

## Food Insufficiency in Urban Latino Families

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**Abstract** National level data show food insecurity/insufficiency is more common in Latino families than the dominant population, however local ethnic rates aren't often available, nor have there been many studies of food insufficiency/insecurity among Latino ethnic groups. This study presents food insufficiency data from three low income immigrant Latino Chicago communities. Data were collected as part of a larger study of ethnic Latino differences in health and nutrition attitudes/behaviors and child health services use. Face to face interviews were conducted with 320 mothers of Latino children entering school for the first time (mean age 5.5 years). Food insufficiency questions from the Radimer/Cornell and NHANES III instruments were used. Participants were 70% Mexican, 22% Puerto Rican and 8% other Latino, reflecting Chicago Latino distribution. Thirty percent ( $n = 96$ ) reported household food insufficiency, although most was worry about obtaining food, and was due to lack of

money or Food Stamps. Some families experienced more severe food access problems, namely adults and children skipping meals, and adults or children going without food for an entire day. Puerto Rican families reported more severe food insufficiency than Mexican families, but there were few other ethnic differences. Only 30% of these low income food insufficient families were Food Stamp participants although 90% of the children received school meals. These data point to the need for better screening and program outreach for low income, immigrant Latino families.

**Keywords** Food security · Latinos · Immigrants · Families · Low income · Mexican · Puerto Rican

### Introduction

Even though the economy was strong and unemployment rates were low during much of the 1990s [1], food insecurity remained a problem among vulnerable groups in the United States. Data from the Third National Health and Nutrition Examination Survey (NHANES III), a nationally representative sample of the U. S. population between 1988 and 1994, indicated that 4.1% of those surveyed reported some degree of food insufficiency<sup>1</sup> as measured answering by 'sometimes' or 'often' to a screening question about their family not getting enough food to eat [2]. Low income

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<sup>1</sup> Food insufficiency as used in the NHANES III survey is defined as the individuals/households where a respondent reported that the family sometimes or often didn't get enough food to eat [2]. Food insecurity is the limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in a socially acceptable way [29].

households were more likely to report food insufficiency with 10.6% of those at or below the poverty level indicating a problem getting enough food. Mexican Americans (the primary Latino ethnicity surveyed in NHANES III) had the highest prevalence of food insufficiency (15.2%) among the ethnic subgroups reported.

Food insecurity<sup>1</sup> data from the 1999 Current Population Survey (CPS) [3] showed that 10.1% of households, or about 31 million people, had some level of food insecurity that year, with about 3 million households reporting some hunger during the year due to inadequate resources. Greater rates of food insecurity were noted among families with incomes below the poverty line (36.7%), households with children headed by a single woman (29.7%), black households (21.2%), and Hispanic households (20.8%). The 1999 CPS data estimated that about 12 million children (39%) were food insecure. Nearly one-third of the households with incomes below 130% of the poverty line were food insecure, with low income households with children even more vulnerable; 42% of 'children in low-income households lived in food insecure households'. Being employed may not make a family less vulnerable to food insecurity; data from the 2001 'Hunger In America Report' indicate that at least 40% of those using emergency food services have at least one household member employed [1].

While Latinos are one of the groups vulnerable to food insecurity, few local or state data are available on the extent and severity of this problem, nor are these data generally available by Hispanic ethnicity. For example, data from the 1996–1998 CPS Food Security Supplement provide state prevalence of food security; 8.2% of Illinois households were food insecure and 3.1% of Illinois households were food insecure with hunger, but Latino data are only available for the national level data [4]. CPS food security data for the U. S. showed 23% food insecurity among Latinos in 1995 and 18% in 1998 [3]. To explore issues of food insecurity/insufficiency within an urban Latino and predominantly immigrant population, food sufficiency questions were included as part of a moderately sized study of multi-ethnic Latino families with children living in three Chicago neighborhoods. The purpose of the larger study was to examine ethnic differences in Latino child health services use as well as to describe and compare health and nutrition attitudes and practices. Other areas of inquiry included access and barriers to primary health and dental care; child health history, including asthma and immunizations; health, nutrition and social program participation and barriers; acculturation, social support, and demographic characteristics.

