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ORIGINAL PAPER

Screening for Food Insecurity in Pediatric Clinical Settings: Opportunities and Barriers

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Abstract Food insecurity is a serious health concern among children in the United States with 15.3 million children living in food insecure households. The American Academy of Pediatrics recommends that pediatricians screen for food insecurity at health maintenance visits as identifying children at risk is a crucial step in the amelioration of food insecurity. Two surveys were administered in a Midwest pediatric clinic. A cross-sectional survey was electronically distributed to pediatric providers to assess perceptions of food insecurity among patients, provider readiness to conduct food security screenings, and barriers to conducting those screenings. A cross-sectional caregiver survey was administered to assess demographics, household food security status, participation in nutrition assistance programs, and barriers to getting enough food to eat. Descriptive statistics and odds ratios were calculated. Eighty-eight percent of physicians believe that food insecurity is a challenge for some of their patients. Only 15 % of providers reported screening for food insecurity, while 80 % were willing to screen. Physicians were most concerned with knowing how to handle a positive screen. Among caregivers, 57 % screened positive for food insecurity. Those experiencing food insecurity were more likely to be non-white, participate in SNAP and to feel discomfort towards the idea of talking to a doctor or nurse about food needs. Caregivers reporting food insecurity were significantly less likely to have a personal vehicle. Effective food insecurity screening requires addressing caregiver and health provider barriers in order to increase the likelihood of identifying households most at risk.

Keywords Food insecurity · Food insecurity screening · Pediatrics

Introduction

Food insecurity is being increasingly recognized as a health crisis in the United States. The USDA defines a food insecure household as one that is "uncertain of having, or unable to acquire, enough food to meet the needs of all their members because they had insufficient money or other resources for food [1]." In 2014, 43 million Americans lived in food insecure households, over 15 million of whom were children. Greater than one in five households with children experience food insecurity [2]. Food insecurity is highest among households with children as well as single parent households, African American households, Hispanic households, households at or below the poverty level, and households in urban or rural areas [1, 2].

Food insecurity has serious immediate and long term consequences for children. Children living in food insecure households have more cognitive, emotional, and physical health challenges throughout their lives [1, 3–5]. Children experiencing food insecurity tend to eat few fruits and vegetables, putting them at increased risk of chronic disease [6] and obesity [7]. To minimize the health impacts of food insecurity, the American Academy of Pediatrics recommends screening for household food insecurity at pediatric health maintenance visits [8].

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In 2012, 17 % of Missouri's households were food insecure, ranking Missouri sixth highest for household food insecurity in the United States [9]. Household food insecurity in the city of St. Louis far outpaces that of the state, with 26 % of St. Louis city households considered food insecure. The Danis Pediatric Center (DPC) at SSM Health Cardinal Glennon Children's Hospital serves a racially and economically diverse pediatric patient population in St. Louis. Danis Pediatrics providers serve approximately 8000 patients in the St. Louis metropolitan area with 19,500 patient visits each year. Medicaid covered 80 % of DPC patients in 2015. The majority of DPC patients identify as Black (89 %), while 3.2 % identified as Hispanic/Latino and 7.8 % identify as white.

Saint Louis University researchers and clinicians conducted an assessment of DPC pediatric health care providers and caregivers. The objectives of this study were to (1) identify physician readiness to screen caregivers and the physician's perceived barriers to conducting a food insecurity screening and (2) assess the prevalence of food insecurity among patients' households, the perceived food environment and the barriers to getting enough food to eat.

Methods

Patients and Methods

This study was approved by the Saint Louis University Institutional Review Board and SSM Research Business Review.

A survey was developed to assess health care providers' perceptions of food insecurity among their pediatric patients and households, their readiness to conduct food in security screening, and their perceived barriers to conducting food insecurity screening. An email was sent to all physicians from the Saint Louis University Department of Pediatrics including DPC providers. To be eligible for participation the physician had to be part of the Department of Pediatrics, regardless of specialty. The email introduced the study and asked providers to complete a brief survey administered through Qualtrics. A follow-up email was sent to all providers 1 week later. Descriptive analysis was used to analyze the data.

