CERVICAL CANCER SCREENING IN FIRST NATIONS, MÉTIS, AND INUIT WOMEN IN QUEBEC, CANADA: A POOLED CROSS-SECTIONAL ANALYSIS

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BACKGROUND

- Screening every 3 years for women age 21-65
- Socioeconomic gradient in screening
- Until 1990s, Aboriginal women living off-reserve were under-screened in Canada...
  - Remote residence
  - Economic marginalization
    - (Calam 1992, Andersen 1992)
- In the past 10 years, inequalities have been reduced
  - (Rusch 2008, Withrow 2014, MacDonald 2010)
OBJECTIVES

1. To describe screening coverage in non-Aboriginal and Aboriginal women living off-reserve in Quebec between 2003-2012

2. To assess the association between Aboriginal identity and lifetime and past three year cervical cancer screening in Quebec

3. To assess reasons given for non-recent screening in non-Aboriginal and Aboriginal women living off-reserve
DATA

▪ 2003, 2005, 2008, and 2012 waves of the Canadian Community Health Survey (CCHS)

▪ Inclusion criteria
  ▪ All women living in Quebec
  ▪ Aged between 21 and 65 year
  ▪ No reported hysterectomy
    * CCHS did not recruit on-reserve

▪ Complete cases: N = 22,778
  ▪ Weighted N= 7,460,856

Source: Statistics Canada, bit.ly/1PT6sFj
MEASUREMENT

Dependent variables:

- **Lifetime screening:** “Have you ever received a Pap smear test?”
- **Recent (Past 3 year) screening:** “How long has it been since your last Pap smear test?”
- **Reasons for non-recent screening:** “What are the reasons that you have not had a Pap smear test in the past 3 years?”

Independent variable: Self-identified as

- Aboriginal
- North American Indian
- Métis
- Inuit
- Cree as a Mother Tongue

Self-Reported Reasons for Non-recent Screening

- Language
  - Fear
- Dislike having one done
- Lack of discretionary time
- Competing Interests
- Costs
- Availability of test
- Wait time
- Transportation
- Did not know where to go
- Did not think it necessary
- Doctor did not think it was necessary
COVARIATES

- **Age** (dichotomized as 21-49 years or 50-65 years)
- **Marital status** (married or in common law relationship; divorced, widowed, or separated; and single)
- Household **income** (tertiles)
- **Education** (less than high school graduation; or greater)
- Access to a primary care **physician** (yes/no).
STATISTICAL ANALYSES

1. Chi-squared tests to compare for every CCHS wave, and separately across years.

2. Crude and fully-adjusted Poisson regression models were used to estimate past 3 year and lifetime cervical cancer screening rate ratios (RR).

3. Chi-squared tests to compare reported reasons for non-recent screening among Aboriginal and non-Aboriginal women.

   ▪ Used CCHS survey sampling weights and bootstrap weights (500 replications).
RESULTS
Sample characteristics

<table>
<thead>
<tr>
<th>Covariates</th>
<th>Non-Aboriginal women (%)</th>
<th>Aboriginal women (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-49</td>
<td>68</td>
<td>75</td>
<td>0.006</td>
</tr>
<tr>
<td>50-65</td>
<td>32</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/common law</td>
<td>67</td>
<td>61</td>
<td>0.07</td>
</tr>
<tr>
<td>Divorced/widowed/separated</td>
<td>12</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>21</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertile 1 (Poorest)</td>
<td>35</td>
<td>41</td>
<td>0.10</td>
</tr>
<tr>
<td>Tertile 2</td>
<td>33</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Tertile 3 (Richest)</td>
<td>32</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than High School</td>
<td>12</td>
<td>18</td>
<td>0.006</td>
</tr>
<tr>
<td>HS graduation</td>
<td>87</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Had access to GP</td>
<td>78</td>
<td>79</td>
<td>0.95</td>
</tr>
<tr>
<td>Not screened in past 3 years</td>
<td>25</td>
<td>26</td>
<td>0.69</td>
</tr>
<tr>
<td>Never screened in lifetime</td>
<td>13</td>
<td>11</td>
<td>0.26</td>
</tr>
</tbody>
</table>
Non-Screening in Aboriginal and non-Aboriginal women in Quebec, 2003-2012

