

Food insecurity and social connections among university food pantry users before and during COVID-19

Anthony D. Campbell,^{a *} Jennifer F. Jettner,^b and Katherine Crawford^c
Auburn University

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Abstract

Student food insecurity is a significant concern on college campuses in the United States and beyond. While demographic risk factors for food insecurity are well-documented, the influence of social factors, such as social relationships and social support, remains less understood. This study aimed to explore the experiences of college food pantry users in relation to food insecurity and social connections. Participants included 53 student food

pantry users from a university in the southeastern United States. The study used a mixed-methods approach, incorporating a quantitative survey to assess food insecurity, social support, social isolation, and demographics, alongside eight qualitative interviews to explore experiences before and during the COVID-19 pandemic. Findings indicated that 47% of participants reported very low food security on the U.S. Adult Food Security Questionnaire, and 30% reported low food security, signifying that together 77% of the sample had experienced food insecurity within the past 12 months. On average, moderate levels of both social support and social isolation were reported, with considerable variation among participants. A key finding is that past food insecurity or adverse life events in the previous year increased the likelihood

^{a *} *Corresponding author:* Anthony D. Campbell, Assistant Professor, Department of Sociology, Anthropology, and Social Work, Auburn University, Auburn, Alabama, USA; adc0044@auburn.edu;

 <https://orcid.org/0000-0001-7255-8263>

^b Jennifer F. Jettner, Assistant Professor, Department of Sociology, Anthropology, and Social Work, Auburn University, Auburn, Alabama, USA; jfj0010@auburn.edu;

 <https://orcid.org/0000-0001-5378-8418>

^c Katherine Crawford, Assistant Professor, Department of Sociology, Anthropology, and Social Work, Auburn University, Auburn, Alabama, USA; kjc0070@auburn.edu;

 <https://orcid.org/0000-0001-9386-2926>

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of very low food security. Qualitative themes included the impact of the pandemic on food security and food pantry access, the role of social connections, and the challenges of resource navigation. The qualitative findings emphasize the importance of social connections in securing access to food and the impacts of social isolation on food security and general well-being. Drawing from these insights, food insecurity may be viewed as a traumatic experience. Therefore, it is recommended that university food pantries adopt a trauma-informed approach to service delivery and screen students for critical risk factors such as past food insecurity and adverse life events. By implementing these strategies, food pantries can foster a safe and supportive environment and integrate social support resources and programs within their spaces.

Keywords

college students, food insecurity, food pantry, social support, resources, trauma-informed approach, COVID-19

College Student Food Insecurity

Food insecurity affects a significant proportion of college students in the United States and beyond (Bruening et al., 2017; Nikolaus et al., 2020). Its prevalence is so notable that it has been described as a syndemic—a set of interconnected health and social issues (Zhong & Xie, 2025). Food insecurity is defined as having “inadequate access to safe, nutritious food to sustain an active and healthy lifestyle” and is classified as either very low or low food security scores on the U.S. Adult Food Security Questionnaire (U.S. Department of Agriculture, Economic Research Service [USDA ERS], n.d.). Meta-analyses estimate food insecurity rates on college campuses to range from 32.9% (Bruening et al., 2017) to 41% (Nikolaus et al., 2020). These figures are considerably higher than national food insecurity trends, which have generally declined from 14.6% in 2008 to 10.2% in 2021, although the rate increased to 12.8% in 2022 to 13.5% in 2023 (Rabbitt et al., 2024; USDA ERS, 2022). This disparity indicates that college students face a heightened risk of food insecurity compared to the general population. Research during the COVID-19 pandemic revealed a sharp rise in food

insecurity among students, driven by changes in financial support, employment, and housing stability (Mialki et al., 2021; Rafferty et al., 2023; Soldavini et al., 2021). Notably, these elevated rates persisted in the aftermath of the pandemic (Zhong & Xie, 2025).

Consequences and Correlates of College Student Food Insecurity

The impacts of food insecurity on college students are evident across multiple dimensions of holistic well-being. Students experiencing food insecurity are more likely to suffer from anxiety and depression (Mukigi et al., 2019) and report higher levels of stress and poorer sleep quality (El Zein et al., 2019) compared to students without food insecurity. The consequences of food insecurity also poorly affect academic performance (Bruening et al., 2017), including decreased attention and concentration (Mukigi et al., 2019), lower grade point averages (El Zein et al., 2019; Morris et al., 2016; Patton-López et al., 2014), lower classroom attendance rates, and an increased likelihood of failing or withdrawing from courses (Silva et al., 2017). A qualitative study by Meza et al. (2019) found that food-insecure students often have poorer academic performance and elevated stress levels when experiencing hunger. As such, the specific experiences of hunger and very low food security are two separate but related concerns within the broader context of food insecurity, and both are particularly concerning issues for college students. Hunger is defined as “a potential consequence of food insecurity that, because of prolonged, involuntary lack of food, results in discomfort, illness, weakness, or pain that goes beyond the usual uneasy sensation” (USDA ERS, 2025b). While it is difficult to measure hunger using survey methods, studies show that very low food security is associated with hunger and the symptoms of hunger (Carlson et al., 1999; Kendall et al., 1996).

