

Journal of Urban Learning, Teaching, and Research

Volume 17, SPECIAL ISSUE
August 2023

A publication of the AERA Urban Learning, Teaching & Research SIG

***2023 Special Issue: Illuminating Effective Practices,
Approaches, and Strategies in Urban Education***



The Students Are Hungry: A Conceptual Model to Understanding Food Insecurity Among Minoritized College Students at Urban Higher Education Institutions

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Abstract

Approximately one in five college students suffers from food insecurity, however, racially/ethnically minoritized students attending urban universities are more likely to experience food insecurity. Although these concerns are well documented, there has been a gap in the theory-driven tools used by higher education professionals to alleviate food insecurity for minoritized students at urban institutions. Guided by a reconceptualized Ecological Systems Model (Network-Ecological Systems Model), this present study aims to identify a model and solutions on food insecurity mitigation for minoritized college students in urban institutions. Findings of the developed model suggest pathways of social connections that higher education professionals can use for direct alleviation of food insecurity, which has major implications for the academic achievement, social connections, and a general sense of belonging and belonging.

Keywords: food insecurity, minoritized college students, higher ed, systems network, ecological systems theory

Introduction

For minoritized students, obtaining a college education has been viewed as a path for upward mobility and growth from historical education gaps (Espenshade & Radford, 2009). While there has been increased opportunities for minoritized students to attend colleges and universities in the United States, it has not been without challenges. One challenge that has been identified as a health and educational epidemic for college students is food insecurity (McCoy et al., 2022). The United States Department of Agriculture (USDA, 2019) defines food insecurity as a lack of access to affordable and fresh foods to live an active, healthy, and productive life, as it inhibits the ability to acquire food to maintain a healthy lifestyle or meet basic needs socially.

In 2020, 1 in 8 Americans were classified as food insecure (Coleman-Jensen et al., 2019). However, 38% of college students attending two-year institutions, 29% of college students attending four-year institutions, 56% of first-generation college students, and 70% racially/ethnically minoritized college students currently suffer from food insecurity in the United States (Hagedorn-Hartfield et al., 2022; McCoy et al., 2022; Shaak, 2021).

Geographically, urban higher education institutions are those within cities with a population of 250,000 or more persons. However, urban public universities serve an enormous share of historically underserved populations, such as low-income, minoritized, and first-generation students (Brost, 2017). According to Riposa (2003), universities must meet the criteria to be considered an urban university: (1) it enrolls 20% or more of its students on a part-time basis; (2) it is in a city with a population of 250,000 or more; (3) it has graduate and professional schools; and (4) it grants the Ph.D. degree. The National Center for Education Statistics states that more than 20 million US students in universities and colleges in urban environments, including all those who are 18-24 years old, are exposed to food insecurity, at risk for food insecurity, food insecure, or highly food insecure, with most of them nested in the highly food insecure bracket (Coleman-Jensen, 2022). According to a recent study, Black, first-generation college students had 296% higher odds of being food insecure compared to white first-generation students (Olfert et al., 2021).

Concurrently, the demographics of college students have changed, with more, first generation, non-traditional, and minoritized students seeking college degrees (Larkin, 2018). Despite the increase in degree seeking opportunities, many students often hold a lower

socioeconomic status designation, which qualifies them for federal support of an estimated coverage of 30% of the cost of tuition (Larkin, 2018; Protopsaltis & Parrott, 2017). Due to the lack of additional financial assistance beyond tuition coverage, the reality for many minoritized college students is meal skipping and hunger due to the inability to afford food as they prioritize other college expenses (rent, textbooks, lab fees, etc.) (Hagedorn-Hartfield et al., 2022).

College students who experienced food insecurity and have access to a campus or community food pantry expressed many barriers with achieving their educational goals and attributed it to their food insecurity status (Berry et al., 2020). Food insecure students also reported having challenges with mental health, finances, time constraints due to working multiple jobs, lack of focus, and family responsibilities (Berry et al., 2020). Food insecurity is also associated with poor physical health and obesity, which has severe implications on academic performance (Anderson & Good, 2017). For college students in urban higher education institutions, they reported an overwhelming struggle between work and academic balance, the lack of affordable and healthy food choices, societal and emotional constraints, and a lack of basic needs (Perkins & Savoy, 2021). A study conducted at five urban higher education institutions highlighted the experience of a minoritized student facing food insecurity as such:

There are [societal] forces to make sure we stay in a state of poverty. College is one of the places where students want to break out of that. When we're in college, we don't have a home to go back to or parents who are paying for it. We have work-study, a second job, and then school on top of that. It becomes much harder to get through school when you have responsibilities. College ideally could be focusing on school and academics. But it's not the case (Perkins & Savoy, 2021).

