

Original Publication

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# Parkinson's Disease Oral Health Module: Interprofessional Coordination of Care

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## Abstract

**Introduction:** Patients with Parkinson's disease (PD) suffer progressive neurodegeneration and experience motor and nonmotor symptoms. Oropharyngeal dysfunctions are increasingly recognized as nonmotor PD symptoms that negatively impact a patient's quality of life. This module was primarily created to update dental health professionals and educate dental students on the oral health needs of patients with PD, with an emphasis on interprofessional collaboration and evidence-based dentistry. The module may also benefit other health professionals from different disciplines working with patients with PD.

**Methods:** The module was developed to be delivered in one 55-minute large-group session followed by a short assessment and case study discussion. Associated materials include PowerPoint slides with transcript, a narrated video version of the PowerPoint lecture, a quiz, and the case study. Thirty-four first-year dental students were invited to watch the narrated presentation, complete a pre-/postsurvey, and take the quiz. **Results:** All participants agreed dental schools should provide education regarding oral health in patients with neurological disorders, as only 29% of them had previously taken a related class. After watching the presentation, students reported that most of the information was new content and that the difficulty level met their expectations. All students reported that the lecture increased their interest in interprofessional collaboration. In a quiz taken immediately after the presentation, the class average grade was 82.7, with 94% of the class passing the quiz with a grade of 70 or more. **Discussion:** Educating dental professionals regarding care of patients with PD must emphasize interprofessional collaborations among health care providers.

## Keywords

Interprofessional, Dentistry, Parkinson Disease, Oral Health, Xerostomia, Parkinson's Disease, Dysphagia, Deglutition Disorders, Tooth Loss, Sialorrhea

## Appendices

- Parkinson's Disease Oral Health - Narrated.mp4
- Parkinson's Disease Oral Health Presentation.pptx
- Parkinson's Disease Oral Health Transcript.pdf
- Quiz & Case Study.pdf

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

## Educational Objectives

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

- Describe the etiology and pathogenesis of Parkinson's disease (PD).
- Describe major oral health problems in PD.
- Define how oral health problems in PD can interact to deteriorate a patient's quality of life.
- Recommend best practices in the dental office to accommodate the needs of patients with PD.
- Encourage collaborations with other health professionals to provide comprehensive care.

## Introduction

Parkinson's disease (PD) is a progressive neurodegenerative disorder that affects approximately seven million people in the world.<sup>1</sup> Although PD is best known for affecting a patient's motor system—causing tremors, akinesia, and postural instability—it is the associated debilitating nonmotor symptoms that often have the most negative impact on quality of life. These include behavioral, cognitive, cardiac autonomic, sleep, sexual, and sensorimotor dysfunctions; gastric and intestinal problems; urinary incontinence; constipation; and dysphagia.<sup>2</sup> Oral cavity problems are a newly recognized set of nonmotor symptoms in this patient population and, as such, need to be included in dental education and continuing education

programs.<sup>3</sup> The goals of this resource are to introduce learners to the oral health needs of patients with PD and to encourage interprofessional collaborations for their care.

The University of Texas Health Science Center at Houston School of Dentistry does not include such a presentation in its curriculum. Therefore, as investigators and clinicians in the field, we created this resource to improve awareness of oral health problems in PD and prepare dental professionals to recognize and treat this patient population in an interprofessional manner. We offered the presentation during an extracurricular meeting for dental students, but it can also be presented as a class lecture. Dental health professionals and care staff of patients with PD can use the resource for continuing education. For example, the presentation can be part of a departmental seminar series in dental schools and nursing schools. The target audience includes any dental health professional (dentists, dental hygienists, dental students) and other health professionals working with patients with PD (physicians, nurses, neurologists, speech therapists, etc.).