Food insecurity disproportionately affects students of color in U.S. universities (Bruening et al., 2017; El Zein et al., 2019; Morris et al., 2016). Socioeconomic factors contributing to this issue include lower income levels (Patton-López et al., 2014) and parental education limited to a high school diploma or less (El Zein et al., 2019). Para-

doxically, employed students are more likely to experience food insecurity (Patton-López et al., 2014), perhaps due to insufficient external financial resources. Research indicates that a lack of parental financial support or financial independence is strongly associated with food insecurity (Bruening et al., 2017; Gaines et al., 2014), whereas financial support from family improves food security outcomes (Soldavini et al., 2021). Younger students who are newly independent and students who are parents themselves face a heightened risk of food insecurity (Bruening et al., 2017). Living arrangements also play a significant role, as students who live alone or off campus are more likely to experience food insecurity (El Zein et al., 2019; Morris et al., 2016). During the COVID-19 pandemic, one study revealed that students who lived alone or remained in their pre-pandemic housing were more likely to encounter barriers to food access (Davitt et al., 2021).

Social Connections and Food Insecurity

Adequate social connections are beneficial for health and well-being (Berkman, 2000; Holt-Lunstad, 2022). Social relationships also play a pivotal role in facilitating a healthy adjustment to college life (Taylor et al., 2014; Vidal et al., 2022). Support from various sources has been shown to counteract stress, loneliness, and depression while improving physical health among college students (Lee et al., 2018). However, limited research exists on how social factors, such as social support and social isolation, may influence students' food insecurity or act as protective or risk factors (Bruening et al., 2017). While two studies investigating the relationship between social support and food security in community samples did not find significant associations (Chhabra et al., 2014; De Marco & Thorburn, 2009), research on college students has only addressed the relationship between social connections and food security indirectly. Qualitative studies suggest that food-insecure students may avoid social activities, such as going out with friends, due to financial constraints (Mukigi et al., 2019). Similarly, students may struggle to develop meaningful relationships because they cannot afford to dine out and often feel embarrassed or reluctant to seek help (Meza et al., 2019). Despite

these insights, few studies have thoroughly examined how social relationships affect food security among college students.

External resources, including material and psychosocial support from friends and family, are critical factors influencing food insecurity (Gaines et al., 2014). A lack of external resources or supportive social connections can increase students' risk of food insecurity. Similarly, experiencing an unusual or disruptive life event may heighten this risk by directly affecting the availability of these resources. Such exogenous shocks may include financial hardships or major health issues, such as a serious illness or the death of a loved one (Gaines et al., 2014; Mukigi et al., 2019). These events can also lead to shifts in social connections, further influencing access to necessary resources and supports. Moreover, the transition from adolescence to young adulthood during the college years involves significant adjustments, as students learn to navigate life challenges independently. Experiencing an exogenous event during this critical developmental period may impair students' ability to effectively respond to their circumstances. Studies show that experiencing adverse childhood experiences (ACEs) is associated with food insecurity in emerging adults (Larson et al., 2023; Royer et al., 2022). Furthermore, the complex experience of food insecurity, whether as children or adults, may be viewed as a form of trauma, suggesting the need to view food insecurity through a trauma-informed lens (Hecht et al., 2018; Larson et al., 2023). Trauma is defined as "an experience that is emotionally painful, distressful, or shocking, and one that often has long-term negative mental and physical (including neurological) consequence" (Straussner & Calnan, 2014, p. 323). Hecht et al. (2018) link food insecurity with trauma, such that "given the painful nature of food insecurity and the physical and mental health consequences that often accompany it[,] ... for many, food insecurity creates trauma" (p. 1962).

The literature on food security among college students is limited in several ways. First, a review of food-insecurity studies found that few measured food insecurity with and without hunger, thus restricting the ability to draw comprehensive conclusions about student outcomes (Cady, 2014).

Also, many studies did not include diverse student populations, such as graduate and professional students, students in rural areas, or nontraditional students, including international students (Bruening et al., 2017). Finally, little is known about how social relationships may serve as risk or protective factors for college student food security.

Current Study

This study explores the relationship between social connections, demographic factors, and food insecurity in a diverse sample of student users of a university-sponsored food pantry. It adopts a mixed-methods approach, utilizing a quantitative survey conducted before the COVID-19 pandemic and a qualitative interview phase that took place incidentally during the pandemic. The study addresses the following research questions: (1) What are the characteristics of student food pantry users, including their food security levels, social connections, and demographic characteristics? (2) Is food insecurity associated with social connections, such as social support and social isolation, or other demographic characteristics? and (3) How did students who are food pantry users experience and utilize social connections to navigate food insecurity before and during COVID-19? By investigating these questions, this study seeks to deepen the understanding of the factors influencing food insecurity. The findings may be used to enhance the trauma-informed provision of services for students facing these challenges, particularly in the context of external disruptions, such as the COVID-19 pandemic.

Applied Research Methods

The following subsections describe the sampling procedures, measurement strategies for quantitative and qualitative data collection, and data analysis approaches for the study.

