

## Food Insecurity in the Food Allergic Population: A Work Group Report of the AAAAI Adverse Reactions to Foods Committee



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**Food allergies affect 32 million Americans. Restricted diets due to food allergies can be difficult to maintain especially when the household is food insecure. Food insecurity is defined as the inability to acquire food for household members due to insufficient money or resources for food. The COVID-19**

**pandemic has caused many people to face food insecurity for the first time with Latinx, Native American, and Black communities disproportionately affected. Because of the increase in food insecurity, this work group developed a survey regarding food insecurity screening. This survey was sent out to a random**

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*Abbreviations used*

AAAAI- American Academy of Allergy Asthma & Immunology  
 AAP- American Academy of Pediatrics  
 CI- Confidence interval  
 EHR- Electronic health record  
 ER- Emergency room  
 FA- Food allergy  
 FARE- Food Allergy Research Education  
 FI- Food insecurity  
 HFSS- Household Food Security Survey  
 NCA- National Confectioners Association  
 NIH- National Institute of Health  
 SNAP- Supplemental Nutrition Assistance Program  
 USDA- United States Department of Agriculture  
 WIC- Women, Infants, and Children

**sample of American Academy of Allergy Asthma & Immunology members to assess food insecurity knowledge and practices. The majority of survey participants did not routinely screen their patients for food insecurity. The biggest barrier identified to screening was lack of knowledge of how to perform a screen and resources available when a patient screened positive. This work group report provides guidance on how to implement and perform a food insecurity screen, including federal resources and assistance programs. © 2021 American Academy of Allergy, Asthma & Immunology (J Allergy Clin Immunol Pract 2022;10:81-90)**

**Key Words:** Food allergy; Food insecurity; Health disparities; Nutrition; COVID-19 pandemic; Food security; Food access; Social determinants of health; Food assistance programs

IgE-mediated food allergy (FA) is a potentially life-threatening condition, affecting approximately 32 million Americans including 10.8% of adults<sup>1</sup> and 7.6% of children<sup>2</sup> in the United States. The current standard of care for FA is avoidance of allergenic foods. This presents several challenges for many patients as FA-related dietary restrictions can impose significant financial<sup>3</sup> and health burdens<sup>4</sup> associated with reduced quality of life.<sup>5</sup> Furthermore, both adults and youth with FA are at risk of emergency room (ER) utilization related to food-induced anaphylaxis.<sup>1</sup> This medical burden disproportionately affects families and individuals with an FA who have limited finances.<sup>3</sup> For instance, compared with children with FA living in higher income households, pediatric patients in the lowest income stratum experience 2.5 times the number of ER visits and related hospitalization costs.<sup>3</sup>

Food insecurity (FI), as defined by the United States Department of Agriculture (USDA), “means that households were, at times, unable to acquire adequate food for one or more household members because they had insufficient money and other resources for food.”<sup>6</sup> The same lack of resources is classified as very low FI when food intake is reduced and eating patterns are altered at any time during the year. Given the higher food costs associated with allergen-free foods,<sup>7,8</sup> food insecure households with 1 or more individuals with FA are significantly challenged with affording these specialty items. Although the current prevalence of food insecure individuals with FA in the United States is unclear, Johns et al<sup>9</sup> reported

that approximately 21% of children with FA in the United States experienced low FI.

FI can be long term or temporary and is influenced by several factors including income, employment, race and ethnicity, and disability.<sup>10-12</sup> In 2018, FI rates were the lowest in more than 20 years, with 37 million food insecure Americans. Because of the COVID-19 pandemic causing an economic collapse, many people are facing FI for the first time, and the number of food insecure individuals is projected to be over 50 million, with Latinx, Native American, and Black communities being disproportionately affected.<sup>13,14</sup> Although there are many factors causing this disparity, it can be in part attributed to structural racism that sustains a disparate food system in the United States.<sup>14-18</sup> This scenario has occurred previously at the regional level and could continue to occur in the future with natural disasters and other economic downturns.

In part due to poorer nutrition and at times food being unavailable, several other chronic diseases have been associated with FI,<sup>19,20</sup> including diabetes, hypertension, and cardiovascular disease. FI is linked with poorer chronic disease management, partly due to limited personal finances to cover household food and medication expenses.<sup>21</sup> In addition, the FI-obesity paradox is a well-known phenomenon affecting certain populations in the United States.<sup>22,23</sup> Although the etiology of FI-obesity syndrome is complex, contributing factors include chronic intake of high calorie and low nutrient-dense foods, sedentary behaviors, lack of safe parks,<sup>24</sup> and insufficient skills or resources (grocery stores with healthy food choices) needed to support healthy eating.<sup>22,25</sup> FI also has numerous negative influences on children’s health,<sup>26</sup> which can increase the risk of developing chronic diseases through adulthood.<sup>27</sup> Youth with FI are more likely to have asthma, energy imbalance/obesity, hypertension, eczema, untreated dental caries, poor academic achievement, and behavioral problems.<sup>26,27</sup>

