Social determinants of mental health among Inuit youth in Nunavik: a multilevel analysis

Andrew Gray
CPHA conference – June 26, 2015
occupied Coast Salish territory (Vancouver)
Suicide rate, 1981-2011

3-year rolling average

Sources: Nunavik Regional Board of Health and Social Services, Statistics Canada
Quantitative studies have found...

**Risk factors**
- Low education
- Low income
- Legal problems
- Abuse (physical, sexual, psychological)
- High emotional demands
- Alcohol and drug use
- Anxiety
- Depression
- Low self-esteem
- Personality disorders
- Aggression
- Impulsivity
- Psychological distress
- Use of health services

**Protective factors**
- More time on the land
- Stronger ties to family
- Recreational opportunities
- School attendance
- Higher employment

**Individual protective factors**
- Being married
- Having children
- Church attendance
- Social support
- Life satisfaction

**Community protective factors? (Ecological associations only)**
- More time on the land
- Stronger ties to family
- Recreational opportunities
- School attendance
- Higher employment
“Inuit feel that it is detrimental to the health of individuals to continually tell them that they are at the highest risk for disease.”

What is mental wellness?

“Self-esteem and personal dignity flowing from harmonious physical, emotional, mental and spiritual wellness and cultural identity”

Pauktuutit Inuit Women of Canada et al. (2012)
Objective

To explore available data for risk and protective factors for mental wellness according to Inuit perspectives
Data source

Nunavik Inuit Health Survey (2004)
- Population: adult Inuit (15+)
- 14 communities
- Response rate: 51% \( (n=1006) \)

Sub-sample for the present study:
452 Inuit youth (15 to 30 y.o.)

Exposures and outcomes

Risk and protective factors
- Community conditions (social, cultural, economic)
- Housing conditions
- Cultural pride
- Hunting, processing, sharing country food

Mental wellness: self-esteem, suicidal ideation
Statistical analysis

• Multiple imputation

• Multilevel regression modeling
  – Community, household, individual-level exposures
  – Standard errors adjusted for household clustering

• Crude and adjusted associations:
  – Predicted difference in self-esteem (%)
  – Predicted difference in risk of suicidal ideation (%)
Causal diagram to select confounders

Global determinants → Community determinants → Individual determinants → Mental wellness
**Individual factors**

<table>
<thead>
<tr>
<th>Protective factors</th>
<th>Effect on self-esteem</th>
<th>Effect on risk of suicidal ideation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural pride*</td>
<td>+6%</td>
<td>−9%</td>
</tr>
<tr>
<td>Harvesting animals</td>
<td>+5%</td>
<td>−12%</td>
</tr>
<tr>
<td>Processing animals</td>
<td>+5%</td>
<td>−11%</td>
</tr>
<tr>
<td>Risk factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animals scarce*</td>
<td>N.S.</td>
<td>+8%</td>
</tr>
<tr>
<td>Crowded housing</td>
<td>−6%</td>
<td>+13%</td>
</tr>
</tbody>
</table>

**Bold** = significant at $p < 0.10$

* = Remained significant after adjustment for confounders
## Community factors

<table>
<thead>
<tr>
<th></th>
<th>Effect on self-esteem</th>
<th>Effect on risk of suicidal ideation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive interaction*</td>
<td>+12%</td>
<td>−15%</td>
</tr>
<tr>
<td>Emotional support</td>
<td>+5%</td>
<td>−7%</td>
</tr>
<tr>
<td><strong>Cultural</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processing animals</td>
<td>N.S.</td>
<td>−12%</td>
</tr>
<tr>
<td>Sharing country food</td>
<td>N.S.</td>
<td>−11%</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education*</td>
<td>+11%</td>
<td>−10%</td>
</tr>
<tr>
<td>Income*</td>
<td>+10%</td>
<td>−10%</td>
</tr>
<tr>
<td><strong>Risk factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual abuse*</td>
<td>−11%</td>
<td>+6%</td>
</tr>
<tr>
<td>Physical violence</td>
<td>N.S.</td>
<td>+8%</td>
</tr>
<tr>
<td>Housing shortage</td>
<td>−8%</td>
<td>+6%</td>
</tr>
</tbody>
</table>

**Bold** = significant at $p < 0.10$

* = Remained significant after adjustment for confounders
As researchers incorporate the insights of Inuit and other Indigenous cultures into their assessments of Indigenous health, we can expect more “new” discoveries of “old truths.”

