Prevalence and experiences of food insecurity among immigrant women connected to perinatal programs at a community-based organization in Edmonton, Canada

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Abstract

Purpose – *The purpose of this paper is to investigate the prevalence of household food insecurity among immigrant women connected to perinatal programs offered through a community-based organization in Edmonton, and to explore their experiences in coping with food insecurity.*

Design/methodology/approach – *This study utilized a mixed methods research design. A community-based participatory research approach was used to engage health workers who were connected to immigrant women and families through the Multicultural Health Brokers Cooperative in Edmonton. Through the health workers a sample of 213 immigrant women connected to their perinatal programs completed the Household Food Security Survey. Following the survey, 17 women completed semi-structured interviews which were analyzed using content analysis.*

Findings – *The vast majority of women (94 percent (n = 199)) lived in food insecure households, and 53 percent (n = 112) in severely food insecure. In semi-structured interviews, women specifically described not having enough money to buy vegetables, fruit and meat, and perceiving a lack of control over foods they ate and offered to their families.*

Practical implications – *This study highlights the need for support to be provided to immigrant families for acquiring healthy food in Canada.*

Originality/value – *The mixed methods design with a decent sample of often underrepresented research participants highlights an area in need of further research and greater support.*

Keywords *Immigrants, Refugees, Mixed methods, Food insecurity, Pregnancy, Community-based*

Paper type *Research paper*

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Introduction

Poor diet quality in pregnancy can increase the risk of complications for both mother and baby as well as the long-term risk of chronic disease such as diabetes and cardiovascular disease (Barker, 1997; Olson 2008; Rasmussen *et al.*, 2009). Evidence consistently shows that lower socioeconomic status is negatively associated with aspects of a healthy pregnancy, including women's ability to access and consume healthy foods, and meet gestational weight gain guidelines (Laraia *et al.*, 2010; Olson, 2010; Hromi-Fiedler *et al.*, 2011). Moreover, the increased nutrient and caloric demands of pregnancy put pregnant women of low socioeconomic status at a higher risk of food insecurity (Laraia *et al.*, 2006), defined as "inadequate or insecure access to food because of financial constraints" (Tarasuk *et al.*, 2014).

Household food insecurity is a significant public health issue in Canada, with 12.6 percent of households experiencing some degree of food insecurity. As such, it is estimated that food

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insecurity affects four million individuals, and one in six children (Tarasuk *et al.*, 2016). The prevalence of household food insecurity is greater (19.6 percent) among families that recently immigrated (< 5 years) to Canada compared to the national average (12.6 percent), revealing that households of recent immigrants are more likely to experience food insecurity (Tarasuk *et al.*, 2016). However, when PROOF (2017) (the Food Insecurity Policy Research team based at the University of Toronto, Canada) examined the association between recent immigration and food insecurity, they found that recent immigration status did not remain independently associated with food insecurity once the analysis was adjusted for covariates such as income, education, household composition and home ownership. This indicates that similarly to households of Canadian-born individuals, immigrants with low income who rent their dwellings and are lone parents of young children are at greater risk of food insecurity (PROOF, 2017). In addition, among recent immigrants to Canada, English proficiency is significantly associated with food insecurity, with families who report poor English having higher rates of food insecurity (Vahabi *et al.*, 2011). Language barriers may not only prevent immigrants from accessing employment that generates sufficient income, but also hinder their ability to navigate food systems in their new countries (Hadley *et al.*, 2010; Vahabi *et al.*, 2011).

Between 2011 and 2016, Canada received 1,212,080 immigrants, categorized by Statistics Canada as economic immigrants, immigrants sponsored by family, and refugees (hereafter called immigrants unless specific facts and categories are being discussed) (Statistics Canada, 2017). Of those, nearly half were women of childbearing age who might experience pregnancy and childbirth in Canada while being at an increased risk for food insecurity. During the same period, the province of Alberta received approximately 208 thousand immigrants (Statistics Canada, 2017), and almost 40 percent of them settled in the Edmonton Metropolitan Area (Statistics Canada, 2016a, b). Many immigrant women (including those with refugee status) might have received additional support to help them settle and integrate into life in Canada from community-based organizations (CBOs).

