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RESEARCH ARTICLE



# Understanding the vital role of campus-based food pantries: Insights into usage patterns, characteristics and eating behaviors among private university students

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## ABSTRACT

**Objective:** This study examined characteristics and usage patterns of students who use a campus-based food pantry at a private university. **Participants:** Student clients of a campus-based food pantry at a private university ( $N=30$ ). **Methods:** A qualitative study was conducted using semi-structured interviews. A supplementary questionnaire assessing demographics, food security, and campus-based pantry usage/satisfaction was administered. **Results:** Food security scores revealed 50% of participants experienced high food security, 33.3% experienced low food security, and 16.67% experienced very low food security. Forty-three percent of participants were International Students. Interview themes included Unique Needs of International Students, Pantry Usage Patterns, Stigma Related to Food Assistance Usage, and Ideas for Pantry Improvement/Awareness. **Conclusion:** Students value hygiene products, culturally relevant options, and ready-to-eat items. International students are a major subset of pantry clients at a private university; the needs of international students should be considered during the planning and implementation of pantries at private universities.

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## Introduction

### *Food and nutrition insecurity on college campuses*

According to the United States Department of Agriculture (USDA), 13.5% of U.S. households were food insecure or experienced low food security at least once throughout 2023, while 5.1% experienced very low food security.<sup>1</sup> This issue extends into higher education, where an alarming number of college students grapple with inadequate access to food. Research indicates that approximately one in three college students across the nation experience food and nutrition insecurity, with some research studies reporting food insecurity rates as high as 60%.<sup>2</sup> Limited income, rising tuition and housing costs, debt, ineligibility for federal food assistance programs, and lack of financial and food management skills are believed to exacerbate the risk of food insecurity among this demographic.<sup>3</sup> Additionally, food and nutrition insecurity among college students may lead to lower GPAs and graduation rates.<sup>3</sup> College-based food pantries offer a practical solution to mitigate food and nutrition insecurity for students; however, research evaluating food pantries on private campuses is severely limited.<sup>3</sup>

### *Campus-based food pantries*

Campus-based food pantries provide access to cost-free food, hygiene products, and household commodities.<sup>4</sup> More

than eight hundred college campuses across the United States have established pantries to serve students, staff and faculty members.<sup>4</sup> A report completed by Swipe Out Hunger surveying 335 campus pantries found that 70% of the pantries included were established at public universities, with 30% of pantries located at private institutions.<sup>5</sup> Campus-based pantries have grown in number and have expanded with the assistance of external and internal funding, allowing for improved operations.<sup>2</sup> As campus-based food pantries continue to grow, there is an increasing need for studies that evaluate the effectiveness of these pantries.

Despite the growing availability of campus-based food pantries, usage remains low.<sup>6</sup> Recent reports indicate that only a small percentage of students utilize pantries.<sup>6</sup> A recent study found that although 47.7% of the student body was aware of the existence of a food pantry on campus, only 7.7% had used it. A study at a large public university showed that 66% of food insecure students were aware of the campus food pantry, yet only 38% utilized it.<sup>6</sup> Cultural or language barriers may be contributing factors to international students' lack of awareness of available resources.<sup>7</sup> Furthermore, the stigma associated with relying on such services, physical inaccessibility, and a lack of knowledge about these pantries all contribute to their underutilization.<sup>6</sup> In addition, many campus pantries are poorly funded, understaffed, and lack adequate outreach strategies to raise awareness.<sup>8</sup>

## International students

International students attending colleges in the United States may be more vulnerable to the adverse effects of food and nutrition insecurity since they may live in unfamiliar settings without access to family assistance.<sup>9</sup> The number of international students studying at U.S. colleges increased by 14% in 2022–2023, surpassing pre-pandemic levels and marking an 80% increase from the previous year.<sup>10</sup> Notably, the number of Indian students studying in the United States has increased exponentially.<sup>10</sup> In 2022–2023, India sent approximately 268,923 students to the U.S., a 35% increase from the previous year, second only to China.<sup>10</sup> This increase in international students is being seen at a variety of institutions including both public and private universities and within a variety of degrees including associates, bachelors, and graduate degrees.<sup>10</sup>

The increase of international students studying in the U.S., particularly Asian students, emphasizes the importance of considering the needs of these students while planning and implementing campus-based pantries. Food and nutrition security includes access to sufficient, healthy, and culturally appropriate foods. Addressing these cultural nuances is critical in ensuring that all students, regardless of country of origin, have access to the resources they need to thrive.<sup>9</sup>

Studies conducted on U.S. college campuses have found that over 30% of international students report food insecurity, while approximately 75% reported experiencing moderate stress relative to securing adequate meals.<sup>11</sup> The three primary barriers identified in securing adequate food included financial constraints, lack of familiar foods, and inadequate transportation.<sup>11</sup>

