The relationship between place of residence and postpartum depression

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This study was approved by the Social Sciences and Humanities Research Council of Canada: Access to Statistics Canada Research Data Centres

This study received ethics approval from the Centre for Addiction and Mental Health

Data analysis was conducted at the University of Toronto – Regional Research Data Centre
1. **The issue**

   Postpartum depression (PPD) is common and serious

2. **What this study accomplished**

   Canadian women living in large urban centres are at greatest risk, partly explained by increased risk for non-Canadian born women and women reporting poor social support

3. **How we got there**

   The Maternal Experiences Survey

4. **Next steps**

   Prevention programs to increase social support and target specific populations in large urban areas
Postpartum Depression

- Internationally, up to 15% of women develop PPD
- PPD is a major clinical, public health, and policy problem
  - Poor outcomes for mothers, children, and families
- Prevention is a priority
  - Many risk factors have been identified; major ones include: *History of Depression*, *Low Social Support*, *Life Stressors*
  - Identifying additional modifiable risk factors and high risk populations can guide preventive efforts
  - Relationship with place of residence uncertain
Canadian Context

- About 30% of Canadians live in rural or remote areas

Research Questions:

- Does PPD risk differ by place of residence?
- If so, what are the factors that explain these differences?
Knowledge to date

Previous PPD prevalence estimates

• Systematic Review*: Rural 21.5% (95% CI 10.9 to 38.0%)
• Higher than reported PPD prevalence rates of ~15%

Limitations

• Most studies in select high-risk populations (low socio-economic status, single parents)
• Only 3 studies had comparison groups of urban mothers:
  – 2 studies: No difference in urban vs. rural at 6-8 weeks postpartum
  – 1 study (Australia): Rural mothers at lower risk at 8-9 months postpartum (OR 0.54, 95% CI 0.33 to 0.90)

Research objective

To generate knowledge about PPD risk in urban and rural areas in Canada
How did we get there?

Maternal Experiences Survey (2007) - Cross-sectional survey of Canadian 6,421 mothers between 5 and 14 months postpartum

1. We described the prevalence of PPD in Canada using three Statistics Canada definitions of rurality and urbanicity

2. We used information collected about other major risk factors for PPD to help explain the differences in rates by place of residence
Maternal Experiences Survey

National cross-sectional survey (2007)

• Performed by the Public Health Agency of Canada and the Canadian Perinatal Surveillance System
• Based on the 2006 Census sampling frame
• N = 6,421 mothers, 5-14 months postpartum
• Telephone interviews, 78% response rate

Excluded

• Mothers living on First Nations reserves, in the armed forces or in collective dwellings
Place of Residence Definitions

- Based on Statistics Canada framework for defining rurality
- Takes into account potential differences between communities, not only in terms of population size, but also in terms of social and occupational connectivity to urban centres

**Definition 1: Population Size and Density**
- Rural = < 1000 people or < 400/sq km
- Semi-rural = < 30,000
- Semi-urban = 30,000 to 499,999
- Urban = ≥ 500,000

**Definition 2: Population size of urban core**
- Large Urban Centre (LUC)
  - Census Metropolitan Area (CMA) or Census Agglomeration (CA), > 10 000 in urban core
- Rural and Small Town (RST) = non-CMA/CA

**Definition 3: % RST Commuting to LUC**
“Metropolitan-influenced zones” (MIZs)
- None
- Weak > 0 but < 5%
- Moderate 5 to 29%
- Strong ≥ 30%
Outcome Measure

Postpartum Depression (PPD)

• 10-item Edinburgh Postnatal Depression Scale*
• Scored 0-30
• Good discriminant validity
• **Primary Outcome**: Score $\geq 13$ (10x likelihood of PPD)
• **Secondary Outcome**: EPDS mean score

Covariates

Socio-demographic and health service use variables important in PPD

• Age, parity, marital status, socio-economic status, education level, country of birth, recent immigration

• History of depression, substance and alcohol use, life stressors, interpersonal abuse, social support, pregnancy complications
Analysis

• Prevalence of PPD using each definition

• Adjustment for known PPD predictors and for major differences between groups

• Population weights supplied by Statistics Canada and a bootstrapping resampling procedure to account for the complex survey design
Results

