

# Assessment of Food Insecurity in Children's Hospital of Wisconsin's Emergency Department

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## ABSTRACT

**Importance:** Food insecurity is associated with adverse health outcomes and the emergency department may be an ideal location to identify food insecure children and families.

**Objective:** To determine the prevalence of food insecurity in families with children that present to an urban pediatric emergency department (ED) in Milwaukee, Wisconsin.

**Design:** We conducted a cross-sectional survey of caregivers of children 0-18 years between June and August, 2013. The questionnaire included 2 validated statements about food insecurity and demographic and community resource questions. Participant rooms were approached during predefined shifts in an order determined by random number generation.

**Outcomes:** The primary outcome was the prevalence of caregivers who identified as food insecure. A secondary outcome was the percentage of food insecure caregivers who accessed community resources.

**Results:** We enrolled 309 caregivers; 141 (45.6%) reported food insecurity. Nearly 60% (56.8%) of nonwhite caregivers were food insecure compared to 27.4% of non-Hispanic white caregivers ( $P < 0.0001$ ). Among caregivers who identified as food insecure, 82% reported using at least 1 community resource for food.

**Conclusions:** Almost half of caregivers presenting to the ED reported food insecurity. The ED is an excellent location for targeted intervention to identify and link food insecure families with community resources.

## BACKGROUND

The United States Department of Agriculture defines food insecurity as "limited or uncertain availability of nutritionally adequate or safe foods, or limited or uncertain ability to acquire acceptable

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foods in socially acceptable ways."<sup>1</sup> In 2011, 14.7% of households in the United States were considered food insecure.<sup>2</sup> Wisconsin was similar to the national average, with 13.2% of respondents reporting food insecurity between 2008 and 2012.<sup>3</sup>

Milwaukee County, the largest county in Wisconsin, contains 17% of the state's population; 46% of Milwaukee County's population is from communities of color.<sup>4</sup> Between 2008 and 2012, 11.9% of households without children in Milwaukee County were food insecure. Among families with children, 19.3% of households in Milwaukee identified themselves as food insecure.<sup>5</sup> Food insecurity in households with children is associated with numerous adverse outcomes, including poorer health and lower academic performance.<sup>6-7</sup> These disadvantages are accentuated in families with children younger than 3 years, as evidenced by 90% greater odds of being in fair

or poor health, and 76% greater odds of being at increased developmental risk.<sup>8</sup> To prevent these poor outcomes, food insecurity must be identified and addressed. Unfortunately, food insecurity often is not recognized by health care professionals, making intervention difficult.

Emergency department (ED) utilization is higher for children in poverty, on Medicaid, or with lower parental education.<sup>9</sup> Like many states, Wisconsin has high rates of children living in poverty.<sup>10-11</sup> In 2011, 18% of children in Wisconsin and 43% of children in the city of Milwaukee lived in poverty.<sup>12</sup> Despite the association between poverty and ED utilization, there are limited data on the prevalence of food insecurity in pediatric EDs. Currently, the Children's Hospital of Wisconsin (CHW), which serves Wisconsin's largest urban population, has no established protocol for assessing food insecurity during an ED visit. We hypothesized that a large percentage of families seeking care for children at the CHW ED identify as food insecure.

## METHODS

### Study Population/Survey Administration

We conducted a cross-sectional survey of caregivers of children 0-18 years old presenting to the CHW ED, an urban/suburban pediatric ED with an annual volume of 62,000 visits. The ED serves a diverse population, with approximately 40% of visits by children identified as black, 40% non-Hispanic white, and 15% Hispanic; 60% of visits are covered by government insurance.

An 8-item questionnaire, which included demographic information (race, annual income, number of children/seniors in household) and 2 validated statements about food insecurity, was administered to caregivers in the CHW ED. Questionnaires were administered during pre-determined 4-hour periods between 11 AM and 11 PM, weekdays and weekends, during the months of June, July, and August 2013. Rooms to be approached were randomly selected using a random number generator to minimize potential bias in caregiver selection. Randomized rooms with non-English speaking caregivers were not approached. Caregivers who lived in the household of the patient were approached and given a brief explanation of the study. If verbal consent from the caregiver was given, those individuals were asked to complete the questionnaire. If the caregiver refused, the refusal was noted and the next room was entered. An information sheet, including an explanation of food insecurity, information about the study, and resources for food assistance, was provided as part of the survey.