An additional risk factor for food insecurity among international students is the ineligibility to receive public benefits from federal programs such as the Supplemental Nutrition Assistance Program (SNAP). SNAP requires proof of permanent residence in the United States.<sup>9</sup> In most cases, non-citizens, including students, are not eligible for SNAP benefits.<sup>9</sup>

## Campus food pantry usage—Public versus private universities

Campus-based food pantries have been established as the primary solution to decrease food and nutrition insecurity and increase food access.<sup>6,12,13</sup> Research studies evaluating campus-based food pantries have identified consistent barriers that hinder students from accessing these services. Common obstacles include lack of awareness, stigmas associated with food assistance, transportation difficulties, dissatisfaction with the quality of food provided, and perception of need in comparison to others.<sup>6,12,13</sup>

There is a notable gap in research studies examining food pantries at private universities. An exhaustive search yielded minimal results, including a dissertation at Drexel University<sup>14</sup> and a study examining food pantry usage at a mid-size, private Catholic university.<sup>15</sup> These limited studies echo the findings from public universities regarding barriers to pantry usage.<sup>14,15</sup> The current study aims to enrich the body of research by providing detailed qualitative insights into the

use of a campus-based pantry at a private university, addressing this critical gap in the existing literature.

## Methods

This qualitative study was conducted at a private university located in a suburban community in southeastern New York, with the goal of gaining a better understanding of the characteristics and usage patterns of campus-based food pantry clients attending private universities. The pantry on this campus was established in 2018 in response to a need that was identified through a Student Experience survey. The results of the Student Experience survey indicated that 70% of undergraduate students and 57% of graduate students reported that they would consider using a campus-based food pantry.<sup>16</sup> Data collection for this study ran from fall 2022 through spring 2023. This pantry offers a variety of mostly boxed and canned food items along with hygiene products. Students, faculty, and staff can utilize the pantry by visiting it in person as well as ordering online. Pantry users can order online by accessing the Pantry icon through their university eCampus accounts. The online ordering form is organized into sections including a variety of food categories, laundry supplies, and toiletries. Orders are transmitted anonymously to pantry volunteers and prepared for pickup. Pantry users are notified when their order is ready; having seven days to pick up their items at the pantry during operational hours.

This study incorporated a community-based participatory research (CBPR) approach. CBPR focuses on including feedback from community members and stakeholders in facilitating and maintaining interventions that are meaningful to the community.<sup>17</sup> In this study, CBPR was used to uncover characteristics of pantry clients, pantry usage patterns, food insecurity/food access concerns, and overall eating behaviors and routines. Student volunteers at the campus pantry were also interviewed as key informants to gain their perspectives on pantry usage. The analysis and results of those interviews will be available in a separate manuscript.

Study recruitment began in the fall of 2022; several recruitment strategies were employed. Faculty members were asked to announce the study to their classes; flyers were posted in campus common areas and distributed directly to pantry clients as well as posted digitally on the university's Instagram pages. All participants received a \$40 Amazon gift card as a thank you for participating in the study. Participants were eligible if they were at least 18 years of age and had utilized the campus pantry at least once in the last year. Campus pantry usage was confirmed using the screening question, "Have you ever used the (campus-based) pantry?" All participants signed a written Informed Consent form, and this study was approved by the Institutional Review Board (IRB) at the university in which the study was conducted.

## Data collection

In-depth, semi-structured interviews were used as the primary data collection tool; a supplementary screening tool

was also administered. Interested campus-based pantry clients were instructed to contact the Research Assistant (RA) to learn more about the study. A purposive sample of thirty pantry clients, undergraduate ( $n=17$ ) and graduate ( $n=13$ ), were enrolled as interview participants. Upon completion of the Informed Consent form, eligible participants were provided with a link to complete an online based 24-question screening tool which included demographic questions, pantry usage questions, and food insecurity questions. Demographic questions were aimed at gathering information regarding age, race/ethnicity, student status, area of study, employment status, family income, and living situation. To assess food security status, a modified version of the U.S. Household Food Security Survey Module: Six-Item Short form was included.<sup>18</sup> This survey is a widely used reliable and valid screening tool to assess household food insecurity.<sup>18</sup> The six-item tool has several advantages including low respondent burden, minimally biased compared to the longer versions, and a relationship has been established between the short version and the longer versions.<sup>18</sup> Five additional questions were developed to assess pantry usage and satisfaction.