A previous study we conducted within a CBO in Edmonton that provides additional support to immigrant women during pregnancy and postpartum suggested that Northeast African women struggled with the high cost of healthy foods in Canada (Quintanilha *et al.*, 2016). Yet, to our knowledge, no data are available on the prevalence and experiences of food insecurity among pregnant and postpartum, immigrant women linked to CBOs in Edmonton. The objectives of this study were: to investigate the prevalence of household food insecurity among women connected to perinatal programs within one CBO and their families, and to explore the experiences of women coping with food insecurity using a mixed methods research design.

Methods

Research approach

We used a community-based participatory research (CBPR) approach to engage health workers who were connected to immigrant women and families through the Multicultural Health Brokers (MCHB) Cooperative in Edmonton. The MCHB is an independently run health worker (i.e. health broker) cooperative that provides perinatal services and supports to at-risk immigrant women and families, including economic immigrants, refugees and refugee claimants, in difficult life circumstances. The MCHB offers clients strategic services related to housing, food security, and education (including language training for women) (Torres *et al.*, 2013).

A CBPR approach is viable for working with minority groups, and addressing health disparities that affect people living in marginalized communities (Israel *et al.*, 2010). The principles of CBPR guided this study, with health brokers deciding on the most appropriate ways to create an exchange among themselves, the researchers, and participants, as well as actively participating in the planning and implementation of quantitative and qualitative data collection strategies. As researchers, we sought consistency with ethical principles of all health brokers and women involved throughout the research process, as to ensure respectful data generation that truly reflected participants' realities (Edwards *et al.*, 2008).

Research design

We used an exploratory sequential mixed method research (MMR) design (Creswell and Plano Clark, 2011). MMR is defined as "research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study" (Tashakkori and Creswell, 2007, p. 4). The exploratory sequential MMR design meant that quantitative surveys were administered and analyzed, and followed up by qualitative interviews that were aimed at explaining, elaborating and illustrating quantitative data (Creswell and Plano Clark, 2011). Quantitative and qualitative results were mixed and interpreted together in the discussion of findings.

Quantitative phase

We used the Household Food Security Survey Module (HFSSM) from the Canadian Community Health Survey (CCHS) to assess food insecurity in a convenience sample of women connected to the MCHB perinatal programs in the Fall of 2016. The HFSSM consists of 18 questions that monitor households' experiences of food insecurity over the previous 12 months (Tarasuk *et al.*, 2016). The questions in the HFSSM focus on "self-reports of uncertain, insufficient or inadequate food access, availability and utilization due to limited financial resources, and the compromised eating patterns and food consumption that may result" (Government of Canada, 2012), while distinguishing the experiences of food insecurity of adults from those of children in the household (Tarasuk *et al.*, 2016). In the HFSSM survey, possible responses in relation to the experiences of adults or children are often true, sometimes true, never true and do not know/refuse to answer. Some of these questions are followed sub-questions that specifically examine the frequency of shortages and disruptions in food consumption. In the USA, food insecurity is monitored using the same questionnaire but the classification of households' food insecurity status and terminology differs from what is used in Canada (Tarasuk *et al.*, 2016).

We introduced the HFSSM questionnaire during a health brokers' monthly meeting, and explained the purpose of investigating food insecurity among women. We emphasized the sensitivity of some of the questions that would be asked about individuals' households, and worked with health brokers to define terms that could be confusing to their clients (e.g. balanced meals were defined as healthy meals that included a variety of foods). Health brokers who felt they had the time to administer the questionnaire with women connected to perinatal programs in their respective communities over the following four weeks were provided with printed questionnaires. Health brokers discussed the study with their clients in a setting that the brokers perceived as appropriate (e.g. during home visits or before/after prenatal classes), obtained informed consent and invited women to complete the questionnaire.