The psychosocial impact of FI is well researched, and studies consistently demonstrate that intermittent to consistent FI uniquely impacts the emotional, behavioral, social, and academic functioning of children and young adults.<sup>28</sup> Preschoolers and school-aged children who experience FI are more likely to demonstrate internalizing behaviors, such as anxiety and depressed mood, as well as externalizing behaviors such as hyperactivity, aggression, and poor self-control.<sup>29-31</sup> The impact of FI on adolescents and young adults is directly related to mental health with an increased likelihood of clinically significant anxiety, depression, dysthymia, and suicidal ideation.<sup>32-34</sup> Across age groups, children from families with FI are more likely to experience academic challenges such as lower reading and mathematics scores, absenteeism, tardiness, suspension, and failing a grade level.<sup>29,35</sup> Although this relationship is more complex in adults due to confounding factors such as socioeconomic status, race, gender, and physical health, most studies suggest that adults who experience FI are at greater risk for poor mental health outcomes.<sup>36-39</sup> Other studies suggest that individuals with FI are at risk for severe mental illness and are less likely to be able to afford mental health care.<sup>12</sup>

Several health care organizations recommend routine clinician screening for FI as part of standard patient care.<sup>40</sup> In a cross-sectional analysis of survey responses from approximately 5000 physician practices in the United States, Frazee et al<sup>41</sup> reported that approximately one-third of clinicians systematically screen for FI in their medical practice. However, a paucity of research

**TABLE I.** AAAAI member demographics

Characteristic	AAAAI respondents (n = 59), n (%)*
<b>Clinical position</b>	
Allergist	41 (69.5)
Advanced practice registered nurse/physician assistant	7 (11.9)
Fellow in training/resident	6 (10.2)
Dietician	1 (1.7)
Social worker	2 (3.4)
Other	2 (3.4)
<b>Sex</b>	
Female	41 (69.5)
Male	18 (30.5)
<b>Race</b>	
White	41 (69.5)
Asian	10 (16.9)
Hispanic or Latino	2 (3.4)
Black	0 (0)
Other	3 (5.1)
Multiracial	3 (5.1)
<b>Practice location</b>	
Urban	15 (26.3)
Suburban	27 (47.4)
Rural	3 (5.3)
Multiple areas	12 (21.1)
<b>Region of practice</b>	
Northeast	12 (21.8)
South	14 (25.5)
Midwest	11 (20.0)
West	10 (18.2)
Canada	8 (14.5)
<b>Type of practice</b>	
Hospital-based (academic)	23 (40.4)
Private practice	20 (35.1)
Group practice	10 (17.5)
Hospital-based (nonacademic)	4 (7.0)

AAAAI, American Academy of Allergy Asthma & Immunology.  
\*Number of observations available for each variable differs because of missing data.

has assessed the prevalence of this type of assessment in clinical settings. To address this gap, this study aims to evaluate FI screening practices among allergy clinicians in the United States and describe related resources to reduce FI affecting patients with FA.

**METHODS**

The Food Insecurity Work Group is composed of members of the American Academy of Allergy Asthma & Immunology (AAAAI) serving on the Adverse Reactions to Foods Committee and members of the Center for Food Allergy and Asthma Research. This work group developed the FI survey, which was reviewed and approved by the Practice, Diagnostics and Therapeutics Committee. The survey was distributed by AAAAI to a random sample of 937 members that was representative of 20% of the following membership categories: Fellows, Honorary Fellows, Members, In-Training Members, Residents, and Allied Health Members. Responses were received from

**TABLE II.** Demographics of AAAAI member patients

Characteristic	AAAAI respondents	
	N (%)	95% CI
<b>Type of patient (n = 56)</b>		
Only children	6 (10.7)	4.0-21.9
Only adults	2 (3.6)	0.4-12.3
Both	48 (85.7)	73.8-93.6
<b>Race of patients (n = 57)</b>		
Mean (SE)		95% CI
% White	63.4 (2.9)	57.6-69.2
% Black	14.8 (1.8)	11.2-18.5
% Hispanic	12.1 (1.8)	8.6-15.7
% Asian	7.1 (0.8)	5.5-8.8
% Other	2.5 (0.7)	1.0-3.9
<b>Adult insurance breakdown (n = 47)</b>		
% Private	58.7 (3.9)	50.9-66.5
% Public	35.6 (3.7)	28.1-43.1
% Uninsured	2.8 (0.5)	1.8-3.8
% Other	0.6 (0.3)	-0.1-1.3
% Not sure	2.3 (2.1)	-2.0-6.6
<b>Child insurance breakdown (n = 51)</b>		
% Private	54.1 (4.1)	45.9-62.3
% Public	38.2 (3.8)	30.5-45.9
% Uninsured	1.7 (0.5)	0.7-2.6
% Other	0.2 (0.1)	-0.1-0.4
% Not sure	5.9 (3.3)	-0.8-12.6

AAAAI, American Academy of Allergy Asthma & Immunology; CI, confidence interval; SE, standard error.

practicing allergists, immunologists, fellows in training, residents, and allied health members. The survey was open from September 15 to October 24, 2020. It consisted of 22 questions that included the demographics of the respondent, their practice, and the demographics and payer information of their patients. Questions were asked regarding each participant's knowledge and/or belief about FI. Respondents who are currently screening for FI were asked how they are performing the screen. Finally, respondents who are not currently screening for FI were asked why screening is not being performed and what resources would be necessary to perform screening in their practice setting.

