Food Insecurity of Low-income Lone Mothers and Their Children in Atlantic Canada

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ABSTRACT

Objective: To examine the occurrence and predictors of hunger and food insecurity over the past year and month among low-income mother-led households in Atlantic Canada.

Method: The Cornell-Radimer Questionnaire to Estimate the Prevalence of Hunger and Food Insecurity was administered weekly for a month, with modifications, to a community sample of 141 lone mothers who took part in a larger dietary intake study. Eligible women included those living alone with at least two children under the age of 14 years in the four Atlantic Provinces and having an annual income less than or equal to Statistics Canada’s low-income cut-off.

Results: Food insecurity over the past year occurred in 96.5% of households. Child hunger was similar to maternal hunger over the one-month study period (23%), however, it was lower than maternal hunger over the past year. On multiple logistic regression analysis, maternal hunger over the past year was predicted by maternal age over 35 years (p<0.0005), and Nova Scotia residence (p=0.03). Child hunger over the past year was also predicted by maternal age over 35 years (p=0.009). Families from New Brunswick experienced less food insecurity over the past month at both the household (p=0.01) and maternal levels (p<0.0005).

Discussion: Provincial policies that might contribute to the regular occurrence of food insecurity in these families should be investigated.
There is no available sampling frame for this population; indeed these women might be considered among the ‘difficult to sample’ described by various authors as critical populations to study but difficult to include in regular survey research.8,9 The use of network or multiplicity sampling is one suggested non-probability sampling strategy for such groups and we used this approach to create 12 community clusters. Initially, we selected geographical sites within each Atlantic province for participant recruitment based on community size and ethnic diversity. Once a location had been selected, research personnel initiated contact with parent resource centres, public health units, and community organizations who in turn referred subjects meeting eligibility criteria. After initial participants agreed to take part, they were asked to identify additional eligible subjects such as a friend or neighbour until approximately 15 participants per site were identified. The study was approved by the Dalhousie University Faculty of Health Professions’ Ethics Committee and written informed consent was secured from the women who received a modest honorarium for their participation. Data were collected from February 1999 to February 2000 from 141 women permitting full seasonal representation.

In a face-to-face interview, participants initially completed a demographic survey, a 24-hour food recall10-12 for themselves and their children, and the Cornell-Radimer Questionnaire to Estimate the Prevalence of Hunger and Food Insecurity [CORAD].13 [Dietary results are being published separately] Three subsequent weekly administrations of the 24-hour recalls and modified CORAD questionnaires were then conducted by telephone by the same trained interviewer.

The CORAD questionnaire was developed to measure the presence or absence (but not the severity) of four sub-scales of food insufficiency: household food insecurity; individual (in our case the mother’s) food insecurity; individual (mother’s) hunger and child hunger.3,4,14 The questionnaire has been well validated and reliability-tested among both rural and urban, black and white New York state populations4,14 and has been used, in whole or in part, with French Canadian and Toronto women.15,16 Tarasuk’s extensive review of the measurement of household and food insecurity instruments described the CORAD as substantially overlapping with the most commonly used and best available measures and sharing comparable levels of validity.17

The CORAD is normally used to identify hunger and food insecurity over the past year. We pilot-tested a modified version to determine changes in these indicators on a weekly basis. Questions related to maternal hunger were found to be too intrusive to

### TABLE I

The Cornell/Radimer Questionnaire to Estimate the Prevalence of Hunger and Food Insecurity (Reproduced from Ref. 13, p. 141-42)

<table>
<thead>
<tr>
<th>Question</th>
<th>Score 1</th>
<th>Score 2</th>
<th>Score 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I worry whether my food will run out before I get money to buy more.†</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>2. I worry about whether the food that I can afford to buy for my household will be enough.</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>3. The food that I bought just didn’t last, and I didn’t have money to get more.</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>4. I ran out of the foods I needed to put together a meal and I didn’t have money to get more food.</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>5. We eat the same thing for several days in a row because we only have a few different kinds of foods on hand and don’t have money to buy more.</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>6. I am often hungry, but I don’t eat because I can’t afford enough food.‡</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>7. I eat less than I think I should because I don’t have enough money for food.</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>8. I can’t afford to eat properly.</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>9. My children are not eating enough because I just can’t afford enough food.</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>10. I know my children are hungry sometimes, but I just can’t afford more food.</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>11. I cannot afford to feed my children a balanced meal because I can’t afford that.</td>
<td>Often true</td>
<td>Sometimes true</td>
<td>Never true</td>
</tr>
<tr>
<td>12. Sometimes people lose weight because they don’t have enough to eat. In the past year, did you lose weight because there wasn’t enough food?§</td>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
</tr>
<tr>
<td>13. In the past year, have you had hunger pangs but couldn’t eat because you couldn’t afford food?§</td>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
</tr>
<tr>
<td>14. In the past month, have you gained weight because you couldn’t afford to eat properly?21</td>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
</tr>
</tbody>
</table>

* Answered Yes or No weeks 2-4  
† Questions 1-11 reworded, ‘In the past week’, for weeks 2-4  
‡ Asked only weeks 1 and 4  
§ Questions 12, 13 re-asked only week 4 as ‘In the past month.’  
|| Asked only week 4.