Studies have found that minoritized students report a lower sense of belonging compared to their white counterparts due to negative or challenging cultural and social experiences (Vaccaro & Newman, 2016). Baumeister and Leary's (1995) theory of belonging argues that the need to belong is a fundamental right and has lasting, positive impacts on an individual. Students with food insecurity are less likely to perceive a sense of belonging or seek student support services to help them address their needs (Wood et al., 2017). According

to Schlossberg's (1987) five aspects of matter (attention, importance, dependence, appreciation, and ego extension), urban higher education institutions and higher education professionals have a wide range of opportunities to provide students with holistic support to allow them to shift their energy from basic need security to academic success and enjoyment in the college setting. For institutions to truly move the needle on food insecurity, a focus on personalized care in urban higher education institutions would be needed as they would not only give students a greater sense of belonging to their institution, but evidence shows that there are positive effects on the overall college experience of students by increasing focus on classwork, increasing academic achievement, reducing stress and anxiety, and decreasing non-ideal methods of obtaining food for survival (Allen, 2021; Bruening et al., 2016; Armstrong, 2020).

Although college students' food insecurity status has gained the attention of media, researchers, and administrators in recent years, there is still a gap in food access, regardless of the campus mitigation efforts through food pantries (Brito-Silva et al., 2022). Students reported the following barriers to food pantry use: being unaware of their campuses having a food pantry, time constraints, lack of transportation, limited pantry operation hours, social stigma (Brito-Silva et al., 2022). Dubick et al., (2016) explored the challenges of food insecurity among college students in 12 states that comprise community colleges and four-year institutions. The results of that study revealed that the students had access to a meal plan, received financial aid, SNAP, worked on campus and were still food insecure. The Dubick study brought a great deal of attention to both public health and higher education administration, as it highlighted a service gap and showed the need for extensive research due to limited resources, increased stress, and poor health that affect student success, long-term health and well-being, and academic achievement (Dubick et al., 2016). The study also showed the difference in the impacts of food insecurity on student achievement in rural and urban institutions, where the burden and impacts in urban institutions far outweighed rural institutions for all students regardless of race and socioeconomic status.

Findings from current literature show that urban higher education institutions have made strides in addressing food insecurity on campuses by installing food pantries, which also addresses the issue of community urban food deserts (Perkins & Savoy, 2021). Some universities, like the University of Albany, have responded to a state mandate to address food insecurity, which led to the opening of the Purple Pantry on their campus to serve the university and the urban community (Perkins & Savoy, 2021). Food deserts have been defined

as urban areas with 10 or fewer stores or where residents cannot buy affordable and healthy food (Walker et al., 2010). While it is important to acknowledge these strides, they have not been conducted in an equitable manner, as many minoritized students at predominantly white institutions (PWIs) experience food insecurity at a higher rate than their majoritized racial/ethnic counterparts (Shi et al., 2021). Minoritized students are defined as students who belong to a culturally, ethnically, or racially distinct group that coexists with but is subordinate to a more dominant group of students (United States Code, 2011).

Since the gap continues to persist, there needs to be person-centered, student focused approaches to the alleviation of food insecurity. Food insecurity among college students is likely to increase if the expansion of higher education continues to draw students from communities that have historically been underrepresented, and this is especially true for urban universities (Willis, 2019). The shift in the approaches to alleviation needs to include the consideration of the impact of food insecurity on students' academic lives. This study embarks on the first known attempt to build a conceptual model using public health and student development theories to explain the process of socializing ecological factors as a means of building mitigation networks for minoritized food insecure students at urban higher education institutions. The model can be used alone as a methodological tool, or it can be used as a tool to aid in person-centered statistical analysis research focused on the elevation of students who face food insecurity first-hand and the faculty and staff that support them (Perkins & Savoy, 2021). The guiding questions for the development of the conceptual model are:

- How do minoritized students at urban higher education institutions in the United States experience food insecurity?
- How does food insecurity impact student success and academic achievement?
- Who are the key stakeholders in food insecurity mitigation for minoritized students?
- What other basic needs and barriers are occurring during food insecurity?
- What approaches do universities and colleges currently use to mitigate food insecurity on their campuses and in their communities?

Conceptual Model

Food insecurity among minoritized college students in urban settings is a complex challenge that must be addressed at the micro, meso, and macro levels (Donaldson & Daughtery, 2011). An intersectional approach can benefit minoritized students at urban higher education institutions by understanding students' needs through an intersectional lens and providing intersectional solutions (Academic Impressions, 2023). By using this approach, we can understand the inequalities faced by students and identify the key personnel and strategies to immediate and long-term actions to mitigate food insecurity. When designing a conceptual model, consideration for the population, complexity of the problem, and solutions need to be brought to the forefront. To address food insecurity in minoritized students, the conceptual model components may be hidden or overlap, meaning the objectives, inputs and outputs, and model content may sometimes be the same components (Robinson et al., 2015).