Procedure and Participants

All study procedures were approved by the Institutional Review Board at Auburn University (#20-328 EX). This mixed-method study followed a sequential design, beginning with a quantitative phase followed by a qualitative phase. In the first phase, a web-based survey was administered to a

sample of students who had used the campus food pantry. The food pantry manager, independent of the research team, emailed a study information letter and survey link to a list of recent food pantry users. To ensure anonymity, no identifying information was collected. Participants were offered a US\$20 gift card as an incentive to complete the survey, with this incentive provided separately to ensure it was unlinked to their survey responses. Survey data collection occurred between December 2019 and February 2020. Of the 110 students contacted, 53 completed the survey, yielding a 48% response rate. All surveys were collected before the beginning of the COVID-19 pandemic. The second phase involved follow-up qualitative interviews conducted between March and April 2020 with survey respondents who expressed interest. Due to COVID-19 restrictions, the university closed and began remote course delivery in March, and coincidentally, all interviews took place in the first two months of the pandemic. To add context for the study, there were several disruptions to campus operations, including the closure of dining facilities and dormitories during the spring semester and decreased availability of campus food pantry and transportation services. Within this context, all 53 survey respondents were invited to participate in this phase, with 8 participants completing the interviews, each receiving an additional US\$20 incentive payment. The interviews, conducted virtually by the first and second authors, averaged 50 minutes and were recorded for transcription.

Measures

The following subsections describe the operationalization and measurement of quantitative study variables, including measures of demographic characteristics, food security, and social connections. Qualitative interview data collection procedures are also discussed, followed by procedures for data analysis for both quantitative and qualitative data.

Demographic Variables

Sociodemographic information collected included participants' age, race, ethnicity, sex, gender identity, domestic or international student status, aca-

demic level, current grade point average, employment status, residence (on- or off-campus), marital status, relationship status, children in household, and access to reliable transportation. Participants were asked if they had experienced any adverse financial or health-related circumstances within the past 12 months. Additionally, a range of financial resources was assessed through a series of yes/no questions. Participants indicated whether they received Supplemental Nutrition Assistance Program (SNAP) benefits; financial support from parents, guardians, or relatives; grants or scholarships; and if they were employed. They also reported whether they had a credit card, carried credit-card debt, and had the ability to use their credit card to purchase food.

Food Security Measures

Food security was assessed using the 10-item U.S. Adult Food Security Questionnaire (AFSQ), the most widely used measurement tool (Nikolaus et al., 2020; USDA ERS, 2025a). The questionnaire consists of a series of yes/no questions (e.g., Did you ever cut the size of your meals or skip meals because there wasn't enough money for food?) and frequency-based follow-up questions (e.g., If yes, how often did this happen?). Yes responses were scored as 1 point each, with total scores ranging from 0 to 10, categorized into four levels as follows: high food security (0), marginal food security (1–2), low food security (3–5), and very low food security (6–10) (USDA ERS, 2021). For this study, the variable was also collapsed into two categories: “very low food security” and “all other levels” to better assess risk factors that may be associated with hunger. Participants were asked to report their experiences over the past 12 months. While first-year students are sometimes excluded from similar studies to avoid potential bias due to the transition from high school to college (Gaines et al., 2014), they were intentionally included in this research to capture their experiences, since they may be particularly vulnerable during this transition. Additionally, lifetime prevalence of food insecurity was evaluated with the question: “Before 12 months ago, were there times when the food for you and your family just did not last and there was no money to buy more?”

Social Connections Measures

Social connection variables in this study included measures of social support and social isolation. Social support was assessed using the 19-item Medical Outcomes Study Social Support Scale (MOS-SSS) (Sherbourne & Stewart, 1991). This measure was chosen because it has been validated in college student populations, and it seemed to be most appropriate for a study on food security. Participants indicated their perceived level of support across various types of assistance, responding on a five-point Likert scale ranging from *none of the time* to *all of the time*. Example items included: “Someone to give you information to help you understand a situation,” “Someone to take you to the doctor if you needed it,” “Someone who shows you love and affection,” and “Someone to do something enjoyable with.” For the purposes of this study, the means for the total social support scores across 19 items were calculated, resulting in possible mean scores of 1–5, and categorical thresholds were identified as follows: low social support (1–2), moderate social support (2.1–3.5), and high social support (3.6–5). The means for the four subscales of social support—tangible support, emotional support, affection, and positive social interaction—were also calculated with the same thresholds.

Social isolation was measured using a three-item Social Isolation Scale (Hughes et al., 2004). Participants reported how often they felt that they lacked companionship, were isolated from others, and were lonely within the past year. Participants rated their responses on a three-point Likert scale ranging from *hardly ever* to *often*, and scores were summed, with higher scores indicating greater social isolation, resulting in a possible range of 3–9.

Qualitative Measures

A semi-structured interview guide was used to elicit students' perspectives on key study concepts before and during the COVID-19 pandemic. Open-ended questions were designed to encourage individual elaboration, with additional probing questions used to obtain further details when needed. The topics explored included participants' social connections, the nature and extent of any changes in their social relationships, the influence of social connections on food insecurity before

and during the pandemic, and how participants navigated resources—such as the campus food pantry and other available services—to meet their food needs.