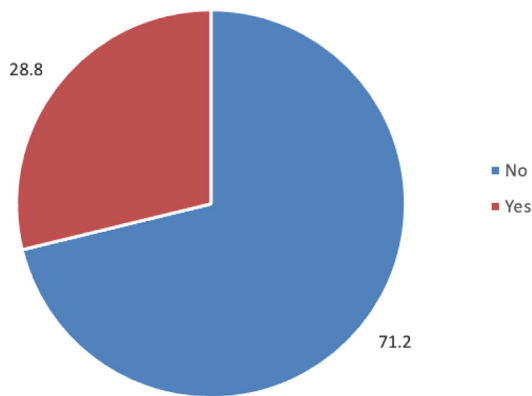
Frequencies and percentages with 95% confidence intervals (CIs) were calculated for categorical responses. The CIs were calculated using the Clopper-Pearson method. Means and 95% CIs were calculated for continuous responses using Taylor series linearization. Bivariate associations (practice type, practice location, 75% or more adult or pediatric patients with public insurance) with current FI practices were tested with  $\chi^2$  tests.

**RESULTS**

**Demographics**

A total of 59 responses were collected, resulting in a 6.3% survey completion rate. Although some respondents skipped questions, only surveys that were submitted were analyzed. If the survey was started but not submitted, they were not included. Table I summarizes the demographics of the AAAAI respondents. The majority of respondents were allergists (69.5%), but there was a mixture of other health care professionals including advanced practice providers (11.9%), fellows-in-training or residents (10.2%), dietitians (1.7%), and social

### Do you know if any of your patients have faced food insecurity in the past 6 months?



**FIGURE 1.** Do you know if any of your patients have faced food insecurity in the past 6 months?

workers (3.4%). Most respondents identified as female (69.5%) and either White (69.5%) or Asian (16.9%). Overall, the majority of participants practiced in either suburban (47.4%) or urban (26.3%) areas throughout the United States, and a minority in Canada (14.5%). Finally, the majority of respondents worked in hospital-based (academic) practices (40.4%) and private practices (35.1%), but others were a part of group practices (17.5%) and hospital-based (nonacademic) practices (7.0%), providing a fairly even distribution of practice types. Because only practice zip codes were collected, it is possible that some respondents came from the same practice as the survey did not capture multisite practice location information.

The majority of practitioners served both pediatric and adult patients (85.7%), whereas 10.7% served only pediatric patients and 3.6% served only adult patients (Table II). Reported patient demographics (Table II) were on average White (63.4%), Black (14.8%), Hispanic/Latinx (12.1%), Asian (7.1%), and Other (2.5%). Insurance coverage for most patients was either private (adult 58.7%, child 54.1%) or public (adult 35.6%, child 38.2%); however, 2.8% of adults and 1.7% of pediatric patients were uninsured on average.

### Current food insecurity practices

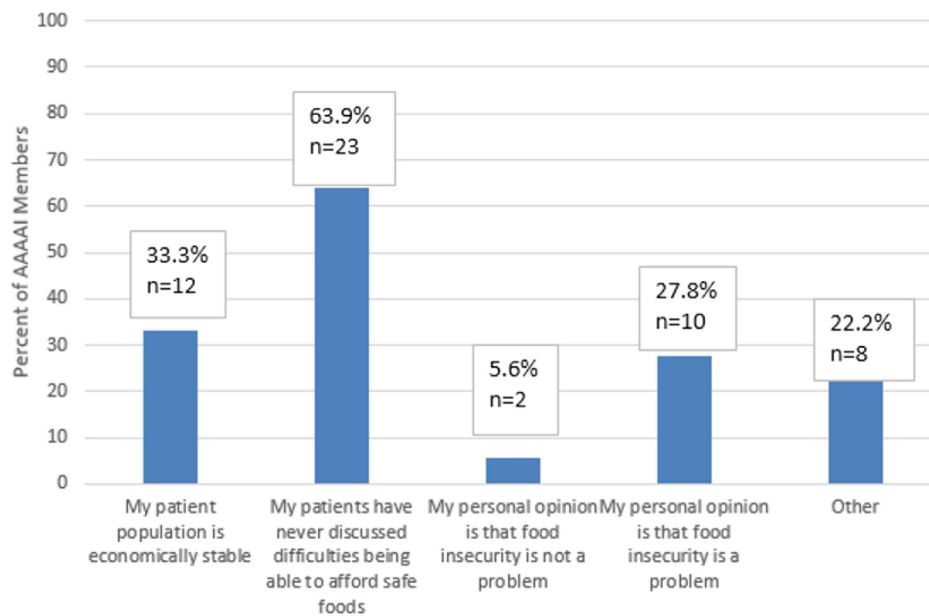
Overall, 71.2% of respondents were unaware of whether their patients with FA faced FI within the past 6 months (Figure 1). The majority of respondents did not routinely screen their patients for FI (75.5%), but 15.1% reported screening patients with FA and 9.4% reported screening all patients (Table III). Of those who did not screen for FI, the biggest barrier was not having enough knowledge about FI to screen patients (70%). Other obstacles were not having resources to offer FI patients (40%) and not feeling comfortable with having this discussion (12.5%). When asked if FI is a problem for their FA patients (Figure 2), 63.9% reported that their patients have never discussed struggling to afford safe foods, 33.3% reported that their patient population is economically stable, and 27.8% reported that they did not think FI was a problem for their patients