Several oral health educational resources have been created for patients with PD and are available online from the Parkinson's Disease Foundation and American Parkinson's Disease Association, among others.<sup>4-6</sup> Yet few have targeted dental health professionals.<sup>7-12</sup> Though interprofessional collaborations between dental health professionals and primary care physicians have been discussed previously, no such resource exists regarding collaborations with specialized physicians such as neurologists.<sup>13-15</sup> Interprofessional collaborations to treat patients with PD have been studied and have proven to be very beneficial for the patient; however, no study to date has included a dental health professional in such teams.<sup>16</sup> A primary goal of this resource is to emphasize the need for dental health professionals to become active members of the interprofessional health care team for patients with PD.

## Methods

The module was created by performing a comprehensive, unstructured, and unblinded search of the PubMed electronic database using keywords related to *oral health* and *Parkinson's disease*. Information gathered through this search was then organized into four main objectives: (1) to describe the major oral health concerns in patients with PD (reporting epidemiology, time of onset of each symptom, preventive plans, and treatment strategies), (2) to emphasize the importance of timely treatment of oral health symptoms in patients with PD by explaining how interactions among these symptoms lead to worsened quality of life and increased risk of death, (3) to recommend strategies in the dental office to accommodate the needs of patients with PD, and (4) to encourage dental students and professionals to collaborate with appropriate health care providers according to each specific symptom.

Included in this resource is a didactic 40-minute slide-show presentation (both narrated [Appendix A] and alone with a transcript [Appendices B & C]) that introduces the basics of PD and educates learners with updated information regarding the four major oral health problems of this patient population (i.e., teeth/gum health, xerostomia, sialorrhea, and dysphagia). The presentation includes an analysis of how specific symptoms are interrelated and can further affect one another and a discussion of the oral-systemic health link and the importance of interprofessional coordination of care. The module concludes with important advice on how to adapt treatment of dental patients with PD. The PowerPoint presentation can be presented in its narrated form in person, as an online digital class, or by a lecturer following the transcript. After the didactic portion of the class, it is recommended to allow 15 minutes for questions, and then the presenter can divide the audience into small groups to discuss a case study (Appendix D) and end the class with a short quiz (Appendix D) to assess understanding of the material presented. The quiz was developed collaboratively by the interprofessional panel of authors. The quiz was not piloted, but some questions were derived from successful exam questions in pertinent dental school courses.

The room should be equipped with audiovisual equipment to present the lecture and a computer with Windows Media Player to show the narrated version of the presentation. The person in charge of

administering the lecture should view it and/or read the transcript before the event. This person should also have enough paper copies of the quiz and case study to distribute to the audience.

The target audience for this short presentation are dental students at any stage of their career and dental health professionals (dentists, dental hygienists) seeking continuing education. However, other health professionals caring for patients with PD (nurses, physicians, neurologists, speech pathologists, etc.) may also benefit from the information presented in this module. The presentation can be included as part of the curricula of dental courses such as gerodontology or special care dentistry. It can also be presented as a single 40-minute continuing education lecture or extracurricular departmental educational talk. The presentation was written to fit a wide range of health providers and thus has no prerequisites aside from the learner being a health provider or student in the field interested in updated information regarding oral health in patients with PD.

We invited first-year dental students by email to attend this lecture in its narrated format. Two of the authors of the lecture, Drs. Jeter and Sadowsky, were present at the event to answer questions and administer the test after the presentation was over. Thirty-four students attended the lecture in a small classroom at the University of Texas Health Science Center at Houston School of Dentistry. A presurvey was given to them to collect general information regarding their prior knowledge and education. After the presentation, students completed the quiz (Appendix D) and a postsurvey for feedback on the lecture.

## Results

Thirty-four first-year dental students attended a single extracurricular lecture and were asked to complete a survey (presurvey) before the presentation. Students were asked about their amount of experience in geriatric dentistry and with patients with PD. Most students had no or little experience with geriatric dentistry, and very few had experience working with patients with PD (see the Table). About a third of the students said they had had a class regarding oral health in patients with PD, and all of them agreed that dental schools should include education regarding oral health in patients with neurological disorders.