If a caregiver agreed to participate, the research team member left the room while the questionnaire was being completed and returned to collect it 15 minutes later. To ensure the safety of both the research team and the patients, caregivers of children were not approached if the child presented for a complaint of alleged sexual assault, drug overdose, suicide attempt, psychotic behavior, known tuberculosis or Methicillin-resistant *Staphylococcus aureus* infection, or if the child was a trauma patient with unstable vital signs. In addition, only English speaking families were approached in this study.

Caregivers were asked to report their race/ethnicity and then answer 2 screening items that were validated previously by Hager, et al to be sensitive and specific in identifying those with food insecurity: (1) within the past 12 months we worried whether our food would run out before we got money to buy more, and (2) within the past 12 months the food we bought just didn't last and we didn't have money to get more.<sup>13</sup> Further data were collected from those who answered affirmatively to either question regarding food insecurity; these data included annual income level (in increments of \$10,000 to >\$40,000), number of people per household, and use of community and government resources to supplement food supply. Community and government resources included (1) WIC—the federal supplemental nutrition program benefiting women, infants and children; (2) FoodShare Wisconsin—a statewide food stamp program that helps provide

groceries to low-income individuals and families; (3) food pantries—locations that distribute food to those who have difficulty purchasing enough food to avoid hunger; and (4) StockBox—a program that provides free, prepackaged boxes of food for seniors with a limited income.

### Study Outcomes and Analyses

The primary outcome was the percentage of caregivers who reported being food insecure, as measured by an affirmative response to either of the 2 validated screening questions. We also evaluated the percentage of food insecure families already using community resources.

All data were entered into an Excel spreadsheet for analysis. Data were double-entered by 2 separate research assistants to ensure accuracy of recorded data. Race/ethnicity was dichotomized as non-Hispanic white vs other, as all other minority categories were similar with regard to responses to the food insecurity questionnaire. For categorical data, a chi-square test was used. Stepwise logistic regression was used to assess the association between demographic/family factors such as race/ethnicity and household income and use of community resources, including WIC, Food Share, a food pantry, or Stockbox. Analyses were conducted using IBM SPSS Statistics Version 21.0 (IBM Corp, Armonk, New York).

## RESULTS

A total of 320 caregivers were approached. Of those approached, 309 (97%) agreed to participate and completed the race/ethnicity and food insecurity questions. The demographics of the final study population closely mirrored that of the overall ED population, with 37.9% of respondents self-identifying as African American/black, 11% Latino/Hispanic, 37.5% non-Hispanic white, and 13.6% other.

Survey results showed that 141 (45.6%) of the 309 caregivers reported food insecurity (Table 1). Analysis by individual question revealed that 134 (43.4%) reported “within the past 12 months we were worried our food would run out before we got money to buy more,” while 107 (34.6%) reported “within the past 12 months the food we bought just didn't last and we didn't have money to get more.” Analysis of food insecurity by race/ethnicity showed that 27.4% of non-Hispanic white caregivers were food insecure (Table 1) compared to 56.8% of caregivers of all other races/ethnicities ( $P < 0.0001$ ).

We then evaluated the community resources utilized by those caregivers who reported food insecurity. Two of the 141 caregivers who reported food insecurity failed to answer questions related to resources used and were excluded from these analyses. Overall, 114 (82%) of the 139 caregivers reported using at least 1 community resource for food. Fifty-three (37.6%) utilized WIC, 97 (68.8%) utilized Food Share, 22 (15.6%) utilized a food pantry and 3 (2.1%) utilized Stockbox. Use of resources differed by race/

