

Poverty, Neighbourhood Characteristics and Trajectories of Maternal Depressive symptoms

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Background

- Maternal depression:
 - Affects 6 to 25% of women
 - May affect mother-infant interaction, attachment and socioemotional development in the child
 - Has not often been studied after the postpartum period (child's first year of life)

Maternal depression and context

- Previous history of depression is a risk factor
- Living in poverty conditions, being unemployed or an immigrant mother are known to be associated with maternal depression (Seguin et al. 1999; Zunzunegui et al. 2007)
- The contribution of neighbourhood characteristics, such as parks, on the incidence of depression has been reported, but not specifically for maternal depression (see review by Mair et al. 2008)
- Very few studies have used longitudinal data to investigate these factors and trajectories of maternal depression

Objectives

- To carry an exploratory study to:
 - Investigate different trajectories of levels of maternal depressive symptoms for up to 7 years after childbirth
 - Describe associations with neighbourhood characteristics while considering individual (maternal) sociodemographic variables

Methods: secondary analyses

Participants

- Mothers from the Quebec Longitudinal Study on Child Development (QLSCD), excluding those with chronic health problems or drug use
- Initial sample of n=2120: representative of singleton births in Quebec in 1997-1998

Measures from QLSCD (n=1611)

- **Standardized depression scores** on an abridged version of Center for Epidemiologic Studies Depression Scale (*CES-D*) at child ages 1.5, 3.5, 5 and 7 years. Excluded if 2 consecutive data missing
- Demographic information for each participant
 - maternal **age**, level of **education**, **immigrant** status (at child birth)
 - **income** (below or above low-income cut-off) and **work status** (whether mother works or not) (at child age 1.5 year)

MEGAPHONE

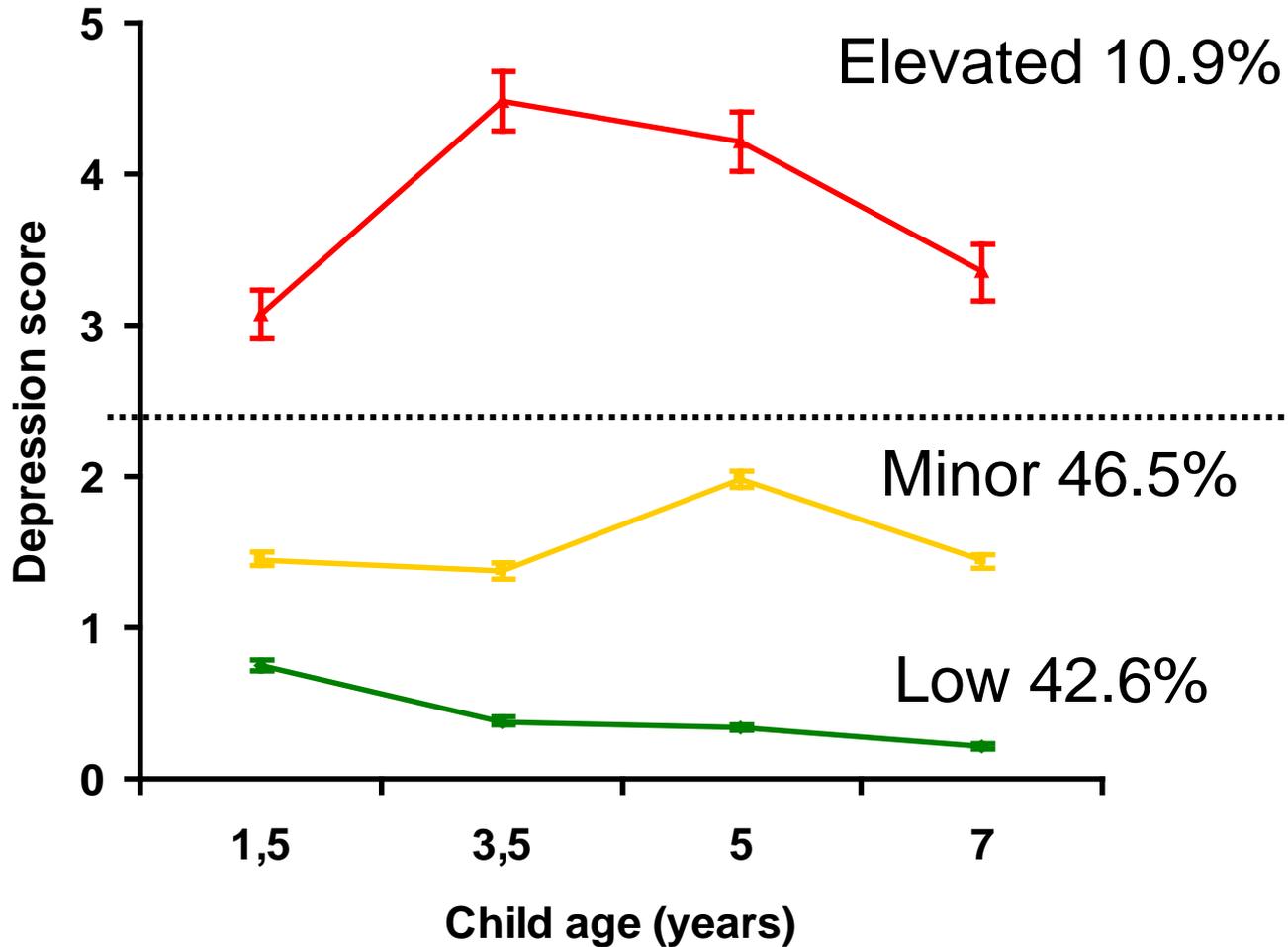
Montreal
Epidemiological and
Geographical
Analysis of
Public
Health
Outcomes and
Neighbourhood
Effects