## Methods

The food insufficiency data presented here originated as part of a comprehensive survey of health behaviors and services use of Latino children and their families as the children entered school for the first time. Unlike many other U. S. areas with large Latino populations, Chicago Latino presence across Mexican, Puerto Rican, and various Central American ethnicities permits assessment of ethnic differences in health behaviors and services use. Three Chicago Community Areas, West Town, Humboldt Park, and Logan Square, with greater than 30 % Latino population [5, 6] were initially selected for sampling, and within these areas schools were inventoried and randomized. (These Community Areas also have high percentages of immigrants.) Of the 35 public elementary schools in these areas, and 17 of had at least 30% Latino enrollment and their principals agreed to our recruiting participants from their school; 5 Head Start preschools in the area were also included in the sampling frame. Recruitment notices were sent to parents of all children ages 4–8 attending the participating schools, although only Latino children were eligible for selection. Latino children entering school for the first time within this age range were eligible for the study, regardless of the presence of other children in the family. These children were targeted because children entering school for the first time are required to have had a physical exam and thus would have had contact with the health system, enabling responses about health services use and health behaviors for the survey. Interested mothers returned the form and were contacted by project staff to explain the study. After obtaining informed consent, bilingual and bicultural staff conducted face to face interviews with 354 eligible women, resulting in 320 complete and valid interviews. The response rate was 90.4%. Most interviews were conducted in Spanish. The recruitment strategies and research protocols were approved by the UIC Institutional Review Board, and data collection was completed in 2000.

Various sources were used to construct the survey used in the larger study. Where appropriate to answer the research questions, some questions and scales from published surveys and studies were included; the investigators and study neighborhood health care providers also provided questions. In some cases, questions were developed specifically for this study. The instrument was translated from English to Spanish by a bilingual/bicultural professional, and back-translated by bilingual/bicultural project staff; differences between the translations were reconciled to yield an

instrument which was grammatically correct yet reflected the diverse ethnic and educational backgrounds of the participants. As survey sections were completed they were pilot tested with Latino mothers of young children using a cognitive processing technique [7] to assess whether the items ‘had the intended meaning when interpreted by’ the anticipated participants. Any differences encountered were then reconciled and the item(s) re-tested.

Items to assess food insufficiency were taken from the scale developed by Radimer/Cornell [8, 9] as well as those from NHANES III (both the family questionnaire and 24-h recall sections) [10, 11]. These items were selected because they had been validated in other studies and were accepted measures of food insufficiency at the time the survey was developed and tested. Demographic, health status, food assistance, child nutrition and emergency food program use data from the larger survey were also used in this analysis.

Characteristics of the responding mothers and their families are shown in Table 1. Nearly 70% of the 320 participants were Mexican, 22% Puerto Rican, and 8% Other Hispanic generally reflecting the Latino ethnic distribution in Chicago [75% Mexican, 11% Puerto Rican and 14% other Hispanic ethnicity] [6]. Their average age was 32 years. Only about 5% of the Mexican women reported a U. S. birthplace while 46% of the Puerto Rican women had been born in the continental U. S. Mexican women averaged about 11 years of U. S. residence compared to 18 years for Puerto Rican women; Puerto Rican women had completed more years of education than the Mexican women (12 years vs. 8.6 years). The mean household size was about 5. In subsequent analyses, the ‘Other Hispanic’ group was combined with the ‘Mexican’ group since these women had primarily Central American origins.