Upon survey completion, participants were scheduled for an in-person or Zoom, semi-structured interview. The RA scheduled all interviews based on the participant's preference for an in-person or virtual interview. A total of eight interviews were conducted in person and twenty-two were conducted *via* Zoom. All interviews were conducted by the primary researcher, a registered dietitian trained in nutrition and public health interviewing. To ensure confidentiality and privacy, all interviews were conducted in the primary researcher's office, with a "no knock" sign. A semi-structured interview guide including four domains was utilized. The domains included meal habits, food insecurity/food access, pantry usage, and thoughts on a community garden. The interview domains were constructed based on the existing body of literature on food pantry usage. The researchers endeavored to use the grounded theory approach while developing the interview guide; an initial set of broad, open-ended questions was used to allow for the flexibility to explore emerging themes. The research team continuously refined the interview questions based on insights gained from the interviews.

Interviews began with a brief description of the study followed by qualifying questions, "Would you like to participate in this interview? Do you confirm that you are at least 18 years of age and a current student at (University Name)?" Interviews were recorded using a Sony IC audio recorder for transcription purposes only. Recordings were transcribed and then deleted after each interview.

## Data analysis

Descriptive statistics were used to summarize demographic characteristics, pantry usage frequency and satisfaction, and food insecurity status.

Audio recorded transcripts were transcribed verbatim and analyzed using the qualitative data software program,

Dedoose 9.0.107. The grounded theory approach was used to systematically collect and analyze qualitative data from the interviews to gain a better understanding of the lived experiences of students who use campus-based food pantries. Inductive coding was used to uncover patterns among the interviews which led to the development of the overarching themes. Constant comparative analysis was completed by the three authors; each researcher independently coded every transcript. Memoing was used as an integral part of the coding process. Codes and memos were then compared and discussed until all authors agreed on the corresponding codes.

## Results

### Screening questionnaire

#### Demographic characteristics

The majority of the participants (56.7%) were between the ages of 20–22. Sixty percent of the participants identified as female. Almost 57% of the participants identified as Asian, 16.7% white, 16.7% Black and 6.7% were mixed race. All but one of the participants reported to be full-time students. Of the sample, 40% of the participants lived with their parents, 33.3% lived off campus with roommates, 20% lived on campus, and 6.7% lived off campus alone. Almost 77% of the participants reported being currently employed. The majority of participants reported working weekly, 53.3% worked between 1–19h and 6.7% reported working more than 35h per week. The majority (50%) of annual household income among the students was below \$20,000. Additionally, 13.3% reported a family income between \$20,001–\$35,000. It is interesting to note that 6.7% of the participants reported having an annual household income between \$75,001–\$100,000 while 10% reported income greater than \$100,000. Furthermore, information collected through the interview process revealed that 43% of the participants were international students. See [Table 1](#) for complete demographic characteristics.

#### Pantry usage/satisfaction

Pantry usage varied widely between pantry clients; 36.7% used the pantry more than ten times, while 33.3% used the pantry between 1 and 3 times. Participants included students who ordered items using the university's online platform (53.3%) as well as those who preferred in-person ordering (46.7%).

Participants seemed to be largely satisfied with the campus-based pantry services, with 43.3% reporting being very satisfied, 43.3% reporting being satisfied, and 13.3% reporting being somewhat satisfied. Specifically examining satisfaction levels of students who utilized online ordering; 31% reported being very satisfied, 50% reported being satisfied, and 19% reported being somewhat satisfied.

Regarding the options available at the pantry, 26.7% reported being always pleased with the options, 63.3% reported being pleased most of the time, and 30% reported being pleased some of the time. See [Table 2](#) for complete usage/satisfaction results.

**Table 1.** Demographic characteristics.

Characteristics	N	%
Age		
18–19	3	10
20–22	17	56.7
23–25	5	16.7
26–30	4	13.3
31–35	1	3.3
Sex		
Female	18	60
Male	12	40
Ethnicity		
Hispanic	4	13.3
Non-Hispanic	26	86.7
Race		
White	5	16.7
Black	5	16.7
Asian	17	56.7
Mixed race	2	6.7
No answer	1	3.3
Student plan		
Undergraduate	17	56.7
Graduate	13	43.3
Discipline/Major		
Business	11	36.7
Arts and sciences	5	16.7
Education and health sciences	5	16.7
Nursing and public health	5	16.7
Psychology	4	13.3
Student status		
Full time	29	96.7
Part time	1	3.3
Current employment status		
Yes	23	76.7
No	7	23.3
Average hours worked per week		
0	6	20
19-Jan	16	53.3
30–34	6	20
>35	2	6.7
Annual household income		
<\$20,000	15	50
\$20,001–\$35,000	4	13.3
\$35,001–\$50,000	3	10
\$50,001–\$75,000	3	10
\$75,001–\$100,000	2	6.7
>\$100,001	3	10
Living situation		
With parents	12	40
Off-campus with roommates	10	33.3
Off-campus alone	2	6.7
On campus dorms	6	20