Fully relational, semi-automated geographic information system integrating extensive inventories of social/physical environmental exposure and health outcomes data in the Montreal region. Data available since 2001 only.

Data linkage QLSCD with MEGAPHONE* database (n=488)

- Characteristics of the park nearest the participant's residence, between 2001 and 2005 (child age 1.5-7 years), through postal codes linkages
 - Distance to closest park (meters),
 - Surface (m²)
 - Quality of park using the Normalized Difference in Vegetation Index (NDVI, scale 0-100, $\geq 30 \cong$ more than grass)
 - Average greenness 500 meters around the postal code

Trajectories: depressive symptoms



Comparison province of Quebec vs. Montreal region

Trajectories	Province of Quebec	Region of Montreal
Elevated	10.9%	12.3%
Minor	46.5%	46.6%
Low	42.6%	41.1%

Regression analyses

- Model 1: Individual demographic characteristics
 - Immigrant status: Canadian/European vs. non-European
 - Age of mother : < 35 years old vs. \geq 35 years old
 - Education: junior college + vs. completed or incomplete high school
 - Individual household income: above vs. below LICO
 - Cumulative work status : work vs. did not work
 - Depression at child age 5 months: absence vs. presence
- Model 2: Neighbourhood aspects
 - % of individuals living below LICO in the 500m radius
 - Distance to the nearest park: < 500 m vs. \geq 500 m
 - Surface of the nearest park
 - Greenness intensity of the nearest park: > 30 vs. \geq 30 NDVI scale
 - Average greenness intensity in 500m radius

Factors associated with trajectories of depressive symptoms

* $p < 0.05$ ** $p < 0.01$	Minor symptoms OR (95% CI)	Elevated symptoms OR (95% CI)
Presence of depression at 5 months No (ref) Yes	6.40 (3.50-11.68) **	8.18 (2.0-23.05) **
Being an non-European immigrant No (ref) Yes	2.21 (1.07-4.54) **	3.32 (1.01-10.92) **
Greenness index for nearest park (NDVI) < 30 (ref) ≥ 30 (≅ more than grass)	0.46 (0.24-0.90) *	0.37 (0.08-1.82)

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Implications

- In addition to the sociodemographic factors already known in the literature (e.g. prior history of depression, poverty, being a non-European immigrant), the quality of parks in the residential neighbourhood is also associated with specific levels of depressive symptoms in mothers of young children
- Findings presented here are from secondary data analyses. What might be associated with greener parks? Social activities, exercise, playground near school?
- Mechanisms underlying these associations along with maternal and child health parameters (e.g. cortisol, stress hormone) for each potential trajectory are being explored

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- Daniel M, Kestens Y (2007). MEGAPHONE: Montreal Epidemiological and Geographic Analysis of Population Health Outcomes and Neighbourhood Effects. Montréal, Centre de recherche du Centre hospitalier de l'Université de Montréal. Registered Copyright 2007 (no.1046898)
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