Breastfeeding Among the Ontario James Bay Cree
A Retrospective Study

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ABSTRACT

Background: Although previous unpublished research has demonstrated low breastfeeding rates among the James Bay Cree of Northern Ontario, the reasons for this are not immediately clear.

Methods: A retrospective medical chart review of women who had given birth at the Weeneebayko General Hospital in Moose Factory, Ontario in the seven-year period 1997 to 2003 was performed. A variety of demographic variables were documented and overall breastfeeding initiation rates and yearly variations were assessed.

Results: Univariate chi-square analysis of the data indicated that young maternal age (mean=23; p=0.001), maternal smoking (average rate=52.1%; p=0.03), living location (in a small coastal community; p=0.001); and low education status (not completing high school; p=0.001) were risk factors for a mother choosing not to breastfeed. Regression analysis revealed that only living in small coastal communities and not having post-secondary education were independently associated with not breastfeeding. Absence of a partner nearly reached statistical significance on regression analysis (p=0.056). The overall breastfeeding initiation rates (51.9%, 95% CI: 49.3-54.5) were confirmed to be lower than the national average (78%), and the rate has remained low over the seven years of the study.

Conclusion: These results should help clarify why some mothers in the Moose Factory region are at risk of not breastfeeding. This information will be useful in directing future research on the differences in breastfeeding rates among different Aboriginal Peoples’ communities, and assist in the development of program policies specific to women who have one or more of the identified risk factors.

Key words: Indians, North American; risk factors; breast feeding; retrospective study

La traduction du résumé se trouve à la fin de l’article.

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METHODS

Weeneebayko General Hospital is located in the Moose Factory First Nations community at the southern end of James Bay. It is Cree-run and is the main source of health care services for approximately 9,000 people living in communities along the Ontario James Bay coast. All of these are Cree First Nations communities, with the exception of Moosonee which is a corporation. Overall, the region’s population is 97% Aboriginal.

Prenatal care is delivered by family physicians and community health nurses, and women are transferred to Moose...
communities of James Bay were grouped together; education level was grouped as post-secondary, completed high school, some high school, and elementary school for descriptive purposes, but was grouped as post-secondary and high school vs. all others or post-secondary vs. all others for comparative analysis. Logistic regression was used to test for the independence of the associations found with univariate analysis. The dependent variable was whether or not they were breastfeeding at discharge; all the variables tested with univariate analysis were entered as independent variables. A Backward Stepwise removal approach was used with p=0.1 as the removal level.

Ethics approval was obtained from the Weeneebayko General Hospital ethics committee prior to any data collection, and input from local health representatives was sought through all phases (see acknowledgements).

RESULTS

Table II contains a summary of our study population characteristics as well as the results of univariate analysis. The Moose Factory region’s breastfeeding initiation rate of 51.9% (95% CI: 49.3-54.5) compared unfavourably to the Canadian national average of 78%. Furthermore, a large proportion of women were of young age, lower educational status, smoked and used medications not routine to the peripartum period.

The variables recorded in the retrospective chart review were subcategorized and examined using chi-square analysis or Student T-test in Table II. Four variables were found to have a statistically significant (p<0.05) association with the choice not to breastfeed: younger mothers (especially teenage mothers) tended to breastfeed less (p=0.001), as did mothers who smoked (p=0.03); those with less than a grade 12 education were less likely to breastfeed than those who had higher education (p=0.001), and those not living in Moose Factory or Moosonee (p=0.001). Mothers who were neither married nor living common law were less likely to breastfeed than those who were, but this did not quite reach statistical significance in the univariate analysis (p=0.11).

Using logistic regression, only three variables remained in the model as independently associated with breastfeeding: living on the coast rather than in Moose Factory or Moosonee (OR 13.6; 95% CI 6.2-29.3; p= 0.001); having less than post-secondary education (OR 5.3; 95% CI 1.1-25.7; p=0.036); and being single (OR 2.9; 95% CI 0.97-9.2; p=0.056).

The data in Table III compare numbers of women initiating breastfeeding between 1997 and 2003. Chi-square analysis for trend does not show a significant difference in breastfeeding rates over time (p=0.78). Breastfeeding initiation rates remained low during the seven years included in the study.

DISCUSSION

Our results agree with previous research on breastfeeding predictors, including work done by Matthews in Newfoundland and Labrador. That study also identified low income, failure to attend prenatal classes and Aboriginal ethnicity as risk factors associated with not breastfeeding. Although we were not able to discern income levels during our chart review, our study population is economically disadvantaged when compared with the general population of Canada.
Breastfeeding among the James Bay Cree

Other research has revealed the mistaken analysis suggested smoking was associated on this variable smoked. Our univariate mothers whose chart included information ing data in this study. For example, there worse for the baby than not breastfeeding. belief that smoking while breastfeeding is for breastfeeding choice in either this study cree communities. Over half (52.1%) of the women included in this study, again relationship before getting pregnant again. eshrished their education or were in a stable latter may have waited until they had fin-
ished their education or were in a stable relationship before getting pregnant again.