**Table 2.** Pantry usage/satisfaction.

Pantry usage	N	%
How many times have you used the Campus Pantry?		
1–3 times	10	33.3
4–6 times	7	23.3
7–10 times	2	6.7
More than 10 times	11	36.7
Did you order online through eCampus or visit the pantry in-person?		
Online	16	53.3
In-person	14	46.7
How satisfied were you with your experience?		
Very satisfied	13	43.3
Satisfied	13	43.4
Somewhat satisfied	4	13.3
Unsatisfied	0	
Very unsatisfied	0	

### Food security status

See Table 3 for results from the modified version of the U.S. Household Food Security Survey Module: Six-Item Short form. Survey results showed that 50% of participants were sometimes or often worried about running out of food. None of the participants reported going hungry often, however 26.7% reported going hungry sometimes, and 26.7% reported rarely going hungry. Thirty-seven percent of participants reported sometimes or often eating less than they should. Fifty percent of participants reported sometimes or often being unable to eat balanced meals. Thirty-three percent of participants reported sometimes or often skipping meals due to lack of money. A comprehensive USDA Food Security score revealed that 50% of participants had high food security, 33.3% experienced low food security, and 16.67% experienced very low food security.

### Interview themes

The use of grounded theory revealed seven overarching interview themes. The following excerpts and summaries, from the interviews of four key participants, highlight the corresponding themes. All names used in this paper are pseudonyms to protect the identities of the participants.

#### Theme 1: Eating habits of busy students

I basically spend the whole day at school, so I pack everything. I pack my breakfast; I pack my lunch. I even bring my snacks.

**Table 3.** Modified version of U.S. Household food Security Survey Module: Six-Item Short form.

Food insecurity screening	N	%
Worried about running out of food		
Never	5	16.7
Rarely	10	33.3
Sometimes	11	36.7
Often	4	13.3
Gone hungry		
Never	14	46.7
Rarely	8	26.7
Sometimes	8	26.7
Often	0	
Unable to eat balanced meals		
Never	9	30
Rarely	6	20
Sometimes	9	30
Often	6	20
Skipped meals		
Never	9	30
Rarely	11	36.7
Sometimes	4	13.3
Often	6	20
Ate less than you should		
Never	10	33.3
Rarely	9	30
Sometimes	6	20
Often	5	16.7
Total USDA score		
High food security	15	50
Low food security	10	33.3
Very low food security	5	16.67



A recurrent trend throughout the interviews was the feeling of always being busy, which is common among college students. The majority of participants were full-time students (96.7%) and were also employed (76.7%); balancing healthful eating habits alongside managing school and work can be quite challenging. Interviews showed that students employed a variety of eating strategies, such as prioritizing low-cost, convenient, and easily accessible foods. See [Table 4](#) for relevant quotes.

**Jasmine** is a Black, female student with an annual family income of less than \$20,000. She is in her final year as a full-time undergraduate student. **Jasmine** suffers from food insecurity; she answered “often” to the following food insecurity screening questions: worrying about running out of food, unable to afford to eat balanced meals, skipping meals, and eating less than she should. She reported using the campus pantry 1–3 times and that she is currently receiving SNAP benefits. She shared some of her eating strategies, emphasizing budgeting and meal planning. **Jasmine** explained that since she is on campus or at corresponding fieldwork every day, she tries to prepare all of her meals at home and bring them to school to save her time and money.

### Theme 2: Impact of financial concerns on eating

I make a sandwich with butter and that's it and I'll put it in my bag and that'll be my lunch. It's whole wheat bread with just butter. Actual butter.

While annual family income ranged from less than \$20,000 to more than \$100,001, 50% of participants reported a family income of less than \$20,000. Throughout the interviews, participants shared the ways financial constraints impacted eating habits and food choices. See [Table 4](#) for relevant quotes. **Elena** is a Hispanic female student in her final year of full-time undergraduate studies. **Elena** resides at home with her parents and three siblings and commutes to school. She uses the campus-based pantry about three times per week. **Elena** shared her coping strategies for managing her limited food budget, including preparing low-cost sandwiches made of just bread and butter to bring to school.

### Theme 3: Unique concerns of international students

Let's put it this way, with my allowance there were many problems for international banks to send money to the states because it's usually the other way around with people from the state sending money abroad.

It became apparent during the interviews that many of the participants were international students (43%). Participants reported originating from several different countries including India ( $n=5$ ), Vietnam ( $n=4$ ), Colombia ( $n=1$ ), Italy ( $n=1$ ), Korea ( $n=1$ ), and Pakistan ( $n=1$ ). International students shared unique financial concerns that may differ from U.S. students. Please see [Table 4](#) for relevant quotes.