A household is:

1. food secure if none of the answers to items 1-11 are positive
2. food insecure if one or more answers to items 1-11 are positive
3. individual insecure if one or more answers to items 6-8 are positive, and 1) one or more answers to items 12 to 13 are positive, or 2) one or more answers to items 9 and 10 are positive
4. individual hungry if one or more answers to items 6-8 are positive, and 1) one or more answers to items 12 to 13 are positive, or 2) one or more answers to items 9 and 10 are positive
5. child hungry if one or more answers to items 9 and 10 are positive
be probed weekly and a week was too short a period of time to question maternal weight loss. In week 4, the survey was answered in its entirety and with the addition of a final question related to weight gain. Child hunger was questioned with each administration (Table I).

Data analysis

Descriptive and analytic (chi-square, t-test, Fisher’s exact test) statistics were conducted for the four dichotomous sub-scales of the CORAD over the past year or past month (weeks 2-4 results combined) for the sociodemographic variables which included maternal age group, maternal education, community size, ethnicity, smoking status, number of children, province, mother’s age at first child and income source. Stepwise multiple logistic regression models were constructed to determine the relationship between food security sub-scale status (dependent variables: household food insecurity, maternal food insecurity, maternal hunger, and child hunger) and sociodemographics (independent variables) for the past month or year. Season was not included in the regression because it was confounded by province; however, data were collected in each province during at least two seasons of the year.

RESULTS

A total of 141 lone mothers were enrolled in the study of whom 139 completed all four weekly interviews (98.6%). The average age of the women was 29.3 years with a range of 19 to 46 years. Their educational status was lower than other Canadian women with half of the women not having completed high school.18 (Table II) Social assistance (welfare) was the major source of income for almost 90% of women. Over 90% of women received supplementary food assistance with the food bank (55%) and relatives (43%) as the most common sources (Table III).

Occurrence of hunger and food insecurity

Respondents reported virtually universal household food insecurity over the past year. Maternal food insecurity, maternal hunger and child hunger demonstrated a downward gradient over the previous year (Table IV). The experience of child hunger was very similar to maternal hunger over the one-month period (23%), perhaps because mothers were asked to report on their own hunger only once over the month while they responded weekly to the same question for their children.

Sociodemographic predictors of hunger and food insecurity

Older maternal age was the main variable associated with hunger and food insecurity over the past year (Table V). The mean age of mothers who reported hunger over the past year was 31.1 [s.d.= 5.7] years compared with the mean age of non-hungry mothers of 28.2 [s.d.= 5.0] years, p=0.001. The experience of maternal hunger differed by province (p=0.03) with more women reporting hunger in Nova Scotia (51.5%) and Prince Edward Island (53.3%) compared to New Brunswick (22.6%) and Newfoundland (33.3%). Household food insecurity over the past month was also significantly more likely to occur where the community size was smaller (p=0.008).

On stepwise multiple logistic regression, maternal and child hunger over the past year were both predicted by maternal age over 35 years; maternal hunger was also predicted by Nova Scotia residence. New Brunswick residents were significantly less likely to experience food insecurity at the household and maternal levels over the past month (Table VI).

DISCUSSION

This study presents a rather disturbing view of food insecurity and hunger among mothers and children living in Atlantic...
Canada. We determined that 96.5% of households had been food insecure over the past year. This figure is comparable to a previous study in Toronto of food bank recipients where investigators determined that 94% of households had experienced food insecurity over the past year.\(^6\) Our study differs from the Toronto study where household insecurity over the past 30 days was 57% compared to 78% in our sample. The fact that maternal food insecurity was reported by more than half of respondents over a one-month period means that mothers are regularly experiencing food stress, even though they may not actually be hungry. Child hunger was reported in almost one quarter of the households over the one-month study period, and as Rose reminds us, households over the one-month study period, and as Rose reminds us, households reporting child hunger are experiencing real hardship.\(^19\)

The Cornell-Radimer Questionnaire has been shown to be both valid and reliable for assessing domains of hunger and food insecurity over the past year. Because the amount of money available in a household to buy food varies considerably throughout the month, we modified the questionnaire for use weekly over the course of a month. We noted a lower degree of hunger and food insecurity during the past month compared to the past year suggesting that the Cornell-Radimer Questionnaire can also be used to measure short-term hunger and food insecurity. The modest differences between previous year and previous month’s reports of hunger and food insecurity indicates that hunger and food insecurity are regular, rather than rare, occurrences for families.