Pauktuutit Inuit Women of Canada et al, 2012
Recommendations

• Support cultural identity
  – Teach Inuit history
  – Culture camps
  – Inuktitut courses
  – Anti-racism education

• Support relationships
  – Support natural helpers
  – Collective healing

• Infrastructure
  – Community spaces
  – Higher education
  – Adequate housing
Ethics

Sought community input on:
• Objectives
• Study design
• Interpretation of results
• Dissemination strategy

Sought consent to conduct study and to share results

IRB: Nunavik Board of Health, McGill University
The people of Nunavik

The Mental Health Promotion Working Group

My supervisors:
• Faisca Richer, McGill
• Sam Harper, McGill
<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Factors relevant to the population</td>
<td>• Scope still limited by available data</td>
</tr>
<tr>
<td>• Large sample size (relative)</td>
<td>• Small sample size (absolute)</td>
</tr>
<tr>
<td>• Multilevel perspective</td>
<td>• Cannot infer causality</td>
</tr>
<tr>
<td>• Community validation and interpretation</td>
<td>• Measures lack scientific validation</td>
</tr>
</tbody>
</table>
Exposures

- **Cultural identity**: Degree of agreement with the statement “I am proud to be an Inuk.”
- **Social support**: 
  - “How often do you have someone to talk to if you feel troubled or for some reason need emotional support?”
  - “How often do you find that you have someone to have a good time with?”
- **Community participation/helping**: “How often do you participate in any activities where people came together to do work for the benefit of the community?”
- **Traditional activities (harvesting country food)**: 
  - How often the person went hunting or fishing in the past year
  - How many animals the person prepared (skinning, washing, cutting, etc) in the last year
  - “Do you receive country food from your friends or relatives outside your household?”
  - “Since 2000, have any species you hunt for food been harder to catch/hunt/find?”
- **Educational and economic success** 
  - Educational attainment (5 categories)
  - Personal income (4 categories)
- **Housing conditions** 
  - Crowding: number of people per room (bedrooms + 2)
- **Emotional demands**: 
  - “How often does someone make you feel worried or demand too much from you in your everyday life?”
- **Violence** 
  - “Have you ever been subjected to any form of forced or attempted forced sexual activity?”
  - “Have you, as an adult, been subjected to threats of violence that were so serious that you became afraid?”
Outcome measures

• Self-esteem (Rosenberg scale, 7 item version)
  – Part of the definition of mental wellness as defined by Inuit Tapiriit Kanatami
  – An important dimension of positive mental health
  – Low self-esteem predicts suicidality in other populations

• Suicidal ideation (last 12 months, yes/no)
  – Suicide is a priority for Inuit communities
  – Suicide itself is too rare (statistically) to study social determinants in great depth
Regression modeling

• Unweighted for efficiency and feasibility
• Standard errors estimated by sandwich estimator adjusted for clustering at household level
• Linear for SE
• Logistic for SI
Multiple imputation

- **Model form:** multivariate normal + rounding as needed
  - Variables assessed visually for normality, log-transformed as needed
- **Predictors**
  - Demographics
  - All survey structure and survey weight variables
  - Survey conduct variables
  - All variables used in regression models
  - Other mental health-related outcomes and treatments
- **50 imputations**
  - Ensure efficiency & stability
- **Sensitivity analyses**
  - More predictors
  - Different random seeds
# Table 1 (individual factors)