A caregiver survey was developed to assess demographics, including caregiver education level, household income, caregiver's gender and race/ethnicity, number of children in the household, and zip code. The survey also assessed household food security status, participation in nutrition assistance programs including Women Infants and Children (WIC), Supplemental Nutrition Assistance Program (SNAP), the National School Lunch Program (NSLP), and food pantries, perception of the neighborhood food environment, and barriers to getting enough food to eat (e.g., transportation). Household food insecurity was measured using the first two questions from the 18-item U.S. Household Food Security Survey. This two-item screen was validated by Hager et al., who reported a sensitivity of 97 % and specificity of 83 % for identifying an affirmative response to questions one and/or two [10].

The research team recruited caregiver participants in the DPC waiting room. Research team members approached caregivers, explained the purpose of the survey, and asked them to participate. Pen and paper surveys were administered in the waiting room. Caregivers were eligible to participate if they had a child greater than 1 year of age in their care and the child was a DPC patient. Caregivers with a child less than 1 year of age were excluded due to a second study focusing on the first year of care simultaneously being conducted. The research team conducted surveys Monday through Friday between 8:30 a.m. and 12 p.m. from July 7, 2015–July 23, 2015. Caregiver survey data was entered into SPSS for data analysis. Descriptive statistics were generated and odds ratios were calculated.

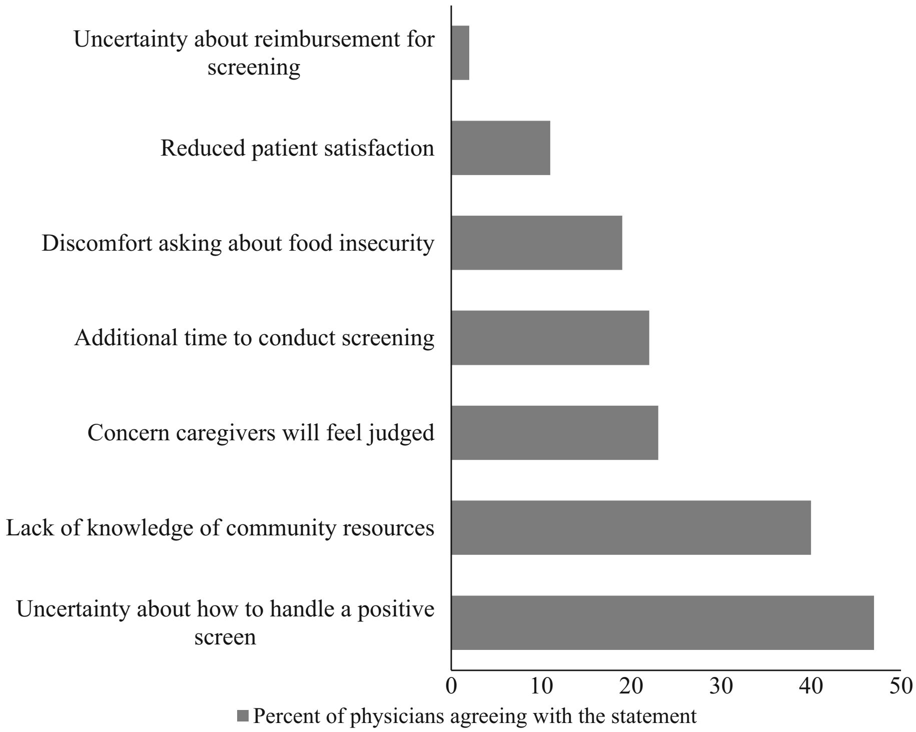
Results

Physicians

Sixty-seven physicians completed the Qualtrics survey, resulting in a 54 % response rate. The majority of physicians were in general pediatrics (20 %), emergency medicine (14 %), cardiology (9 %), neonatology (9 %), or pediatric intensive care (8 %). The majority of physicians (88 %) believe that food insecurity is a challenge for some of their patients with most physicians estimating that between 10 and 40 % of patients' households experience food insecurity. Fifteen percent of pediatricians said that they currently screen patients for food insecurity while 80 % responded that they would be willing to screen patients.

