Do linguistic barriers have an impact on health disparities in Québec ?

A look at the situation for myocardial infarction cases.

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Outline

- Background
- Objective
- Methods
- Results
- Discussion

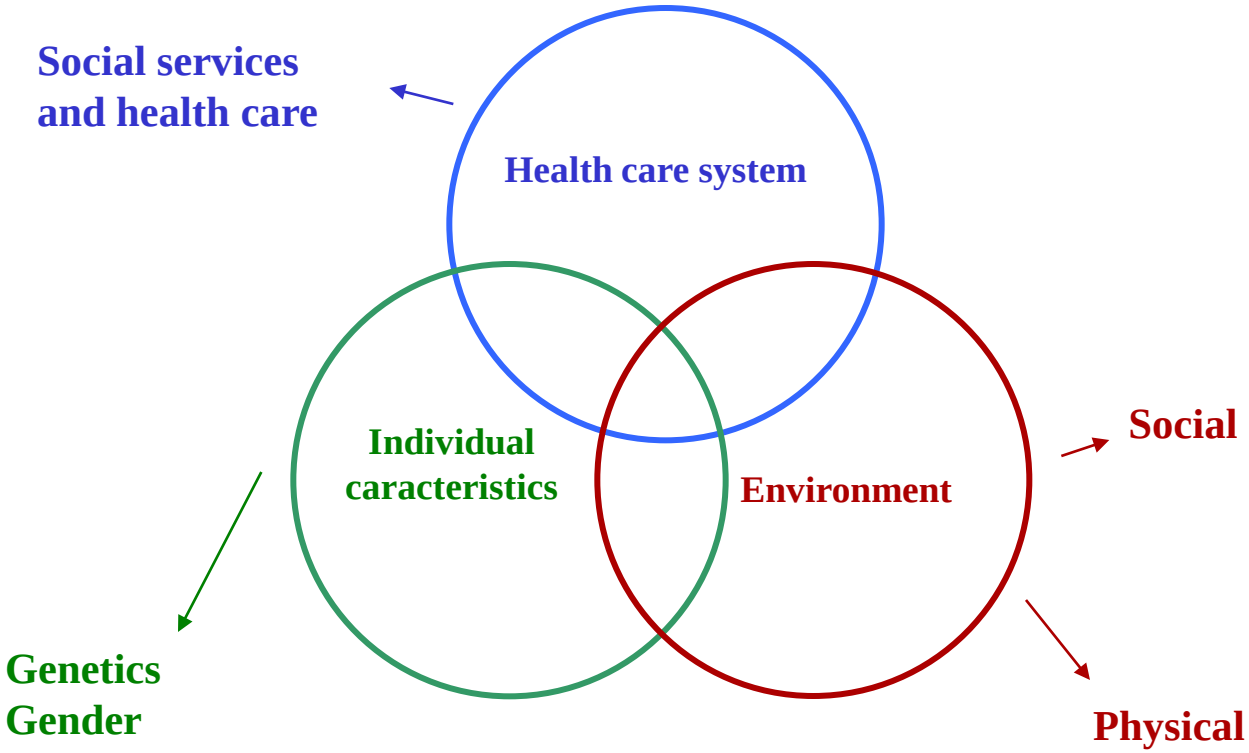
Background

- Health disparities
  - Differences in regard to a disease, health issues or health care access[1]
    - Unfair and avoidable[2]
    - Affecting a population that can be defined by social status, economic status, demographics or geographically [3]
  - In public health, health disparities should be considered as a chain of events leading to differences in … [4]
    - The living environment
    - Access, use and quality of care
    - Level of health
    - A specific health problem

1. *Eliminating health disparities in the US*, 2001 2. Braveman 2006
3. The International Society for Equity in Health 2005 4. Carter-Pokras & Baquet 2002

Background

- Health determinants [1,2,3,4,5]



Social status
Social Network
Education
Employment
Childhood
Culture
Stress
Social exclusion
Drug and Alcohol
Diet
Transportation
Housing
First nations