The HFSSM was conducted in women's mother tongue. Women's personal information and demographics were not collected. Many of the women were involved with child protective services, and the health brokers were not comfortable recording information that would enable their clients' identification. However, we were able to record women's country/region of origin based on the ethnic background of the health broker that administered their questionnaire.

Responses to the HFSSM were recorded on paper questionnaires, transferred to Harris *et al.* (2009), and analyzed using STATA (Version 14, StataCorp LP). Based on the number of positive responses (i.e. yes or often true/sometimes true) to the 18 questions in the HFSSM, households were classified as being food secure or marginally, moderately or severely food insecure (Table I). Whereas food secure households have no indication of any income-related problems of access to food, severe food insecure households have extensive compromises in adults and/or children's eating patterns (Tarasuk *et al.*, 2016).

The proportion of families who reported being food secure, having marginal food insecurity, moderate food insecurity or severe food insecurity was determined in the whole group, and also categorized by whether the families did or did not have children. Because we did not collect any demographic information, we relied on the HFSSM's answers to determine the number of households that had children under the age of 18. The proportion of families responding affirmatively to each of the items on the HFSSM were also explored. Finally differences in food

Table I Food security status based on the HFSSM questionnaire

Food security status	*Interpretation*	*10-item adult food security scale*	*8-item child food security scale*
Food secure	No report of income-related problems of food access	No items affirmed	No items affirmed
Marginal food insecurity	Some indication of worry or an income-related barrier to adequate, secure food access	Affirmed no more than 1 item on either scale (or one item in either scale affirmed)	
Moderate food insecurity	Compromise in quality and/or quantity of food consumed by adults and/or children due to a lack of money for food	2 to 5 positive responses	2 to 4 positive responses
Severe food insecurity	Disrupted eating patterns and food intake among adults and/or children	6 or more positive responses	5 or more positive responses

Source: Adapted from the Household Food Security in Canada (2014) Cite Tarasuk *et al.* (2016)

security status by women and their families country/region of origin, as classified by Citizenship and Immigration Canada (2014) – e.g. Africa and Middle East vs Asia and Pacific, were assessed using Fisher's exact test, as some categories contained fewer than five observations. A $p < 0.05$ was considered statistically significant.

Qualitative phase

The results from the quantitative phase guided purposeful sampling during the qualitative phase of the study. We had learned that women from Africa and the Middle East were more likely to experience food insecurity than those from other regions in the world; therefore, we approached health brokers from African communities who had previously worked with us, and invited them to collaborate in conducting semi-structured interviews with women in their communities (Quintanilha *et al.*, 2016). We explained to health brokers that our main purpose was to explore pregnant and postpartum women's experiences with food insecurity. The health broker representing the Somali community expressed interest in participating after discussing the study with women in her program. We conducted interviews with a sample of Somali women who the health broker identified as experiencing food insecurity. These interviews were conducted four months after the HFSSM questionnaires were administered, and although some women could have participated in the quantitative phase, we did not establish any inclusion/exclusion criteria in relation to their previous involvement.

The interviews were conducted after family classes (when childcare was provided) hosted at the MCHB Cooperative on the weekends. An English-speaker researcher moderated the interview, and the health broker carried out real-time interpretation. Most Somali women (13 out of 17) requested not to have their interviews audio recorded, and, as a result, the researcher took notes as the health broker interpreted participants' answers. The researcher debriefed with the Somali health broker after interviews to clarify women's answers. The first few interview questions investigated women's sociodemographic and household characteristics, including country of birth, refugee status, number of years living in Canada, number of children and adults in the household, and source of income. The remaining questions were aimed at exploring women's perceptions of the foods available in their homes in terms of quantity, quality and representation of their cultural heritage. Additionally, we explored women's sense of control over what was available to and consumed by their families, and ended the interviews with a question about what women believed could be in place in order to help them have access to the foods they need/want.