Data Analysis

For the survey data analysis, univariate statistics (e.g., means and frequencies) were used to describe the sample, and bivariate statistics (e.g., chi-square tests and independent *t*-tests) were used to identify differences between food-security groups. All statistical analyses were conducted using SPSS version 26. For the interview data, an inductive content analysis approach was utilized to generate broad codes relevant to the research questions and was based on a thorough review of each transcript by the three authors (Hsieh & Shannon, 2005). Similar codes were grouped into categories, which were then used to build themes that connected participant interviews. To ensure consistency and reliability, the authors met regularly to discuss codes, review coding consistency, and reach consensus on the emerging themes.

Results

The following subsections begin with a description of the quantitative results from the survey, including demographic characteristics and bivariate statistics regarding potential associations between food security and key study variables. This is followed by a description of qualitative findings from semi-structured interviews with a subsample of participants.

Descriptive Statistics

This section outlines demographic characteristics of the participants and descriptive data regarding the levels of food security and social connections reported by participants.

Demographic Characteristics

The demographics of the study sample are summarized in Table 1. Compared to the university's overall student population, this sample was notably diverse. A greater proportion of students identified as people of color (46%), compared to white students (54%). More participants identified as women (60%) rather than men (34%) and 5.7% of

students identified as gender nonconforming or transgender. The sample included a higher percentage of graduate and professional students (57%) compared to undergraduates (43%) and a significant number of international students (47%) compared to domestic students (53%). The average age of participants was 26.3 years ($SD = 5.4$; range = 18–45). Among the sample, 19% were married, another 7% were in a committed relationship, and 11% had children. Academically, 76% had a GPA of 3.0 or higher. Most participants lived off-campus (94%), had reliable transportation (68%), and shared their living spaces with others (70%). Nearly half of the participants (47%) reported experiencing an exogenous event in the past year, such as a major financial setback or an adverse health-related circumstance (prior to COVID-19). Regarding financial resources, a minority of students received SNAP benefits (21%), parental or guardian financial assistance (34%), or student loans (38%). However, the majority received grants or scholarships (66%), were employed part-time (55%) or full-time (15%), and owned a credit card (76%).

Food Security

Statistics on food security among participants are also shown in Table 1. Participants were categorized into the following USDA food security levels: 47.2% reported very low food security, 30.2% low food security, 18.9% marginal food security, and 3.8% high food security. Overall, 77% of respondents were classified as food insecure (very low or low food security), while 23% fell into the marginal or high food security categories. Additionally, 47% of the participants reported experiencing very low food security within the past 12 months, and half of the participants indicated having ever experienced food insecurity at some point *prior to* the past year.

Social Connections

Participants reported moderate levels of both social support and social isolation, with mean scores shown in Table 1. The mean score on the MOS Social Support Scale was 3.3 ($SD = 1.04$), above the midpoint (3) on the scale of 1–5, indicating moderate overall social support. Subscale scores showed variation, with tangible social support

items averaging 2.8, below the midpoint but still considered moderate and lower than emotional support (3.4), affection support (3.5), and positive social interaction (3.5), all of which were moderate. Individual responses varied widely, with some participants reporting minimal social support and others indicating high levels of social support, resulting in moderate overall average scores. Similarly,

social isolation scores averaged 6.2 ($SD = 1.85$; range = 3–9), aligning with the midpoint (6) on the scale, which indicates that participants experienced moderate levels of social isolation.

Bivariate Analysis

Chi-square analyses and independent *t*-tests used to identify risk and/or protective factors are summa-

Table 1. Descriptive Characteristics (N = 53)

	N/Mean	%/SD		N/Mean	%/SD
Demographics					
Age	26.28	5.39	Receive grants or scholarships		
Gender			Yes	35	66.0
Female	32	60.4	No	18	34.0
Male	18	34.0	Have student loans		
Gender non-conforming or trans	3	5.7	Yes	20	37.7
Race			No	33	62.3
Asian	6	11.3	Employed		
Black/African American	8	15.1	Yes	37	69.8
White	28	52.8	No	16	30.2
Biracial or multiracial	6	11.3	Have credit card	40	75.5
Other	4	7.6	Yes	13	24.5
Hispanic ethnicity			No	13	24.5
Yes	17	32.1	Able to use credit card for food (n = 40)		
No	36	67.9	Yes	35	87.5
International student			No	5	12.5
Yes	25	47.2	Food Security Status		
No	28	52.8	Food security level		
Academic level			High food security	2	3.8
Freshman	1	1.9	Marginal food security	10	18.9
Sophomore	1	1.9	Low food security	16	30.2
Junior	4	32.1	Very low food security	25	47.2
Senior	17	32.1	Past 12 months		
Graduate or professional	30	56.6	Not very low food security	25	52.8
Grade point average			Very low food security	25	47.2
0.00-1.99	1	1.9	Ever food insecure (prior to the last 12 months)		
2.00-2.99	12	22.6	Yes	25	50.0
3.00-3.99	25	47.2	No	25	50.0
4.00	15	28.3	Social Connections		
Marital status			Social Support Scale	3.3	1.04
Single, never married	39	73.6	Tangible (sub-scale)	2.8	1.19
Married	10	18.9	Emotional (sub-scale)	3.4	1.10
Divorced or separated	4	7.6	Affection (sub-scale)	3.5	1.14
In committed relationship			Positive social interaction (sub-scale)	3.5	1.07
Yes	14	26.4	Help get your mind off things (single item)	3.3	1.35
No	39	73.6	Social Isolation Scale	6.2	1.85
Living situation			Exogenous Event		
Alone	16	30.2	Experienced adverse event in last 12 months		
With roommate(s)	22	41.5	Yes	25	47.2
With significant other	11	20.8	No	28	52.8
With family members	4	7.5			<i>continued</i>
Children in household					
Yes	6	11.3			
No	47	88.7			

Table 1, continued.