After a screening question for all survey participants, food sufficiency questions from the Cornell/Radimer scale [9, 8] and the NHANES III survey [10] were asked of those participants answering ‘sometimes’ or ‘often’ to the screening question (‘Which one of the following statements best describes the food eaten by

your family? Do you have *enough food to eat, sometimes not enough to eat, or often not enough to eat?*’). Ninety-six of the 320 (30%) women responded ‘sometimes’ or ‘often’ to the screening question, indicating some level of household food insufficiency, and these women and their families are the primary focus of this analysis. The other established scale used for this analysis was the Marin short acculturation scale, a widely used 13-item Hispanic acculturation index which focuses on language proficiency, language preference and used, and the friends’ ethnicities in their social network [12]. (The mean acculturation score was 28.34 of a possible 65 score, reflecting that this was predominantly a less acculturated group.) While predominantly frequency data are presented here, some bivariate analyses and analysis of variance with other related survey variables are also presented.

**Results**

Based on the Cornell/Radimer scale, 84% of the women who answered positively to the screening question also reported they were *sometimes* or *often* ‘worried about food running out before they had more money to buy more’ and 90% ‘worried whether the food they could afford would be enough for their family’ (Table 2). They also reported that the ‘food they bought didn’t last and they didn’t have money to buy more’. Nearly half of the women reported that they ‘ate less than they thought they should because they didn’t have enough money for food’, with 34% reporting they were ‘hungry but didn’t eat’ because there wasn’t money for family food. Thirty-two percent reported that their ‘child was sometimes hungry but they couldn’t afford more food’. Thus, about one-third of these ‘food insufficient’ participants reported more severe hunger. These percentages seem alarming given the tendency for underreporting in a sensitive area such as food security [13].

There were a few ethnic differences in responses to the Cornell/Radimer questions. Seventy-five of those who answered positively to the initial screening ques-

**Table 1** Demographic characteristics of responding mothers

	Mexican + Other Hispanic (78%) n = 251	Puerto Rican (22%) n = 64
Mean age in years ± S.D.	32.3 ± 6.1	33.1 ± 7.3
Mean education in years ± S.D.	8.8 ± 3.5	12.2 ± 3
Mean years of US residence ± S.D.	11.3 ± 6.4	18.4 ± 12
Birthplace in U.S.	5.5%	46% <sup>a</sup>
Mean household size ± S.D.	5.1 ± 1.5	4.2 ± 1.5
Mean age of target child ± S.D.	5.48 ± 1.09	5.68 ± 1.39

<sup>a</sup> Puerto Ricans born in the Continental United States

**Table 2** Food insufficiency responses (Cornell/Radimer Scale) of mothers' answering 'sometimes or often' to the screening question (Do you have enough to eat, sometimes not enough to eat, or often not enough to eat?) by Latino ethnicity

Cornell/Radimer Scale Item Stem 'Sometimes or Often True'	Entire Group % (n = 96)	Mexican + Other Hispanic % (n = 75)	Puerto Rican % (n = 21)
Worry food will run out before I have money to buy more.	84	81	95
Worry whether food I can afford will be enough for my family.	90	85	90
The food I bought just didn't last and I didn't have money to get more.	83	83	86
I ran out of food I needed and didn't have money to get more.	82	83	81
Having few different kinds of food on hand and no money to buy more.	68	69	62
I eat less than I should because I don't have enough money for food.	34	44	62
I'm hungry but don't eat because I can't afford food for my family.	48	32	43
My child is sometimes hungry but I can't afford more food.	32	32	33

tion were Mexican or Other Hispanic, and 21 were Puerto Rican, proportionately about the same ethnic representation as in the overall sample. The primary percentage differences were that the Puerto Rican women worried more about 'running out of food', were more likely to report that they 'ate less than they should because they didn't have money for food', or that they were 'hungry but didn't eat because they couldn't afford food for their family', although these differences are not statistically significant. Responses to other questions were remarkably similar for the two ethnic groups.

Women were also asked to answer the food insufficiency questions from both the family questionnaire and 24-h recall form used in NHANES III [10]. As shown in Table 3, the primary reason why families 'sometimes' or 'often' didn't have enough food to eat was not having enough money, Food Stamps or WIC vouchers to purchase food (93%), although 12% indicated that transportation was also a problem. About one-quarter of the women reported that 'there were days in the past year with no food or money to buy

food', and this problem seemed to be more prevalent among the Puerto Rican families. For nearly two-thirds of the families reporting no food or money to buy food, this was limited to fewer than 3 days, although the greater number of days for the remaining third are of concern. Six percent reported that 'they or their child had skipped a meal yesterday due to lack of food', and 5 % reported that 'there were days they or their child didn't eat at all due to lack of food'. Puerto Rican families were more likely to report these more severe problems than the Mexican and Other Hispanic ones.

