Published in final edited form as:
Ann Neurol. 2009 August ; 66(2): 142–145. doi:10.1002/ana.21774.

Treatment Disparities in Parkinson's Disease

Nabila Dahodwala, MD[1,2], **Ming Xie, MS**[3], **Elizabeth Noll, MA**[3], **Andrew Siderowf, MD, MSCE**[1,2], and **David S. Mandell, ScD**[2,3]

[1] Department of Neurology, University of Pennsylvania, Philadelphia, PA

[2] Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, PA

[3] Department of Psychiatry, University of Pennsylvania, Philadelphia, PA

Abstract

We sought to identify racial disparities in the treatment of Parkinson's disease (PD). We identified 307 incident PD cases using Pennsylvania State Medicaid claims, and extracted claims for medications, physical therapy, and healthcare visits for the 6 months after diagnosis. After controlling for age, sex, and geography, African-Americans were four times less likely than whites to receive any PD treatment (odds ratio, 0.24; 95% confidence interval, 0.09 – 0.64), especially indicated medications. In a group with the same healthcare insurance, disparities in PD treatment exist. Physician and community awareness of these racial differences in PD treatment is the first step in addressing healthcare disparities.

Racial and ethnic disparities exist in the care of many chronic diseases, including cardiovascular disease, diabetes care, and renal disease, independent of access to care.[1] Individuals with Parkinson's disease (PD) may be vulnerable to the same racial and ethnic disparities observed for other health conditions.[2] There has been little examination, however, of racial differences in PD management.

One study found that nonwhite veterans were 15% less likely to receive high-quality care as defined by a series of 10 indicators that measured management of wearing off in advanced PD, assessment and treatment of nonmotor symptoms (including depression), avoidance of neuroleptics, and appropriate medication titration.[3] The observed differences were largely a function of less depression treatment among nonwhites. This study, however, did not compare initial treatment between white and minority PD patients for symptomatic motor control.

There is little evidence regarding how physicians and patients make treatment decisions in newly diagnosed cases of PD, and whether these decisions differ by race. Evidence-based reviews of initial PD management recommend treatment with L-dopa, dopamine agonists, anticholinergic agents, or amantadine to improve clinical outcomes.[4,5] Physical therapy also can provide some clinical benefit in PD.[6] There is no evidence to support differential clinical effectiveness of PD treatment by race.[7] Several nonmedical or social determinants of health, however, such as healthcare access, geography, patient/physician preferences, or bias could lead to racial differences in PD treatment.

Address correspondence to Dr Dahodwala, Parkinson's Disease and Movement Disorders Center, 330 South 9th Street, 2nd Floor, Philadelphia, PA 19107. dahodwan@mail.med.upenn.edu.

Potential conflict of interest: Nothing to report.

Lack of appropriate treatment for PD leads to increased morbidity and decreased health-related quality of life among African Americans.[8] Delays in the initiation of potentially disease-modifying agents for PD will hasten disease progression.[9] It is important to understand treatment differences as the first step in improving equity in health care for all PD patients.

The goals of this study, therefore, are to examine the management of PD after an initial diagnosis among a group of middle-aged adults with equal health insurance and to determine whether there are racial differences in prescribed treatment.

Patients and Methods

The Institutional Review Board at the University of Pennsylvania approved the study protocol.

Data Source and Sample

Data were abstracted from Pennsylvania Medicaid claims and included information (date, type, location, and diagnosis) on each health service billed through Medicaid insurance. Patient information included date of birth, sex, self-identified race and ethnicity, and zip code.

The study period was from January 1, 1999, to December 31, 2003, and the sample included 307 new cases of PD as defined in the following section. Vascular parkinsonism associated with cerebrovascular disease and treatment with neuroleptics for schizophrenia or bipolar disorder are two common causes of secondary parkinsonism.[10] Because of concerns about misclassification, all individuals with at least one claim for conditions that are common causes of secondary parkinsonism (stroke [International Classification of Diseases, Ninth Revision (ICD-9): 433–436], schizophrenia [ICD-9: 295], and bipolar disorder [ICD-9: 296.4–296.9]) were excluded from the cohort.

Case Definition

To be considered a new PD case, patients must have fulfilled these criteria: (1) be Medicaid enrolled, (2) have at least one Medicaid-reimbursed claim associated with a principal diagnosis of PD (ICD-9 332.0), (3) have no claim associated with a diagnosis of PD (ICD-9 332.0) or parkinsonism (ICD-9 332.1) in the 12 months before the index claim, and (4) not have received medication indicated for PD in those 12 months.