1. Shah 2003 2. Wilkinson & Marmot 2003 3. Raphael 2004 4. Starfield 1998 5. Health Canada 2002

Background

- Could a language barrier also cause health disparities ?
  - Knowing that…
    - …communication is very important in a patient-health care provider relationship [1]
    - …having a second language ≠ an appropriate comprehension in a health-related situation [2,3]
  - But ⇨ not enough data available on linguistic minorities, their needs or their health [4, 5]

1. Starfield 1998 2. Zun *et al.* 2004 3. Ramirez 2006 4. IRSC 2004 5. Flores 2006

Background

- Why consider myocardial infarction cases?
  - One of the most important causes of incapacity and death in Canada [1]
  - Cardiovascular diseases have the biggest impact on economy [1]
  - Treatment efficacy is time dependant [2]
  - Established link with some social characteristics
    - Rurality [3]
    - Immigration [4]
    - Deprivation [5]
  - Treatment availability does not explain disparities [6]

1. Agence de santé publique du Canada 2003 2. ACC/AHA 2007
3. Loslier *et al*. 2005 4. Orzanco *et al.* 2006 5. Riffon 2006 6. Alter *et al.* 2003

Background

Acute myocardial infarction length of stay and hospital mortality are not associated with language preference

Grubbs, V. *et al*, J GEN INTERN MED 2008;23(2):190-194

Both recommended to look at longer-term issues after hospitalization

The effect of English language proficiency on length of stay and in-hospital mortality

John-Baptiste, A. *et al*, J GEN INTERN MED 2004;19:221-228

Objective

- Determine if differences in outcomes related with myocardial infarction can be associated with differences in the linguistic composition of communities in the province of Québec

Methods

- Design
  - Ecological analysis of secondary data
- Unit of analysis
  - Census Subdivision (CSD)
- Data sources
  - Statistic Canada
  - RAMQ registry
  - Québec's hospital discharge database

Data sources are linked using geocoding.

Methods

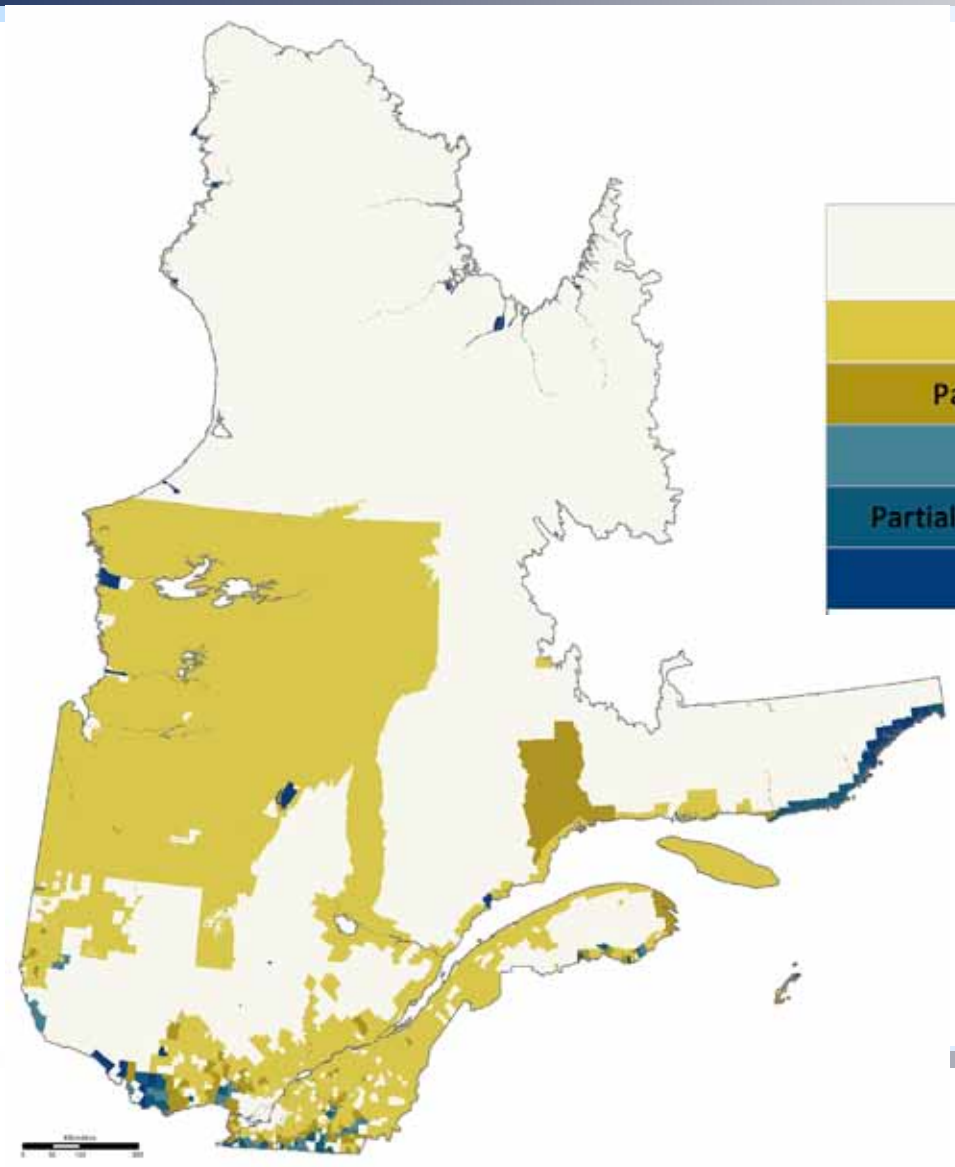
- Population
  - Population of the province of Québec living outside the Montréal metropolitan area.
  - 2001 Census
- Cases of myocardial infarction (MI)
  - Patients aged 25 and up
  - Hospitalized in Québec between January 1st 2000 and December 31st 2003
  - Primary diagnosis: myocardial infarction,

