

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.

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

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Food insecurity in a developed nation context has been defined as "the inability to obtain sufficient, nutritious, personally acceptable food through normal food channels or the uncertainty that one will be able to do so."¹ Hunger is an extreme manifestation of food insecurity, and refers to an individual's uneasy or painful sensation of not having enough to eat.² Household members may have different experiences of hunger and food insecurity because of intra-household food provisioning that favours the needs of one or more family members over others.^{3,4}

The 1998/99 National Population Health Survey (NPHS) estimated that 10% of Canadians experienced food insecurity with children being the most likely age group to live in a food insecure household.⁵ The NPHS noted that single-mother households experienced the highest rate of food insecurity with 32% reporting some insecurity.⁵ Food purchasing power in poor households is compromised by many factors including the relative high cost of housing and utilities combined with low social assistance support and low minimum wage. The poverty rate of lone mothers with children in Atlantic Canada is the highest in the country at 66.4%, and their average annual income is only 63% of the poverty line.⁶ Despite this high rate of at-risk households, we know very little about food insecurity in this population living in an economically depressed region of the country – e.g., how often it occurs among poor households, and which households are most susceptible? As part of a larger study on the diets of lone mothers in relation to their children, we examined the occurrence and predictors of food insecurity in a geographically dispersed population of low-income mother-led households in Atlantic Canada.

METHODS

Women were eligible for the study if they were lone mothers living with two or more children under the age of 14 years in the four Atlantic provinces (Newfoundland, New Brunswick, Nova Scotia and Prince Edward Island), and if their annual household income was less than or equal to Statistics Canada's low-income cut-off (LICO) for the provincial district or region.⁷ Women in this category could be on social assistance, or among the working poor.

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 populations^{4,14} and has been used, in whole or in part, with French Canadian and Toronto women.^{15,16} Tarasuk’s extensive review of

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

1.	I worry whether my food will run out before I get money to buy more.†	1. Often true* 2. Sometimes true 3. Never true
2.	I worry about whether the food that I can afford to buy for my household will be enough.	1. Often true 2. Sometimes true 3. Never true
3.	The food that I bought just didn’t last, and I didn’t have money to get more.	1. Often true 2. Sometimes true 3. Never true
4.	I ran out of the foods I needed to put together a meal and I didn’t have money to get more food.	1. Often true 2. Sometimes true 3. Never true
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.	1. Often true 2. Sometimes true 3. Never true
6.	I am often hungry, but I don’t eat because I can’t afford enough food.‡	1. Often true 2. Sometimes true 3. Never true
7.	I eat less than I think I should because I don’t have enough money for food.	1. Often true 2. Sometimes true 3. Never true
8.	I can’t afford to eat properly.	1. Often true 2. Sometimes true 3. Never true
9.	My children are not eating enough because I just can’t afford enough food.	1. Often true 2. Sometimes true 3. Never true
10.	I know my children are hungry sometimes, but I just can’t afford more food.	1. Often true 2. Sometimes true 3. Never true
11.	I cannot afford to feed my children a balanced meal because I can’t afford that.	1. Often true 2. Sometimes true 3. Never true
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?§	1. Yes 2. No 3. Don’t know
13.	In the past year, have you had hunger pangs but couldn’t eat because you couldn’t afford food?§	1. Yes 2. No 3. Don’t know
14.	In the past month, have you gained weight because you couldn’t afford to eat properly?	1. Yes 2. No 3. Don’t know

* 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 6-11 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

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 II

**Characteristics of Study Mothers
(N=141)**

Province of Residence	Number (Percent)
Nova Scotia	68 (48.2%)
New Brunswick	31 (22.0)
Newfoundland	27 (19.1)
Prince Edward Island	15 (10.6)
Referral Source	
Resource centre	86 (61.0)
Friends	29 (20.6)
Healthy baby program	9 (6.4)
Food bank	8 (5.7)
Other	9 (6.4)
Education Status	
< Grade 9	17 (12.1)
Some high school	54 (38.2)
High school graduation	38 (27.0)
Some post-secondary	32 (22.7)
All Income Sources	
Social assistance	129 (91.5)
Wages	19 (13.5)
Employment insurance	5 (3.5)
Child tax credit	139 (98.6)
Child support	31 (22.0)
Other income	9 (6.4)
Self-identified Cultural Background	
English-speaking Canadian	109 (77.3)
African Canadian	14 (9.9)
First Nation	8 (5.7)
Acadian or French Canadian	8 (5.7)
Other	2 (1.4)

TABLE III

Sources of Free Food Received by Lone Mothers Over Past Year

Source of Free Food	Number (Percent)
Food bank	77 (54.6%)
Relatives	60 (42.6)
School program	27 (19.1)
Food voucher	23 (16.3)
Friends	22 (15.6)
Hunting or fishing	20 (14.2)
Church	19 (13.5)
Garden	12 (8.5)
Community cooking program	12 (8.5)
Other sources	26 (18.4)
No free food	12 (9.3)

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

TABLE IV

Food Insecurity and Hunger among Low-income Lone Mothers and their Children over the Past Year and Month

Food Security Status	Past Year N=141 (%)	Past Month N=139 (%)
Household insecure	136 (96.5%)	108 (77.7%)
Mother insecure	108 (76.6)	81 (58.3)
Mother hungry	59 (41.8)	32 (23.0)*
Child hungry	49 (34.8)	33 (23.7)

* Asked week 4 only

TABLE V

Comparison of Food Insecurity State by Maternal Age Group Over Past Year

Age Group, Years (Number of Participants)	Mother Insecure Number (Percent)	Mother Hungry N (%)	Child Hungry N (%)
19-24 (N= 32)	20 (62.5%)	8 (25.0%)	6 (18.8%)
25-29 (N=47)	38 (80.9)	19 (40.4)	19 (40.4)
30-34 (N=37)	27 (73.0)	13 (35.1)	10 (27.0)
35+ (N=25)	23 (92.0)	19 (76.0)	14 (56.0)
TOTAL (N=141)	108 (76.6) p=0.055	59 (41.8) p=0.001	49 (34.8) p=0.017

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.¹⁶ 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 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

TABLE VI

Stepwise Multiple Logistic Regression Analyses of Risk Factors for Hunger and Food Insecurity over the Past Year and Month

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

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 cheques in Nova Scotia while it remained as added income for New Brunswick recipients.²⁰ In addition, in New Brunswick rent is paid directly and not included in the amount of the monthly assistance cheque. The combination of a modest increase in money and removal of a large fixed cost may contribute to a higher disposable income in this province. While the cost of food may vary slightly from province to province, this is less likely 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.

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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 visons 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 ($p < 0,0005$) 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 ($p < 0,0005$).

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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