

research brief

# Screening for Food Insecurity: A Curriculum for Medical Students

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#### Abstract

**Introduction**: Food insecurity (FI) is defined as a lack of access to enough food for an active, healthy life. We sought to determine how a longitudinal FI screening curriculum impacts medical students' knowledge, attitudes, and behavior in screening for FI.

**Methods:** This was a prospective, single-institution study. The curriculum consisted of three components completed over 3 years. We administered a survey to the intervention cohort before and after the curriculum and analyzed their written reflections. We also evaluated whether students screened for FI during an objective structured clinical exam (OSCE) and compared their performance to a control cohort, which did not receive the curriculum.

**Results:** Preintervention, students felt screening for FI was important for physicians to do with their patients, but most felt uncomfortable addressing it in clinical settings. Postintervention, there was a statistically significant increase in mean scores for knowledge questions (45.24% vs 74.74%, *P*<.001, preand postintervention, respectively). Students also felt more confident in their abilities to screen and follow up about FI. Additionally, compared to the control cohort, the intervention cohort screened for FI more often during their OSCE (28.21% vs 10.71%, *P*<.001).

**Conclusion:** A longitudinal curriculum using minimal curricular time can improve students' knowledge, attitudes, and behavior when screening for FI. Students who received the curriculum were more likely to recognize the need for and perform FI screening. Based on these findings, we anticipate that the curriculum will increase the likelihood of students identifying, screening for, and intervening in cases of FI in future clinical encounters.

In 2021, 13.5 million US households (10.2%) were food insecure.<sup>1</sup> Food insecurity (FI) is defined as a lack of access to enough food for an active, healthy life.<sup>2</sup> The social and structural determinants of health (SDOH), including FI, are major contributors to chronic illnesses in the United States.<sup>3</sup> FI is also associated with higher health care utilization, higher health care costs, and adverse health outcomes, especially for children.<sup>4–6</sup>

There is a growing interest in training health professionals to screen for the SDOH, including FI.<sup>7</sup> The American Academy of Pediatrics recommends universal screening for FI<sup>8</sup>; other organizations plan to consider

modifiable SDOH<sup>9</sup> in their recommended screenings. Yet, most medical schools do not have an FI screening curriculum; existing programs are primarily for residents and attending physicians.<sup>10–12</sup> Given the high prevalence of FI in Washington, DC<sup>13</sup> where our medical students train, we designed a longitudinal curriculum to address this gap.

The curriculum is a novel attempt to explicitly teach FI screening to medical students. Our study objective was to determine whether participation in this FI screening curriculum improves students' knowledge, self-efficacy, and behavior in screening for and intervening in cases of FI.

## Methods

## **Design and Setting**

This was a prospective, single-institution study at a midsized, private medical school in the US mid-Atlantic region. Participants included students from the classes of 2022 (intervention cohort) and 2021 (control cohort).

### **Educational Intervention**

The longitudinal FI curriculum ("curriculum") was introduced during the first year of medical school. It included three components completed over 3 years (Figure 1).

**Year 1.** We presented information on FI screening during a 2-hour workshop and distributed the Food Insecurity Screening Informational Pocket Card. Students were then paired to practice screening, using scenarios based on real clinical encounters. The 10-item Qualtrics survey and the Pocket Card can be found in the STFM Resource Library.<sup>14</sup>

Year 2. The curriculum was reinforced with a similar 20-minute FI screening role-playing exercise.

**Year 3**. Students participated in an existing objective structured clinical exam (OSCE) with a patient with poorlycontrolled diabetes. The patient had recently struggled with FI but did not present with specific complaints of FI.

### **Procedures and Measures**

During Year 1, students were emailed an informed consent script to participate in the study. We then administered a 10-item survey via Qualtrics. In Year 3, students completed the same survey, postintervention.

Five items assessed students' FI knowledge using multiple-choice questions and were scored as correct or incorrect. Five items also assessed students' attitudes using a 5-point Likert scale (1=strongly disagree to 5=strongly agree); we calculated the percentage of respondents who agreed or strongly agreed.

Furthermore, intervention students submitted written reflections on the following prompts after the workshop:

- 1. What went well?
- 2. What was challenging?
- 3. What questions or insights did this exercise raise for you?

Both the intervention cohort and a historical control cohort completed the OSCE, which remained unchanged between years. The historical control group had not participated in the FI curriculum. Standardized patients scored "yes" or "no" on one OSCE checklist item, "Did the student screen for FI?"