Interview notes were typed into word documents, whereas recorded interviews were transcribed verbatim. All interview data were organized in NVivo (Version 11, QSR International), and analyzed using qualitative content analysis to inductively derive codes and categories (Hsiu-Fang and Shannon, 2005; Elo and Kyngas, 2007). One researcher (MQ) was responsible for coding transcripts, and bringing emerging categories to all involved researchers for review, discussion and verification.

Ethics

This study received the University of Alberta Research Ethics Board approval. Consent to participate in the quantitative phase of this study was given by participants to health brokers orally, and confirmed with their overt participation by responding to the questionnaire. For the qualitative phase, due to the language barriers between researchers and participants, interpreters were asked to explain the purpose of the research at the beginning of each interview, and reiterate with women that participation was voluntary. Participants provided oral consent prior to engaging with the researcher in qualitative semi-structured interviews.

Results

Quantitative phase

A sample of 217 women completed the HFSSM; four incomplete questionnaires were excluded and 213 were analyzed to determine food security status. In sum, 94 percent of households included children ($n = 201$). In addition, 94 percent of women reported some level of food insecurity and 53 percent were severely food insecure (Table II).

Table III shows the proportion of women who answered affirmatively for each item on the HFSSM questionnaire. In the past year, 85 percent of women reported households' members did not

Table II Household food security status for all households ($n = 213$), households with children under 18 years of age ($n = 201$) and households with no children ($n = 12$)

Food security status	*All households (n = 213) n (%)*	*Households with children under 18 years (n = 201) n (%)*	*Households with no children (n = 12) n (%)*
Food secure	14 (6)	10 (5)	4 (33)
Marginal food insecurity	6 (3)	4 (2)	2 (17)
Moderate food insecurity	81 (38)	76 (38)	5 (42)
Severe food insecurity	112 (53)	111 (55)	1 (8)

Table III Number and proportion (%) of households that reported experiencing income-related problems of access to food in the past 12 months

In the past 12 months, of all 213 households	
Adult food security scale items	*n* (%)
Worried food would run out before the end of the month	182 (85)
Ran out of food and had no money to buy more	173 (81)
Could not afford balanced meals	182 (85)
Adults cut the size or skipped meals (yes/no)	91 (43)
Adults cut the size or skipped meals almost every month or some months (frequency)	75 (82)
Ate less than felt should because there was not enough money to buy food	104 (49)
Was hungry but could not afford food to eat	87 (41)
Lost weight because no money to buy food	73 (34)
Adults did not eat for a whole day because there was not enough money to buy food (yes/no)	68 (32)
Adults did not eat for a whole day almost every month or some months (frequency)	48 (53)
In the past 12 months, of 201 households with children under 18 years	
Child food security scale items	*n* (%)
Relied on a few low cost foods to feed children	165 (82)
Could not afford to feed children a balanced meal	166 (83)
Children were not eating enough because could not afford enough food	137 (68)
Adults cut the size of any of the children's meals because they could not afford to buy more food	79 (39)
Children ever skipped meals because there was not enough money for food (yes/no)	74 (37)
Children skipped meals almost every month or some months (frequency)	68 (34)
Children were hungry but could not afford more food	79 (39)
Children did not eat for a whole day because there was not enough money for food	62 (31)

have enough money to eat balanced meals; 43 percent ($n = 91$) of adults cut meal sizes or skipped meals because there was not enough money for food; and 31 percent ($n = 62$) of children did not eat for a whole day because there wasn't enough money for food (Table III).

Household food security status according to families' country/region of origin is presented in Table IV. A significantly greater proportion of households from Africa and the Middle East reporting being severely food insecurity compared with households from other continents and regions of the world ($p < 0.001$). This significance remained following the exclusion of households of South and Central America origin.

Qualitative phase

We interviewed 17 Somali women about their experiences of food insecurity. All women had refugee status upon moving to Canada, had been living in Canada for an average of six years (between 6 months and 12 years) and were either permanent residents of Canada ($n = 12$, 71 percent) or Canadian citizens ($n = 5$, 29 percent) at the time of interviews. Information about women's households is presented in Table V.