Physicians reported being most concerned about how to handle a positive screen for household food insecurity and a lack of knowledge about community resources to help children and families experiencing food insecurity. See Fig. 1. Another concern expressed by participants was that screening for food insecurity is not an appropriate use of time during emergency or specialty evaluations; those providers felt both ill equipped to "ask about something I don't know much about how to help them with" and concerned that the questioning might open "Pandora's box about their lack of other things." Others noted this type of screening would be best done by primary care providers or a registered nurse. Two participants noted that there are not enough supportive resources to be able to react to a positive

Fig. 1 Physicians concerns about screening for household food insecurity



screen. One physician noted, “we are tremendously understaffed in terms of social services. We have one social worker for a clinic that has ~15,000 visits per year. This fact seems overlooked.”

Caregiver Demographics

Two hundred twelve caregivers completed the survey. Forty-six caregivers refused to participate and nine did not complete the entire survey. The median caregiver age was 31 years of age. See Table 1. The majority of caregivers were female (90 %), employed (49.5 %), and had some college (44.3 %). There was a wide household income range with nearly a quarter of household’s reporting income less than $10,000. One-fifth of incomes were greater than $35,000. Half of caregivers reported participating in WIC and half reported participating in SNAP. One-third of caregivers received SNAP benefits in at least ten of the past twelve months.

Household Food Security Status

A two item validated screener was used to assess household food security [10]. The first item asked, “over the last 12 months did you worry there would not be enough food and there was no money to buy more?” Nearly one-fifth (17.5 %) of caregivers reported this was often true while 37.3 % reported this as sometimes true. The second question asked, “over the last 12 months, did food run out and you did not have money to buy more?” Fifteen percent of caregivers reported this was often true and 30 % reported this was sometimes true. Considering affirmative responses to one or both questions (response of often true or sometimes true), 57.1 % of the sample reported some level of food insecurity. Table 2 presents the determinants associated with food insecurity. Compared to caregivers considered food secure, the odds of being non-white (OR 3.54; 95 % CI 1.70, 7.40) and the odds of receiving SNAP benefits (OR 3.20; 95 % CI 1.79, 5.64) were significantly greater among caregivers experiencing food insecurity.

Nearly two-thirds of caregivers said they would be comfortable talking with their doctor about food needs while 17.9 % reported they would be somewhat or very uncomfortable talking to a doctor about food needs. When asked about speaking to a nurse about food needs, 18.9 % of caregivers said they would feel somewhat or very uncomfortable. Compared to food secure caregivers, the odds of being uncomfortable talking with a doctor about food needs was 2.72 times greater (95 % CI 1.20, 6.15) among caregivers with food insecurity. Similarly, the odds of experiencing some level of discomfort towards the idea of speaking with a nurse about household food needs was 3.99 times greater (95 % CI 1.65, 9.61) among caregivers reporting household food insecurity compared to caregivers who were food secure.

Table 1 Pediatric caregiver demographic characteristics

	Count (n = 212)	Percent
Gender		
Female	191	90.1
Male	20	9.4
Median age	31	–
Race		
White	40	18.9
Black or African American	160	75.5
Asian	5	2.4
Native Hawaiian or Pacific Islander	1	0.5
Hispanic	3	1.4
Other	2	0.9
Employment status		
Employed for wages	105	49.5
Self-employed	8	3.8
Stay at home parent	35	16.5
Unable to work	14	6.6
Unemployed	23	10.8
Retired	3	1.4
Student	23	10.8
Food assistance participation		
WIC	104	49.7
SNAP	109	51.4
School breakfast	42	19.8
School lunch	51	24.1
Head start	20	9.4
Food pantry or ministry	22	10.4
Food security status		
Food secure	88	42.1
Food insecure	121	57.9
Household income		
0–9999	56	26.4
10,000–14,999	19	8.9
15,000–19,999	23	10.8
20,000–24,999	18	8.5
25,000–34,999	22	10.4
≥35,000	45	21.2
Do not know	29	13.7
Education level		
Less than high school	22	10.4
High school diploma or GED	53	25
Some college	94	44.3
College graduate	40	18.9