**Table.** Pre- and Postsurveys (N = 34)

Question	None or Little Experience	Some Experience	Fair or Large Amount of Experience
What is your expertise in geriatric dentistry?	79.4%	20.6%	0%
What is your expertise with patients with Parkinson's disease?	88.2%	11.8%	0%
	<b>Nothing or Very Little</b>	<b>Some</b>	<b>All or Almost All</b>
How much of the lecture was new information to you?	5.9%	26.5%	67.6%
	<b>Too Easy</b>	<b>As Expected</b>	<b>Too Difficult</b>
Was the difficulty of the lecture in line with your expectations?	8.8%	76.5%	14.7%

In a postpresentation survey, 67.6% of students reported that the content of the presentation was almost all or all new material to them; 76.5% said the difficulty of the lecture met their expectations, with a minority reporting it being too easy (8.8%) or too difficult (14.7%; see the Table). About 80% of students reported that the presentation increased their interest in interprofessional oral health care for patients with PD, and 100% of them said they would recommend the course to other students. After the didactic presentation, students were given a short quiz (Appendix D) to evaluate their understanding of the material presented. The class average grade was 82.7, and 94% of the class passed the quiz with a grade of 70 or more.

When we asked students what they liked best about the presentation, many said they liked the clarity and organization of the lecture and how the diagrams helped them understand the material presented. Some students commented favorably on the clarity of the audio. Most also liked learning the material from an interprofessional perspective, which helped them see how dentists fit into the care of these patients. After the presentation, the most prevalent feedback received was requests for real-life scenarios or examples of patients and their symptoms. To address this, we included a case study to be discussed at the end of the presentation.

## Discussion

As the elderly population grows, so does a population of elderly people with neurodegenerative disorders such as PD. Students training for a career in health care need to prepare themselves to treat and care for them. Recent research suggests that poor oral health in patients with PD has a negative impact on their quality of life and may even lead to a premature death.<sup>16</sup> Furthermore, oral health problems interact with other systems of the body, making interprofessional collaborations essential for the treatment of these patients. This module was designed to be short, thorough, and clear in order to encourage as many dental care professionals as possible to work with patients with PD and collaborate with each other. Feedback from students tells us that the presentation is easy to understand and well organized, with dynamic diagrams.

This module has the advantage that each user can determine the format in which he or she prefers to administer it. In this way, the resource fits the needs of a broader audience. We envision its use to include the following avenues: online in narrated video form, in class in narrated video form (as pilot-tested), and in class with a human lecturer who builds on the speaker notes. In addition, presentations can be followed by the optional case study and quiz.

## Lessons Learned

The implementation of this stand-alone module has reinforced our view that resources are needed to educate health care providers and increase interprofessional collaborations. Qualitative feedback from students tells us that they are eager to collaborate with other health professionals but may lack education regarding how or with whom to collaborate. This didactic module promotes interprofessional collaborations by increasing learners' understanding of oral health symptoms in patients with PD, as well as how such symptoms can affect each other if untreated. This resource also specifies which health professionals to contact to treat specific symptoms and how dentists can work together with them.

## Limitations and Future Directions

We have not evaluated this presentation for advanced students or professionals, and some may find less of the presentation to be new material to them. The information presented is based on a critical appraisal of current research literature, thus supporting evidence-based dentistry, which is important for dental health professionals to improve clinical decision-making.

The presentation is intended to increase interest in the area, and thus, it is not a comprehensive educational resource on its own. A future goal is to create a specialized course in understanding how neurodegenerative disorders may affect oral health and vice versa. The biggest challenge is finding ways to encourage and teach efficient means of communication between health professionals in order to care for these patients in an interprofessional manner.

Because students in the pilot were not pretested on their knowledge of oral health in PD, measurement of the lecture's impact on knowledge is limited. Of note, only a third of the students had had a similar class in the past, suggesting that the high quiz scores reflect new knowledge. We have not measured the impact of the lecture on changing behavior regarding interprofessional collaborations. Doing so would be a challenge because it would require a longitudinal experimental design.

Finally, the module is largely didactic, limiting the chances of information retention and application. In the future, creation of other interactive/active learning components would augment this module.

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#### Ethical Approval

Reported as not applicable.

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