Addressing Food Insecurity in a Pediatric Weight Management Clinic: A Pilot Intervention

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ABSTRACT

Introduction: Our objectives were to (a) identify rates of food insecurity among patients seen in a pediatric weight management clinic and (b) test a pilot intervention to address food insecurity in the identified patients.

Methods: All new patients seen in the clinic were screened for food insecurity and Supplemental Nutrition Assistance Program (SNAP) benefit status. Families with food insecurity and no SNAP benefits were asked if they wanted SNAP enrollment assistance from a partnering food bank. Those agreeing to assistance were connected to the food bank.

Results: A total of 116 new patients were evaluated in the clinic during the intervention; 28 (24%) endorsed food insecurity, and 40 (34%) were eligible for SNAP enrollment assistance. Three (8%) of the eligible patients completed the SNAP enrollment process.

Discussion: Food insecurity in this pediatric weight management clinic was common. However, even when given direct access to SNAP enrollment assistance, only a small minority of patients matriculated into this program. J Pediatr Health Care. (2016) - - - -.

KEY WORDS
Food insecurity, obesity, food assistance

INTRODUCTION
Children and adolescents from low-income families are more likely to have obesity than their higher-income counterparts (Ogden, Lamb, Carroll, & Flegal, 2010). One of the many potential mediators between low socioeconomic status and obesity may be food insecurity, which is defined as a “household-level economic and social condition of limited or uncertain access to adequate food” (U.S. Department of Agriculture, Economic Research Service, 2014). Food insecurity is associated with poor nutrition, including limited fruit and vegetable intake, less frequent breakfast eating, and more sugar-sweetened beverage and fast food consumption (Bruening, MacLehose, Loth, Story, & Neumark-Sztainer, 2012; Widome, Neumark-Sztainer, Hannan, Haines, & Story, 2009). Further, it is hypothesized that food insecurity may contribute to obesity via consumption cycling, that is, eating more
when food is available to offset times of scarcity (Olson, Bove, & Miller, 2007). This relationship between food insecurity and obesity is termed “paradoxical” because food insecurity is a state of limited access leading to hunger, and obesity is a state of overconsumption (Dietz, 1995, p. 766).

The Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, was developed to reduce hunger and improve the health and well-being of low-income individuals. SNAP is a federally funded entitlement program that provides electronic benefit cards to purchase food for qualifying families. One of the eligibility criteria is a monthly gross income at or below 130% of the federal poverty guideline (i.e., $2,584 per month for a family of four in 2014–2015; U.S. Department of Agriculture, Food and Nutrition Service, 2014). Several studies have shown that participation in SNAP improves food security (Cook et al., 2002; Ettinger de Cuba et al., 2012; Mabli & Ohls, 2015). In addition, although not a consistent finding, some studies suggest that SNAP may be protective against obesity, even if there is on-going food insecurity (Goldman, Ettinger de Cuba, Sheward, Cutts, & Coleman, 2014; Jones, Jahns, Laraia, & Haughton, 2003). For example, one study showed that children in food-insecure households without SNAP had 1.7 times increased odds of being overweight. Furthermore, the weight status of the children in the food-insecure households that received SNAP was the same as those in the food-secure households (Goldman et al., 2014).

The current report describes a pilot intervention to address food insecurity among patients who were seen in a multidisciplinary pediatric weight management clinic. The prevalence of low socioeconomic status among patients seen in pediatric weight management clinics is high (Jasik et al., 2015), yet the prevalence of food insecurity in these patients is unknown. As such, our objectives were to (a) identify the prevalence of food insecurity among households of patients seen in a multidisciplinary pediatric weight management clinic and (b) develop and describe outcomes of a pilot clinical intervention to address food insecurity in families attending this clinic.

METHODS

This pilot clinical intervention was conducted between August 5 and November 17, 2014, in a multidisciplinary, tertiary-care, university-based pediatric weight management clinic in partnership with Second Harvest Heartland.

The pediatric weight management clinic, located in a medium-sized, diverse metropolitan community in Minnesota, provides care for children and adolescents with obesity. Second Harvest Heartland, one of the nation’s largest food banks, serves Minnesota and western Wisconsin. Its mission is to “end hunger through community partnerships.” For this pilot intervention, Second Harvest Heartland outreach workers provided direct assistance with the SNAP enrollment process to the families of patients attending the pediatric weight management clinic. During the 3-month pilot time period, all new patients who were seen in the pediatric weight management clinic were screened for food insecurity using a validated two-item instrument (97% sensitive and 83% specific; Hager et al., 2010) completed by the parent/guardian. According to the instrument, an answer of yes to either of the following was considered positive for food insecurity: Within the past 12 months we worried whether our food would run out before we got money to buy more or Within the past 12 months the food we bought just didn’t last and we didn’t have money to get more. The parent/guardian also indicated if he or she already received SNAP benefits. From the medical record, patient body mass index (BMI), age, sex, race/ethnicity, and health insurance type were abstracted. This project was deemed exempt for review by the institutional review board.