**TABLE III.** Current food insecurity practices

Practice	AAAAI respondents	
	N*	% (95% CI)
<b>Routinely screens for food insecurity (n = 53)</b>		
Yes—all patients	5	9.4 (3.1-20.7)
Yes—only patients with food allergies	8	15.1 (6.7-27.6)
No	40	75.5 (61.7-86.2)
<b>Resources available for food insecure and allergic patients (n = 53)</b>		
Allergen-free food banks	3	5.7 (1.2-15.7)
General food banks	35	66.0 (51.7-78.5)
I don't know	15	28.3 (16.8-42.3)
<b>Thinks COVID-19 has increased food insecurity in patient population (n = 51)</b>		
Yes	29	56.9 (42.2-70.7)
No	5	9.8 (3.3-21.4)
Unsure or unaware	17	33.3 (20.8-47.9)
<b>Interested in implementing food insecurity assessments into practice (n = 50)</b>		
Yes	30	60.0 (45.2-73.6)
No	4	8.0 (2.2-19.2)
Not sure	16	32.0 (19.5-46.7)
<b>Types of food insecurity tools preferred (select all) (n = 45)</b>		
Validated questionnaires	34	75.6 (60.5-87.1)
Tips on including food security in conversation	35	77.8 (62.9-88.8)
Guides for structural clinical interviews	20	44.4 (29.6-60.0)
<b>Types of food insecurity resources preferred (select all) (n = 46)</b>		
Electronic educational resources	29	63.0 (47.5-76.8)
Informational pamphlets	36	78.3 (63.6-89.1)
List of local allergen-free and general pantries	39	84.8 (71.1-93.7)
<b>Barriers to screening for food insecurity (select all) (n = 40)</b>		
Not a problem for my patients	3	7.5 (1.6-20.4)
Not enough time	4	10.0 (2.8-23.7)
No resources to refer to food insecure patients	16	40.0 (24.9-56.7)
Not comfortable having this discussion	5	12.5 (4.2-26.8)
Not enough knowledge about food insecurity to screen my patients	28	70.0 (53.5-83.4)
Other barriers	6	15.0 (5.7-29.8)

AAAAI, American Academy of Allergy Asthma & Immunology; CI, confidence interval.

\*Number of observations available for each variable differs because of missing data.



**FIGURE 2.** Do you think food insecurity is a problem for your food allergy patients? (n = 36). AAAAI, American Academy of Allergy Asthma & Immunology.

(Table III). Over half (56.9%) of respondents believed that COVID-19 has increased FI in their patient population, whereas 9.8% did not think so, and 33.3% were unsure.

Among all respondents, 60.0% were interested in implementing FI screenings into their practices, 8.0% were not interested, and 32.0% were undecided (Table III). Respondents reported wanting tips on including FI in conversations with their patients (77.8%), validated FI screening questionnaires (75.6%), and guides for structured clinical interviews (44.4%). When asked what resources are available in their communities for FI and FA patients, most providers were aware of general food banks (66.0%), a few knew of allergy-friendly food banks (5.7%), but a quarter (28.3%) did not know of any available resources. Finally, providers reported wanting a list of local allergen-free and general pantries (84.8%), FI informational pamphlets (78.3%), and electronic FI educational resources (63.0%).

## DISCUSSION

This survey is the first to assess FI knowledge and practices amongst allergy providers across North America. Overall, we found that 7 of 10 respondents did not know if their patients have faced FI within the past 6 months because three-quarters did not screen their patients for FI. Barriers to FI screening included 7 of 10 providers not having enough knowledge and 4 of 10 were not aware of resources for their patients. Although there was a clear lack of knowledge about FI, over half of respondents were interested in implementing screenings into their practices.