Using qualitative content analysis, we identified three main categories in women's description of their experiences in coping with food insecurity in their households: maybe food in acceptable quantity but not quality; sense of control; and vision for a food secure future.

Maybe food in acceptable quantity but not quality

Somali women commonly described not having enough money to buy sufficient amounts of food throughout the month. They described various strategies to "stretch" the food available as much as possible in a month, including decreasing size and frequency of meals. Although some participants did not describe issues with quantity of foods available in their homes, all of them described not

Table IV Household food security status by world region of origin for women and their families

Region of family origin	*Food security status*			
	Food Secure	*Marginal food insecurity*	*Moderate food insecurity*	*Severe food insecurity*
			n (%)	
Africa and Middle East ($n = 118$)	0	1 (1)	46 (39)	71 (60)*
Asia and Pacific ($n = 60$)	11 (18)	5 (9)	20 (33)	24 (40)
Europe and UK ($n = 25$)	3 (12)	0	13 (52)	9 (36)
South and Central America ($n = 2$)	0	0	0	2 (100)

Note: *$p < 0.001$

Table V Household characteristics of interviewed 17 Somali women

Household characteristics	*n (%)*
Number of adults in the household	
Lone-parent households (mother only)	6 (35)
Two or more adults in the household	11 (65)
Number of children in the household	
0–3 children	9 (53)
4–6 children	5 (29)
7 or more children	3 (18)
Income source	
Employment (at least one adult in the household)	7 (41)
Social assistance	10 (59)

being able to afford the diet quality they wanted. The quote below exemplifies some of the factors women considered when thinking about food for themselves and their families:

> You have to think about what you are eating and what you are buying because you only have a certain amount [of money]. You're always thinking what you are going to do and how you are going to do it. (Somali woman, mother of 7)

Compromises in quality commonly meant not having enough money to buy meat, vegetables and fruit. Somali women described rice, bread and pasta as the main foods they could afford: "Food might be available every day but may not be the best quality" (Somali woman, mother of 3).

The issues with quantity and quality of foods available in women's households were stressful for participants who commonly reminisced about the fact that "back home" (i.e. Somalia) they had less money than "here" (i.e. in Canada), yet struggled less to make ends meet:

> I'm happy with what I have here [in Canada] because I have no alternative. This country is safe and that's why I came here. But at the same time when you compare with Somalia the problems are so different. There I could have lots of things but it wasn't safe, here it's safe but everything I need costs a lot of money. (Somali woman, mother of 7)

Comments about stress and contrasts between "back home" and "here" allowed us to explore women's sense of control over their food and lives.

Sense of control

We found that food insecurity had profound effects on women's sense of control as individuals, and mothers. Participants' expressed a lack of control over foods they ate and offered to their families, and linked this to their stress: "I don't feel I have much control due to my income. It's not easy. I feel I have been stressed for the past six months" (Somali woman, mother of 2).

As women, participants struggled with the fact they did not have enough money to buy the foods that represented their cultural identity, and were commonly prepared "back home." As examples, they mentioned their inability to buy Halal meat, and African ingredients that were sold locally at specialty shops. In addition, Somali women expressed frustration and sadness for not being able to help family members who were struggling "back home." This was especially difficult, given that their families "back home" believed they had the finances to help because they were living in Canada. This made women feel powerless, and with a sense of unfulfilled obligation toward their extended family.

As mothers, a low sense of control overlapped with women's negative perceptions of the quality of their families' diets. Women commonly described not feeling in control over their children's diets because they could not afford the foods they perceived as best for them: "Sometimes as a mother I worry about what food I am feeding my children and if it will have an impact on their health" (Somali woman, mother of 4). The fact that 16 of our 17 participants already had at least one child in their household made their insights into food insecurity commonly reflect dreams and hopes for their whole family (adults and children). They shared with us things they believed that could improve their income, and likely make them food secure.