Families identified through the screening process as not receiving SNAP benefits and having either (a) food insecurity or (b) public health insurance (i.e., Medicaid) were asked if they wanted to be referred to Second Harvest Heartland for SNAP enrollment assistance. Health insurance status was used as an eligibility criterion because it is a surrogate for low income, which is one of the SNAP benefit eligibility criteria. The pediatric weight management clinic staff provided the name, language spoken, and phone number of the families agreeing to SNAP enrollment assistance to the Second Harvest Heartland outreach workers who, in turn, contacted the families by phone to facilitate SNAP enrollment. Second Harvest Heartland outreach workers logged the disposition of the calls. The outreach workers were fluent in Spanish.

Statistical Analyses

Descriptive statistics are presented as n (%) or mean ± standard deviation. Continuous variables between the three groups (total cohort, food-secure group, and food-insecure group) were compared using a one-tailed t test with unequal group sizes, and categorical variables between these groups were compared using chi-square tests; p values less than 0.05 were considered statistically significant.

RESULTS

A total of 116 new patients (mean age = 12.3 ± 3.2 years, 43% boys, 47% White, mean BMI = 31.9 ± 7.0 kg/m²)
were evaluated in the pediatric weight management clinic during the 3-month intervention; 24% indicated food insecurity. Age, sex, race/ethnicity, and BMI were not significantly different between patients with and without food insecurity (Table 1). Significantly more food-insecure patients received public health insurance than food-secure patients \((p = .0002)\). SNAP enrollment (before referral to Second Harvest Heartland) was significantly higher in food-insecure families than in food-secure families \((p = .004)\).

Of the families who were not already receiving SNAP benefits, 17% were food insecure, and 36% had public insurance (Table 2). Forty of the 116 (34%) patients screened were eligible for referral to Second Harvest Heartland because they had either food insecurity or public insurance and were not already receiving SNAP benefits. Thirty of the 40 families agreed to be referred, and after three attempts to reach each family by phone, 15 families responded. Of these 15, three completed the enrollment process. Regarding the other 12 who responded to the Second Harvest Heartland calls but did not complete the enrollment process, four were already receiving SNAP benefits, three were over the income limit, two indicated that they would get back to the SNAP outreach worker but did not, one was recently not approved for SNAP and did not want to apply again, one was not interested, and one wanted to complete the application later because of a “family circumstance.”

**DISCUSSION**

We found that food insecurity among patients seen in a multidisciplinary pediatric weight management clinic was relatively common, although it was not correlated with degree of obesity. Further, we showed the feasibility of a clinic–food bank partnership to address food insecurity. However, the pilot clinical intervention resulted in a low rate of matriculation into this government program.

The national prevalence of food insecurity is 14.5% but varies according to household type. For households with children of any age, the prevalence of food insecurity is 19.5%, and for those households with children headed by a single woman the prevalence is 34.4%. Black non-Hispanic and Hispanic households have a prevalence of 26.1% and 23.7%, respectively. In contrast to the overall national average, the prevalence of food insecurity in the state of Minnesota is much lower, at 10.8% (U.S. Department of Agriculture, Food and Nutrition Service, 2014). However, among households of patients in the pediatric weight management clinic, the prevalence of food insecurity was more than twice this level, at 24%. This high prevalence of food insecurity among weight management clinic patient households supports the need to routinely address food insecurity in programs that care for children with obesity.

Although most studies support a positive association between food insecurity and obesity among adults, particularly women, the studies of children are inconsistent (Larson & Story, 2011). One review (Dinour, Bergen, & Yeh, 2007) suggested that whether or not there is an association between food insecurity and