	N/Mean	%/SD
Reliable transportation		
Yes	36	67.9
No	16	30.2
Receive SNAP benefits		
Yes	11	20.8
No	42	79.2
Receive parent or guardian financial assistance		
Yes	18	34.0
No	35	66.0

Note. N = 52 for race and transportation; N = 50 for sex & ever food insecure; N = 40 for able to use credit card for food

alized in Tables 2 and 3. Among the demographic variables commonly associated with student food insecurity—such as younger age, racial or ethnic minority status, living alone or off-campus, or being employed or financially independent—none was found to be a significant predictor in this sample.

Chi-square analyses revealed two factors that are significantly related to having very low food security: past experiences of food insecurity and experiencing an exogenous negative event (see Table 2). Participants who had experienced an adverse financial-related or health-related event within the past 12 months were more likely (76%) to experience very low food security compared to those who had not (24%); $p < 0.001$. Similarly, those who indicated that they had experienced a time when they could not afford to purchase food prior to the past 12 months were much more likely to have very low food security (69.6%) compared to those who had not (33.3%); $p < 0.01$. An unexpected finding was that the social connection variables—social support and social isolation—were not significantly associated with very low food security. However, tangible support approached statistical significance at $p = 0.054$ (see Table 3).

Qualitative Findings

The purpose of the qualitative interview phase of the study was to give voice to the perspectives of students and their experiences with food insecurity and social connections. Since the interviews occurred during the COVID-19 pandemic, responses reflected experiences prior to and during the pan-

demic. The following overarching and interconnected themes emerged:

Theme 1: Impact of pandemic on food security and food pantry access

Participants shared a range of experiences related to how the COVID-19 pandemic affected their access to food. They discussed a variety of pandemic-related limitations, including the transition from on-campus to virtual classes, work-related changes, income changes, transportation challenges, and alterations to the operations of the university food pantry. These limitations naturally led to hardships for some but led to improved circumstances for others. For example, an African American female student compared her food access before and during the pandemic as follows: “It was spotty. I’d use the food pantry when it just wasn’t enough, and I needed something else to tide me over. But for the most part, I’ve missed meals, I missed meals regularly pre-COVID, too.” She had used the food pantry on a regular basis, but during the pandemic, she only used it once because “it was really hard to get to it” even though she wished she could still use it. For one international female graduate student, the barriers to food access substantially increased to the point where she was not able to use the food pantry or go to the grocery store at all during the early pandemic in March and April 2020. She reported stopping using any supportive services for fear of virus exposure. Another female student explained that access to food during COVID-19 became “just another barrier and another layer of stress that definitely impacted the process of getting food securely.”

Table 2. Chi-Square Differences in Food Security by Select Demographic Factors (N = 53)

	Not Very Low Food Security		Very Low Food Security		X ²	p
	n	%	n	%		
Gender						
Female	17	63.0	15	65.2	0.027	0.869
Male	10	37.0	8	34.8		
Race						
White	16	57.1	12	50.0	0.265	0.606
Non-white	12	42.9	12	50.0		
Hispanic ethnicity						
Yes	11	39.3	6	24.0	1.416	0.234
No	17	60.7	19	76.0		
International student						
Yes	14	50.0	11	44.0	0.191	0.662
No	14	50.0	14	56.0		
Academic Level						
Undergraduate	11	39.3	12	48.0	0.408	0.523
Graduate/professional	17	60.7	13	52.0		
Living Situation						
Alone	7	25.0	9	36.0	0.758	0.384
With others	21	75.0	16	64.0		
Experienced exogenous event						
Yes	6	21.4	19	76.0	15.784	0.000
No	22	78.6	6	24.0		
Ever food insecure						
Yes	9	33.3	16	69.6	6.522	0.011
No	18	66.7	7	30.4		
Parent/guardian financial assistance						
Yes	11	39.3	7	28.0	0.750	0.386
No	17	60.7	18	72.0		
Have student loans						
Yes	12	42.9	8	32.0	0.663	0.416
No	16	57.1	17	68.0		
Employed						
Yes	20	71.4	17	68.0	0.074	0.786
No	8	28.6	8	32.0		
Member of community organization						
Yes	5	17.9	9	36.0	2.237	0.135
No	23	82.1	16	64.0		

Table 3. T-test Differences in Food Security by Age and Social Connections (N = 53)

	t	df	p	M Diff	95% CI	
					Lower	Upper
Age	-0.562	51	0.577	-0.81	-3.72	2.10
Social Support Scale	1.297	51	0.201	0.37	-0.20	0.94
Tangible	1.975	51	0.054	0.63	-0.01	1.27
Emotional	0.994	51	0.325	0.30	-0.31	0.91
Affection	0.572	51	0.570	0.18	-0.45	0.81
Positive social interaction	1.196	51	0.237	0.35	-0.24	0.94
Help get your mind off things	1.342	51	0.186	0.50	-0.25	1.24
Social Isolation Scale	-1.405	51	0.166	-0.71	-1.72	0.30

Logistical changes in food pantry days and pickup times affected several students, with three students reducing their use accordingly and one student maintaining her pre-pandemic use of the food pantry by altering her routine to accommodate those changes. Finally, one student shared how she unexpectedly had

greater access to food now and since COVID-19 than before, because [due to reduced work hours beginning two and half months before] I was able to start receiving food assistance from the state and [due to having a less-restrictive class schedule with no in-person classes] actually use the food pantry program more.

