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# Oral Health for Older Adults: An Interprofessional Workshop for Medical Students

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## Abstract

**Introduction:** Because many older adults lack dental insurance and have limited or no access to dental care, it is essential to train future physicians to conduct brief oral health assessments on them. Likewise, interprofessional educational experiences are crucial in teaching medical students the skills necessary to provide comprehensive, team-based care to complex and vulnerable populations. Thus, this workshop was designed to increase fourth-year medical students' knowledge and confidence in performing oral health examinations on older adult patients using an interprofessional and hands-on approach. **Methods:** The curriculum includes an online pre-session self-study module followed by a 75-minute workshop. The workshop is comprised of a brief introduction (5 minutes), a lecture about the impact of oral health on older adults (30 minutes), a hands-on skill session practicing a focused oral exam led by dental students (30 minutes), and a large-group debrief and wrap-up (10 minutes). **Results:** A pre-/postsurvey assessed learners' knowledge, attitudes, and confidence in oral health skills. The results were compared to a lecture-only format that was in place prior to the implementation of the workshop. In comparison to medical students who received the lecture-only format, those who participated in the workshop showed a greater increase in confidence and skills over time. The medical students also expressed interest in more frequent opportunities for collaborative learning experiences with dental students. **Discussion:** This workshop was successful in introducing an interprofessional experience to medical students in order to ensure more comprehensive and coordinated care for older adult patients in the future.

## Keywords

Geriatrics, Interprofessional, Interprofessional Relations, Oral Health, Older Adults, Frail Elderly

## Educational Objectives

By the end of this workshop, learners will be able to:

1. Recognize the connection between oral health and quality of life in older adults.
2. Identify associations between systemic disease and oral disease.
3. Perform a focused oral health assessment on older adult patients.
4. Work collaboratively with interprofessional team members to ensure the appropriate management of older adult patients with common oral health conditions.

## Introduction

The burden of oral disease in older adults is substantial.<sup>1</sup> As of 2009, 130 million Americans lacked dental coverage.<sup>2</sup> The Healthy People 2020 website states that oral health is one of the top nine health areas in need of improvement for older adults.<sup>3</sup> An increasing number of studies show that poor oral health is associated with systemic diseases such as diabetes, atherosclerotic vascular disease, and aspiration pneumonia.<sup>4-6</sup> There is mounting evidence that improved oral health can positively impact overall health status. In addition, oral diseases such as caries, periodontal disease, and oral cancer can negatively impact quality of life, as well as emotional and psychological well-being.<sup>7</sup> Oral health problems are also a burden on the health care system. It is estimated that over 830,000 emergency room visits were

## Appendices

- A. Pre-session Independent Learning.docx
- B. Presurvey.doc
- C. Postsurvey Immediate.doc
- D. Postsurvey One Month.doc
- E. Facilitators Guide.docx
- F. Session PowerPoint.pptx
- G. Case Discussion TBL.docx
- H. Data Analysis.docx

*All appendices are peer reviewed as integral parts of the Original Publication.*

generated by preventable dental conditions in the US in 2009.<sup>8</sup> In 2010, Americans were more likely to see their medical doctor at least once in the previous year (73%) than their dentist (59%),<sup>9</sup> making medical providers an important source of oral health information, screening, and referrals to dental care.

Despite this, oral health is often overlooked in crowded medical school curricula. A survey of US medical schools found that 69% reported offering less than 5 hours of oral health curriculum, and 10% offered no curriculum at all.<sup>10</sup> The medical schools that do provide curriculum on oral health specific to older adult patients have reported using lecture-style sessions only. This results in an increase in students' oral health knowledge, but not necessarily in their comfort with the essential skills needed to perform optimal exams.<sup>11</sup>

We hypothesized that an interprofessional, skill-building workshop would help demonstrate the importance of a collaborative care model to medical students in delivering quality patient-centered oral care to vulnerable older adults.<sup>12</sup> Our resource is unique because there are few published educational tools for teaching medical students skills necessary to perform targeted oral health exams of older adults, and none were found with an interactive, interprofessional skills session. Although one educational module found on this topic emphasizes the importance of the interprofessional team approach, it lacked a hands-on practical component.<sup>13</sup>

In 2015, we created and evaluated an interactive, interprofessional oral health education workshop to address both the lack of oral health education and the need for interprofessional learning experiences for fourth-year medical students at the Boston University School of Medicine. This was built upon a 1-hour lecture on oral health in older adults that had been given for the previous 2 years. The workshop consists of a brief lecture/didactic followed by a small-group skills session pairing medical students with dental student facilitators to practice oral health examinations on each other. The aim of our study was to evaluate whether participation in the interprofessional oral health education workshop increases medical students' knowledge, attitudes, and confidence in oral health skills compared to students participating only in the lecture.