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**TABLE 1. Characteristics of patients with food security and food insecurity**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total</th>
<th>Food secure</th>
<th>Food insecure</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n) (%)</td>
<td>116</td>
<td>88 (76)</td>
<td>28 (24)</td>
<td>—</td>
</tr>
<tr>
<td>Age, years (mean ± SD)</td>
<td>12.3 ± 3.2</td>
<td>12.2 ± 3.2</td>
<td>12.5 ± 4.2</td>
<td>.42</td>
</tr>
<tr>
<td>Sex, % male</td>
<td>43</td>
<td>45</td>
<td>36</td>
<td>.36</td>
</tr>
<tr>
<td>Race/ethnicity, (n) (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>55 (47.4)</td>
<td>45 (51.1)</td>
<td>10 (35.7)</td>
<td>.31</td>
</tr>
<tr>
<td>African American</td>
<td>6 (5.2)</td>
<td>3 (3.4)</td>
<td>3 (10.7)</td>
<td>.14</td>
</tr>
<tr>
<td>Hispanic</td>
<td>12 (10.3)</td>
<td>9 (10.2)</td>
<td>3 (10.7)</td>
<td>.93</td>
</tr>
<tr>
<td>Asian</td>
<td>6 (5.2)</td>
<td>4 (4.5)</td>
<td>2 (7.1)</td>
<td>.59</td>
</tr>
<tr>
<td>Other</td>
<td>20 (17.2)</td>
<td>14 (15.9)</td>
<td>6 (21.4)</td>
<td>.52</td>
</tr>
<tr>
<td>Did not answer, (n) (%)</td>
<td>17 (14.7)</td>
<td>13 (14.8)</td>
<td>4 (14.3)</td>
<td>.96</td>
</tr>
<tr>
<td>BMI, kg/m² (mean ± SD)</td>
<td>31.9 ± 7.0</td>
<td>31.3 ± 6.7</td>
<td>33.7 ± 7.6</td>
<td>.07</td>
</tr>
<tr>
<td>BMI (z) score (mean ± SD)</td>
<td>2.32 ± 0.66</td>
<td>2.26 ± 0.57</td>
<td>2.49 ± 0.88</td>
<td>.20</td>
</tr>
<tr>
<td>Publicly insured, (n) (%)</td>
<td>53 (45.7)</td>
<td>32 (36.3)</td>
<td>21 (75.0)</td>
<td>.0003*</td>
</tr>
<tr>
<td>Enrolled in SNAP at baseline, (n) (%)</td>
<td>18 (15.5)</td>
<td>8 (9.1)</td>
<td>10 (35.7)</td>
<td>.0007*</td>
</tr>
</tbody>
</table>

*Note. BMI, body mass index; SNAP, Supplemental Nutrition Assistance Program.

*Statistically significant difference between groups \((p < .05)\).
weight status in children depends on race/ethnicity, age, household income, sex (with one study [Jyoti, Frongillo, & Jones, 2005] finding greater gains in BMI in girls with food insecurity but not boys), and definition of food insecurity. We did not find a difference in the mean BMIs between patients with and without food insecurity, although our entire sample had obesity. It may be that once a threshold of excess weight is achieved, food security status becomes less relevant.

Only 35.7% of the food-insecure families in the pediatric weight management clinic were already receiving SNAP before the intervention. This is far lower than the national average of 54.2% of food-insecure households that received SNAP benefits within the past year (U.S. Department of Agriculture, Economic Research Service, 2014). Further, 25% of the pediatric weight management clinic families who were eligible for SNAP enrollment assistance elected not to participate in the intervention. Although we do not know the reasons for declining participation, other studies suggest that underuse of public assistance programs varies with maternal age (with increasing age associated with lower rates of participation), nonproficiency in English, and immigration status (Gilbert, Nanda, & Paige, 2006). Stigma may be another significant barrier to using government programs (Stuber & Schlesinger, 2014). For the families that agreed to participate in SNAP enrollment assistance but did not enroll, several were later identified as already receiving SNAP benefits, and several were over the income limit. In the case of the families later identified as already receiving SNAP benefits, it may be that they misunderstood the purpose of the pilot intervention, or that their current SNAP benefits were not enough and they were looking for more assistance. The over-income families may represent those who earn too much to qualify for governmental assistance yet still struggle with food insecurity.

The strengths of this study included the use of a validated instrument to measure food insecurity among families attending a pediatric weight management clinic and the nature of the intervention instituted in a clinical setting. To our knowledge, this is the first study to measure food insecurity in a pediatric weight management clinic. The study was limited by the lack of a control group. Additionally, the food insecurity questionnaire was designed to measure food status at the household level, not at the individual level. Parents may be experiencing food insecurity at the expense of protecting their children, which may have distorted the results.

Future studies should focus on overcoming barriers to enrollment in SNAP and other strategies to reduce food insecurity in this high-risk population. Given the large numbers of families who expressed interest in enrolling in SNAP yet were unable to be reached by phone, examining the efficacy of on-site (i.e., during the weight management clinic appointment) support for SNAP matriculation may be of value. Further, because there was a sizable number of families who were interested in SNAP but were ineligible for matriculation because they were over the income criterion or already enrolled, investigating the feasibility of on-site food banks should be considered.

Consistent with the food insecurity–obesity paradox, food insecurity was highly prevalent in families whose children attended a pediatric weight management clinic. Although many of these families were not enrolled in SNAP, which may offset food insecurity, providing direct phone-based assistance to enroll in this program did not increase matriculation. Research into other strategies to address food insecurity in patients attending pediatric weight management clinics is needed.

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