### Limited FI screening

FA places a unique strain on food insecure families, as their food options are further limited. The rate of FI in children with FA is around 20% to 22%.<sup>9,42</sup> Allergies to common foods can

increase the risk of FI, as a previous study showed that children allergic to both cow's milk and egg were more likely to be FI. Racial differences are also present among patients with FA and FI, where Black and Latinx patients with FA were more likely to experience greater FI than their White counterparts.<sup>42</sup> Children with FA also reported having similar or greater difficulties accessing care and obtaining allergen-friendly foods than children with other chronic diseases.<sup>9</sup>

Poor access to allergy-friendly food, medication, and health care may lead to increased morbidity, particularly among minority children, due to compromised nutrition and delayed treatment of allergic reactions.<sup>9</sup> The combination of FA and FI also confers an increased risk for anaphylaxis. This may be partly due to dependence on food assistance programs with limited choices of safe foods, thereby increasing the risk of an allergic reaction from accidental ingestion of allergens.<sup>43</sup> Humphrey et al<sup>44</sup> found an association between living in a food desert (an area that has limited access to affordable and nutritious food) and a child having a diagnosis of FA. Although FI was not included in the analysis of their study, these findings suggest that food deserts can contribute to FI because patients with FA may be unable to make safe, affordable, and convenient food purchases close to home. Although research is limited, other specialty clinics also found that FI was higher in those with chronic disease.<sup>45</sup>

### Screening implementation procedures

**Preparation.** Recognition of the widespread impact of FI and the necessity of universal screening across specialties is a crucial first step in practice implementation. Staff should understand the impact of FI on health and well-being, as well as effective interventions. This work group report may serve as an educational tool, in addition to implementation toolkits that are available for both pediatric and adult populations from the American

TABLE IV. Food security guides and tools for health care professionals

Guide	Guide URL	Tools referenced	Tool description	Tool URL
American Academy of Pediatrics <i>Addressing Food Insecurity: A Toolkit for Pediatricians</i>	<a href="https://frac.org/wp-content/uploads/frac-aap-toolkit.pdf">https://frac.org/wp-content/uploads/frac-aap-toolkit.pdf</a>	Hunger Vital Signs	Two-item survey validated in all age groups	<a href="https://www.childrenshealthwatch.org/wp-content/uploads/EH_Pediatrics_2010.pdf">https://www.childrenshealthwatch.org/wp-content/uploads/EH_Pediatrics_2010.pdf</a>
AARP <i>Implementing Food Security Screening and Referral for Older Patients in Primary Care</i>	<a href="https://www.aarp.org/content/dam/aarp/aarp_foundation/2016-pdfs/FoodSecurityScreening.pdf">https://www.aarp.org/content/dam/aarp/aarp_foundation/2016-pdfs/FoodSecurityScreening.pdf</a>			
United States Department of Agriculture <i>Guide to Measuring Household Food Security, Revised 2000</i>	<a href="https://www.fns.usda.gov/guide-measuring-household-food-security-revised-2000">https://www.fns.usda.gov/guide-measuring-household-food-security-revised-2000</a>	US Household Food Security Survey (HFSS) Module	18-item tool with 3-stage design	<a href="https://www.ers.usda.gov/media/8271/hh2012.pdf">https://www.ers.usda.gov/media/8271/hh2012.pdf</a>
		US Household HFSS Six-Item Short Form	Abbreviated 6-item tool	<a href="https://www.ers.usda.gov/media/8282/short2012.pdf">https://www.ers.usda.gov/media/8282/short2012.pdf</a>

Academy of Pediatrics (AAP)<sup>46</sup> and the American Association of Retired Persons, referenced in Table IV.<sup>47</sup> The AAP policy statement on promoting food security for all children is another excellent resource.<sup>48</sup>

**Choosing a screening tool.** Most validated food security screening tools are adaptations of the US Household Food Security Survey (HFSS) module, an 18-item 3-stage screening survey distributed to 40,000 households nationally each December. Although considered the gold standard due to its practicality on a national scale, scoring the HFSS can be laborious and time-consuming to interpret.<sup>49</sup> Consequently, numerous modified versions have been validated, including a 6-item short form<sup>50</sup> and a 9-item self-administered survey<sup>51</sup> for adolescents and adults.

Perhaps the most widely used, universally validated, and practical adaptation of the HFSS for a clinic setting is the Hunger Vital Signs, a 2-item survey developed in 2010.<sup>52</sup> A family is identified as at risk if they answer “often true” or “sometimes true” to either item (Figure 3). The Hunger Vital Signs is validated in children, adolescents,<sup>53</sup> and adults.<sup>52,54</sup> It is available in 11 languages on the Children’s Health Watch website and may be administered orally, in paper form, or incorporated into an electronic health record (EHR).<sup>55</sup>

The Hunger Vital Signs assesses FI on a 12-month basis. This work group recommends yearly assessment unless a more frequent assessment is warranted. One recommendation is embedding an FI screen into the EHR. Screening for FI and subsequent discussions can use these diagnosis codes to assist with billing, International Classification of Diseases, Tenth Revision code Z59.4 (lack of adequate food and safe drinking water) or in some cases Z59.5 (extreme poverty), medical staff should be empowered to be food security champions, as having staff with knowledge of federal programs and local services can improve access to care and patient use of available FI services.