Independent Variables

We categorized treatment between initial diagnosis and the 6 months after as follows: (1) medication for PD (L-dopa, bromocriptine, pergolide, pramipexole, ropinirole, selegiline, amantadine, and trihexyphenidyl), (2) physical therapy, (3) second visit for PD. All therapies were covered by Medicaid insurance.

Age, sex, race, county, reason for Medicaid eligibility, and specialty of treating physician for index claim were abstracted from the claims data. Age was categorized into two groups: ≤55 and >55 years. A location of care variable was created based on the urbanization spectrum for counties from the National Center for Health Statistics' urban-rural classification scheme.[11]

Data Analysis

Sample characteristics and treatment claims were compared between African Americans and whites using χ^2 test. Three logistic regression models were used to estimate the adjusted

association between demographic and clinical variables and the following: (1) any medication or physical therapy, (2) any medication only, and (3) at least one subsequent visit for PD. Coefficients are reported as odds ratios (ORs) with 95% confidence intervals (CIs) and two-sided *p* values. All analyses were performed using SAS software (SAS Institute, Cary, NC).

Results

Three hundred and seven newly diagnosed cases of PD were identified. The mean age of diagnosis was 55.1 years (standard deviation, 6.45). Of the sample, 14% were African American and 86% were white. More than half were women (61%) and received care in urban areas (52%). African American and white PD patients did not statistically significantly differ in age, sex, initial visit with neurologist, or reason for Medicaid eligibility (Table 1). African American patients were significantly more likely to receive care in an urban setting than white patients (93 vs 46%).

Overall, 104 patients (34%) were prescribed PD medication or physical therapy, and 124 (40%) had a second visit for PD after initial diagnosis. In unadjusted analysis (Table 2), African American patients were less likely to receive any medication treatment or physical therapy than white patients (12 vs 38%). They were also less likely to receive just medication therapy (12 vs 33%). There was no significant difference in the number of second visits for PD in the 6 months after initial diagnosis.

In adjusted analysis (Table 3), African American race (OR, 0.24; 95% CI, 0.09 – 0.64) and older age (OR, 1.67; 95% CI, 1.02–2.73) remained significantly associated with any medication treatment or physical therapy. These factors were also significantly associated with use of medication treatment only (OR for African Americans, 0.35; 95% CI, 0.13–0.96; OR for older age, 1.96; 95% CI, 1.17–3.27). Individuals who received care in an urban area had almost half the odds of medication treatment than those who lived in rural areas (OR, 0.58; 95% CI, 0.34 – 0.99]).

Discussion

Although both antiparkinsonian medications and physical therapy are effective for PD,[4 – 6] only about one third of newly diagnosed PD patients were started on therapy. African American patients were significantly less likely to receive treatment for PD than white patients. These differences remained after controlling for other demographic and clinical factors, including age, sex, geography, initial visit with a neurologist, and reason for Medicaid eligibility.

Two recent prospective, observational studies reported that between 39 and 62% of drug-naïve PD patients were started on PD medications within 9 to 12 months.[12,13] In comparison, our study found that 30% of PD patients were started on similar treatment. Although this falls at the lower end of the range of the proportion treated, we observed patients for only 6 months after diagnosis and studied a lower socioeconomic group than previously studied.

This study also builds on the small body of literature that describes healthcare disparities in the identification and treatment of PD. Traditionally underserved minorities are less likely to be identified with PD,[14] receive therapeutic surgery,[15] receive high-quality care,[3] or participate in relevant clinical trials.[16]

Several lessons from the study of depression care may be applicable to our findings. African American patients are less likely to receive treatment for depression than are white patients,

[17] even though providers are equally likely to recommend treatment. Ethnic minority patients, however, report that they take antidepressant medication less often and find it less acceptable than white patients.[18,19] Gaps in the quality of provider communication may also contribute to this disparity.[20] Communication patterns during a clinical encounter differ significantly between African American and white patients with depression, which could affect treatment decisions.[21] Our data cannot explain whether differences in treatment were due to differences in provider recommendations or differences in patient acceptance of treatment.