More than half of the mothers in food insufficient families didn't know where to seek food if they were short of money, although about one third of the women in food insufficient households knew of a pantry in their neighborhood and also reported they had used a pantry as an emergency food source, 35% of these in the past month. When asked about where people in need of food were more likely to go to get food, 50% of the entire sample reported that most people would go to a church and/or food pantry, and only 35% would go to relatives. In the survey administration sequence,

**Table 3** NHANES III food insecurity responses by ethnicity for women who answered 'sometimes or often' to the screening question (n = 96)

NHANES III item	Entire Group% Yes (n = 96)	Mexican + Other Hispanic% Yes (n = 75)	Puerto Rican% Yes (n = 21)
Reasons why family had this problem			
Lack of transportation	12	15	7
Non-working stove/refrigerator	5	2	13
Not enough money, Food Stamps or WIC	93	95	93
Other reason	5	2	0
In the past year, were there days with no food or money to buy food for you or your child?	26	24	33
Reasons why no food or money for food: not enough money	96	97	92
Did you or your child skip any meals yesterday because there wasn't food or money to buy food?	6	4	14
During the past month, were there any days you or your child didn't eat at all because of no food or money for food?	5	3	14

women were asked about their knowledge and use of emergency food sources *before* and independently of the food insufficiency questions, so the similar findings for use of emergency food resources by this group seem to confirm the food insufficiency findings.

Participation in food assistance and child nutrition programs was also assessed. About 90% of the participants, both food sufficient and food insufficient, reported that their child participated in the School Lunch Program and School Breakfast Program. Thirty percent of the food insufficient households were current Food Stamp Program participants compared with 16% of the food sufficient group ( $\chi^2 = 8.07, p = 0.008$ ). About 36% of the entire group reported that they had received Food Stamps in the past.

Given the relatively large prevalence of food insufficiency, bivariate analyses for sociodemographic variables were conducted comparing those who were food sufficient versus those who were food insufficient. The proportion of food insufficient households did not significantly differ by the type of diet consumed by the families (predominantly traditional Mexican or Puerto Rican diet, predominantly American foods, or both equally, data not shown); most mothers reported their families ate predominantly traditional foods. Perceived food insufficient families had a significantly lower gross annual household income than did perceived food sufficient families ( $F = 5.89, p = 0.016$ ), although household income was relatively low for both groups of families [median family income was \$15,000] (Table 4). When income data are compared categorically, more of the food insufficient families had incomes in the \$0–\$14,999 range, although there were perceived food insufficiency problems at all three income levels examined. Namely, nearly 23% of the families with household incomes over \$25,000 reported problems with food insufficiency.

More importantly, there were no significant differences between perceived food sufficient and perceived food insufficient families for length of time living in the U. S., the number of household moves in the past 5 years (an indicator of family stability), mother’s employment status, acculturation level or housing type. Home ownership, compared to rented housing, is often thought to reflect greater family income stability [14],

however food insufficiency was noted in 19 of 59 (32%) home owners in the study.

When child health status was evaluated by food insufficiency, only 12% of the food sufficient household children’s mothers reported them to be in fair or poor health while nearly twice as many mothers (23%) of children in food insufficient households reported them to be in fair or poor health ( $\chi^2 = 6.69, p = 0.01$ ). Only 15% of all children’s health was rated as fair or poor by their mothers but of this group, 46% were also from food insufficient families. There were also differences in health insurance coverage for the target child between the food sufficient and food insufficient groups. Twenty-four percent of food sufficient children had no health insurance coverage compared to 30% of children from food insufficient households.

