

# The Contribution of Objective and Subjective Measures of Health Status in Predicting Physician Utilization in Ontario, Canada.

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# Background

- Equitable access to care on the basis of need is a key principle of health care in Canada
- Policy makers in are interested in accurate methods of assessing the health care needs of populations.
- Self-reported health status has long been recognized as a reliable predictor of health services utilization.
- Diagnosis based risk adjustment systems such as the Johns Hopkins ACG Case-mix System are also recognized as strong predictors of utilization.
- ACGs can be calculated on population level data without survey/primary data collection.



# Objective

- Evaluate the contribution of subjective and objective measures of health status in relation to use of physician services in Ontario, Canada.
- Examine equity in use of family physician and specialist physician services in Ontario, Canada

# Methods - Data Sources

- Canadian Community Health Survey
  - ▶ April 2000 – March 2001
- Administrative Claims Data
  - ▶ April 2002 – March 2004
  - ▶ Ontario Health Insurance Plan
  - ▶ Hospital Discharge Abstract Database

# Methods – Physician Utilization

- Number of physician visits overall
- Access
  - ▶ 1 or more GP/FP visit
  - ▶ 1 or more SP visits
- Frequency
  - ▶ 10 or more GP/FP visits
  - ▶ 5 or more SP visits

# Methods - Subjective Health Status

- Health
- Depression
- Number of chronic diseases
- Disability

# Methods - Objective Health Status

- Morbidity – RUB
- Comorbidity – number of ADGs
- Data from OHIP and Hospital DAD – 2001

# Methods – Socioeconomic Status

- Education
  - ▶ < high school
  - ▶ high school graduation
  - ▶ university graduation
- Income
- Rural/urban residence

# Methods – Analysis

- Linear regression
  - ▶ number of physician visits overall
- Logistic regression
  - ▶ access
  - ▶ frequency
- $R^2$
- Population adjusted weights
- Bootstrap weights for confidence intervals

# Results - Sample

- 25,558 respondents
- Aged 20-79 years
- Representing more than 7,868,000 Ontarians

# Results – R<sup>2</sup>

Outcome	Age, Sex, SES	Subjective HS	Objective HS	Subjective/ Objective
# of Visits	0.13	0.19	0.31	0.34
≥ 1 GP Visit	0.02	0.03		0.09
≥ 10 GP Visits	0.14	0.21		0.31
≥ 1 SP Visit	0.11	0.15		0.22
≥ 5 SP Visits	0.14	0.21		0.31

# Results – ACG Measures

Outcome	≥ 1 GP Visit	≥ 10 GP Visits	≥ 1 SP Visit	≥ 5 SP Visits
ADGs - ≥ 10	3.19 (1.61-4.78)	6.82 (5.00-8.65)	3.02 (2.17-3.87)	2.34 (1.76-2.92)
- 6-9	3.07 (2.29-3.86)	2.81 (2.46-3.16)	1.89 (1.67-2.10)	1.37 (1.18-1.56)
- 0-5	1.00	1.00	1.00	1.00
RUBs - 4-5	2.80 (1.89-3.72)	3.53 (2.32-4.74)	3.31 (2.53-4.10)	2.76 (1.85-3.68)
- 3	5.29 (4.40-6.17)	4.29 (3.04-5.54)	2.79 (2.38-3.21)	1.85 (1.36-2.23)
- 2	2.68 (2.23-3.13)	2.26 (1.55-2.97)	1.71 (1.44-1.98)	1.22 (0.88-1.57)
- 0-1	1.00	1.00	1.00	1.00

Controlling for: age, sex, urban-rural, education, income, health, depression, disability, chronic diseases

# Results – Physician Utilization by Education and Income

Outcome	≥ 1 GP Visit	≥ 10 GP Visits	≥ 1 SP Visit	≥ 5 SP Visits
Education - High	1.05 (0.87-1.24)	<b>0.77 (0.65-0.88)</b>	<b>1.22 (1.07-1.37)</b>	<b>1.23 (1.03-1.42)</b>
- Med	0.99 (0.80-1.18)	0.91 (0.77-1.05)	1.12 (0.97-1.26)	1.19 (0.99-1.40)
- Low	1.00	1.00	1.00	1.00
Income - High	1.14 (0.95-1.33)	<b>0.85 (0.72-0.98)</b>	1.12 (0.99-1.24)	1.05 (0.90-1.20)
- Med	1.09 (0.90-1.28)	1.02 (0.87-1.16)	1.02 (0.90-1.13)	1.12 (0.96-1.29)
- Low	1.00	1.00	1.00	1.00

Controlling for: age, sex, urban-rural, health, depression, disability, chronic diseases, ADGs, RUBs

# Limitations

- Incomplete response to CCHS ~ 85%
- Incomplete linkage ~ 87%
- Excluded residents of First Nations reserves and some remote areas
- Missing CHCs that cater to disadvantaged groups (but < 1% of province FP/GPs)

# Conclusions

- ADGs and RUBs are valid measures of health status and may be used to predict physician utilization in Ontario.
- Primary care
  - ▶ equity of access – good
  - ▶ greater frequency by low SES
- Specialist care
  - ▶ inequitable access and frequency – high SES

# Next Steps

- Evaluate ADGs and RUBs ability to predict physician visits for the whole population
- Evaluate ADGs and RUBs ability to predict cost measures of health care utilization

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