<table>
<thead>
<tr>
<th>Individual factors (n=452)</th>
<th>Mean among women (n=244)</th>
<th>Mean among men (n=208)</th>
<th>Overall mean (n=452)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-esteem</td>
<td>58.5%</td>
<td>63.6%</td>
<td>60.9%</td>
</tr>
<tr>
<td>Suicidal ideation in past 12 months</td>
<td>26.5%</td>
<td>16.2%</td>
<td>21.8%</td>
</tr>
<tr>
<td>Emotional support</td>
<td>59.3%</td>
<td>48.6%</td>
<td>54.4%</td>
</tr>
<tr>
<td>Positive interaction</td>
<td>72.6%</td>
<td>70.6%</td>
<td>71.7%</td>
</tr>
<tr>
<td>Completed secondary school*</td>
<td>28.2%</td>
<td>26.8%</td>
<td>27.6%</td>
</tr>
<tr>
<td>Personal Income &lt; $20,000</td>
<td>72.4%</td>
<td>73.2%</td>
<td>72.7%</td>
</tr>
<tr>
<td>Personal Income $20,000-$40,000</td>
<td>22.6%</td>
<td>16.8%</td>
<td>19.9%</td>
</tr>
<tr>
<td>Personal Income &gt; $40,000</td>
<td>5.1%</td>
<td>10.1%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Cultural pride</td>
<td>80.9%</td>
<td>81.5%</td>
<td>81.2%</td>
</tr>
<tr>
<td>Harvesting animals (episodes/year)</td>
<td>55.6</td>
<td>94.4</td>
<td>73.5</td>
</tr>
<tr>
<td>Processing animals (animals/year)</td>
<td>6.7</td>
<td>15.5</td>
<td>10.7</td>
</tr>
<tr>
<td>Difficulty hunting</td>
<td>43.5%</td>
<td>53.3%</td>
<td>48.0%</td>
</tr>
<tr>
<td>High emotional demands</td>
<td>42.5%</td>
<td>34.8%</td>
<td>39.0%</td>
</tr>
<tr>
<td>Lifetime history of sexual abuse*</td>
<td>61.9%</td>
<td>23.1%</td>
<td>44.0%</td>
</tr>
<tr>
<td>Serious threats of physical violence*</td>
<td>33.1%</td>
<td>14.6%</td>
<td>24.6%</td>
</tr>
<tr>
<td>Number of people per room</td>
<td>1.13</td>
<td>1.10</td>
<td>1.12</td>
</tr>
<tr>
<td>Community factors (n=14)</td>
<td>Minimum</td>
<td>Median</td>
<td>Maximum</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>---------</td>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td>Emotional support</td>
<td>45.9%</td>
<td>52.9%</td>
<td>60.3%</td>
</tr>
<tr>
<td>Positive interaction</td>
<td>57.5%</td>
<td>67.8%</td>
<td>72.7%</td>
</tr>
<tr>
<td>High school completion**</td>
<td>14.0%</td>
<td>25.2%</td>
<td>41.0%</td>
</tr>
<tr>
<td>Personal Income &gt; $20,000/year</td>
<td>24.5%</td>
<td>40.1%</td>
<td>53.0%</td>
</tr>
<tr>
<td>Cultural pride</td>
<td>76.8%</td>
<td>85.1%</td>
<td>96.0%</td>
</tr>
<tr>
<td>Harvesting (episodes/year)</td>
<td>71.7</td>
<td>95.1</td>
<td>157.8</td>
</tr>
<tr>
<td>Processing (animals/year)</td>
<td>10.1</td>
<td>15.6</td>
<td>29.0</td>
</tr>
<tr>
<td>Sharing country food</td>
<td>38.2%</td>
<td>55.8%</td>
<td>64.2%</td>
</tr>
<tr>
<td>Difficulty hunting</td>
<td>37.2%</td>
<td>51.6%</td>
<td>69.8%</td>
</tr>
<tr>
<td>People per room</td>
<td>76.2%</td>
<td>106.0%</td>
<td>125.7%</td>
</tr>
<tr>
<td>Prevalence of sexual abuse*</td>
<td>25.5%</td>
<td>44.0%</td>
<td>68.5%</td>
</tr>
<tr>
<td>Prevalence of violence*</td>
<td>13.2%</td>
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<td>31.1%</td>
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Additional results

Other results already shown in previous studies:

- **Protective factors:**
  - Education
  - Income
  - Social support

- **Risk factors**
  - Emotional demands
  - Sexual abuse
  - Violence
Dissemination and impact

• Results presented to Mental Health Promotion Working Group to inform/support recommendations

• Scientific article currently under review by community members