Theme 2: Impact of pandemic on social connections

Participants shared a range of social changes due to the pandemic, with some severely impacted, one temporarily more isolated, while others paradoxically were able to increase contact and reconnect with family. A Black female student intimated one of the more detrimental social circumstances as she described the major changes she experienced. She explained, “It was just really hard, emotionally, mentally, socially. And a lot of my social relationships kind of dissolved because of it. ... The weight of the whole thing. And it’s kind of hard trying to keep a friendship together while you’re also trying to keep yourself together.” An international male student stated his social connections were “affected greatly” during the pandemic. He explained that he took precautions very seriously and avoided the social outlets that he and his spouse and young child normally benefited from, including going to the park and having meetings with others from his home country. While he said he felt much more isolated during the pandemic, he reported increased family connections back home because he was able to communicate with them more via FaceTime and share concerns about the mutual pandemic experience.

A white female student, who had previously sought support for long-term mental health difficulties, elaborated on some of the social challenges she faced during the pandemic:

I felt like before COVID-19 I was doing a good job with therapy and finding more personal security and when COVID-19 happened, the people I was seeing had to get a lot smaller. So, it’s definitely been more challenging to continue to dig into relationships, to express needs, to meet other people’s needs. I still definitely have a very small bubble of people that I directly interact with.

She explained that despite those limitations, she wanted to protect her social relationships by “focusing on the people around me, that we share love and support and realizing that everyone is in a similar boat, and it doesn’t make you strange or weird or crazy to be struggling.” She went on to say she made a conscious choice “to push myself in that direction so that I didn’t allow the pandemic to collapse my social support.” Another participant, an international female student, stated that other than being socially isolated during extensive lockdowns at the onset of the pandemic, she was only temporarily affected and quickly resumed in-person social interactions, despite social distancing recommendations. Finally, a white female student shared how pandemic stressors led to reconnecting and mending her relationship with estranged parents. She explained that the unusual pandemic circumstances necessitated reaching out for help, and her family agreed to do so. She also reported developing a closer relationship with her partner, who helped her navigate the uncertain experience. Overall, participants alluded to their social connections as being instrumental in their access to resources, further emphasized in the next theme.

Theme 3: Navigation of social resources

All interview participants elaborated on the importance of social connections for addressing their food security and other basic needs during the pandemic. Out of necessity, participants described being highly self-reliant, resourceful, and creative in their efforts to meet basic needs, utilizing multiple resources. Clearly, receiving services from the campus food pantry was a crucial resource, but it often served as a catalyst for accessing additional resources. For example, one white female explained, “I just think that once I had the access to the initial

campus food pantry resource, things just kind of took off from there in a positive way. I started researching more, more opportunities, more just things that are going around.” She went on to say that contacts at the food pantry enabled additional resources, such as “being able to get an EBT card [electronic benefit transfer card, for cash and food assistance programs] and getting some information about the community food bank.” Another female student noted her resourcefulness, “I just sort of routinely keep a Word document with a list of resources. . . . So, I just kind of keep a running list of counseling, food sources . . . whatever is going on that’s available in the community.” She also related:

I’ve always utilized resources. Even as a child, I was going to food banks and asking churches and continued to do that through my young adult life. . . . I started looking for food for my family at a very young age, so I understood there were resources. I knew how to apply for food stamps by the time I was 10. I think I grew up understanding that if you didn’t have food, you had to find a way to get it and there was support for that.

The previous passage is not only about self-reliance and navigating resources, but also highlights the idea that past food insecurity and adversities have a direct influence on how a person adapts to current circumstances. She noted that it seemed simple for her to navigate resources because of her experience, but recognized that “for a lot of students, there’s a lot of barriers to taking that step.”

A Black female student discussed relying on family and friends who were willing to help her financially on a temporary basis. This participant’s experience reveals the interplay between navigating resources and social connections, as she explained, “. . . socially, my everything, food, bills, all of that was positively impacted due to social connections and getting help from friends, whether it’s financial help. But just talking to them to get resources.” Indeed, several of the participants indicated they learned of the campus food pantry directly from social connections such as friends, faculty advisors,

or university staff. They emphasized the importance of awareness of services and that social awareness among students should be expanded.

Discussion

This study examines the multifaceted experiences of students with food insecurity, incorporating diverse demographic characteristics and social relationships. To achieve this, the study surveyed students before the COVID-19 pandemic and then gathered in-depth perspectives from those willing to share their experiences with food insecurity and intersecting factors, both before and during the pandemic. As a mixed-methods study of food pantry users at a southeastern U.S. university, it provides valuable insights into the challenges faced by college students dealing with food insecurity. The following sections highlight the study’s novel contributions and connect its findings to existing literature.