Averages
- Non-Aboriginal: Past 3 YRS
  - 2003: 25%
  - 2005: 26%
  - 2008: 25%
  - 2012: 26%
- Aboriginal: Past 3 YRS
  - 2003: 26%
  - 2005: 13%
  - 2008: 13%
  - 2012: 12%
- Non-Aboriginal: Lifetime
  - 2003: 13%
  - 2005: 12%
  - 2008: 12%
  - 2012: 12%
- Aboriginal: Lifetime
  - 2003: 12%
  - 2005: 12%
  - 2008: 12%
  - 2012: 12%
### Associations between Aboriginal identity and inadequate screening (past 3 years, lifetime)

<table>
<thead>
<tr>
<th>COVARIATES</th>
<th>NON SCREENING IN PAST 3 YEARS RR (95% CI)</th>
<th>NEVER SCREENED IN LIFETIME RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboriginal identity</td>
<td>1.01 (0.83, 1.22)</td>
<td>0.97 (0.94, 1.00)</td>
</tr>
<tr>
<td>Age 50-65 years (ref. 21-49)</td>
<td>1.30 (1.20, 1.42)</td>
<td>0.99 (0.97, 1.00)</td>
</tr>
<tr>
<td>Marital status (ref. Married)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced/widowed/separated</td>
<td>0.98 (0.86, 1.11)</td>
<td>0.98 (0.97, 1.00)</td>
</tr>
<tr>
<td>Single</td>
<td>1.12 (1.01, 1.25)</td>
<td>1.04 (1.02, 1.05)</td>
</tr>
<tr>
<td>Income (ref. Tertile 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertile 1</td>
<td>1.41 (1.23, 1.62)</td>
<td>1.06 (1.05, 1.09)</td>
</tr>
<tr>
<td>Tertile 2</td>
<td>1.13 (0.99, 1.28)</td>
<td>1.01 (1.00, 1.03)</td>
</tr>
<tr>
<td>Less than High School (ref. Above)</td>
<td>1.55 (1.40, 1.72)</td>
<td>1.08 (1.05, 1.11)</td>
</tr>
<tr>
<td>No access to GP (ref. Yes)</td>
<td>1.99 (1.82, 2.17)</td>
<td>1.07 (1.04, 1.09)</td>
</tr>
</tbody>
</table>

* Fully-adjusted models presented
SELF-REPORTED REASONS FOR NON-RECENT SCREENING

- Similar reasons reported between the two groups

- Significantly more Aboriginal women reported that they “hated or disliked receiving a Pap test” than non-Aboriginal women.

Source: Giver of Life by Leah Dorion, bit.ly/1Fkpv0Y
TAKE-HOME POINTS

1. Screening coverage did not change significantly between 2003-2012.
2. No significant difference in screening between Aboriginal, Non-Aboriginal women
3. Most important predictors are socioeconomic:
   - Access to a physician, income, education
4. Psychosocial pathways to inadequate screening may be different in Aboriginal, Non-Aboriginal women

Limitations
- No data on First Nations women on-reserve
- Self-report data
Do differences exist in screening between First Nations women on-reserve and non-Aboriginal women in Quebec?

Have reduced screening inequalities translated into decreases in inequalities of cervical cancer mortality among Aboriginal women?

How to increase screening overall?
ACKNOWLEDGEMENTS

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Lise Gauvin
Mylène Drouin
Geetanjali Datta

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THANK YOU

Source: Norval Morrissau, bit.ly/1HSiINi

MERCI
ADDITIONAL SLIDES
References

Caused by HPV infection, cervical cancer is the 4th most common cancer among women worldwide.

In 2015, 1500 women will be diagnosed with cervical cancer and 380 will die from it.

Under-screening

50% of cases have never been screened. 10% of cases in women who were screened >5 years previous to diagnosis.

In 2008, approximately 74% of Canadians aged 20-69 met the minimum recommended screening frequency.