Unlike other current oral health curricula that focus more on the mastery of anatomy and pathology in general adult and pediatric populations, this interactive, interprofessional skills session teaches medical students practical skills necessary to perform targeted oral health exams specifically on older adult patients. The students' feedback from our study confirmed the desirability of both the interprofessional as well as the hands-on skills components of this form of training.

One educational tool reported in the literature is from New York University. This tool added oral cavity anatomy to the traditional medical school head, ears, eyes, nose, and throat (HEENT) examination. The addition of the teeth, gums, oral mucosa, tongue, and palate examination resulted in a new protocol, the head, ears, eyes, nose, oral, throat (HEENOT), that was taught to nursing, dental, and both medical faculty and students by simulation and clinical experiences. The educational intervention was associated with increased inclusion of oral assessments in the history and physical examination, increased inclusion of oral-systemic health data in the assessment and plan documentation, and increased dental-primary care referrals.<sup>14</sup> However, this curriculum change did not take into consideration the special needs of older adults. The results focused mostly on the change in number of dental referrals from primary care providers. Our project offers a study of the changes in medical students' attitudes, knowledge, and confidence in performing oral health assessments on a vulnerable population that has a high likelihood of oral health issues and otherwise has difficulty accessing dental providers.

An additional educational module entitled "Interprofessional Team Approach: Incorporating Oral Health to Improve Patient Outcomes for Older Adults" emphasized the importance of the interprofessional team approach for oral health in older adults by highlighting barriers to oral health care, including lack of payment sources.<sup>13</sup> The training materials are available in PowerPoint format only and do not include an interactive, hands-on module where dental students are training medical students in their specific area of expertise as highlighted in our resource. We feel the interactive component is crucial for medical providers

to truly understand proper utilization of dental referrals and for both parties to gain an increased understanding and appreciation for the unique challenges unique to while managing complex older patients in both the primary care and dental settings.

In summation, the aim of this workshop is to use an interprofessional education model to teach medical students the skills necessary to assess, triage, educate, and refer older adult patients with oral health problems. The Boston University School of Medicine Institutional Review Board stated that the study is exempt.

### Methods

The target audience for this workshop is medical students or other health professional students (such as physician assistants<sup>15</sup> or nurse practitioners) in their clinical years of training with the following prerequisites:

- Basic knowledge of oral anatomy.
- Basic skills in the HEENT examination.
- Basic knowledge about oral health conditions (e.g., interaction with student's own dentist is often sufficient).
- Basic clinical experience in the ambulatory environment.

The ideal site for implementation is at a medical campus that houses a dental school or clinic with medical and dental faculty and students readily available to collaborate on the project.

### Logistics

Our session was held monthly for 75 minutes with approximately 20 fourth-year medical students per session during their 4 week required geriatrics clinical clerkship. Teaching staff included one geriatrician, two dental faculty members, and four- to six-volunteer dental students in their second to fourth year in training. The involved dental faculty members used different modalities such as email, social media, and word of mouth to enlist dental student volunteers. Ideally there is one dental student to every four medical students participating in the session.

Our session was held during a clinical rotation that focuses exclusively on the care of older adults. However, this session could easily be tailored to audiences in other ambulatory rotations such as internal medicine or family medicine.

The initial lecture portion is held around a rectangular table to promote learner discussion. Small-group breakouts (approximately four groups per session) are held in the same large conference room, with one group in each corner of the room.

The following list describes the items used in the sessions. Those who would like to implement the oral health workshop without an evaluation component may exclude the first three items.

- Presurvey for medical students (Appendix B).
- Immediate postsurvey for medical students (Appendix C).
- One month postsurvey for medical students (Appendix D).
- Oral exam equipment including hand sanitizer, gloves, light source (e.g., pen lights, smartphone, or other), gauze, and tongue blades/depressors.
- Computer and projector for didactic.

Prior to the session, medical students are required to complete a self-directed online module on oral health in older adults (Appendix A). Below is an overview of the session, which should have a total class time of 1 hour and 15 min.

