

# Parkinson's disease nutritional issues



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## Parkinson's Disease

Parkinson's Disease is a progressive neurodegenerative disease first described in 1817<sup>1</sup>. It is a collection of symptoms which include bradykinesia which is the slowness of movement, rigidity which is having stiff muscles, and tremor of body parts when the patient is at rest<sup>1</sup>. These motor features are three of the most common symptoms seen in patients with Parkinson's Disease<sup>1</sup>. Other symptoms of Parkinson's include postural instability, dysarthria which is difficulty with speech due to muscle weakness, and dystonia which is repetitive muscle contraction in parts or sometimes the entire body<sup>1</sup>. The disease is difficult to diagnose so the patient must be seen by a specialist that will rule out other motor disorders and get an understanding of the patient's medical history<sup>1</sup>. The Unified Parkinson's Disease Rating Scale (UPDRS) is a tool for physicians to use to determine if the patient has the disease<sup>2</sup>. It is an extensive form that rates the patient's symptoms on two different scales to determine the likelihood of disease. Multiple sections for dates are allotted to test periodically and symptoms are revealed over time. The cause of the disease is still unknown but is thought to be associated with the combination of many factors, some being genetics, the environment, and loss of dopamine cells produced (which is associated with aging)<sup>2</sup>. Age is one of the most common factors seen with the disorder, with an average age of 60-year-old at diagnosis<sup>2</sup>. Because there is no cure for the disease, a large focus for care providers is prevention and managing symptoms. Patients with Parkinson's Disease are at risk for problems associated with nutrition which allows for the management of the disease to be a

multidisciplinary approach- involving dietitians, speech-language pathologists, mental health professionals, neurologists, occupational therapists, physical therapists, and social workers <sup>3</sup> . Parkinson's is one of the most common neurological disorders <sup>1</sup> . This progressive disease can be many things to a patient: painful, embarrassing, frustrating, upsetting, emotional, etc. The disease impacts motor and nonmotor functions that alter normal functioning. Depending on the severity and rate of progression, the disease can also be extremely upsetting for the patient's family and friends offering their support.

Parkinson's disease has been shown to begin with symptoms that are nonmotor- making it especially difficult for care providers to diagnose if the distinctive motor features that make the disease more detectable are not present <sup>1</sup> . These include depression, sleeping problems, anxiety, impairment of the senses, pain, and cognitive impairment ranging from memory issues to the struggle of completing tasks that are more advanced. These non-motor symptoms are typically in seen the early stages of the disease which lasts about four to six years <sup>1</sup> . Research has shown that the loss of cells that produce dopamine in the brain is what causes the known symptoms of the disease <sup>2</sup> . Dopamine is produced by the substantia nigra <sup>2</sup> . The substantia nigra is a portion of the structures in the extrapyramidal system that controls involuntary movement <sup>2</sup> . Dopamine is the excitatory neurotransmitter and GABA is the inhibitory neurotransmitter that when in balance, will control movement that is coordinated, control posture, and muscle tone <sup>2</sup> . As more neurons responsible for relaying dopamine signals are destroyed, the

balance of excitatory and inhibitory will be disrupted, and patients will experience disruption of movement and the motor symptoms of the disease<sup>1</sup>. Lewy bodies are abnormal clumps of protein that are deposited into cells<sup>4</sup>. These deposits will interfere with normal functioning and communication of the brain<sup>4</sup>. The clumps formed will cause neurons to not work as well and they will eventually die off<sup>4</sup>. Lewy bodies can disrupt normal thoughts, behavior, movement, and mood<sup>4</sup>. The brain regions responsible include the cerebral cortex, the limbic system including the hippocampus, the midbrain, the basal ganglia, and the brain stem<sup>4</sup>. Damage of neurons in the cerebral cortex can cause disruption to multiple lobes in the brain of higher functioning like thinking, processing, understanding, memory, cognition, posture, movement, and more<sup>5</sup>. The limbic system is where emotions, learning, and memory are processed<sup>5</sup>. The midbrain and basal ganglia are where motor movements are processed<sup>5</sup>. The brainstem is important for autonomic functions<sup>5</sup>. The rate destruction of neurons that are responsible for these functions determines when the symptoms of the disease will present themselves. With symptoms of Parkinson's comes major nutritional risk and intervention for care providers.