While not a site of significant multicultural immigration, Atlantic Canada is nevertheless a diverse region with respect to language, economic prosperity, and culture. In the absence of a sampling frame, we elected to use a sampling strategy appropriate to ‘difficult to sample’ groups and to recruit subjects from areas that would reflect the region. As a result this is not a representative sample of all low-income lone mother-led households. Nonetheless, we do feel that participants were typical of those who use community resources within the region. Because these mothers were for the most part participating in community-based programs, it is possible that they are better off than those who do not and the problem of food insecurity may be even more pervasive. This interpretation is supported by the observation that mother-led families from smaller communities with access to fewer programs reported more food insecurity than those from larger communities.

The only independent predictors of child or maternal hunger over the past year were maternal age over 35 years with the latter occurring especially in the province of Nova Scotia. These results were independent of other sociodemographic variables including the number of children and ages of children living in the household. It may be that older women are simply “burnt out” after years entrenched in poverty, leaving them less able to be resourceful and provide for their children and themselves. While it is also possible that older women in the study were new to poverty as a result of family breakdown, our impression was that most participants had lived in poverty for some time. Another explanation for increased hunger among families led by older mothers may be that community and program supports are targeted towards younger mothers and may be less available for older women.

Residence in New Brunswick was found to be repeatedly associated with lower risk for food insecurity. This observation may be related to jurisdictional differences in the administration of social assistance. For example, at the time of the study, the child tax benefit was “clawed back” from social assistance recipients where investigators determined it to be a major contributor to lower levels of food insecurity in New Brunswick because the same grocery store chains provide food throughout the region. Of course, we cannot discount the possibility that the New Brunswick participants, who were recruited using the same procedures as other provinces, differed in other ways such as family/community support, seasonal variations we are unable to test for, or access to free food. Still, this study provides impetus to examine provincial policies related to social assistance administration to determine their impact on food insecurity.

### REFERENCES


### TABLE VI

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variable</th>
<th>Adjusted Odds Ratio</th>
<th>95% C.I.</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Hunger - Past Year</td>
<td>Maternal Age &gt; 35 years</td>
<td>12.3</td>
<td>3.29-45.8</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Child Hunger - Past Year</td>
<td>Province (NS)</td>
<td>3.31</td>
<td>1.13-9.68</td>
<td>0.03</td>
</tr>
<tr>
<td>Household Food Insecurity - Past Month</td>
<td>Maternal Age &gt; 35 years</td>
<td>1.09</td>
<td>1.02-1.07</td>
<td>0.009</td>
</tr>
<tr>
<td>Maternal Food Insecurity - Past Month</td>
<td>Province (NB)</td>
<td>0.30</td>
<td>0.12-0.78</td>
<td>0.01</td>
</tr>
<tr>
<td>Province (NB)</td>
<td>0.19</td>
<td>0.07-0.47</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
</tbody>
</table>
RÉSUMÉ

Objectif : Examiner la fréquence et les prédicteurs de la faim et de l’insécurité alimentaire au cours du dernier mois et de la dernière année chez les ménages à faible revenu dirigés par des mères au Canada atlantique.

Méthode : Une fois par semaine pendant un mois, nous avons administré une version modifiée du questionnaire Cornell-Radimer estimant la prévalence de la faim et de l’insécurité alimentaire à un échantillon communautaire de 141 mères de familles monoparentales prenant part à une vaste étude sur les apports alimentaires. Nous visions les femmes vivant seules avec au moins deux enfants de moins de 14 ans dans les quatre provinces de l’Atlantique et dont le revenu annuel était inférieur ou égal au seuil de faible revenu de Statistique Canada.

Résultats : L’insécurité alimentaire au cours de l’année précédente avait été vécue par 96,5 % des ménages. La faim des enfants était comparable à la faim maternelle au cours de la période d’étude d’un mois (23 %), mais sur un an, elle était plus faible que la faim maternelle. Selon une analyse de régression logistique multiple, les prédicteurs de la faim maternelle sur un an étaient l’âge maternel de plus de 35 ans (p<0,005) et le fait d’habiter la Nouvelle-Écosse (p=0,03). L’âge maternel de plus de 35 ans était également un prédicteur de la faim des enfants sur un an (p=0,009). Les familles du Nouveau-Brunswick avaient vécu moins d’insécurité alimentaire au cours du mois précédent; tant au niveau du ménage (p=0,01) que de la mère (p<0,005).

Question à débattre : Il faudrait se pencher sur les politiques provinciales susceptibles d’entretenir une insécurité alimentaire périodique dans ces familles.

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