In summary, many of the food insufficiency problems reported by these families were limited to anxiety and worry about having enough food and/or money to buy food, however more serious problems such as skipping meals for adults and children were reported by about one-third of those who screened positively for food insufficiency. These more serious problems with food access were more prevalent among the Puerto Rican families, but otherwise, there were few ethnic differences with either the Cornell/Radimer or NHANES III responses. While 35% of the food insufficient mothers reported using a food pantry in the last month, a large proportion didn’t know where to obtain emergency food. Ninety percent of the target children participated in School Breakfast and School Lunch programs, while only about 30% of the food insufficient families reported Food Stamp participation. Food Stamp participation among the food insufficient families was about twice that of food sufficient families. Among this relatively low acculturated group, most families consumed predominantly traditional Mexican or Puerto Rican foods, and this did not differ by whether they were food sufficient or insufficient.

The food sufficient families had significantly higher gross incomes than did the food insufficient families even though most all of the families reported incomes below \$25,000. There weren’t significant differences

**Table 4** Food sufficiency perceptions by income characteristics

	Perceived food sufficient	Perceived food insufficient	ANOVA or Chi-Square
Mean household annual gross income	\$20,166	\$15,488	$F = 5.89, p = 0.016$
<i>Annual gross income</i>			
\$0–\$14,999	60.7%	39.3%	$\chi^2 = 12.43, p = 0.002$
\$15,000–\$24,999	19.6%	19.6%	
\$25,000 or over	77.4%	22.6%	

between the two groups for variables as number of years in the U.S., acculturation level as measured by the Marin scale [12], number of household moves in the past 5 years or mother's employment, and nearly one-third of the food insufficient families were also home owners. Nearly a quarter of the target children from food insufficient families were rated by their mothers as having fair or poor health, and a higher proportion of children from food insufficient families had health insurance coverage compared to children from food sufficient families.

## Discussion

This study shows that the prevalence of food insufficiency among these predominantly immigrant Latino families was greater than that reported on a national level for Latinos by the Current Population Survey or NHANES III [3, 2]. Given the tendency to underreport this type of information [13], these findings raise concern about the nutritional status of these children and their families. Since the food sufficiency questions were asked at the very end of the study, and interviewers had developed considerable rapport with these women, we believe the prevalence provided here is reasonably accurate. Fortunately, most of the participants reported more worry or anxiety about running out of food than hunger or severe hunger. However, the widespread food insufficiency in participants who were employed and/or homeowners, were more acculturated, moved less frequently, and/or had lived in the U. S. longer, variables considered to reflect greater family resources and financial stability, shows the extent of the problem across these Latino communities. Data from the CPS [15] corroborates that a notable percentage of families with middle and higher incomes also report food insecurity.

One study which examined hunger in documented Latino, Vietnamese and Cambodian immigrants in Illinois, Texas and California [16] reported that only 20% of those surveyed were food secure, with 41% food insecure with hunger. Food insecurity and hunger were associated with incomes below the poverty line, 'poor' English speaking, or whether there were children in the household. These families were less likely to participate in federal assistance programs (Food Stamps and WIC) even though they were income-eligible. In our study 30% of the food insufficient participants in our study received Food Stamp benefits, and because the target children from our study were enrolled in school, they were not WIC participants. We didn't specifically ask about participant's legal status,

but some of the families likely were undocumented immigrants and ineligible for Food Stamps. Fortunately, about 90 % of the children in this study regularly participated in School Breakfast and School lunch, reducing the impact of food insufficiency at least during the school year.

The data show that children's food intake was affected fairly regularly by lack of food and/or family resources. While not specifically assessed in this study, other research has documented effects of household or family food insufficiency/insecurity on family dynamics as well as children's nutritional status, psychological and physical development, cognitive function and/or behavior [17–23]. Given that studies in various other groups across the U. S. and Canada have noted one or more of these effects, further exploration of food insufficiency and Latino child development and nutritional status seem warranted.

Due to their migration to the continental U. S., many of these families are undergoing the stresses and adjustments of acculturation to life in the U. S., with the additional stresses and strains of food insufficiency making these families even more vulnerable. Longer term effects on children's growth, development and school performance, and family dynamics are clearly areas to further explore in these children and their families.