## Data Analysis

We calculated descriptive statistics for intervention students' pre- and postintervention survey responses.

Categorical variables were reported as count and frequency; continuous data were reported as mean and standard deviation. We used Wilcoxon Signed-Rank and McNemar tests to compare the paired pre- and postdata. We did not perform multiple testing corrections. We performed comparison of successful OSCE screening between intervention and control groups using the  $\chi^2$  test. Incomplete data in pre/post knowledge questions with at least one answer were considered incorrect. If none were answered, it was considered missing data and was excluded from analysis. Significance was defined as *P*<.05. SAS v9.4 was used for all analyses.

We qualitatively analyzed postworkshop reflections to determine predominant themes. Two researchers not involved in the intervention independently completed the data coding and analysis using the software data management program, Ethnograph v6 (Qualis Research, Colorado Springs, CO). They developed a coding dictionary based on the reflection questions asked as part of the assessment in the FI workshop in year 1 and identified emerging themes through review of the data. After independently coding the data, the coded text was extracted to populate an analysis grid to support and finalize themes.

This study (#20181123) was determined to be exempt from review by our institutional review board.

## **Results**

Of the 204 students who received the intervention, 61 (30.0%) completed both pre- and postintervention surveys, and 137 (67.5%) submitted reflections. Four observations were missing for the postsurvey knowledge questions and seven were missing for postsurvey attitude questions. The OSCE was completed by 156 and 140 students in the intervention, and control cohorts, respectively.

When considering preintervention attitudes, only 24 (39.34%) students agreed/strongly agreed that they were comfortable discussing FI with patients; even fewer (12, 19.67%) agreed/strongly agreed they were confident referring to community resources. However, 57 (93.44%) students agreed/strongly agreed that screening for FI was important for physicians to do with their patients. Some students (23, 37.70%) disagreed/strongly disagreed that their patients would be harmed by screening due to embarrassment and 39 (63.93%) students disagreed/strongly disagreed their screening will divert visit time from more important medical issues (Table 1).

In terms of outcomes, students were significantly more likely to feel extremely or quite confident in referring patients to community resources for nutrition assistance at postintervention compared to preintervention (19.67% vs 42.59%, respectively). They were also significantly more likely to strongly disagree or disagree to "patients may be harmed by screening for food insecurity due to embarrassment" (37.70% vs 81.48%) and "screening for food insecurity will divert visit time from more important medical issues" (63.93% vs 79.63%; Table 1).

Qualitative results were determined based on students' reflections after the workshop. Five salient themes supported students' preintervention attitudes:

- 1. Learning New Knowledge and Skills
- 2. New Perspectives Regarding FI
- 3. Resource Barriers
- 4. Physician-Patient Communication
- 5. Using FI Screening in Clinical Practice.

Explanation of the themes and representative quotes are shown in Table 2.

Regarding knowledge questions, students showed a statistically significant increase in mean percent scores

pre- and postintervention (45.24% vs 74.74%, P<.001; Table 3). In their behaviors, students in the intervention cohort were significantly more likely than the control cohort to screen for FI (28.2% vs 10.7%, P<0.001; Table 4).

## Conclusions

Our curriculum added less than 3 hours of curricular time and improved students' knowledge. Moreover, students who participated in the curriculum were more likely than students who had not participated to both recognize the need and screen for FI. This is particularly significant as the standardized patient did not present with specific complaints of FI, so students were not explicitly prompted.

Our study was limited to one intervention cohort at one institution. The number of students who completed both the pre-and postintervention surveys was low. Student behavior was assessed using simulated patients in one case. The results may therefore not be generalizable across different student populations within or outside our institution, in other health profession educational settings, or in practice.

A longitudinal curriculum can improve students' knowledge, self-efficacy, and behavior in screening for FI. Reinforcing knowledge and skills for behavior change may require minimal additional curricular time if integrated into the existing curriculum.