**Ho-Jon**, an international student from Korea, lives and works on campus as a Resident Assistant (RA). **Ho-Jon** reports that he has used the campus pantry 7–10 times and is satisfied with the experience and service. Although **Ho-Jon**

was mostly satisfied with the campus pantry, he expressed a need for more culturally diverse options.

### Theme 4: Ideas for improvement

If they kept an updated list of items... of what's out of stock, what's going to be in stock, or what's going to be out of stock for a while, that'd be great. So, I'm not waiting just because maybe it'll be tomorrow.

Although participants were pleased with the pantry, several participants made suggestions for improvements. Please see [Table 4](#) for relevant quotes.

**Clarissa** is a 19-year-old, Black female student who lives in the dorms. **Clarissa** volunteers at the campus pantry and has utilized it personally. She reported being very satisfied with her experiences at the pantry, but she did mention concerns with items being out of stock or unavailable. She shared ideas for sharing current inventory with pantry users *via* a list that gets updated on a regular basis.

Other ideas for improvement included updating policies regarding the quantity of allowed food items and providing more ready-to-eat meals. Additionally, many students provided suggestions for improvements to the physical environment of the pantry, including adding art and posters, music, and more prominent signage. Please see [Table 4](#) for relevant quotes.

### Theme 5: Feelings of embarrassment

Admitting that food is difficult to come by at times, and that help has to be taken externally instead of finding it in myself to go figure out a way to find more food is sometimes a difficult pill to swallow.

Many participants shared feelings of embarrassment related to using a campus-based food pantry. Participants shared experiences of feeling judged and desire anonymity regarding pantry usage. Please see [Table 4](#) for relevant quotes.

### Usage patterns and wish lists

This study focused on a campus-based food pantry that offers a variety of food and personal hygiene products. Through the interviews, details about how students use the food pantry were collected. Participants shared pertinent information regarding pantry usage details including how often they use the pantry, which items they usually choose, and what they wish was available. See [Table 5](#) for relevant quotes related to usage patterns and wish lists.

Participants reported that the most useful items included cooking staples such as olive oil; grab-n-go items such as granola bars, canned fruit, and oatmeal; and foods that simplify meal preparation like canned vegetables, beans, and peanut butter. The interviews revealed that students greatly appreciated the hygiene products including menstrual products, detergent, and toothpaste. When asked what items they wished were available at the pantry, many students shared that they would like access to perishable items such as bread and dairy. Additionally, students expressed an interest in an