Associations between food insecurity, resultant food restriction, and overweight and obesity have also been reported with overeating following episodes of food restriction in children [24]. Polivy noted that the milder levels of household food insufficiency, such as those which predominated in this study, were associated with greater BMI changes [19]. Overweight and obesity rates have rapidly increased among children and adults in the U. S. [25], with Latinos and those with lower incomes particularly affected. Weight for height of the children was not assessed in this study, however their ethnicity, the low acculturation, and lower income levels of these families place both children and their parents at considerable risk for overweight and obesity and the associated chronic disease risks. Other data from the study indicate that many of these families' food patterns are undergoing a nutritional transition from traditional Mexican or Puerto Rican diets to those of mainstream America, adding to their risk of obesity and subsequent chronic diseases [26, 27].

These findings of a fairly large proportion of urban Latino families reporting some level of food insufficiency provide useful information for program planners and emergency food providers. There are some limitations with the data, however. The sample families and target children who were the subject of this study

were not randomly selected from the neighborhoods although the schools which the children attended were selected randomly based on sociodemographic and ethnic distribution factors. Data provided by the mothers was self-reported and not verified with record reviews or medical exams, although our findings are similar to those reported with other urban studies of Latino food insufficiency/food security [28]. While the food insufficiency scales and questions used in this study had been validated, their specific validation in Latino groups has not been reported. However, our cognitive and pre-testing of the survey questions with community Latinos didn't show any problems with misinterpretation or understanding of the questions. Additionally, internal consistency testing using Cronbach's alpha showed that the scale had acceptable reliability ( $\alpha = 0.89$ ). Our statistical analyses and findings for the food insufficient segment of the study sample were sometimes limited by small sample sizes. It is also likely that our findings represent underestimates of food insufficiency and hunger in this group of urban Latino families since data of this nature are often underreported [13].

## Conclusions

National food insecurity prevalence among Hispanics was about 23% in 1995 and 18% in 1998 using the CPS data [3]. While Hispanic-specific data are not available for Illinois, the average food insecurity prevalence in the state was 8.2% in the 1996–1998 period [4]. Yet, in this study, about 30% of the women reported some level of family food insufficiency, a rate much higher than that reported in the CPS data.

While most of the reported food insufficiency in this study was not at the *hunger or severe hunger* stage, these levels of community food insufficiency are of great concern because of their reach across multiple sociodemographic characteristics, and because of the number of children reported to have occasional food insufficiency. Notable levels of food insufficiency were found in households with *higher* income levels, in home owners, and among employed women, showing that the scope of the problem in these communities is not being captured by more routine surveillance data. These food insufficiency levels are confirmed by the mothers reporting that about 35% had used a food pantry in the past month. Given that most of the study families reported fairly low incomes and were not Food Stamp participants, one concern is that many reported not knowing where to get food when they were in need. This shows the need for greater outreach to these

families to be sure they are participating in programs for which they are eligible and that they know where to obtain emergency food. This needs to be handled sensitively among immigrant groups that may have undocumented individuals. The relatively high food insufficiency levels in conjunction with high participation in school meals programs points to the need to assure that school meals are of high quality and nutrient density, and to promote adoption of the Summer Meals Program in at risk communities. This is particularly important for undocumented immigrant children for whom this is the primary food assistance program for which they are eligible. Given the generally lower insurance and health care use of low income, urban, immigrant Latinos, various social, education, and health professional sectors need to routinely assess risk of food insufficiency and insecurity and make appropriate food assistance referrals to Latino families.

As public health nutrition professionals and community providers, additional community food assistance and support programs along with outreach are needed to reach these vulnerable families and children. Primary care providers should routinely ask parents of young children a screening question regarding food insufficiency, then follow up and provide appropriate referrals if there is any indication of food insufficiency. The public health community needs to furnish providers with referral materials to food assistance programs or emergency food sources for at risk immigrant and low income families.

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