Figure 1. PPD Prevalence and EPDS Mean Score by Population Size
Results

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>EPDS ≥ 13,† weighted % (95% CI)</th>
<th>EPDS score, weighted mean (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location‡</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural, $n = 1362$</td>
<td>6.07 (4.66–7.48)</td>
<td>4.94 (4.68–5.20)</td>
</tr>
<tr>
<td>Semirural, $n = 1225$</td>
<td>6.96 (5.39–8.53)</td>
<td>5.05 (4.78–5.33)</td>
</tr>
<tr>
<td>Semiurban, $n = 2187$</td>
<td>5.31 (4.01–5.61)</td>
<td>5.00 (4.77–5.24)</td>
</tr>
<tr>
<td>Urban, $n = 1352$</td>
<td>9.16 (7.50–10.40)</td>
<td>5.61 (5.41–5.81)</td>
</tr>
<tr>
<td>Census metropolitan and census agglomeration areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural and small town, $n = 1248$</td>
<td>6.98 (5.48–8.48)</td>
<td>5.03 (4.77–5.30)</td>
</tr>
<tr>
<td>Large urban centre $n = 4878$</td>
<td>7.56 (6.75–8.37)</td>
<td>5.33 (5.19–5.46)</td>
</tr>
<tr>
<td>Rural and small-town areas, by metropolitan influence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong, $n = 316$</td>
<td>5.50 (2.94–8.06)</td>
<td>5.18 (4.73–5.64)</td>
</tr>
<tr>
<td>Moderate, $n = 444$</td>
<td>7.05 (4.53–9.58)</td>
<td>4.91 (4.47–5.35)</td>
</tr>
<tr>
<td>Weak, $n = 440$</td>
<td>8.31 (5.60–11.00)</td>
<td>5.14 (4.68–5.60)</td>
</tr>
<tr>
<td>None, $n = 48$</td>
<td>NR</td>
<td>4.06 (2.78–5.33)</td>
</tr>
</tbody>
</table>

Note: CI = confidence interval, EPDS = Edinburgh Postnatal Depression Scale, NR = not reportable.
* Differences between groups were evaluated using $\chi^2$ tests for categorical variables and independent $t$ test or analysis of variance (ANOVA) for continuous variables.
† EPDS ≥ 13 represents likelihood that a woman has postpartum depression.
‡ $p < 0.05$ for differences between groups for both EPDS ≥ 13 and EPDS mean score.
Urban group had higher risk of PPD than all other groups.

Important prognostic factors accounted for almost all of the increased risk. In particular:

- **Immigrant women at higher risk of PPD**: Urban areas had higher proportion of non-Canadian born women

- **Poor social support is a strong risk factor for PPD**: Women in urban areas reported lower levels of social support
Limitations

Limitations of the MES

- Excluded populations (e.g., First Nations women)
- Lack of a diagnostic interview
- Cross-sectional
- Couldn’t explain all of the variance (e.g., social support)
What did we learn?

1. Women living in large urban centres in Canada are at higher risk of PPD than women living in smaller urban and rural areas.

2. This can be almost fully explained by differential distribution of PPD risk factors across areas – specifically poor social support and prevalence of immigrant women in urban areas.

3. Careful consideration of the definitions of urbanicity and rurality are required -- or important information can be missed.
Where to go from here?

- Opportunity to prevent PPD, particularly in large urban centres
- Framework to develop and rigorously evaluate interventions focused on:
  - Improving social support
  - Appropriate to immigrant women
  - Other psychosocial risk factors
Big Cities Tied to Higher Risk of Postpartum Depression

By RICK NAILERT PHD, Senior News Editor
Reviewed by John M. Croft, Psy D. on August 6, 2013

A new Canadian study finds that women living in large urban centers with more than 500,000 inhabitants were at higher risk of postpartum depression than women in other areas.

Postpartum depression is a serious health concern for women and their children. Risk factors for postpartum depression include lack of social support and a history of depression.

As in the U.S., Canada has a variety of living environments ranging from rural and remote regions, semiurban or semirural areas, and large urban metropoles.

Relation between place of residence and postpartum depression

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New moms living in large cities most at risk for postpartum depression

SHERYL UBELEACKER
TORONTO — The Canadian Press
Published Tuesday, Aug. 06 2013, 1:33 PM EDT
Last updated Tuesday, Aug. 06 2013, 7:39 PM EDT

has found that women living in large urban centres in Canada are at higher risk of postpartum depression than women in less populated...
Thank you