

# Oral Hygiene in Patients with Parkinson's Disease

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## ABSTRACT

Parkinson's disease is a chronic progressive neurodegenerative disorder with a multifactorial etiology. The symptoms are characterized by motor disorders – tremor, rigidity, bradykinesia and postural instability, which hinder oral hygiene. Oral and dental health in Parkinson's disease has been under-documented and findings are conflicting. Moreover, a number of dentists have limited experience regarding the management of these patients. This article reviews literature published within the last fifteen years, to better understand the impact of this disease in oral health. A literature search (MEDLINE and PUBMED), using keywords *Parkinson Disease* and *Oral Hygiene*, yielded 27 articles, from which 20 were selected. All of the articles were published in English in the last 15 years.

**KEYWORDS:** Parkinson's disease, oral hygiene, oral health

## INTRODUCTION

Parkinson's disease (PD) has a prevalence of greater than 1% in people over 65 years old. This illness results in selective destruction of mesencephalic dopaminergic neurons located in the substantia nigra.<sup>1</sup> The classic motor presentation, characterized by tremor, rigidity, bradykinesia, and postural instability, reduces dexterity, making oral hygiene challenging. Additionally, other risk factors for oral disease in PD patients have been documented, such as craving for sweets and medication-induced salivation changes.<sup>2,3</sup>

Although there are increasing data on the subject, oral health in Parkinson's disease is still poorly documented and findings have been contradictory. This may affect the level of expertise and, consequently, the level of comfort that dentists have in the management of these patients. Oral health professionals rarely perform complex dental procedures in PD patients, and sometimes they may disregard an essential step of the treatment: motivation and instructions for oral hygiene. These limitations in treatment may also help to explain the increase, sometimes reported, in tooth loss in this population. On the other hand, patients with PD have also been reported to have a smaller number of teeth decayed.<sup>2,4,5</sup>

Almost half of patients with PD have some difficulty with daily oral hygiene habits, and although there is no absolute

consensus in the literature about the link between a higher prevalence of oral disease and PD, it is essential for health care providers to be aware of the potential oral health hazards that PD patients have.

## METHODS

We performed a systematic review of articles published in English in the last 15 years that connect Parkinson's disease and oral hygiene. Using MEDLINE and PUBMED) with the keywords *Parkinson Disease* and *Oral Hygiene*. articles were included if they were published in English within the last 15 years. The search yielded 27 articles, from which 20 were included based on the aforementioned criteria.

## LITERATURE REVIEW

Parkinson's disease is characterized by cardinal motor impairments noted above, but other findings may also be present including dysphagia, gait instability/shuffling gait, and masked facial expression. Although they produce less saliva than normal, they swallow less, which may lead to drooling. It is an irreversible, slowly progressive disorder.<sup>6,7,8,9</sup>

There is some concordance in the literature on risk factors that PD patients have to develop oral diseases: mechanical inability to perform proper oral cleaning, medication use that can cause dry mouth by reducing saliva formation, physical and behavioral changes that complicate professional dental service, cognitive changes that prevent patients from reporting dental symptomatology including pain, and an elevated number of appointments missed with the dentist.<sup>2,3</sup>

Almost half of patients with PD have some difficulty in daily teeth cleaning. For instance, PD patients are less likely than healthy patients of the same age: to brush their teeth, to use dental floss, and to clean their dental prosthesis.<sup>4,5,11</sup>

The reduction of salivation caused by anticholinergic medications and also by possible malnutrition, and the habit of eating sweets and sticky foods, may contribute to the formation of dental caries, periodontal disease and eventual tooth loss.<sup>8,12</sup> Some patients have decreased appetite. This problem, associated with proper motor function required for proper chewing, cause patients to avoid nutritious foods such as vegetables and grains. Additionally, PD patients are also known for their "sweet tooth," a predilection which can increase the risk of developing dental caries.<sup>13,14</sup>

Behavioral changes may also increase the risk of oral health problems. Apathy, depression and forgetfulness, for instance, may cause patients to neglect their oral hygiene as well as hamper professional dental care. Patients may develop cognitive impairment, which tends to be reflected in the decline in the practice and effectiveness of activities of daily living, including self-care routines, such as dental hygiene. For these same reasons, PD patients can also lose more appointments with the dentist and may not accurately report their dental symptoms to their caregivers and dentists.<sup>15</sup>