Vision for a food secure future

When we asked Somali women what had helped or could help them to eat better and to have the foods they wanted/needed at home, they commonly shared their vision for a future where money would not prevent them from affording the foods they wanted for their families. Women's vision for a food secure future included education for them and their children, employment opportunities for them and their spouses and, for those already employed, higher earnings: "I would like to have a job that pays well enough for me to afford the life that my kids and I would like to have" (Somali woman, mother of 4).

It is worth noting that even though we probed for community programs that provided food aid to families in need (e.g. food banks, community kitchens), women did not elaborate on how these could help them. Many women acknowledged they had been able to access them in the past, and were grateful for that, but perceived better income as the main answer to a food secure future.

As such, their visions for a food secure future really reflected dreams for their lives in Canada, including getting an education, following certain career paths (e.g. social work and nursing) or opening their own business (e.g. Somali sweet shop), as exemplified in the following quote:

> I would like to have a good life, to finish my education and to get a job. I want to be educated and my children to get good education too so that they can be independent in the future. (Somali woman, mother of 3)

Discussion

This study investigated the prevalence and experiences of household food insecurity among immigrant women and families connected to a CBO that supports them in Edmonton, Canada. Through the HFSSM administered in the quantitative phase, we found staggering rates of severe food insecurity (53 percent) in our sample of 213 households. Yet, it were the data collected in the qualitative phase that added subtleties of what coping with food insecurity meant for Somali women and their families.

We found an overall prevalence of 94 percent of any food insecurity, a rate that was considerably higher than the 19.6 percent rate for recent immigrants (< 5 years) found in the CCHS data (Tarasuk *et al.*, 2014). Reasons for the discrepancies between our study and the CCHS reports include the fact that the CCHS data are representative of the Canadian population, whereas our data were collected with a relatively small convenience sample of 213 households connected to a CBO in Edmonton. In addition, the CBO, the MCHB, supports at-risk immigrant women who might be living with low income, feeling socially isolated or coping with stressors such as mental health issues, family violence or addictions among family members. All of these factors put women's households at a greater risk for food insecurity (Laraia *et al.*, 2006; Power *et al.*, 2017).

Moreover, the HFSSM was administered through CCHS in Canada's official languages (English and French) which potentially excluded vulnerable immigrant groups from the national data (Vahabi *et al.*, 2011). Refugees, in particular, commonly struggle with education and literacy as many of them spend a considerable amount of time in refugee camps where educational opportunities are rare (Henderson *et al.*, 2017). An examination of food insecurity among recent Latin American immigrants residing in Toronto found that 56 percent of their sample were food insecure despite participants' high educational level (Vahabi *et al.*, 2011). Interestingly, in the same sample, Vahabi *et al*. (2011) found that the "ability to converse in English" was a significant predictor of household food insecurity with those who reported good/excellent English being more likely to be food secure. Because we did not collect any personal information and demographic data in the quantitative phase of our study, we could not investigate any associations between food insecurity levels in our sample and variables such as length of stay in Canada, English fluency, immigration category (economic immigrants vs refugees), household composition, income source, etc.

For the qualitative phase, we tried to recruit women that were from Africa or the Middle East, as a greater proportion reported severe household food insecurity in the quantitative phase. We cannot infer any possible explanations for this finding but it is possible that African and Middle Eastern women who responded to the HFSSM were more likely to be recent refugees given that Africa and the Middle East were the top regions of birth of refugees who arrived in Canada between 2011 and 2016 (Statistics Canada, 2016a, b). In addition, refugees, especially women, might arrive in Canada in poorer health, without educational and language training, and having experienced significant trauma; therefore, they could be at a higher risk for an array of social and health issues (Small *et al.*, 2008; Gagnon *et al.*, 2009; Newbold, 2009; Merry *et al.*, 2011). All Somali women interviewed in this study had refugee status upon moving to Canada. Refugees' low education, literacy and poor English skills represented factors linked to household food insecurity in other studies conducted with refugees who have resettled in the USA or Canada (Hadley *et al.*, 2010; Henderson *et al.*, 2017).