This study had the following limitations. First, the use of administrative data does not allow for examination of potential clinical factors that could influence treatment decisions such as disease stage. White patients may be more likely than African American patients to approach Medicaid for care at later stages of illness when other health care options are exhausted, which would select for sicker white patients.

Second, the diagnosis of PD has not been validated in the Medicaid claims. A recent study using Medicare data, however, found high specificity (>99%) and positive predictive value (73%) when using ICD-9 332.0 for PD.[22] In addition, we excluded those individuals who were at increased risk for secondary parkinsonism based on a history of stroke, bipolar disorder, or schizophrenia. If misclassification differed between African Americans and white patients, it might confound observed differences.

A third limitation relates to the generalizability of the results. The sample was relatively young, poor, and disabled. The high level of disability (90% of cohort was eligible for Medicaid through Supplementary Security Income) would favor symptomatic treatment among both African American and white patients; however, multiple comorbid conditions that require treatment may discourage clinicians from adding therapies with potential cross-interactions.

Addressing these disparities necessitates increased community, patient, and physician awareness. Understanding the underlying causal mechanisms of these racial disparities such as patient and physician preferences, patient-physician communication, and confounding socioeconomic differences is important to develop interventions to reduce inequities in care and improve health for all patients with PD.

Acknowledgments

The Robert Wood Johnson Foundation Clinical Scholars Program and Philadelphia Veterans Affairs Medical Center provided research and salary support for Dr Dahodwala.

We thank K. Duey for her assistance with data verification.

References

1. Smedley, BD.; Stith, AY.; Nelson, AR. Unequal treatment: confronting racial and ethnic disparities in healthcare. Washington, DC: The National Academies Press; 2003.
2. McInerney-Leo A, Gwinn-Hardy K, Nussbaum RL. Prevalence of Parkinson's disease in populations of African ancestry: a review. J Natl Med Assoc 2004;96:974–979. [PubMed: 15253330]
3. Cheng EM, Siderowf AD, Swarztrauber K, et al. Disparities in care in veterans with Parkinson's disease. Parkinsonism Relat Disord 2008;14:8–14. [PubMed: 17702625]
4. Miyasaki JM, Marting W, Suchowersky O, et al. Practice parameter: initiation of treatment for Parkinson's disease: an evidence-based reviews. Neurology 2002;58:11–17. [PubMed: 11781398]

5. Quality Standards Submcommittee of the American Academy of Neurology. Practice pararamters: initial therapy of Parkinson's disease (summary statement). Neurology 1993;43:1296–1297. [PubMed: 8327126]
6. Keus SHJ, Munneke M, Nijkrake MJ, et al. Physical therapy in Parkinson's disease: evolution and future challenges. Mov Disord 2009;24:1–14. [PubMed: 18946880]
7. Parkinson Study Group. Pramipexole in levodopa-treated Parkinson disease patients of African, Asian and Hispanic heritage. Clin Neuropharmacol 2007;30:72–85. [PubMed: 17414939]
8. Gallagher DA, Schrag A. Impact of newer pharmacological treatments on quality of life in patients with Parkinson's disease. CNS Drugs 2008;22:563–586. [PubMed: 18547126]
9. Parkinson Study Group. A controlled, randomized, delayed-start study of rasagiline in early Parkinson disease. Arch Neurol 2004;61:561–566. [PubMed: 15096406]
10. Tolosa E, Wenning G, Poewe W. The diagnosis of Parkinson's disease. Lancet Neurol 2006;5:75–86. [PubMed: 16361025]
11. NCHS. National Center for Health Statistics: urban-rural classification scheme for counties. 2006 [Accessed June 12, 2007]. http://www.cdc.gov/nchs/r&d/rdc_urbanrural.htm
12. Grosset D, Taurah L, Burn DJ, et al. A multicentre longitudinal observational study of changes in self reported health status in people with Parkinson's disease left untreated at diagnosis. J Neurol Neurosurg Psychiatry 2007;78:465–469. [PubMed: 17098846]
13. Asimakopoulos P, Caslake R, Harris CE, et al. Changes in quality of life in people with Parkinson's disease left untreated at diagnosis. J Neurol Neurosurg Psychiatry 2008;79:716–718. [PubMed: 18223017]
14. Schoenberg BS, Anderson DW, Haerer AF. Prevalence of Parkinson's disease in the biracial population of Copiah County, Mississippi. Neurology 1985;35:841–845. [PubMed: 4000484]
15. Eskandar EN, Flaherty A, Cosgrove GR, et al. Surgery for Parkinson's disease in the United States, 1996 to 2000: practice patterns, short-term outcomes, and hospital charges in a nationwide sample. J Neurosurg 2003;99:863–871. [PubMed: 14609166]
16. Schneider MG, Swearingen CJ, Shulman LM, et al. Minority enrollment in Parkinson's disease clinical trials. Parkinsonism Relat Disord 2009;15:258–262. [PubMed: 18693062]
17. Kales HC, Mellow AM. Race and depression: does race affect the diagnosis and treatment of late-life depression? Geriatrics 2006;19:120–126.
18. Miranda J, Cooper LA. Disparities in care for depression among primary care patients. J Gen Intern Med 2004;19:120–126. [PubMed: 15009791]
19. Cooper LA, Gonzalez JJ, Gallo JJ, et al. The acceptability of treatment for depression among African-American, Hispanic and white primary care patients. Med Care 2003;41:479–489. [PubMed: 12665712]
20. Kilbourne AM, Switzer G, Hyman K, et al. Advancing health disparities research within the health care system: a conceptual framework. Am J Public Health 2006;96:2113–2121. [PubMed: 17077411]
21. Ghods BK, Roter DL, Ford DE, et al. Patient-physician communication in the primary care visits of African Americans and Whites with depression. J Gen Intern Med 2008;23:600–606. [PubMed: 18264834]
22. Noyes K, Liu H, Holloway R, Dick AW. Accuracy of medicare claims data in identifying Parkinsonism cases: comparison with the medicare current beneficiary survey. Mov Disord 2007;22:509–514. [PubMed: 17230477]