## **Tables and Figures**



#### Figure 1. Components of the Longitudinal Food Insecurity Intervention

	Preintervention (N=61)	Postintervention (N=61)	<i>P</i> value <sup>1</sup>				
Questions assessing attitudes							
Q6: How comfortable are you with discussing food insecurity with patients/families? (Extremely or quite comfortable)	24 (39.34%)	28 (51.85%)	.145				
Q7: How confident are you that you can refer to community resources for nutrition assistance? (Extremely or quite confident)	12 (19.67%)	23 (42.59%)	.007				
Q8: I believe it is my job as a future doctor to screen for food insecurity. (Strongly agree or agree)	57 (93.44%)	50 (92.59%)	.796				
Q9: Patients may be harmed by screening for food insecurity due to embarrassment. (Strongly disagree or disagree)	23 (37.70%)	44 (81.48%)	<.001				
Q10: Screening for food insecurity will divert visit time from more important medical issues. (Strongly disagree or disagree)	39 (63.93%)	43 (79.63%)	.048				

#### Table 1. Five Questions of Attitudes Regarding Screening for Food Insecurity

Categorical data presented as count (frequency). <sup>1</sup>*P* value calculated by McNemar test.

Qualitative theme	Theme description	Student quotes
Learning new knowledge and skills	Students reported having learned more didactic and clinical skills on FI and screening for FI.	"It was extremely helpfulto be presented with the card that lists the various resources for food insecurity. Having a plan with individual steps to go through that also contains the exact resources seems immensely helpful, and I plan to keep the card with me as I transition into the clinical years."
New perspectives regarding FI	Students wrote about empathizing with their patients and showed an understanding that FI can be a complex and difficult topic.	"I now understand that food insecurity can present in anyone, regardless of race, class, location, education, etc. I also gained a respect for the way in which it might be unsettling for the patient to share this kind of information. They might feel a sense of shame when they aren't able to provide a healthy, regular source of food for their family, but I think it's an important discussion that medical professionals have with their patients." "My biggest takeaway from this session was that it is very important to understand the different walks of life that people come from. Realizing their circumstances will help us help them overcome their challenges. The same problem can pose very different issues for individuals, so it is important for us, as future healthcare professionals, to know how to seek and direct patients to helpful resources."
Resource barriers	Students expressed their frustrations with the accessibility and practicality of connecting patients to food resources.	"A significant challenge was that the closest community resource to the patient's apartment was almost a mile away. With two small kids, limited operating hours, and potentially limited transport availability, the patient might have a difficult time just getting to the food pantry." "I don't know the resources besides google searching, and then trying to figure out if places are open, when they can access, etc. can take time There seemed to be legal issues such as being SNAP ineligible or an undocumented immigrant that presents challenges since we are not trained in law."
Physician-patient communication	Students identified the challenges and lessons learned when discussing FI with patients.	"My (student) physician did a good job of naturally integrating the food insecurity questions into the conversation. She was sensitive to the fact that this is a delicate and embarrassing issue for many people, and she made sure I knew others were struggling with the same issue." "My main takeaway was that a physician needs to be aware that these issues happen first and foremost, but then be prepared to tackle them and finally, a physician must create an environment PRIOR to the screening in order for an effective screening to take place. Getting to know the patient, asking them questions about their lives, listening actively, summarizing, and emotional reflection are just some of the skills that one can use to create this environment."
Using FI screening in clinical practice	Students highlighted their concerns and beliefs about applying FI screening in their future clinical practice.	"A question that this raises for me is how to fit in a hunger screening in a 15-minute patient interaction, especially if they have other chief complaints that are medical and urgent in nature." "Something else that I began to think about is the importance of follow-up. It is easy to give out resources and even explain them and then discharge the patient. However, making sure that the patient has support during the process of accessing these resources is a different story and takes a lot more time and work"

# Table 2. Representative Student Quotes From Each of the Key Themes Found in Students' Reflections After the Food Insecurity Workshop

Abbreviations: FI, food insecurity; SNAP, Supplemental Nutrition Assistance Program.

#### Table 3. Knowledge Questions on Screening for Food Insecurity

	Pre (N=61)	Post (N=61)	<i>P</i> value <sup>1</sup>
Knowledge Score (Percent correct of questions 1-5)	45.24% (19.28)	74.74% (20.54)	<.001

Continuous data presented as mean (std) <sup>1</sup>*P* value calculated by Wilcoxon Signed-Rank test.

#### Table 4. Food Insecurity Screening During OSCE, by Cohort

	Control (N=140)*	Intervention (N=156)*	<i>P</i> value <sup>1</sup>
Food insecurity screening: Did the student screen for food insecurity?	15 (10.71%)	44 (28.21%)	<.001

Abbreviation: OSCE, objective, structured clinical exam. <sup>1</sup> Chi squared

\*The OSCE was required, but many students did not remain with their matriculating class.

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