Although screening can feel intrusive and may be uncomfortable to perform at first, it is necessary to improve the health and safety of patients and provide high-quality, comprehensive care. FI is rarely visible; it cannot be assumed based on patient appearance or physical characteristics. Patients and caregivers may be embarrassed to admit to struggling to obtain food due to the stigma surrounding FI, and parents may also fear being reported to social and/or immigration services.<sup>56</sup> Universal screening help to reduce the stigma of FI and overcoming barriers of provider bias.<sup>57</sup> Using empathetic statements such as “we care about your health,” “we know the pandemic has created new stressors,” or “the higher cost of allergy-safe foods can be difficult to afford,” can help families understand that all patients are receiving FI assessments.

Patients who have a positive screen for FI should be provided local and national resources. Furthermore, referrals to dietitians, social workers, and behavioral health specialists should be considered to provide additional evaluation, support, and assistance. If these resources are not available, consider using case managers through primary care offices, insurance providers and counselors, and nurses in local school districts. Many specialty care providers may fear that FI screenings may be an additional burden to an already overwhelmed workflow. However, implementation of a social determinant of health screening in the Sickle Cell Clinic at Boston Medical Center was found to be successful. This clinic found that over 50% of their families reported 1 or more unmet

1. Within the past 12 months, we worried whether our food would run out before we got money to buy more.

Often true   Sometimes true   Never true   Don't know/refused

2. Within the past 12 months, the food we bought just didn't last and we didn't have money to get more.

Often true   Sometimes true   Never true   Don't know/refused

**FIGURE 3.** An example of the Hunger Vital Signs screening tool.

social needs, demonstrating the value and great need for screening in specialty clinics.<sup>58</sup> Furthermore, clinicians did not find any significant additional workflow disruptions associated with implementation. This example highlights that if a complex and lengthy social determinants of health screen can be implemented, then a shorter FI screening can also be successful.

When FI screening was implemented into the EHR at Phoenix Children's Hospital, 70% of patients were screened and FI was identified in 9.5% to 20% of these patients.<sup>59</sup> It is also important to remember that FI does not solely exist in urban areas and screening in suburban populations is equally important.<sup>60</sup>

**Assistance programs and resources.** Our finding that one of the main barriers to implementing FI screenings is a lack of awareness of FI resources to give to patients with a positive FI screen is consistent with prior research.<sup>61</sup> Fortunately, many federal, tribal, state, and local government programs, along with those offered through nonprofit organizations, are available to assist families experiencing FI, including families with FA. However, regional disparity does exist, and those living in food deserts who could benefit the most may still be far from safe and healthy services. Food Allergy Research and Education, a national nonprofit patient advocacy organization, offers a website listing of food banks and soup kitchens as well as free FA educational materials for food assistance program staff.<sup>62</sup> Additional programs and resources assisting families experiencing FI are listed in [Table V](#).

Food and Nutrition Services, a division of the USDA, oversees the federal nutrition programs that provide the bulk of nutrition assistance to individuals and families experiencing FI and income instability. These programs and affairs are impacted by legislative policies including: (1) the Farm Bill, renewed every 5 years, (2) the Child Nutrition Reauthorization Act, and (3) Dietary Guidelines for Healthy Americans.

The largest program providing relief for FI families is the Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, with 9.5 million US families with children relying on SNAP benefits.<sup>63</sup> Although this program allows participants to be able to select the foods they want, the benefit does not account for the increased cost of allergen-free foods, which cost 2 to 4 times more<sup>3</sup> than foods that contain common allergens.

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides nutrition benefits to 7 million pregnant and postpartum women, infants, and children up to the age of 5 years, per month.<sup>64</sup> However, WIC provides very limited substitutions for participants with dietary restrictions. Substitutes generally are not functionally similar and further limit the biodiversity in the diet of the participant.<sup>65</sup> For example, a can of beans is the standard substitute for peanut butter, eggs, and fish.<sup>66</sup> Participants with limited diets due to food allergies also struggle to find allergen-friendly foods due to the program's adherence to strict brand and quantity requirements.<sup>67</sup> It would be difficult for a family on WIC to provide adequate nutrition for their child with an FA exclusively relying on the services provided by WIC.

