

Socioeconomic and Geographic Differences in Health Services Utilization for Parkinson's Disease

Lisa M. Lix¹, Mahmoud Azimae², William D. Leslie³, Charles Burchill², Shaun Hobson⁴, Douglas E. Hobson⁴

¹School of Public Health, University of Saskatchewan; ²Manitoba Centre for Health Policy, University of Manitoba; ³Department of Internal Medicine, University of Manitoba; ⁴Manitoba Movement Disorders Clinic, University of Manitoba

CAHSPR May 11-14, 2009

Outline

- ✧ Background
 - Determinants of health service use
- ✧ Methods
 - Identifying cases and controls from administrative databases
 - Measures of health service use
- ✧ Results
 - Comparisons by income quintile
 - Comparisons by location of residence
- ✧ Conclusions

Background

- ✧ Geographic and socioeconomic variations in the use of health services exist within the Canadian population.
- ✧ These variations challenge the basic principles underlying universal health care.
- ✧ There has been little research about whether these variations endure in chronic disease populations, where the need for health services is often greatest.

Background

- ✧ Parkinson's disease (PD) is a progressive degenerative disease; age of onset is middle to later years
- ✧ Previous Canadian study (Ontario): Total costs for health services were twice as high for PD cases as for matched controls.
- ✧ Several recent studies use population-based administrative data to investigate treatment and long-term health outcomes for PD.

Objectives

- ✧ To investigate the use of health services for cases with diagnosed PD by income quintile and urban/rural residence.
- ✧ To compare the results to those for matched controls without PD.

Methods

- ✧ Study Design: Retrospective cohort
- ✧ Data Source: Population Health Research Data Repository housed at Manitoba Centre for Health Policy
- ✧ Inception Cohort:
 - PD diagnosis (ICD-9-CM 332) in hospital and/or physician data in each of fiscal years 1999/00 and 2000/01
 - ≥ 25 years of age
 - Data from 1984/85 to 1998/99 used to distinguish newly versus previous diagnosed cases
- ✧ Matched Controls:
 - No diagnosis for PD from 1984/85 to 2006/07
 - Matched by age, sex, and region of residence (urban, rural)
 - 2:1 match

Methods

- ✧ Utilization measures: acute care hospitalizations, outpatient physician visits, and prescriptions for 2001/02 to 2006/07
- ✧ Method of analysis
 - Generalized linear models (Negative binomial or Poisson distribution)
 - Model offset – natural logarithm of person-years
 - Separate models for cases and controls
- ✧ Model covariates:
 - Comorbidity: # of adjusted diagnosis groups (ADGs)
 - Age
 - Sex
 - Income quintile: assigned using Statistics Canada Census – average household income for dissemination areas
 - Region of residence
 - Urban: Winnipeg/Brandon Regional Health Authorities
 - Rural: all other Manitoba regional health authorities

Description of PD Cohort and Matched Controls

	Cases (<i>N</i> = 1,469)	Controls (<i>N</i> = 2,938)
Age, Mean (SD)	73.9 (10.7)	73.9 (10.7)
Sex – Male	54%	54%
Region – Urban	64%	64%
Income Quintile – Q1 (lowest)	21%	20%
Income Quintile – Q5 (highest)	12%	14%
Income Quintile – Missing	20%	11%

Healthcare Use, 2001/02 – 2006/07, Mean (Median)

	Cases (<i>N</i> = 1,469)	Controls (<i>N</i> = 2,938)
Physician Visits	50.0 (42)	41.9 (37)
In-Patient Hospitalizations	2.3 (1)	2.1 (0)
In-Patient Days	30.8 (3)	15.4 (0)
Prescriptions	243.5 (168)	145.6 (85)
Levodopa Prescriptions	36.7 (23)	0 (0)

Relative Rate of Change in Healthcare Use, 2001/02 – 2006/07

	Cases	Controls
Physician Visits	1.01 (1.00, 1.02)	1.02 (1.01, 1.02)
In-Patient Hospitalizations	1.00 (0.96, 1.04)	0.96 (0.93, 0.99)
In-Patient Days	1.01 (0.95, 1.08)	1.06 (0.99, 1.12)
Prescriptions	1.14 (1.12, 1.16)	1.12 (1.11, 1.13)
Levodopa Prescriptions	1.10 (1.07, 1.12)	--

Relative Rate of Healthcare Use for Lowest Income Quintile*

	Cases	Controls
All Physician Visits	1.04 (1.01, 1.16)	1.08 (1.00, 1.18)
GP Visits	1.14 (1.01, 1.30)	1.13 (1.08, 1.18)
Other Physician Visits (excl. neurologists)	0.74 (0.58, 0.95)	0.86 (0.74, 1.00)
In-Patient Hospitalizations	1.35 (1.08, 1.70)	1.13 (0.96, 1.33)
In-Patient Days	1.03 (0.67, 1.58)	2.11 (1.53, 2.93)
Prescriptions	1.06 (0.86, 1.25)	1.44 (1.25, 1.65)

*Reference group is highest income quintile (Q5)

Relative Rate of Healthcare Use for Rural Residents*

	Cases	Controls
All Physician Visits	0.85 (0.79, 0.91)	0.95 (0.90, 1.00)
GP Visits	1.02 (0.94, 1.10)	1.16 (1.13, 1.18)
Other Physician Visits (excl. neurologists)	0.38 (0.32, 0.44)	0.45 (0.40, 0.49)
In-Patient Hospitalizations	1.64 (1.43, 1.88)	1.63 (1.47, 1.80)
In-Patient Days	1.21 (0.91, 1.60)	1.30 (1.06, 1.61)
Prescriptions	1.12 (1.01, 1.25)	1.28 (1.17, 1.40)

*Reference group is urban residence

Relative Rate of Healthcare Use for PD Cases Only

	Income Quintile (Q1) ¹	Region (Rural) ²
Neurologist Visits	0.70 (0.52, 0.95)	0.37 (0.30, 0.45)
Levodopa Prescriptions	1.18 (1.04, 1.34)	1.12 (1.03, 1.22)
Dopamine Agonist Prescriptions	1.31 (0.49, 3.51)	1.43 (0.73, 2.78)

¹Reference group is highest income quintile (Q5); ² Reference group is urban residence

Conclusions

- ✧ Some patterns of PD health service use are consistent with those reported in previous research for the general population.
 - Higher rates of hospitalization in lowest income group and among residents of rural areas
 - Lower rates of specialist visits in lowest income group and among residents of rural areas

- ✧ Some patterns of PD health services use were not consistent with those observed in the control group.
 - Rate of inpatient days and prescription dispensations were similar for high and low income groups

Conclusions

- ✧ Health service use for Parkinson's disease is determined, in part, by socioeconomic status.

- ✧ Use of specialist services is strongly influenced by geography
 - Lower likelihood of referral to neurologists for rural residents

Conclusions

✧ Strengths:

- Little previous research about factors influencing health care use of PD patients
- Multiple dimensions of health service use were investigated

✧ Limitations:

- Cannot determine whether rates of use are too high or too low
- Possible misclassification of PD cases and non-cases
- Area level measure of income
- Other health services to investigate: home care, long-term care

Acknowledgements

- ✧ Research supported by funding from the National Parkinson's Foundation (USA) and CIHR
- ✧ The authors are indebted to Manitoba Health and Healthy Living for the provision of data (#2007/08-25). The results and conclusions are those of the authors, and no official endorsement by Manitoba Health and Healthy Living is intended or should be inferred.