**Table 4.** Interview themes.

Theme	Relevant quotes
Eating Habits of Busy Students	<p>"For lunch, I usually bring like, a frozen food to school that's easy to heat up because I don't really have time to go out to make something and bring it."</p> <p>"I do try to meal prep, so over the weekend I'll try to make it all, but then if I don't, then that's when I'll run into a little bit of problems. Just go to the UC or something."</p> <p>"My favorite go to sometimes I would like go to McDonald's or Wendy's for a quick, cheap meal."</p> <p>"My mom brings me dinner when she comes pick me up at night."</p> <p>"I literally fix my breakfast in the back of my car. So that's how I do it. Now I have a bunch of things in my car. I have paper plates, I have spoons, I have napkins, I have everything. I have paper cups."</p> <p>"I'll bring like chips. I buy Doritos at the store. I have fruits, like I buy this container of grapes at BJ's and I have Ziploc bags at home, so I section it every time I need it... it's prewashed in my fridge, so I try to do less work. So, I just grab and put in a Ziploc bag and pack everything and go."</p>
Impact of Financial Concerns on Eating	<p>"Sometimes it'll be like this good oil that I'll look on the recipe and they say it's really good, or like this sauce, but it's like over \$10, \$15? I was like, maybe another time."</p> <p>"Like, today, I had a salad for lunch, and I had grilled chicken, but I had two pieces of chicken, and today when I was eating, I kind of realized I don't really have any more chicken left at home that's cooked. So, I kind of saved the other piece of chicken that I had for tomorrow, because I know I can always bring a salad."</p> <p>"If it's like basic vegetable, I might add water so it has more of a gravy so that I can use it for two to three days."</p> <p>"If I am running out of food, then I usually rely on my coworkers..., because some of them have been generous enough to offer me some."</p> <p>"On weekdays, I tend to try to skip or maybe I'll have a prepared sandwich, but that's about it...on campus is a little bit too expensive for me to buy anything. I make a sandwich with butter and that's it and I'll put it in my bag and that'll be my lunch. It's whole wheat bread with just butter. Actual butter."</p>
Unique Concerns of International Students	<p>"It (food pantry) helps me save some money, because as an international student, when you come here, everything seems much more expensive."</p> <p>"I just wake up late and then I have to run to the places, so that's why I skip the meal and sometimes doing that helps save money... because of transfer from the Vietnamese currency to the US. And I withdraw the money to pay for the rent, it cost like \$52 for only \$600. That's really expensive. The cost of saving on food is really important. Plus, I don't have any on campus job at all. I'm still looking for one."</p> <p>"I was worried about running out of food because the first year when I came, during the semester, I lost my on-campus job."</p>
Ideas for Pantry Improvement/Awareness	<p>"Somehow making it known that it's not just food. I feel like people really benefit from the non-food items as well."</p> <p>"Free food, free things to give away. That's what grabs a lot of people on campus. So maybe doing some activities like that or giving free shirts, free bags that says (Pantry Name) on it."</p> <p>"I also think they could put more variety of food...There's not much that I can actually eat from there because I can't have pork and beef."</p> <p>"I think one product at a time doesn't help...I can only have one of each kind. I can't have the one that I really like the most."</p> <p>"Maybe updating and trying to get people to grab two stuff? Because sometimes I noticed some comments that I've heard where it's like, 'oh, we can only get one thing and I wish I got two of those so I don't have to come back tomorrow'"</p> <p>"Maybe more variety, like quick and easy meals? I sometimes get tired of the granola bars. I'll switch to the fruit, but then I'll get tired of the fruit, switch back to the granola bars."</p> <p>"Maybe having more, like, quick and easy meals that we can grab. I know they have mac and cheese, but then you also require a stove to do that. They used to have mini mac and cheese bowls or was it instant noodles? But sometimes I don't like the instant noodles because they have so much sodium in them, and I try to stay away from those."</p> <p>"There's not a lot of stuff on the walls. It's really bland, and there's not a lot of color around it, so maybe like, getting that a little bit more lively so that when people walk in, it's not like an office kind of space."</p>
Feelings of Embarrassment	<p>"Honestly, for me...I'm a little bit, like, keeping it down low."</p> <p>"I feel like it's sort of like a common thing in our world where if we don't spend so and so money for food or whatever, then you're considered as poor or part of the underprivileged class."</p> <p>"As college students in society, I feel like students will always feel like they'll be judged if they need help."</p> <p>"I think also just kind of that stigma that...I feel like a part of the reason why the pantry is not used as often is just because since it's kind of almost hidden away from the student body. I feel like more students feel shameful about it because they feel like they're the only ones using it versus if it was open or more well known."</p> <p>"That's always been on top of my mind. Every time I make an order, I always feel like, am I grabbing somebody else's needs, somebody else's food to survive."</p> <p>"I know some students have told me they feel, like, embarrassed to go into the pantry because then it tends to make them seem like they're poor."</p> <p>"If it's free, it's for me. If it's free for someone else, it's for them too. But there's no embarrassment associated with it for me."</p>

All quotes presented in Table 4 are exact, unmodified, and unedited quotes from study participants.

expansion of cultural food items to represent a variety of ethnic backgrounds.

## Discussion

Within the last decade there has been an increase in research related to food insecurity rates among college students. The COVID-19 pandemic has had many public health implications including exacerbating food insecurity among vulnerable populations, such as college students.<sup>19</sup>

As the demand for food assistance increases, it becomes essential to assess how these resources are being used. The vast majority of research on campus-based food assistance programs has been conducted at public universities. The researchers of this study focused on campus-based pantry usage at private universities, aiming to use the findings to guide the design and operation of pantries at other private institutions.

Using a grounded theory approach, interviews revealed that students at private universities are vulnerable to food

