Introduction to causes and prevention of periodontal disease
3. Recognize that oral health is reflective of and linked to systemic health
4. Recognize normal intraoral and extraoral anatomy and general diagnostic concerns
5. Learn to conduct a head and neck, intraoral, and extraoral examination

examination in a hybrid of lecture, flipped classroom (in which students review basic concepts before class and spend class time on group activities to reinforce those concepts), and problem-based learning tutorial case (in which small groups of 8–10 students, each with a faculty or postdoctoral student mentor, are presented with a clinical case and discuss potential findings, issues, and treatments) formats. The specific learning objectives are shown in Table 1. Students were provided with a head and neck intraoral and extraoral examination video to view before the class time and a precourse survey. The HSDM faculty members presented lectures on basic oral anatomy and oral health's relation to systemic health, as well as the social aspects of oral health and dental treatment. Following the lectures, HSDM faculty supervised small-group exercises (10 students per group), which included a tutorial case study and hands-on oral examinations by the medical and dental students. Students were asked to fill out a postsession questionnaire at the end of the session. Students and tutorial leaders were provided with protective equipment (eye protection, gloves, and gowns) and materials (gauze and disposable mirrors) for the oral examination portions of the small-group session. Students were also given toothbrushes, toothpaste, and dental floss as part of oral hygiene instructions upon completion of the session.

Results

One hundred forty-six students completed the presession survey, and 145 students completed the postsession survey. Based on the postsession survey results, all respondents found the session to be helpful in raising their awareness of basic oral health issues and 135 (82%) respondents were comfortable with performing oral examinations. The lecture on the social aspects of oral health care was particularly well received.

The responses for questions on basic oral health issues and oral examinations on the presession and postsession surveys are given in Table 2. Major findings from the presession data are that 51 (35%) students were very or somewhat familiar with the causes and prevention of periodontal disease before the session, and this number increased to 124 (86%) students after the session. Also, 40 (27%) students were very or somewhat comfortable per-

Table 2. Pre-session and post-session survey results for repeated questions

Question	Category	Presurvey ^a	Postsurvey ^b	Standard deviation
Are you familiar with the causes, prevention, and signs of dental caries?	Very	24 (16)	55 (38)	56.049 (p < 0.001, d.f. 4)
	Somewhat	54 (37)	72 (50)	
	Neutral	11 (8)	12 (8)	
	Not Very	39 (27)	5 (3)	
	Not at All	15 (10)	0	
Are you familiar with the causes and prevention of periodontal disease?	Very	23 (16)	39 (27)	89.393 (p < 0.001)
	Somewhat	28 (19)	85 (59)	
	Neutral	15 (10)	11 (8)	
	Not Very	48 (33)	10 (7)	
	Not at All	31 (21)	0	
Are you aware of links between tobacco use and oral cancer?	Very	70 (48)	76 (52)	6.431 (p = 0.169)
	Somewhat	57 (39)	60 (41)	
	Neutral	9 (6)	3 (2)	
	Not Very	4 (3)	5 (3)	
	Not at All	3 (2)	0	
Are you aware of the importance of oral health screening?	Very	64 (44)	109 (75)	38.018 (p < 0.001)
	Somewhat	62 (42)	37 (26)	
	Neutral	13 (9)	0	
	Not Very	4 (3)	0	
	Not at All	3 (2)	0	
Can you recognize risks for oral disease?	Always	8 (5)	30 (21)	75.861 (p < 0.001)
	Sometimes	55 (38)	99 (68)	
	Neutral	30 (21)	14 (10)	
	Not Often	46 (32)	3 (2)	
	Never	7 (5)	0	
Are you comfortable conducting an oral examination?	Very	16 (11)	43 (30)	106.345 (p < 0.001)
	Somewhat	24 (16)	76 (52)	
	Neutral	16 (11)	17 (12)	
	Not Very	45 (31)	8 (6)	
	Not at All	44 (30)	1 (1)	
Are you comfortable providing basic oral health information to patients?	Very	21 (14)	49 (34)	70.469 (p < 0.001)
	Somewhat	38 (26)	75 (52)	
	Neutral	14 (10)	14 (10)	
	Not Very	49 (34)	7 (5)	
	Not at All	21 (14)	2 (1)	
How important is oral health to overall health and well-being?	Very	107 (73)	120 (83)	3.798 (p = 0.434)
	Somewhat	29 (20)	20 (14)	
	Neutral	6 (4)	4 (3)	
	Not Very	1 (1)	1 (1)	
	Not at All	3 (2)	1 (1)	
How important is it for primary care health professionals to collaborate with dentists?	Very	103 (71)	122 (84)	14.858 (p = 0.005)
	Somewhat	32 (22)	21 (14)	
	Neutral	6 (4)	0	
	Not Very	3 (2)	0	
	Not at All	2 (1)	0	

Values are presented as numbers (%) unless otherwise stated. ^a n = 146. ^b n = 145.

forming an oral examination before the session, versus 119 (82%) students after the session. All 146 (100%) students who participated were very or somewhat aware of the importance of oral health screenings.