    ICD-9: 410

Methods

- Correlations
  - Independent variable
    - % first language ≠ French
  - Dependant variables
    - MI outcomes
  - Confounding factors
    - % of men
    - % of aged 65 and up
    - Social deprivation
    - Material deprivation

Methods



Classes	% of first language ≠ French
Francophone	[0,0000 - 6,3317]
Partially francophone	] 6,3317 - 20,4301]
Mixed	] 20,4301 - 42,6230]
Partially non-francophone	] 42,6230 - 73,8562]
Non-francophone	] 73,8562 - 100,0000]

Results

Rate of…	Bêta coefficient for language		R^2 (complete model)
	Uni. model	Multi. model	
Incidence	0,005	0,005	**0,029 ****
Death at IH	-0,038	-0,047	**0,014 ****
Death at 12 months	**0,087 ****	**0,085 ****	**0,015 ****
Death by CVD at 12 m.	0,024	0,027	**0,004**
Rehospitalization at 12 m.	0,039	0,024	**0,017 ****
Rehosp. for MI at 12 m.	0,002	-0,013	0,007
Rehosp. for CVD at 12 m.	-0,023	-0,052	**0,019 ****
Revascularization at IH	**-0,092 ****	**-0,084 ****	**0,037 *****
PTCA at IH	-0,051	-0,039	**0,027 *****
PAC at IH	**0,009 ***	**0,016 ***	0.021
Revascularization at 12 m.	**-0,123 *****	**-0,127 *****	0,035
PTCA at 12 m.	**-0,082 ****	**-0,078 ****	**0,025 ***
PAC at 12 m.	**-0,085 ****	**-0,095 ****	0,014
Patients who did not consult a family physician during the 12 month period following MI	**0,284 *****	**0,267 *****	**0,093 *****
Patients who did not consult a specialist during the 12 months period following MI	**0,204 *****	**0,189 *****	**0,067 *****
Patients who did not consult at an emergency room during the 12 month period following MI	0,038	**0,066 ***	**0,018****
Patients who did not consult at an outpatient clinic during the 12 month period following MI	**0,177 *****	**0,172 *****	0,034

* $p < 0,05$ ** $p < 0,01$ *** $p \leq 0,001$

Discussion

- Biggest impact of language barrier on service utilization
  - Accessibility, Availability, Acceptability
- At a population level, no significant influence from social and economic variables
- Possible bias
  - Ecological bias
  - Selection bias
  - MAUP and Geocoding accuracy

Thank you!

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