- 10:40-11:00 AM: Twenty minute pre-session huddle. Dental faculty prime the volunteer dental students on key aspects of the focused oral health exam to concentrate on during the small group breakout.
- 11:00-11:05 AM: Five minute introduction to the session for all students. This portion of the session is

led by a medical faculty member and reviews the purpose and structure of session, learning objectives, and introduces both faculty members and dental students (Appendix F).

- 11:05-11:35 AM: Thirty minute large group lecture and discussion on oral health for older adults led by a dental faculty member (Appendix F).
- 11:35 AM-12:05 PM: Thirty minute small group breakout. Oral health examination introduction and skills practice led by the dental students. Small groups debrief as time allows with discussion of oral health case (Appendix G).
- 12:05-12:15 PM: Ten minute large group debrief and wrap-up led by the medical faculty member (Appendix G).

#### Faculty Preparation

The facilitator's guide (Appendix E) and PowerPoint presentation (Appendix F) are emailed to participating faculty members to review approximately 1 week prior to the session's scheduled date. The medical and dental faculty members review the PowerPoint material and presession independent learning (Appendix A) units, as well as the learning objectives and postsession debrief questions.

#### Evaluation

Using a pre-/postsurvey model, we compared the two educational approaches to teaching medical students how to conduct a focused oral health exam on older adult patients. The two educational approaches were as follows:

1. A self-directed, presession online module plus an in-class 50-minute lecture (lecture-only format).
2. A self-directed, presession online module plus an abbreviated 30-minute lecture with a 30-minute hands-on, interprofessional skills practice workshop (lecture/workshop format).

The presession online module was the same for both groups (Appendix A). Three surveys (pre, immediate post, and delayed postsurveys) were administered to the medical students to measure pre-/postintervention change in the following domains:

1. Knowledge in oral health.
2. Attitudes regarding oral health, referrals, and working with other health care domain practitioners.
3. Skill in performing oral health exams with confidence.

The online accessible presurvey (Appendix B) measured knowledge, attitudes, and skill level at baseline. The presurvey included two additional questions to determine background experience in oral health screening that were not included on the postsurveys.

The immediate postsurvey (Appendix C) was paper based and administered in class immediately following the sessions. The delayed postsurvey (Appendix D) was administered online 1 month after the session. This gauged the medical students' use and retention of the knowledge and skills gained via the workshop over time. Open-ended questions were included on both the immediate postsurvey and delayed postsurveys to allow us to explore in depth their reactions to participation in either the lecture-only format or the lecture/workshop format. After completion of the study, the participants who completed all three questionnaires were offered gift cards. An informal postintervention survey given to the volunteer dental students assessed their impressions of the session and the benefits they perceived gaining from it.

#### Results

Seventy-four fourth-year medical students participated in the 6 month long study. Students were assigned to one of the two educational modules based on the timing of their 4 week rotation. Students in the first three rotations of the study period ( $N = 35$ ) received the control lecture-only format while students in the second three rotations ( $N = 39$ ) received the experimental lecture/workshop format. Sixty-seven students responded to the presurvey and were included in the analysis. A breakdown of student prior experience in oral health screening by format is located in the accompanying [Table](#). Ten total volunteer dental students participated in the experimental sessions.

**Table.** Prior Student Experience by Training Format

Characteristic	n (%) <sup>a</sup>	
	Lecture Only	Lecture/Workshop
Experience in oral health screening	5 (16.67)	1 (2.70)
Training in oral health screening, in medical school	8 (26.67)	5 (13.51)

<sup>a</sup>Percentage out of total training format sample (Lecture Only  $N = 30$ ; Lecture and Workshop  $N = 37$ ).

Participation in the lecture/workshop group resulted in a slight increase in self-reported comfort with performing skills when compared to the lecture-only group, both immediately after the session and 1 month later, a difference approaching statistical significance ( $p = .0609$ , Appendix H). The lecture-only groups and the lecture/workshop groups all showed increases in knowledge and attitudes, with no statistical significant difference in outcomes. In the open-ended questions, students who participated in the lecture/workshop sessions reported the format as useful in filling two gaps that are currently underrepresented in their curriculum, interprofessional education and oral health.

We asked students to complete a postsurvey 1 month after the completion of the session. Twenty students from the lecture-only group responded to at least one question on the survey and 26 students out of the lecture/workshop group responded to at least one question. In the lecture-only group, respondents to question one ( $n = 9$ ) identified the following items from the session that would be most useful for both future practice and collaborating with nonphysicians, ordered by frequency of reference:

1. Oral disease pathology and treatment (e.g., general oral health, caries, dentures, trauma, and oral health related to systemic disease).
2. Patient education.
3. Interprofessional collaboration.
4. Dental referrals and consultations.
5. Oral examination skills.