Food Insecurity and Student Characteristics

Findings revealed that most students using the campus food pantry experienced food insecurity, with the largest proportion reporting very low food security—a result unsurprising given the sample. This observation aligns with prior studies on student food insecurity (Nikolaus et al., 2020). Intuitively, students with prior experiences of food insecurity were the most likely to report very low food security. This finding parallels results from other qualitative studies where students recounted childhood food insecurity experiences (Mukigi et al., 2019; Zigmont et al., 2021). Mukigi and colleagues (2019) reported that approximately half of the college students interviewed had experienced food insecurity in the past, while the other half was experiencing it for the first time (Mukigi et al., 2019). Similarly, in our survey, half of the students had experienced food insecurity in the past, and that group was significantly more likely to report current very low food security. This was reinforced in interviews in which some students discussed childhood food insecurity and its connection to their current concerns.

The demographic composition of the participants also distinguished this sample from the broader university student population and from

those represented in some other studies. The sample was quite diverse, including higher proportions of students of color, international students, upper-classmen, and graduate students relative to the overall campus composition. These sample characteristics are similar to those observed in a Canadian university study (Farahbakhsh et al., 2015), providing more evidence that nontraditional students (international students, graduate students, students with families) and/or students of minority status may be more likely to use campus food pantry services. Interestingly, we discovered that despite the high degree of diversity within this group on many characteristics (age, race, ethnicity, academic level, marital status, etc.), none of those demographic factors was significantly associated with very low food security. Consequently, a key takeaway is the importance of avoiding generalized assumptions about which student demographic groups are at the greatest risk of food insecurity. Instead, it is essential to carefully assess and consider the intersectional and multidimensional experiences that contribute to students' risk of food insecurity.

Food Insecurity and Social Connections

A notable contribution of this study is its broader examination of social relationship factors and their connection to student food security. Quantitatively, participants' responses displayed considerable variation, ranging from very low levels to quite high levels of support across multiple subtypes. Despite this diversity, the social support scale did not show a significant association with food insecurity. Although some students experienced high levels of social isolation and low levels of social support, these patterns were not reflected in the bivariate analyses of food insecurity. These null findings may stem from measurement issues, including choosing the best tool from a variety of competing social support and isolation instruments. For example, instead of using the MOS-SSS, employing a different validated measure of social support, such as the Social Support Questionnaire or the Multidimensional Scale of Perceived Social Support, may have yielded different results.

The qualitative phase of our study revealed details related to social connections and food insecurity that the survey could not detect. Students

reported a range of experiences related to social connections, both negative and positive, that clearly affected their access to resources and support during the pandemic. Our qualitative findings align with and extend the findings of other studies related to college student food insecurity. A qualitative study by Manboard and colleagues (2021) revealed that students adopted various strategies for dealing with pandemic food challenges, including using food pantries, relying on social supports such as food sharing, and seeking help from community support programs. In another interview study, Mukigi et al. (2019) found an important role of support systems in negotiating food insecurity, such as using a food pantry and asking for help from informal supports. More studies of college students are needed to further understand how social relationships influence food security in this special population.

In addition, in the pre-pandemic survey, students experiencing very low food security were more likely to report having had an exogenous event in the past 12 months and having less access to financial support. One possible explanation is that the disruptive event may have stressed, strained, or dissolved possible social relationships that otherwise could have offered financial assistance. Interviews occurring during the pandemic revealed how COVID-19, as a collectively experienced exogenous event, led to sequential events that directly affected participants' lives in holistic ways, including food security, social interactions, and resources.

Intersecting Influences Before and During Pandemic

Students addressed food insecurity issues before and during the COVID-19 pandemic in a variety of ways. Notably, not all students experienced negative consequences of the pandemic; in fact, some were able to access more resources and improve their social connections despite the stressors of the ongoing event. Prior experiences affected several students' responses and actions. Some students persevered through food insecurity by using various community resources and skills they developed to identify, request, and secure assistance. Others, however, found that the pandemic only weakened

their limited social support and hindered access to needed resources. After experiencing an exogenous or disruptive event, distinct types of responses emerged. Some respondents developed new skills and strategies, while others found that their coping skills decreased or diminished. This is especially evident in maintaining social connections and asking for support. This study reveals that there are multiple pathways and outcomes for students experiencing food insecurity. It also supports a need for further exploration of the events affecting students' college trajectories.

Past research shows that food insecurity in adulthood is not only linked with facing food insecurity as a child, but also with the experience of additional and multiple adverse childhood experiences (Becker et al., 2018; Chilton et al., 2015). This study did not account for the adverse experiences that occurred prior to the most recent 12 months, meaning those who reported a disruptive event in recent months may also have a history of childhood adversity. This is important, as these childhood experiences may significantly impact the students' ability to cope, their access to financial support and social connections, and their overall physical and psychological health. The combination of past and recent negative experiences may be experienced as trauma because the difficulties emerging from the events exceed the capacity of an individual to cope with them. As such, it is necessary to acknowledge when students are struggling with food insecurity because it may occur alongside or in addition to other difficult or traumatic life events. Services could be developed to not only address food insecurity but also address the relational, physical, and mental health concerns these students are facing (Becker et al., 2018; Chilton et al., 2015).