Parkinson's Disease can put those who are affected at risk for nutritional problems including weight loss and malnutrition<sup>2</sup>. As the severity of symptoms increase, the risk for malnutrition will increase as well. The symptoms that are presented in the disease that cause the patient to be at high risk for poor nutrition include a decrease in ability to self-feed, decreased appetite, chewing and swallowing problems, inadequate fluid and

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oral intake, and drug-nutrient interactions<sup>2</sup>. Resting tremor is a motor symptom of Parkinson's disease that can cause patients trouble with self-feeding<sup>2</sup>. Tremor can cause patients to exert more effort at meal times, causing fatigue and poor intake<sup>2</sup>. Adaptive equipment for Parkinson's can help patients keep their independence when experiencing such symptoms<sup>6</sup>. Weighted utensils, travel cups with lids or straws attached, and scoop plates are all assisted devices that can help to increase intake and decrease patient frustration and loss of independence<sup>6</sup>. Patients can also benefit from help from caregivers during mealtimes, as well as allowing patients with Parkinson's to have more time to eat their meal<sup>2</sup>. If problems still persist, mechanical alterations can be made to food to make mealtimes easier<sup>2</sup>. Dry mouth- or xerostomia in Parkinson's is a nutritional problem caused by the action of excessive swallowing or from the side effect of some medications<sup>2</sup>. If dry mouth is not treated, it can be hard for patients to speak and eat, causing a downward spiral of problems including decreased intake and also dysphagia<sup>2</sup>. Foods can be moistened to help with chewing and swallowing difficulties. The lack of saliva and also impairment of motor muscles in the throat can cause a decreased intake and pose a risk for choking<sup>2</sup>. Patients can be assessed by a speech-language pathologist to determine what level of dysphagia the patient is at<sup>2</sup>. Some diets may need to be altered in order to match a consistency that will allow the patient to consume food safely and in appropriate amounts for their needs<sup>2</sup>. If the patient is still not consuming enough through the oral route, they can benefit from nutrition support<sup>2</sup>. With altered GI function, patients may experience gastroparesis<sup>2</sup>. The initial

recommendation for this problem is to encourage small, more frequent, low fat and low fiber meals to increase the likelihood of digestion<sup>2</sup>. Delayed emptying of the stomach can attribute to patient feelings of fullness, nausea, and loss of appetite<sup>2</sup>. To prevent malnutrition, patients with gastroparesis may benefit from enteral feeding passing the stomach and letting nutrients enter through the duodenum<sup>2</sup>. Dehydration is another nutritional risk for patients with Parkinson's disease and can be hard to resolve if patients are depressed, fatigued, or if they are having trouble with swallowing<sup>2</sup>.

Dehydration can result in constipation<sup>2</sup>. Small and frequent sips of water should be encouraged and alternate routes for hydration should be implemented if needed<sup>2</sup>. If patients are losing weight unintentionally, the dietitian can work with the patient to brainstorm ways the patient can increase their intake by increasing nutrient dense foods, providing the patient with supplements, and extending meal times<sup>2</sup>. Enteral feeding is a way that the health care team can monitor the patient's specific nutritional needs and meet them through a formula<sup>2</sup>. If patients choose enteral support, they should be receiving bolus feedings in order for medications to be administered in between feedings to ensure optimal levels are available for absorption<sup>2</sup>. Long term nutrition support is also an option for patients who are continuously at high risk for malnutrition and may need more assistance<sup>2</sup>. The choice of nutrition support poses a quality of life decision that is made between the patient, the patient's medical team, and the patient's family/caregivers. Research has shown that patients that have a say in the outcome of their medical plan have a better quality of life. Drug-

nutrient interactions must be taken into account when working with patients with Parkinson's disease <sup>2</sup> . Patients will need to be educated on how to take their medications and what foods to avoid in order to prevent disruption of absorption from either medications or nutrients which are both extremely important in the management of the disease <sup>2</sup> .

## References

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