In some studies, comparing patients with PD and healthy populations, PD patients have a higher number of missing teeth, more dental plaque, more dental caries, more pronounced bone loss, deeper periodontal pockets and overall worse oral hygiene. In these studies, salivation rates were essentially the same for groups with and without Parkinson's disease, which can be a surprising finding given that PD patients may sometimes either present with reduced salivation due to some anti-parkinsonian medications or even as an early autonomic manifestation of PD, or have drooling due to a reduced rate of swallowing.<sup>2,15</sup>

Some interventions have been proposed to improve oral hygiene and the care of these patients: the use of an electric toothbrush provides precise and repetitive movements, cleaning and protecting teeth more effectively<sup>16</sup>; treatment with stannous fluoride dental gel is a good strategy for daily use at home, as well as in periodic visits to the dentist, because stannous fluoride gel is stronger than the fluoride component found in toothpastes;<sup>17</sup> treatments with chlorhexidine, which can chemically reduce the plaque index in patients with motor deficiencies; appointments preferably scheduled for about an hour after patients have taken their PD medications, to take advantage of a peak response period, leading to better cooperation with the dental procedures;<sup>18,19</sup> the use of mouth opening devices to facilitate procedures; the use of appropriate local anesthetics (e.g. Lidocaine with adrenaline) in the lowest effective dose. Dentists should stimulate and guide their PD patients, family and caregivers to practice appropriate techniques of dental hygiene.<sup>13</sup>

## DISCUSSION

Studies that outline the habits and the special needs of patients with PD are still scarce and fairly discordant. Nevertheless, there seems to be agreement on the many predisposing factors for oral cavity diseases in PD, including: 1) the difficulty performing proper oral hygiene because of motor limitations; 2) propensity for deleterious food habits such as high ingestion of sweets; 3) the use of drugs that reduce salivation; 4) physical and behavioral deficiencies that hinder adequate professional dental procedures; 5) cognitive changes, which make patients more likely to miss dental visits and less likely to report dental pain/symptomatology to their caregivers or dentist, among other factors.<sup>2</sup>

However, contrary to what one could expect, patients

with Parkinson's disease have been reported as having less decayed teeth but an increased prevalence of periodontal disease when compared to a normal control group.<sup>3,14</sup> The authors also found that the frequency of brushing was higher among patients with Parkinson's disease, with an average of two daily brushings. The results of increased rates of gingivitis and periodontitis, with a significant increase of the depth of periodontal pockets serves as a reminder that chronic plaque accumulations may cause not only tooth decay but also bone loss in this special patient group, because of their presumed difficulty with daily oral hygiene.<sup>2,3</sup>

While oral hygiene was reportedly poor in PD patients, the number of caries were at least as high as in control groups, suggesting that PD patients are not invariably associated with a protective factor against decay.<sup>2,14</sup> Furthermore, the authors also found that the subjects were aware of the need for good oral hygiene.<sup>14</sup> Although individuals with PD have been reported to brush their teeth at least as often as the comparison subjects, and they also seem to be aware of the need of proper oral hygiene, this was clearly not always particularly effective. Published reports in which individuals with PD used electric toothbrushes and even flossed, still noted that the results were still not satisfactory for efficient plaque control. Because the inability to perform oral hygiene well due to their motor limitations, the authors identified a need to further strengthen oral hygiene in this group, through a combination of physical methods and chemical control of the plaque, with chlorhexidine or a similar agent. Furthermore, regular monitoring by a dentist or dental hygienist to ensure that patients are able to maintain a reasonable oral hygiene appears to be a sensible recommendation.<sup>2,13,14</sup>

There is general agreement on the need for greater participation of dentists in the planning and delivery of health care to patients with PD, as an essential team player in the multidisciplinary task force in PD. Oral health professionals are also essential to motivate and educate these patients and their caregivers on the importance of maintaining good oral hygiene habits. Deficient dental and periodontal health may be a risk factor for progression of associated systemic diseases such as diabetes, pulmonary disease, atherosclerosis, cardiovascular disease and stroke in any population.<sup>16</sup> Moreover, a good control of the PD itself prevents deterioration of the patient's oral health, which can often be neglected as a result of the evolution of the disease.<sup>11,17,18,19</sup>

## CONCLUSION

To date, it appears that there is no consensus in the literature on the most prevalent diseases of the oral cavity in patients with Parkinson's disease. However, their motor limitations, often deleterious diet, cognitive changes and medications causing salivary reduction, still seem to be major risk factors for oral diseases when compared to people without the disease. It is essential that patients and their caregivers are fully aware of the importance of as well

as how to achieve good oral hygiene in PD. Additionally, dentists need to understand the disease and the limitations it imposes to properly participate in the care of PD patients, helping them to achieve a better quality of life.

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