**Table 1.** Study Sample Demographics

	Food insecure n=141 (%)	Not food insecure n=168 <sup>a</sup> (%)
<b>Race</b>		
American Indian	7 (77.8)	2 (22.2)
Asian	4 (50.0)	4 (50.0)
Black/African American	72 (57.1)	54 (42.9)
Hispanic/Latino	23 (56.1)	18 (43.9)
Hawaiian/Pacific Islander	0 (0.0)	1 (100)
Non-Hispanic white	32 (27.4)	85 (72.6)
Other	3 (42.9)	4 (57.1)
<b>Annual Income</b>		
<\$10,000	60 (42.6)	
\$10,000-\$19,000	25 (17.7)	
\$20,000-\$29,000	25 (17.7)	
\$30,000-\$39,000	13 (9.2)	
>\$40,000	11 (7.8)	
Prefer not to answer	7 (5.0)	
<b>Total people in household</b>		
2	20 (14.2)	
3	28 (19.9)	
4	37 (26.2)	
5	25 (17.7)	
6	16 (11.3)	
7+	13 (9.2)	
Not answered	2 (1.4)	

<sup>a</sup>Annual income and total number of people in household were only collected on caregivers identified a food insecure.

ethnicity, with 86.9% of minority caregivers utilizing resources compared to 65.6% of white caregivers ( $P=0.006$ ). In regression analysis assessing use of resources, race/ethnicity was no longer significant, and income remained the only significant variable in the model. The odds of using at least 1 community resource decreased by 0.77 for each additional \$10,000 incremental increase in annual income.

## DISCUSSION

The results of our study show a high prevalence of food insecurity in caregivers presenting with children to the CHW ED. We found almost half of caregivers presenting with children to the ED reported concerns related to food insecurity. This percentage is significantly higher than the prevalence of food insecurity reported nationally (14.7%), statewide (13.2%), for Milwaukee households without children (11.9%), and Milwaukee households with children (19.3%). This disparity is most likely due to the role the ED plays as the safety net provider for those with limited access to care. Given the population it serves, the ED provides a potential location for targeted intervention to identify and improve the knowledge of the community regarding resources available for those with food insecurity.

In our sample, the prevalence of food insecurity across races was disproportionately greater among minorities compared to

non-Hispanic whites; yet, income rather than race was the only significant variable for assessing use of resources. This finding suggests that income, rather than race, may be the best predictor of food insecurity, though additional data about income of families without food insecurity would be required to confirm this finding. Approximately 80% of those caregivers reporting food insecurity were already receiving aid from available community resources. While it is reassuring that the majority have identified resources to help, it is also concerning for 2 reasons. First, these families continued to report food insecurity despite their knowledge of and use of available resources in the community. Second, 1 in 5 food insecure caregivers were not using any community resources to alleviate their concerns about providing food for their families. Targeted interventions might include a standardized ED screen for food insecurity, providing information about additional community resources to families identified as food insecure, and following up with families after their ED visit to ensure they were able to obtain an adequate food supply.

Previous research assessing food insecurity in the ED has shown that 38% of the adult population that presented to an urban ED identified as being food insecure.<sup>14</sup> While there have been data on the adult population, there have been no studies specifically assessing food insecurity in a pediatric ED. Our study reveals that the percentage of patients presenting to our pediatric ED is even greater, and is significantly higher than the general city population. Our study not only shows that food insecurity in the urban pediatric population is prevalent and deserves more attention, but also confirms that the ED is a valuable location to identify those in need of additional resources.

## Limitations

Our study was limited by excluding some presenting complaints. Although a source of potential bias in our estimate, these patients represent a very small proportion of the potential study population, and thus would have minimal impact on our results. Another limitation is the exclusion of non-English speaking families due to a lack of trained personnel to enroll in the ED. It is likely that the exclusion of non-English-speaking families underestimated the actual food insecurity prevalence, given that the Hispanic population experiences more food insecurity than the national average.<sup>15</sup> In addition, our mode of assessment was a written questionnaire. Although the questionnaire was simple and brief, it had the potential to cause confusion for individuals with literacy limitations. Furthermore, we collected income data only from respondents who identified as food-insecure, making it difficult to know the degree to which income, rather than race, drives the likelihood of food insecurity. We also were limited by enrolling in a single ED. Verification of these findings in other settings would increase the generalizability of study findings. Our study, however, is strengthened by the use of random room sampling to ensure an unbiased enrollment of presenting caregivers.

## CONCLUSION

Almost half of families presenting with children to a pediatric ED report food insecurity. Because these patients are at increased risk for adverse health outcomes, it is very important for medical providers to recognize food insecurity. This study demonstrates the potential benefit of implementing a formal screening process for food insecurity in the ED, as the ED is often the only access point to medical care for families most at risk for food insecurity.

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