Smoking was relatively common among the women included in this study, again confirming research conducted in other Cree communities. Over half (52.1%) of mothers whose chart included information on this variable smoked. Our univariate analysis suggested smoking was associated with a choice not to breastfeed; however this was not upheld with regression analysis. Other research has revealed the mistaken belief that smoking while breastfeeding is worse for the baby than not breastfeeding.

There were several limitations to gathering data in this study. For example, there was a finite time span for finding and logging the data. With more time, a greater proportion of charts could have been pulled and a higher percentage of complete ones included. The most common barrier to obtaining information was finding incomplete prenatal forms. Frequently, missing information had to be searched for in other areas of the patient’s chart. Also, because of an apparent relationship between decision to breastfeed and mother’s home community, it would have been preferable to have a more proportional number of subjects from each community to further verify and evaluate this finding.

Nevertheless, possibly our most important finding was this difference in breastfeeding rates among women living in the small coastal James Bay communities compared to Moose Factory and Moosonee. Explanations for this are probably multifactorial and may have their origins in local custom, proximity to health care providers, and availability of antenatal information and training. In Peawanuk, where limited data indicated women breastfed exclusively, the reason may be as simple as a lack of affordable baby formula. Anecdotal information also suggested that the people of Peawanuk live a more traditional hunter-gatherer lifestyle than their First Nations neighbours to the south and this may have had some further impact on their choice of infant feeding.

The use of qualitative questionnaires and interviews would be a valuable method of expanding on the knowledge gained in this study. A limited study of this type has been performed in the Moose Factory area. However, one of much larger scope, that would explore attitudes in the more distant communities, is needed. Other researchers have recognized that differences between Aboriginal Peoples’ communities and even within individual bands exist, and these should be taken into consideration when formulating educational and promotional strategies to increase breastfeeding.

The education programmes available at Weeneebayko General Hospital may explain why breastfeeding rates were higher in the Moose Factory and Moosonee areas. Women in these two communities obtain much of their primary care through the Hospital and would have far greater exposure to healthy promotional materials and individualized counselling. However, it has been shown in a number of studies that the mother’s decision to breastfeed is often

### Population Characteristics and Univariate Analysis of Associations with Breastfeeding

<table>
<thead>
<tr>
<th>Maternal age [Mean (SD)]</th>
<th>Full Study Population (N=297)</th>
<th>Women Breastfeeding at Discharge (N=154)</th>
<th>Women Not Breastfeeding at Discharge (N=143)</th>
<th>OR (95% CI) for Breastfeeding</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age 25 years or less</td>
<td>23 (5.5)</td>
<td>24.4 (5.7)</td>
<td>21.7 (5)</td>
<td>NA</td>
<td>0.001</td>
</tr>
<tr>
<td>Parity [Median (Range)]</td>
<td>2 (1-10)</td>
<td>2 (1-10)</td>
<td>2 (1-10)</td>
<td>1.05 (0.64-1.70)</td>
<td>0.85</td>
</tr>
<tr>
<td>Mother’s first baby (Primip)</td>
<td>95 (32%)</td>
<td>50 (32.5%)</td>
<td>45 (30%)</td>
<td>0.29 (0.16-0.55)</td>
<td>0.001</td>
</tr>
<tr>
<td>Caesarean section this pregnancy [N (%)]</td>
<td>64 (21.5%)</td>
<td>34 (22.1%)</td>
<td>30 (21.0%)</td>
<td>1.07 (0.61-1.86)</td>
<td>0.90</td>
</tr>
<tr>
<td>Mother smoked during this pregnancy [N (%)]</td>
<td>146 (49.2%)</td>
<td>66 (42.9%)</td>
<td>80 (55.9%)</td>
<td>0.59 (0.37-0.94)</td>
<td>0.03</td>
</tr>
<tr>
<td>Mother used alcohol during this pregnancy [N (%)]</td>
<td>45 (15.2%)</td>
<td>23 (14.9%)</td>
<td>22 (15.4%)</td>
<td>0.97 (0.51-1.82)</td>
<td>0.91</td>
</tr>
<tr>
<td>Married or living with partner [N (%)]</td>
<td>254 (85.5%)</td>
<td>137 (89%)</td>
<td>117 (81.8%)</td>
<td>1.79 (0.93-3.46)</td>
<td>0.11</td>
</tr>
<tr>
<td>High school or post secondary education [N (%)]</td>
<td>63 (32.6%)</td>
<td>44 (54.8%)</td>
<td>19 (19.6%)</td>
<td>3.5 (1.8-6.6)</td>
<td>0.001</td>
</tr>
<tr>
<td>Education level [N (%)]</td>
<td>63 (32.6%)</td>
<td>44 (54.8%)</td>
<td>19 (19.6%)</td>
<td>3.5 (1.8-6.6)</td>
<td>0.001</td>
</tr>
<tr>
<td>Community</td>
<td>Moose Factory</td>
<td>94 (31.7%)</td>
<td>75 (79.8%)</td>
<td>19 (20.2%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Community</td>
<td>Moosonee</td>
<td>62 (20.9%)</td>
<td>44 (71.0%)</td>
<td>18 (29.0%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Community</td>
<td>Fort Albany</td>
<td>18 (6.1%)</td>
<td>15 (83.3%)</td>
<td>3 (16.7%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Community</td>
<td>Kashachewan</td>
<td>60 (20.2%)</td>
<td>11 (18.3%)</td>
<td>49 (81.7%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Community</td>
<td>Attawapiskat</td>
<td>52 (17.5%)</td>
<td>12 (23.1%)</td>
<td>40 (76.9%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Community</td>
<td>Peawanuk</td>
<td>9 (3.0%)</td>
<td>9 (100)</td>
<td>0 (0)</td>
<td>0.001</td>
</tr>
<tr>
<td>Community</td>
<td>Other</td>
<td>2 (0.6%)</td>
<td>2 (100)</td>
<td>0 (0)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