Reasons Caregivers Report not Having the Kinds of Food They Want to Eat

Caregivers were also asked why they do not have the foods they would like to eat. Approximately 40 % reported that they do not have enough money to buy the food they want to eat. In addition to the reasons listed in Fig. 2, transportation was listed as a key barrier to not having the types of food they want to eat. Seventy-five percent of caregivers reported a major mode of transportation was their own car. Other prominent modes of transportation included use of someone else's car (6.6 %), someone else drives them (18.9 %), they walk (10.4 %), or they take the bus (17.5 %). Listing a personal vehicle as the primary mode of transportation was also related to food security status. Compared to caregivers who were food secure, the odds of not listing a personal vehicle as the primary form of transportation was 3.25 times greater among caregivers experiencing food insecurity (OR 3.25, 95 % CI 1.59, 6.64).

Discussion

Our results show that food insecurity within the DPC patient population is a serious concern. More than one in two DPC caregivers surveyed reported living in a food insecure household. Saint Louis University pediatric physicians are aware that food insecurity is a challenge for their patients and many are willing to screen for household food insecurity. Still, challenges exist in identifying and addressing food insecurity in pediatric clinical settings.

Barriers to systematic screening of food insecurity in clinical settings are products of caregiver, physician, and regional food safety net infrastructure. Success for screening programs in pediatric settings relies heavily on caregiver participation. Our data indicate that some caregivers experiencing household food insecurity are less comfortable discussing food needs with a health care provider. However, little is known about the reasons for caregiver discomfort with food insecurity disclosure in clinical settings. There has been extensive study of patient disclosure for other sensitive topics such as intimate partner violence (IPV) which have identified stigma and patient-provider trust as factors affecting disclosure [11, 12]. Based on these findings, it is possible that caregivers are uncomfortable discussing food insecurity with healthcare providers due to a fear of stigmatization or concern about having their children removed from their care as a consequence of their disclosing food insecurity [13]. Another factor may be that caregivers do not view pediatricians as resources for addressing food insecurity because they do not view it as a medical problem that their doctor could address. In another study examining IPV disclosure, women felt either as though they could deal with the problem themselves or that their doctors would not be able to help [14]. Finally, if caregivers perceive struggling to feed their family as a personal obligation, they may

Table 2 Associations between caregiver characteristics and food insecurity status

	OR	CI (95 %)	*p*
Race (non-white)			
White	1.00 (ref)	–	–
Non-white	3.54	1.70–7.40	0.001
SNAP participant			
No	1.00 (ref)	–	–
Yes	3.18	1.79–5.64	<0.001
Uncomfortable talking to doctor about food needs			
No	1.00 (ref)	–	–
Yes	2.72	1.20–6.15	0.017
Uncomfortable talking to nurse about food needs			
No	1.00 (ref)	–	–
Yes	3.99	1.65–9.61	0.002
Primary transportation is a personal vehicle			
Yes	1.00 (ref)	–	–
No	3.25	1.59–6.64	0.001