The Emergency Food Assistance Program provides support to individuals and families through food banks and pantries. This federal commodities program buys up surplus agriculture product, packs product, and distributes it to food banks. Although the foods distributed in this program are seasonal and diverse, there is no minimum standard for the inclusion of allergen-free foods. This means that often families with FA who rely on food banks and food pantries cannot find safe foods.<sup>68</sup>

Families dependent on local food banks and food pantries also face challenges to accessing the safe foods they need. Many of these organizations have implemented pandemic protocols due to decreased volunteer support and moved to drive-thru distribution with prepacked boxes. The lack of choice further limits access for patients who have a medically restricted diet.<sup>69</sup> Beyond the lack of choice, most food banks and pantries are not actively procuring allergen-friendly foods on a regular basis.

There are many complex policies that govern federal supplemental nutrition programs. Many of the current policies make it difficult for individuals and families with FA to rely on these programs, due to their restrictive nature; these programs are only designed to meet the standard of sustenance.

### Ways to become involved

If FI is an area of interest, there are ways to become involved:

- Start screening for FI in your practice and create patient information regarding national, state, and local resources that can be provided for positive screens.
- Join or create a hospital or community Hunger-Free Advocacy Group.

**TABLE V.** Selected web resources for food insecurity

Federal Nutrition and Food Assistance Programs
<ul style="list-style-type: none"> <li>• USDA Afterschool Nutrition Program <a href="https://www.fns.usda.gov/cacfp/afterschool-programs">https://www.fns.usda.gov/cacfp/afterschool-programs</a></li> <li>• USDA Child and Adult Care Food Program (CACFP) <a href="https://www.fns.usda.gov/cacfp">https://www.fns.usda.gov/cacfp</a></li> <li>• USDA Child Nutrition Program <a href="https://www.fns.usda.gov/contacts?f%5B0%5D=program%3A27">https://www.fns.usda.gov/contacts?f%5B0%5D=program%3A27</a></li> <li>• USDA National School Lunch Program and School Breakfast Program <a href="https://www.fns.usda.gov/nsfp">https://www.fns.usda.gov/nsfp</a></li> <li>• USDA Summer Food Service Program <a href="https://www.fns.usda.gov/sfsp/summer-food-service-program">https://www.fns.usda.gov/sfsp/summer-food-service-program</a></li> <li>• USDA Supplemental Nutrition Assistance Program Eligibility (SNAP/food stamps) <a href="https://www.fns.usda.gov/snap/recipient/eligibility">https://www.fns.usda.gov/snap/recipient/eligibility</a></li> <li>• USDA Supplemental Nutrition Assistance Program State Directory of Resources <a href="https://www.fns.usda.gov/snap/state-directory">https://www.fns.usda.gov/snap/state-directory</a></li> <li>• USDA Temporary Emergency Food Assistance Program (TEFAP) <a href="https://www.fns.usda.gov/tefap/emergency-food-assistance-program">https://www.fns.usda.gov/tefap/emergency-food-assistance-program</a></li> <li>• USDA Women Infant Child (WIC) Programs <a href="https://www.fns.usda.gov/contacts?f%5B1%5D=program%3A32">https://www.fns.usda.gov/contacts?f%5B1%5D=program%3A32</a></li> <li>• USDHHS Temporary Assistance for Needy Families (TANF) <a href="https://www.acf.hhs.gov/ofa/help">https://www.acf.hhs.gov/ofa/help</a></li> </ul>
Food Pantry and Food Assistance Program Locators
<ul style="list-style-type: none"> <li>• Feeding America Nationwide Network of Food Banks <a href="https://www.feedingamerica.org/find-your-local-foodbank">https://www.feedingamerica.org/find-your-local-foodbank</a></li> <li>• List of U.S. Free Food Centers <a href="https://www.freefood.org">https://www.freefood.org</a></li> </ul>
National Organizations
<ul style="list-style-type: none"> <li>• American Academy of Pediatrics (AAP) Food Insecurity Toolkit <a href="https://frac.org/aaptoolkit">https://frac.org/aaptoolkit</a></li> <li>• Catholic Charities U.S. Food Support Programs <a href="https://www.catholiccharitiesusa.org/our-vision-and-ministry/food-nutrition">https://www.catholiccharitiesusa.org/our-vision-and-ministry/food-nutrition</a></li> <li>• Food Allergy Research &amp; Education (FARE) Summary of Food Assistance Programs <a href="https://www.foodallergy.org/resources/accessing-safe-foods-during-disaster">https://www.foodallergy.org/resources/accessing-safe-foods-during-disaster</a></li> <li>• Food Allergy Research &amp; Education (FARE): Food Allergy Focused Food Banks <a href="https://www.foodallergy.org/resources/food-banks-and-soup-kitchens">https://www.foodallergy.org/resources/food-banks-and-soup-kitchens</a></li> <li>• Food Equality Initiative: Leading the Free-From Food Access Movement <a href="https://foodequalityinitiative.org">https://foodequalityinitiative.org</a></li> <li>• Food Research &amp; Action Center (FRAC): Afterschool Nutrition Programs <a href="https://frac.org/programs/afterschool-nutrition-programs">https://frac.org/programs/afterschool-nutrition-programs</a></li> <li>• Food Trust <a href="http://thefoodtrust.org/centerforhealthyfoodaccess">http://thefoodtrust.org/centerforhealthyfoodaccess</a></li> <li>• Salvation Army Food Pantries &amp; Meal Programs <a href="https://www.salvationarmyusa.org/usn/cure-hunger">https://www.salvationarmyusa.org/usn/cure-hunger</a></li> <li>• United Way <a href="https://unitedway.org">https://unitedway.org</a></li> <li>• Rachel Way (Plymouth, Pennsylvania) <a href="http://www.therachelway.org/">http://www.therachelway.org/</a></li> <li>• SAFE (Supplying Allergy Friendly and Emergency) Food Pantry (Howard County Maryland) <a href="https://www.safefoodpantry.org/howard-county-food-bank.html">https://www.safefoodpantry.org/howard-county-food-bank.html</a></li> <li>• Garden of Health (Montgomery and Bucks Counties in Pennsylvania) <a href="https://www.gardenofhealthinc.org/">https://www.gardenofhealthinc.org/</a></li> </ul>