In the lecture/workshop group, respondents to question one ( $n = 11$ ) identified the following, also ordered by frequency of reference:

1. Oral examination skills.
2. Dental referrals and consultations.
3. Interprofessional collaboration.
4. Oral disease pathology and treatment (e.g., general oral health, oral health related to systemic disease, and mouth pain).
5. Patient education.

The number of students from each group who performed an oral health exam within 1 month of the session was compared ( $\chi^2(1) = 0.92, p = .3$ ). Among the 20 respondents of the lecture-only group, five students said yes. Of these five, three gave the following reasons for the oral health assessment (in order by frequency of reference):

1. Patient complaints.
2. Dental pain.
3. Halitosis.

Among the 26 respondents of the lecture/workshop group, 10 had performed an oral health exam. Of this group of 10, eight students gave the following reasons for the oral health assessment (in order of frequency of reference):

1. Patient screening.
2. Patient complaints.

3. Dental pain.
4. Dental decay.
5. Part of anesthesia rotation.

The student responses to whether the session positively influenced their attitudes toward collaboration with nonphysicians was compared between the groups ( $\chi^2(1) = 0.51, p = .5$ ). In the lecture-only group of respondents, 15 said yes. Of those 15, eight gave the following responses as far as what they considered the most influential interprofessional items, ordered by frequency of references:

1. Dental referrals and consultations.
2. Oral health awareness and assessment.
3. Impact on overall health.

In the lecture/workshop group, 17 of the respondents said the session was a positive influence. Of those 17, eight gave the following responses as far as what they considered the most influential interprofessional items, ordered by frequency of references:

1. Dental referrals and consultations.
2. Oral health awareness and assessment.

Comments from open-ended feedback questions included the following:

- “I found the hands-on section particularly helpful. I liked interacting with the dental students as they showed us how to properly do an oral exam. It was reminder that the oral exam is simple and can be included in my physical exam of patient.”
- “Learning from our colleagues in dental medicine was invaluable. I think more medical students are likely to incorporate oral screenings into their routine physical exams. I already do a quick oral health screen but now I feel more confident in my skills and more knowledgeable about what I am looking for.”

## Discussion

This workshop was successful in introducing an interprofessional experience to medical students to ensure more comprehensive and coordinated care for older adult patients in the future. By having the skills practice incorporated into the session, the different students learned from each other’s unique areas of expertise. At the same time, the confidence and skills of medical students in performing the oral health exam on older adult participants was enhanced. The workshop also helps fulfill interprofessional competency requirements for accreditation in both medical and dental education.

Based on the overwhelmingly positive feedback from both medical and dental students as well as participating faculty, this resource can be useful when building similar interprofessional experiences at other institutions. There were 27 qualitative responses to the open-ended questions from the lecture-only group and 44 from the lecture/workshop group. The thematic analysis was based on the qualitative data.

The thematic analysis shows that students referred to different parts of the oral health sessions more or less frequently depending on which group they were in. This could indicate that the students noticed a different emphasis in the lecture-only session versus lecture/workshop, but students were not asked to rank the importance of the most useful items they learned.

Limitations of this approach include time constraints for implementation, funding for materials, scheduling difficulties, and dental students’ varying skill levels in teaching. It is difficult to expect large changes in interprofessional attitudes and relationships from one session, though there is likely a cumulative effect if more learning opportunities with interprofessional team members are incorporated throughout the four year medical school curriculum. Additionally, these sessions may have resulted in different attitudes regarding interprofessional collaboration because of varying teaching skills among the dental students. Major challenges in the long term sustainability of the curriculum include the coordination of student and

faculty schedules across the multiple disciplines involved, institutional support and funding, and finding dedicated time in an already busy medical student curricula.

Despite these challenges, emphasizing accreditation standards will increase the likelihood that this project becomes sustainable. Specifically, this project addresses the important curricular gap of oral health in older adults facing most medical schools, as well as addressing the Liaison Committee on Medical Education standard 7.9 for interprofessional collaborative skills.<sup>16</sup>

Future directions for the curriculum include potentially incorporating an introductory oral health session earlier in the medical students' training. Direct feedback from the students suggested that teaching these skills during their second-year doctoring course alongside the head and neck examination, would be ideal.

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#### Ethical Approval

This publication contains data obtained from human subjects and received ethical approval.

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