Socioeconomic inequalities in screening.
RATIONALE: SCREENING IN QUEBEC

- Assessment of screening coverage among Aboriginal women in Quebec is important for two reasons:
  1) Large number of Aboriginal women live in urban areas
     - Approximately 20,360 live in Gatineau and Montreal (2006)
  2) Quebec has no systematic screening program
     - Tactic relies on women’s regular use of primary care services, awareness of prevention modalities, and physician’s readiness to recommend screening.
     - Vulnerable populations can be under-screened: lack of availability and accessibility of test, competing interests and lack of discretionary time, attitudinal resistance
DATA

Response rates
- CCHS survey response rates were
  - 80.7% in 2003
  - 79% in 2005
  - 78% in 2008
  - 67% in 2012.

Why 2003-2012?
- Information on Pap test screening behaviour was recorded in Quebec residents
- Bootstrap weights were available for variance estimation
- Income imputation available

- Excluded regions in the CCHS
  - Crown Lands, First Nations reserves, and remote areas.
QUESTIONNAIRE WORDING

Pap test screening:
- “How long has it been since your last Pap smear test?” (Less than 1, 2, or 3 years ago)
- “Have you ever received a Pap smear test?” (Yes/No)

Aboriginal identity:
- “To which ethnic or cultural group(s) did your family ancestors belong?” (North American Indian, Métis, or Inuit);
- “People living in Canada come from many different cultural and racial backgrounds. Is your background of Aboriginal Peoples of North America (North American Indian, Métis, Inuit)?” (Yes/No)
- “In what languages can you conduct a conversation?” (Cree)
- “What is the language that you first learned at home in childhood and can still understand?” (Cree)
ON-RESERVE VS. OFF-RESERVE POPULATIONS

- Individuals who live in CMAs are less likely to report being unhealthy.
- Those with “Indian Status” living off reserve tend to have higher levels of socioeconomic status as compared to those living on reserve.
  - Higher income (DIAND, 1995)
  - Higher education (Clatworthy, 1994; DIAND, 1995).
  - Advantages of city life (e.g., better housing opportunities, job opportunities, etc.)
LIMITATIONS WITH SELF-REPORTED DATA

- Self-reported outcome
  - Forward telescoping
  - Inequalities in reporting: less over-reporting in vulnerable populations
- Self-reported exposure
  - Differences between those with Status according to the Indian Act, and those without Status
### REASONS FOR NON SCREENING: RONALD ANDERSEN’S BEHAVIOURAL MODEL TO EXPLAIN HEALTH SERVICE UTILIZATION

<table>
<thead>
<tr>
<th>Reported reason for non-recent screening</th>
<th>Non-Aboriginal women (%)</th>
<th>Aboriginal women (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling</td>
<td>32</td>
<td>30</td>
<td>0.73</td>
</tr>
<tr>
<td>Need-based</td>
<td>54</td>
<td>50</td>
<td>0.36</td>
</tr>
<tr>
<td>Other</td>
<td>14</td>
<td>17</td>
<td>0.60</td>
</tr>
<tr>
<td>Predisposing</td>
<td>3</td>
<td>8</td>
<td>0.04</td>
</tr>
<tr>
<td>Fear</td>
<td>1</td>
<td>1</td>
<td>0.79</td>
</tr>
<tr>
<td>Hates/Dislikes having one done</td>
<td>2</td>
<td>6</td>
<td>0.004</td>
</tr>
</tbody>
</table>

**Social Structure**
- PAP_26L (Language)
- PAP_26M (Fear)
- PAP_26N (hate/dislike having one done)

**Attitudes**
- PAP_26A (Haven't gotten around to it)
- PAP_26D (Personal/Fam responsibilities)
- PAP_26I (cost)
- PAP_26P (unable to leave house/health problems)

**Community Resources**
- PAP_26E (not available when required)
- PAP_26F (not available in area)
- PAP_26G (wait time too long)
- PAP_26H (transportation)
- PAP_26K (did not know where to go)

**Enabling**
- Personal/Family Resources
  - PAP_26A
  - PAP_26D
- Need
  - Perceived Need
    - PAP_26B (Respondent didn’t think it was necessary)
  - Evaluated Need
    - PAP_26C (Dr. didn’t think it was necessary)

**Pap Smear Screening**
- Other
  - PAP_26O (Other)