**Table 5.** Usage patterns and wish lists.

Usage	"Whenever I run out of stuff, really and I went in there because two of my friends were, like, out of swipes, and they were struggling a bit, so I went in there and see if there was some food that I could come bring them, and then I did that."
Patterns	"I tend to go every single day because I have a locker and I try to stock up. Knowing me, I'm just like, who knows if they'll be low in stock next week, so I might as well grab one now and then have it in my locker and eat it for next week."
Quotes	"I tend to use it once a week the most because I obviously don't want to take too much advantage of it. I know there is a lot of people that might need it more than I do. I'm aware of that. I never really order more than once a week."
	"I mainly used it the first time just to see what was available, and then the second time I just wanted some extra food so I didn't have to buy as much food at the UC. So, I guess usually if I'm starting to feel low on money, I might be more inclined to look at other options and therefore use the pantry."
	"I just make sure I have everything I need, and when what I need is running out. I just take a couple of trips to the pantry."
	"I realized that I've gotten a couple of things where it helps me with breakfast."
	"I would say I try to use it, like, once every two weeks, but it ends up always being like, once a month because I would end up forgetting or it would not be convenient."
	"Like, once a week, but now it's probably once every two weeks because I don't know, I started skipping more breakfasts because I'm having more stuff to do. So, I'd have the cereal bars I'm seeing from here and the cans of fruit just sitting there. So, I have to place an order this week or for this week."
	"Depends on how much food that I have left and also how much toiletries I have left and if they have some new foods that they have - they recently put out like ramen and I think rice as well. So, if they have new food then that's when I get those too."
	"I would say when I first heard about the pantry, it was like maybe once a month during the pandemic, like I said, it was probably like every week I was getting something just to keep us by. And then now it's probably like once every two months, and it's just because the pantry hours change."
Items	"I get canned food a lot like the pineapple, corn, chickpeas, kidney beans, and the oatmeal. And also go for snack bars."
Chosen	"The pantry always has corn in there, so I'll get some corn. My smoothie has peanut butter. I'll grab some peanut butter. Like, I just grabbed peanut butter yesterday because I ran out."
	"I got granola bars one time, like a pack of granola bars, because I knew that could help replace my breakfast, since I don't have breakfast, if I just want to grab that and eat it in class one day."
	"I'll eat a lot of canned fruit. Yes, a lot of canned fruit. So, I have like two cans or three cans a week because I make orders every week because it just simplifies my breakfast."
	"If get laundry detergent a couple of times a week, I would only take peas and beans once or twice a week, depending on how often I consume them."
Wish List	"I wish they had some more diversity when it comes to cuisines, especially things that represent my background."
Items	"Maybe other staples like bread, rice."
	"I'll go with the obvious, like more fruits and vegetables."
	"Going back to the things that are missing, it would be nice if they have things like bread and eggs and dairy and the other things that you would get at a supermarket. Like, for example, they have, like, I would say my favorite thing is, like, Campbell's tomato soup with grilled cheese. But they don't have the cheese or the bread, they just have the soup. Just more like complete meals. It's a help, like, to be able to, like, if you wanted to make chicken and rice and beans, they have the beans. Sometimes they have the rice, but they don't have the chicken. So, it's like more complete meat meals or, I don't know, like, recipes. And then this is what they provide for that recipe type thing."
	"Bread. I know it's like, got a short shelf life and that's probably why they don't have it. But bread would be so good because then I can just make myself a quick sandwich in the morning instead of having to either wait till after 10:30 or just hoping that I can wake up extra early to go grab something from the UC. If I can just make something quick in my dorm and then head to class with that, that'd be awesome."
	"Um, maybe eggs just because you can use that multiple times. As you can see, my recurring theme is multiple uses. So maybe eggs just because you can like, let's say there's like six in it. That's six meals right there. So maybe things like that. Things that come in bulk kind of you know what I mean?"
	"Maybe, like, fruits. I don't know if they have a fridge, because fruits can go bad very easily. Maybe like something basic like apple, because a lot of people are big, like apple fans. Like, you grab an apple and then you come to school."
	"Like, more like, lentils and stuff? Yeah, because they are the things that mostly South Asian people, Pakistani, Indian, Bangladesh people consume. We don't have it there, and there is a whole variety of them, but we don't have it. We have red beans mostly in the pantry. I don't think we have any other kind of beans as well. So, people like me who consume specific dietary restrictions, they have really low options."
	"Any kind of, like, protein. Obviously, they can't do anything fresh, but like any kind of packaged protein, like that would be great because that's the main thing that I'm lacking, so..."
	"Just that, the nutrition bars and maybe even milk. I'm not sure pantry can have that, but milk and bread would help as well."
	"Fresh fruits maybe, if that's possible."
	"Maybe some cleaning supplies, basic cleaning supplies."
	"Because I usually cook rice and vegetables, so maybe there's some rice and the kind of vegetable like tomato or the stuff that you mentioned. That would be great."
	"Maybe more like cereals? There's only, like, honey nut, which I'm not very big on the honey part, but I'll still eat it because it's like, something quick I can eat. Maybe having, like, other options. It doesn't have to be, like, other stuff, like generic brands, like cornflakes, rice and Krispies. If they maybe had milk, I know a lot of students asked, do you have any milk? Because they have the refrigerators in the back, but they don't have nothing in the refrigerators. Maybe offering, like, little cartons of milk that'd be really great and beneficial."
	"I would say things like bread and the basic stuff; egg, bread, maybe some vegetables, if that would be possible? Something like that."
	"I don't know, instant coffee if you can get some instant coffee."

All quotes presented in Table 5 are exact, unmodified and unedited quotes from study participants.

insecurity and that students in need find campus-based food pantries to be valuable resources. Interestingly, it was found that at a private university, international students may be representative of a large subset of pantry users. This may be due to unique financial concerns that many international students may face, including high bank fees and a lack of funds. These findings suggest that the needs of international students, including the desire for culturally inclusive food items, should be carefully considered when developing

campus-based food pantries at private universities. The unpublished key informant interviews with pantry volunteers not only reinforce these findings but also offer additional suggestions for addressing the needs of international students.