When addressing past and current trauma, several protective factors can help mitigate the consequences, including fostering a sense of purpose and building interpersonal connections (Hamby et al., 2020, 2021). Students highlighted that the campus food pantry serves not only as a source of food but also as a connection to additional resources. The campus food pantry has the potential to function as an access point for holistic intervention and as a space for fostering community among students

who may be struggling. Hecht and colleagues (2018) propose that food insecurity itself constitutes a form of trauma, whether it occurs as a single event or repeatedly, resulting in severe physical, social, and psychological consequences. Our study reinforced this notion, finding that students experiencing very low food security were also more likely to have experienced a disruptive event within the past 12 months, signifying an additional major life stressor alongside food insecurity. Furthermore, research indicates that adults facing food insecurity are often more likely to have endured one or more adverse childhood events. The cumulative impacts of these factors underscore the value of college food pantry services adopting a trauma-informed approach.

Policy and Practice Implications

Based on the findings, recommendations to enhance the services of university food pantries include adopting a trauma-informed approach and incorporating social connection opportunities alongside food programs. A trauma-informed approach to food insecurity services requires a fundamental understanding of the prevalence of past and present trauma and its profound impact on those seeking assistance. This would involve staff and volunteers being aware of the concepts of trauma, trauma-informed care, and food insecurity as a form of trauma. This could be accomplished through a brief in-person or video educational training as part of an existing staff or volunteer orientation. To improve assessment of student circumstances and needs, staff could screen for past food insecurity and adverse events that increase student risk for continued food insecurity. This could involve asking an additional two questions at intake, which would not substantially increase the amount of time required or the burden to the assessment process for staff or consumers. Even if a food pantry does not have an intake or assessment process, simply understanding the potential for trauma and its reciprocal impact on food security and providing support from that standpoint would be beneficial.

Trauma-informed food insecurity services could ensure a safe, supportive, and nonjudgmental environment where students can build meaningful

connections with peers and staff, address mental and physical health challenges, and access additional resources. This could include creating inviting spaces to host small group interactions with peers. Additional strategies to enhance social connections within food pantries include facilitating peer support groups for sharing experiences and coping strategies, creating peer mentoring programs for new food pantry users, hosting engaging social events at the food pantry to raise awareness and build community, and promoting social campaigns that normalize discussions about food insecurity and reduce the stigma of seeking assistance. Since food insecurity is linked to the experience of trauma and mental health concerns, it is important that campus food pantries ensure they have close connections with mental health and counseling support services that are available to students through the institution. Food pantry staff could refer students to mental health resources and professionals as needed.

Inviting students' perspectives and experiences through satisfaction surveys is essential for identifying areas of improvement and tailoring services to best meet their needs. Gardiner and Harvey (2024) illustrate this with their survey findings, which revealed students' desire for additional campus food pantry support, including school supplies, hygiene and toiletry items, cooking utensils, information on other emergency resources, financial assistance, and recipes. Together, these approaches align with a trauma-informed framework and help address social risk factors commonly linked to food insecurity.

Study Limitations

Although this study had numerous strengths, particularly its simultaneous examination of student food insecurity and social support, it also had several limitations. The study had a small sample size of 53 participants who used a food pantry at a single large university in the U.S. Southeast. Therefore, the findings are not generalizable to all food pantry users, the larger student body, or other institutions. While the sample was relatively diverse, it may not have captured the full diversity of experiences of all campus food pantry users and is likely different from non-campus food pantry samples.

The campus location and socioeconomic context, along with the uniqueness of this campus food pantry, limit its applicability to pantry operations or universities in other regions or populations. The time-period in which the study took place also limits the findings since the survey responses occurred before the COVID-19 pandemic and the interviews were conducted in the first two months of the pandemic. Students' experiences could have changed significantly in later stages and after the pandemic. Additionally, the inclusion of all food pantry users, regardless of whether their needs had been met, may have included students whose food insecurity or social needs had already been resolved. Another limitation was focusing only on food pantry users, combined with the lack of a comparison group of students who were not using the food pantry. While only eight interviews were conducted, the in-depth responses provided valuable insights, highlighting both shared circumstances and the unique experiences of students facing food insecurity before and during the pandemic. The diversity in responses may also explain some of the null findings from the quantitative phase. Despite these limitations, this case study at one campus food pantry can be used as an example of methodology and recommendations for researchers and practitioners who are exploring college students' social connections and food security.

Conclusions

Addressing food insecurity among college students requires a comprehensive and multifaceted approach. This study's findings emphasize that campus food pantries and their staff serve a broader role beyond providing access to food, aligning with strategic recommendations for addressing campus food insecurity (Freudenberg et al., 2019; Peterson & Freidus, 2020). Food pantries might consider including more assessment and consideration of students' previous experiences of food insecurity, the impact of exogenous factors that create hardships during college, the associations of food insecurity with trauma, and the availability of social support resources. Interviews conducted during the COVID-19 pandemic revealed significant challenges faced by students and highlighted the influence of social connections on their

food security status. Future research could delve deeper into the exploration of how social relationships may serve as protective factors against food insecurity among college students. Recommendations for university food pantries include adopting

a trauma-informed approach to service delivery and integrating opportunities for social connection alongside providing resources and addressing students' basic food needs. 

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