Discussion

The pre- and postsurvey results showed that the oral health education session in the medical curriculum contributed to an increase in student awareness and understanding of the Oral Health Session course. It was also observed that students expressed interest in understanding the important link between oral and systemic health.

The Patient-Doctor course is designed to prepare students for clinical clerkships and focuses on establishing the patient-doctor relationship through the medical interview and physical examination. Although the course covers several branches of medicine, it had not included oral health in previous years.

Clinicians across the entire medical profession are invaluable assets in the prevention and detection of oral disease. An oral health education program is an important initiative to further develop educational collaboration between health professions and incorporate curricular content on the interaction of oral and systemic conditions.

Oral health is integral to systemic health, and an educational curriculum should reflect the need for collaboration among health care professionals for optimum patient care. Interprofessional training opportunities at the predoctoral level are important as medical education becomes more focused on the whole patient. Studies support the need for more interdisciplinary programs and interprofessional education in the curricula [11–15].

Not only do dental and medical educations share a foundation in basic biomedical science, but also the literature is replete with evidence that dental and oral diseases have associated systemic health problems and oral health is inextricably connected to physical health, quality of life, and disease prevention [14–20]. A lack of oral health has been shown to be associated with negative health outcomes including respiratory disease, cardiovascular disease, diabetes, stroke, and adverse pregnancy outcomes [4, 19, 21–23].

The project exposed the second-year medical students and dental students to the concept of oral health as it relates to systemic health and the intraoral and extraoral physical examination as conducted by dental professionals. A survey of US medical schools that offer curriculum hours in oral health found that while topics such as oral

cancers were covered in 81.7% of the schools, only 10.0% taught hands-on skills [10]. To the question asking how comfortable students were conducting an oral examination, 82% of HMS and HSDM students responded positively after the session, compared with 27% before the experience. Considering the reported effectiveness of the interactive session on student comfort with performing a basic clinical examination, this model shows promise for further use in other institutions.

HMS and the HSDM are currently redesigning their curricula to meet new standards and explore new pedagogical methods and opportunities. Oral health education is an important step to support interprofessional education in the health care professions and to promote a collaborative learning environment in medical school. The interprofessional Oral Health Session for the second-year students helped to expose the medical students to some basic concepts of oral health by dental school faculty, small-group discussions, and hands-on exercises. The initial feedback from the students was almost entirely positive.

Additional work is underway currently to integrate oral health education into the new medical school curriculum through introduction of interprofessional educational opportunities. Medical students could be invited to attend the third-year dental student case presentations and be asked to consider the medical implications of a patient undergoing extensive dental treatment. This would both reinforce the link between oral and systemic health and provide opportunities for peer-to-peer learning through small-group discussion.

Students found the tutorial case discussion to be the least useful of the sessions. This may be a result of the case selected; the hypothetical patient involved an edentulous case. However, the purpose of the tutorial session was to tie some potential findings of an oral examination to systemic medical conditions, and analysis of the survey data shows that this was accomplished.

While small-group tutorial cases are a regular part of both the HMS and the HSDM curricula, 20 HSDM faculty members were required to lead small-group sessions for the combined medical and dental students in a problem-based learning environment. HSDM held calibration meetings for the tutorial leaders, to give them the basic concepts and learning objectives, before the Oral Health Session; however, since some of the leaders were not able to attend the calibration meetings and some were more familiar than others with the problem-based tutorial format, some students felt their tutorial leaders were not as effective as they might have been.

The future direction for this program involves further developing the oral health topics throughout the curriculum and measuring evidence of impact in the collaborative learning experience. This project could have a significant effect on patient care outcomes. A medical professional who is aware of the link between oral and systemic health and mindful of the societal and biological consequences of poor oral health can provide a higher level of care to patients.

Conclusion

In this study, the Oral Health Sessions in the medical curriculum helped to increase student awareness and understanding of oral health. As patient care involves multidisciplinary and interprofessional environments with a wide array of health care providers, curricular directions for medical school should explore an education model that incorporates oral health.

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