* Other than routine analgesics, laxatives, minerals (e.g., Fe) and vitamins.
† Data on 193 only. Percentages based on a denominator of 193.

### Breastfeeding Rates from 1997 to 2003, Inclusive

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Births at Weeneebayko</th>
<th>Total Sampled per Year</th>
<th>Breastfeeding N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>147</td>
<td>46</td>
<td>25 (54.3)</td>
</tr>
<tr>
<td>1998</td>
<td>137</td>
<td>46</td>
<td>20 (43.5)</td>
</tr>
<tr>
<td>1999</td>
<td>113</td>
<td>38</td>
<td>25 (65.8)</td>
</tr>
<tr>
<td>2000</td>
<td>139</td>
<td>45</td>
<td>25 (55.6)</td>
</tr>
<tr>
<td>2001</td>
<td>147</td>
<td>50</td>
<td>23 (46.0)</td>
</tr>
<tr>
<td>2002</td>
<td>111</td>
<td>37</td>
<td>16 (43.2)</td>
</tr>
<tr>
<td>2003</td>
<td>109</td>
<td>35</td>
<td>20 (57.1)</td>
</tr>
</tbody>
</table>
made in advance of contact with health care personnel\textsuperscript{16,21-23} and she may be more influenced, positively or negatively, by her culture, partner or family.\textsuperscript{7,15,19,24} It is, therefore, important that efforts to increase breastfeeding be more broadly based within the community.\textsuperscript{1,7,15,25} The current study revealed a relatively high number of teen pregnancies (14.5\% of mothers gave birth at 17 years or younger, the youngest being 13 years), and also a high number of pregnancies among women who had not yet completed high school (67.4\% of those whose education was documented). Thus, it would be advantageous to target school children at an early age.

Future research and health promotion activities among the Cree of Northern Ontario should also explore breastfeeding duration. Our work could only look at initiation rates, but previous research\textsuperscript{6,8,23} has shown abrupt discontinuation rates among First Nation mothers once discharged from hospital and the reasons for this are not always clear. What is more clear is that ongoing efforts to promote exclusive breastfeeding among the Ontario James Bay Cree will help lessen the increasing burden of chronic diseases such as type 2 diabetes,\textsuperscript{2} obesity,\textsuperscript{3,4} and hypertension.\textsuperscript{3}

\section*{REFERENCES}


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\section*{RÉSUMÉ}

\textbf{Contexte :} Des études encore inédites font état de faibles taux d’allaitement chez les Cris de la baie James du Nord de l’Ontario, mais les raisons de cette situation n’apparaissent pas clairement.


\textbf{Résultats :} Une analyse du khi-carré univariée a montré que le jeune âge des mères (moyenne\textsuperscript{23} ans; p=0,001), le tabagisme maternel (taux moyen=52,1\%; p=0,03), le lieu de vie (petite localité côtière; p=0,001) et la sous-scolarisation (abandon des études secondaires; p=0,001) étaient des facteurs de risque de ne pas allaiter. Une analyse de régression a montré que seules deux variables (vivre dans une petite localité côtière et ne pas avoir fait d’études postsecondaires) étaient liées de façon indépendante au fait de ne pas allaiter. L’absence de partenaire était aussi très proche d’avoir une signification statistique selon l’analyse de régression (p=0,056). Les taux d’allaitement maternel globaux (51,9\% ; IC 95\% = 49,3-54,5) étaient effectivement plus faibles que la moyenne nationale (78\%) et le sont demeurés pendant les sept années de l’étude.

\textbf{Conclusion :} Ces résultats devraient contribuer à clarifier pourquoi certaines mères de la région de Moose Factory risquent de ne pas allaiter. Cette information sera utile pour orienter les études futures des différences dans les taux d’allaitement de diverses communautés autochtones; elle devrait aussi faciliter l’élaboration de politiques et de programmes axés sur les femmes qui présentent un ou plusieurs des facteurs de risque indiqués.

\textbf{Mots clés :} Amérindiens; facteurs de risque; allaitement; étude rétrospective