Table 1

Characteristics of Newly Diagnosed Parkinson's Disease Patients by Race from a Cohort of Pennsylvania State Medicaid-Eligible Middle-Aged Adults, 1999–2003 (N = 307)

Demographic and Clinical Characteristics	African American Patients (n = 43)	White Patients (n = 264)	*p*
Female sex (n)	53% (23)	62% (164)	0.282
Age > 55 years (n)	51% (22)	52% (136)	0.97
Urban (n)	93% (40)	46% (121)	<0.0001
Initial visit with neurologist[a] (n)	33% (14)	39% (103)	0.66
Medicaid-eligible because of disability (n)	88% (38)	90% (237)	0.78

[a] Analysis of 223 patients with identified physician specialist type.

Table 2

Treatment within the First 6 Months of Parkinson's Disease Diagnosis by Race from Pennsylvania State Medicaid-Eligible Middle-Aged Adults, 1999–2003

Treatment Type	African American Patients (n = 43)	White Patients (n = 264)	*p*
Any treatment (medication[a] or physical therapy), % (n)	12 (5)	38 (100)	0.002
Any medication,[a] % (n)	12 (5)	33 (87)	0.008
Second visit for PD, % (n)	35 (15)	41 (109)	0.427

[a]Medications include L-dopa, dopamine agonist, monoamine oxidase B inhibitor, amantadine, and trihexyphenidyl.

Table 3

Multivariate Odds of Parkinson's Disease Treatment in 6 Months after Initial Parkinson's Disease Claim among the 307 Newly Diagnosed Patients

Characteristics	Medication or Physical Therapy, OR (95% CI)	Medication Therapy, OR (95% CI)	Second Visit for PD, OR (95% CI)
African American ethnicity	0.24 (0.09–0.64)[a]	0.35 (0.13–0.96)[b]	0.68 (0.33–1.41)
Age > 55 years	1.67 (1.02–2.73)[b]	1.96 (1.17–3.26)[a]	1.43 (0.90–2.27)
Female sex	1.25 (0.75–2.08)	1.19 (0.7–2.02)	1.49 (0.92–2.42)
Urban	0.87 (0.52–1.45)	0.58 (0.34–0.99)[b]	1.39 (0.84–2.29)
Initial visit with neurologist	1.03 (0.62–1.72)	1.07 (0.63–1.83)	1.25 (0.77–2.02)
Medicaid-eligible because of disability	1.58 (0.67–3.74)	1.27 (0.53–3.02)	1.16 (0.54–2.49)

[a] $p \leq 0.01$;

[b] $p \leq 0.05$.

OR = odds ratio; CI = confidence interval; PD = Parkinson's disease.