Within the last decade, a great deal of research has been conducted at food pantries at public universities. As in this current study, many studies utilized the 6-item version of the U.S Household Food Insecurity Module. Rates of food insecurity found in those studies align closely to the results



at this private university. For instance, a study conducted by Esaryk et al. at ten public universities found that 49% of participants ran out of food and were concerned about their finances, a finding similar to this study, where 50% of participants reported sometimes or frequently worrying about running out of food.<sup>13</sup> The similarities between the findings at public universities and those observed at this private university highlight that, despite the higher enrollment costs at private institutions, financial challenges still persist. Another similarity found was the high percentage of campus-based pantry users who are international students from Eastern and Southeastern Asian countries.<sup>13,20</sup> This study at a private university adds to the existing body of knowledge by highlighting the importance of culturally appropriate inventory and staff training for the effective operation of on-campus food pantries at both public and private universities.

The results from this study point to the critical need of a campus-based food pantry, as many students identified it as a consistent source of support for their eating habits during times of financial hardship and inconsistent food access. While the pantry assisted in alleviating these issues and participants were mostly satisfied with its services, many participants offered suggestions and recommendations for improving the pantry with a main focus on raising awareness of the pantry and its offerings. Ideas for increasing awareness include a more prominent location with easier access. The majority of participants also supported expanding the pantry's selection of food and non-food products. The most popular suggestions included fresh fruits and vegetables, milk, bread, oil, rice, ready-to-eat meals, and more culturally curated food items along with an expanded hygiene, sanitary, and cleaning product selection. These suggestions, in conjunction with similar and complementary feedback received from the key informant interviews, point to the need for increased funding. Increased funding can provide the opportunity for more welcoming and attractive spaces; increased storage and refrigeration; and increased purchasing power to provide a wide array of culturally diverse food options. Increased opportunities for fresh produce such as a greenhouse and enhanced garden space could elevate the campus-based pantry and ultimately increase satisfaction and overall usage of the pantry.

## Conclusion

This study seeks to fill in a gap in research involving campus-based pantry usage at private universities. It may be assumed that students attending a private university are not at risk for food insecurity and do not need food assistance. However, the results of this study show that this is untrue; private university students may have financial concerns and may suffer from food insecurity including low access to inexpensive, quality food items. Additionally, this study revealed that international students may be a group of students who are particularly vulnerable to food insecurity. Since international students appear to be a large proportion of pantry users at a private university, it is important to

consider the specific needs of these students when planning and ordering pantry items. More research is needed on food insecurity at private universities and particularly on international students with an emphasis on Eastern Asian and South Asian students.

There are several limitations associated with this study. Although there are many advantages to using the U.S. Household Food Security Survey Module: Six-Item Short form, there are also documented limitations to using the short version instead of the 10-item or 18-item version.<sup>18</sup> These limitations include that the six-item measure is less precise and somewhat less reliable than the 18-item measure, does not assess the most severe levels of food insecurity, and does not include questions regarding the condition of children in the household.<sup>18</sup>

A key limitation to consider is the relatively small sample size; a larger sample closer to one hundred participants would provide a more accurate representation of the pantry client population. Another notable limitation was the absence of data collection tools to measure the types and quantities of items selected at the campus-based food pantry. Additionally, there are some inherent limitations of grounded theory, particularly subjective interpretations and researcher bias. These limitations should be taken into consideration during the design phase of future research studies.

## Future research

Additional research is needed to examine the needs of food insecure, international students. This may include surveying international students to gather information on the specific types of food items they would like to see in the pantry, along with general information about their eating and cooking habits to better meet their needs. Research examining strategies to increase outreach, awareness and usage of campus-based pantries at private universities is also needed. Pilot studies should be conducted to evaluate different intervention strategies such as increased signage, contests, cooking/tasting demonstrations, and social events.

Additionally, the research on food insecurity has recently shifted to examining nutrition security. The new 2-question nutrition screener developed by researchers at Tufts, Kaiser Permanente and Los Angeles Department of Public Health asks respondents questions about specific challenges related to accessing healthy foods.<sup>21</sup> Future research studies examining food insecurity among college students should consider using this nutrition screener in addition to the U.S. Household Food Security Survey Module: Six-Item Short form. Furthermore, With the use of the nutrition screener, a larger focus can be placed on accessing healthy foods. Researchers should consider evaluating the healthfulness of the food options available at campus-based pantries. Simply providing any type of food cost-free may not be sufficient in garnering healthy educational environments for students in need. Partnering with community programs such as cooperative extensions and libraries may promote nutrition security while reducing the stigma of accepting cost-free food.<sup>20</sup>

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## Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States and received approval from the Institutional Review Board of Adelphi University, protocol #061122.

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