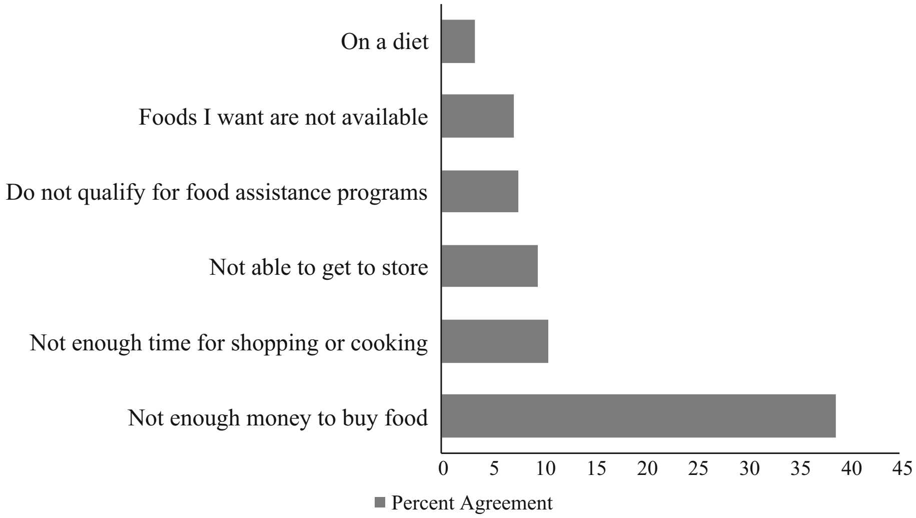


Fig. 2 Cargivers' reasons for not having the kinds of foods the household wants to eat

not think to ask pediatricians for assistance [14]. In light of these potential barriers, safe spaces for caregivers to disclose can be created through use of thoughtful screening techniques. In the context of IPV, patient comfort improves with repeated screening over time by responsive health care providers [11]. Likewise, routine screening for food insecurity and the subsequent normalization of this process may present opportunities for changing patients' expectations of healthcare providers and systems.

Health care providers on the forefront of food insecurity screening in the clinical setting identified provider training as critical to physician buy-in [15, 16]. As noted, providers surveyed for our study expressed discomfort discussing food insecurity with caregivers often due to uncertainty regarding local food safety net resources. The Oregon Health and Science University and the Oregon Childhood Hunger Initiative developed a continuing education training course [17] that consists of six training modules that cover food insecurity measurement and predictors, food access, relationship between food insecurity and child health, food insecurity screening, and potential intervention strategies. Additionally, the Child Hunger Coalition developed a screening algorithm that guides providers from a positive food insecurity screen to helping patients identify community resources [18]. Training and algorithm tools have increased the effectiveness of food insecurity screening [19] and have the potential to increase provider self-efficacy to screen; thereby normalizing food insecurity screening for providers and caregivers.

Although our study did not look at regional infrastructure to address food insecurity, households receiving SNAP were more likely to be food insecure and 10 % of households used food pantry services. Regional infrastructure influences the implementation of effective screening programs. In 2011, Kaiser Permanente of Colorado piloted a program in partnership with Colorado's statewide hunger advocacy group, Hunger Free Colorado. Patients with a positive food insecurity screening were referred to Hunger Free Colorado personnel who determined eligibility for food assistances programs, assisted with applications for federal nutrition programs, and provided education on resources in the community [17]. Similarly, Cincinnati Children's Hospital Medical Center (CCHMC) and Freestore Foodbank of Southwest Ohio partnered for the Keeping Infants Nourished and Developing (KIND) program. The partnership used pediatric well-visits to identify food insecure patients then referred those who screened positive to Freestore Foodbank [15]. These two examples highlight the importance of strong local or regional food safety net infrastructure. Future studies should consider how the regional food safety net infrastructure affects the effectiveness of food insecurity screening programs in clinical settings.

Our study raises important concerns about food insecurity screening in pediatric clinical settings. Our study does have limitations. Assessment data was collected from a convenience sample of caregivers during July. It is possible that those who chose not to participate in the survey were different from those who chose to participate. For example, 57 % of caregivers surveyed reported household food insecurity which is higher than St. Louis City's food insecurity rate. It could be that those experiencing food insecurity were more likely to participate in the survey than those who were not experiencing food insecurity. Household food insecurity for households with children increases during the summer months. Because we collected data during the summer, our data may reflect an elevated rate of food insecurity because children do not participate in school meals programs at the same frequency as they would during the school year. On the other hand, caregivers with infants were excluded from our assessment due to a co-occurring study. It is possible that food insecurity among DPC households is greater when households with infants are considered.

Conclusion

The 2015 recommendation by the American Academy of Pediatrics to conduct food insecurity screening in pediatric clinical visits is an important step in identifying children at-risk of food insecurity. Effective food insecurity screening requires addressing caregiver and healthcare provider barriers in order to increase the likelihood of identifying the households that are most at risk.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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