- Develop community partnerships with pantries/food banks/agencies in your community to provide more allergy safe alternatives in the pantries.
- Start a food drive for allergy-friendly foods.
- Consider starting a pantry or allergy-friendly shelf in your clinic that patients can access.
- Advocate for policy changes<sup>69</sup>
  - Increased amounts of benefits.
  - Strengthening federal nutrition programs.
  - Assistance programs to recognize dietary restrictions with more options and alternatives available.
  - Fewer restrictions on substitutions in the WIC program with more offerings of allergy-friendly foods and nutritionally equivalent offerings.
- Change health plans to allow dietary accommodations with a prescription. Produce prescriptions have been shown to be successful in improving fruit and vegetable consumption.<sup>70,71</sup> Food prescriptions for healthy foods can promote behavior change, improve nutrition education, include financial incentives, and connect patients to local resources.<sup>72</sup> The food prescription movement has moved into other chronic disease management as well.<sup>57</sup>

### Limitations

The main limitation of this study is the small sample size. Although the survey was distributed to 937 AAAAI members, 59 responses were collected, resulting in a 6.3% completion rate. The typical response rate for surveys of AAAAI is approximately 14%, which includes a recent high response rate of 31% and a recent low response rate of 4%. Although the intent of the work group was to obtain survey results representative of AAAAI members, we would be remiss to note that a small sample size might not completely represent the diversity of AAAAI members.

Of the 937 surveys delivered, over 50% of surveys were opened, but not completed. This low response rate may be attributed to the timing of the survey distribution, at the end of the year, resulting in survey fatigue. COVID-19 may have also played a role as many health care providers are overworked and did not find the time to complete the survey. Finally, a lack of knowledge surrounding FI could have contributed to providers being unwilling or unable to complete the survey. The results may therefore overestimate knowledge of FI and use of screening for FI.

### Future studies/considerations

Some primary care providers assess social determinants of health as part of well child check, as a recent study showed 30% of physician practices and 40% of hospitals screen for FI.<sup>41</sup> Primary care provider offices may be equipped to handle positive FI screens and be more cognizant of resources in the community. Therefore, a future study could assess the screening practices and tools of primary care providers. FI can affect those of any socioeconomic status. Whereas those that are uninsured may experience FI, those with insurance, especially those with high-deductible plans, may also experience FI. Because of limited research surrounding FI and FA, future research is needed to understand the impact of socioeconomic status on FA. Furthermore, the Hunger Vital Signs tool only asks about lack of food but does not consider food related diseases that may be accounting to the lack of food. It may be prudent to add a question identifying a reason behind the lack of food. The



development of more educational tools and resources about FI for allergy clinical teams would also be beneficial.

## CONCLUSION

The COVID-19 pandemic has brought to light the growing epidemic of FI, having impacted individuals and families on a global and national scale. Although not a new problem, it is one that is often overlooked within the field of allergy and immunology. This may be due to a lack of diverse study samples in FA research related to underrepresented groups such as those that are high risk with comorbidities as well as a lack of racially, economically, and educationally diverse patient samples. In addition, overlooking FI may be related to a lack of diversity among clinicians and researchers, presence of implicit bias, stigma surrounding FI, the personal nature of FI questions, or lack of resources specifically designed for this population.<sup>73</sup> This survey, while of a small sample size, highlights the fact that most practicing allergists and staff do not have the knowledge or resources to assist their FI patients. More research is needed to fully understand the impact of FI on patients with FA. It is the duty of health care providers, especially those working in allergy clinics, to implement FI screenings and provide crucial resources to vulnerable populations, optimizing their treatment and improving their health, nutrition, and quality of life.

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