Further, a large proportion of Somali women who were interviewed in the qualitative phase were lone parents (35 percent), and had more than three children younger than 18 years of age

(47 percent), factors that also make them more vulnerable to household food insecurity (Alberta Health Services, 2017). Somali women and their children are susceptible to various poorer health outcomes associated with household food insecurity (Tarasuk *et al.*, 2016; Alberta Health Services, 2017). In particular, among pregnant women, food insecurity is associated with nutrient deficiencies and depressive symptoms among mothers, and poor birth outcomes for infants (Laraia *et al.*, 2006; Hromi-Fiedler *et al.*, 2011).

Although we did not ask women about depressive symptoms, we found that they perceived their low sense of control as stressful. In both quantitative and qualitative phases of our study, women reported compromises in the quality of their families' diets because they could not afford "balanced meals" in the past 12 months. Somali women reported that often they could not buy vegetables, fruit and meat, a finding that was consistent with studies with other immigrant groups, and during pregnancy (Rush *et al.*, 2007; Hromi-Fiedler *et al.*, 2012). The fact that women interviewed in our study could not afford the foods they wanted meant even more than stressful compromises in diet quality. They also felt a loss of cultural identity because foods that had cultural and religious meaning to them were perceived as too expensive in Canada. It is important to recognize that for immigrant women whose family role is primarily constructed around food and the kitchen table, food insecurity might also mean loss of power, agency and identity (Page-Reeves, 2014).

Our study had many limitations related to the administration of the HFSSM among a vulnerable group of immigrant women yet it is one of few that have investigated food insecurity among immigrants, and especially refugees, in Canada. The lack of demographic data is a significant limitation of our study, and something we tried to compensate for by conducting qualitative interviews that included a few questions about women's demographics and household characteristics.

Moreover, in following principles of CBPR, we asked health brokers to administer the HFSSM in women's mother tongues rather than in Canada's official languages, and to include any of their clients who were interested in participating. Although this decision was made in an effort to balance ethical validity and data validity (Edwards *et al.*, 2008), it posed threats to the external validity of data collected through the HFSSM. To optimize data validity and reliability, we read and discussed every question in the HFSSM with health brokers prior to them going through the questionnaire with any women. If health brokers had any questions about terms or phrases, we tried to use definitions that had already been reported in other documents and validation studies (Tarasuk, 2001; Hromi-Fiedler *et al.*, 2009).

Conclusions

Strong evidence is available in Canada showing the link between low income and food insecurity (Tarasuk *et al.,* 2014, 2016; Dietitians of Canada, 2016). Therefore, economic policies are needed to offer income protection and additional social assistance for immigrant women who might be engaged in low-wage jobs and simultaneously caring for young children. Furthermore, we believe there needs to be governmental commitment to include immigrants, and a representative sample of refugees, in all cycles of CCHS (Dietitians of Canada, 2016). This represents an essential step in increasing policy advocacy, and effective programming aimed at improving the health outcomes of immigrants.

Given the complex network of factors that influence immigrant women's health in a receiving country, health services need to assess food insecurity among immigrants, especially women in perinatal period. Improving immigrant women's diets in pregnancy and postpartum will require addressing migration as a determinant of health. It is of the utmost importance to support these women with strong integration policies that not only promote diversity and multiculturalism but also make an active effort to integrate immigrants into local economies (Bollini *et al.*, 2009).

The extensive number of CBOs across Canada, such as the MCHB, can play an important role in enabling integration policies by fostering opportunities for social and economic integration of immigrant women and families into local contexts. However, they require adequate funding to provide continuing services that can assist immigrant women in being healthier in childbearing

years and beyond. We also suggest that all government levels need to acknowledge, and recognize through meaningful policies, their potential role in positively impacting the health of future generations by pro-actively looking after women and children's health and well-being (Barker *et al.*, 2013).

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