To guide the formation of the new conceptual model, the student development theory Ecological Systems Theory will be used, but not in its traditional form. Since social networks have been shown to act as a facilitator to food access and serve as a resource for food and a responsibility to provide for, the conceptual model will also be guided by the integration of social network components (Anderson et al., 2022). The role of ecological systems and networks in the impact of on-campus resource distribution and access, financial burdens and barriers to food access, and other basic needs will be examined in the conceptual model.

Ecological Systems Theory

Ecological Systems Theory (EST) places an individual within the center of five nested structures: microsystems, mesosystems, macrosystems, exosystems, and chronosystems (Barnett et al., 2019). The microsystem is the system of people, groups, or institutions that play an immediate and explicit role in a student's life (direct contact) (Bronfenbrenner, 2000). The mesosystem is the interactions between different microsystems. The macrosystem is the largest and most distant collection of people to the student but they still have an influence on the student (Bronfenbrenner, 2000). The exosystem refers to the settings in which a student's development occurs and can affect them directly or indirectly (Bronfenbrenner, 2000). The chronosystem adds the element of time and change in a student's development and takes into consideration life events and societal changes.

This is considered the traditional view of the 1979 Bronfenbrenner model, which stresses if changes occur at one level, all other levels will see significant effects and developmental outcomes will be sparked or stifled at all levels. Studies that have used the traditional model to examine food insecurity among college students used the concentric circles model, which usually explains predictors or effects, but not at the same time for the ecological setting of an individual. Morris & Smith (2016) explored food insecurity through the EST model among college students at four public universities in a rural setting. In that study, the microsystem consisted of the college student. The results of the Morris & Smith (2016) study showed that 35% of those college students were food insecure, with a higher prevalence of food insecurity seen among African Americans, those with a lower GPA, those living off campus independently, and those receiving financial aid. A lower risk was observed among those who lived with parents and support groups. Considerations to unpack food insecurity experiences among college students at the meso level would involve evaluating the influence of family, friends, social networks, and the university (Barnett et al., 2019). A higher education professional can consider the financial obligations of college students that prevent risk factors for food insecurity. Addressing risk factors in conjunction with food access could have a holistic impact on student development through different nested levels (Fox, 2017).

If we use Bronfenbrenner's model for minoritized college students at urban higher education institutions in the 21st century and their challenges, there may be limitations that cannot be overlooked, resulting in the continuation of food insecurity in the future. However, there is an approach that allows for an expansion of the ecological systems theory model not as nested (concentric circles), but as networked. This assumes more of a socioecological and social network model approach, where levels are not nested within each other, but instead, as juxta-positioned forces to impact a student's development (Dietz, 2015). Social network models are used in public health studies to show how social networks are formed, how they evolve, and how they impact an individual or social group (Valente, 2010). The networked model still considers micro-, meso-, and exosystems, while macro- and chronosystems are often hidden but implied through interactions. For ecological models, setting is an important factor, and using a reconstructed EST allows for a reconceptualization of setting from a specific location to interactions among common forces, which shape the development of individuals who engage in common patterns of interactions, regardless of location (Neal & Neal, 2013). It is also true that if individuals have interactions at the same location, they differ (Neal & Neal, 2013);

for example, if a student and mentor A interact professionally in the office and a different student and mentor B fight in the same office, those may have developmental consequences. Here, a network perspective contends that different forces are likely to shape the development of these two students because they are engaged in different patterns of social interaction, even if in the same location (Neal & Neal, 2013). Using this perspective, the focus is placed more on social interactions than setting, while saying that they are both important.

By defining the networked-EST as a setting of interactions, this allows for the formation of an ecological model that has overlapping environmental structures, connected to each other by direct and indirect paths based on social interactions. This structure allows each system to be individualized based on the personal social interactions of a minoritized college student within the urban higher education institution setting. An example model that higher education professionals can use to address food insecurity is using social interactions among a minoritized college student and interactions between eight other key individuals (peers, higher education professionals, community partners/ local food suppliers, study body president, professors, parents/ guardians, sports/ organization leaders, and church leader). Illustration of the model (Figure 1).

The minoritized college student experiencing food insecurity is at the center and shaded darker than the other network members. Each set of people that interact with each other is considered a setting and is represented by the enclosed dashed circle. In one of the microsystem settings, the minoritized college student interacts with person D, whose role in higher administration can be student success or services, and person E, who is the student's professor. They can provide immediate services to the student to alleviate food insecurity by continuing to connect them to others in their network that can either provide the student with healthy food choices or eliminate the barriers causing food insecurity. They themselves can also help with the effects of food insecurity, like low academic achievement. In this model, there are three microsystems created based on social interactions, and according to Bronfenbrenner (1977) and Renn & Reason (2021), the microsystem has the most influence on the development of the student; hence it can be assumed that the more microsystems formed, the stronger social interactions the student will have with the most influential people to make them food secure.

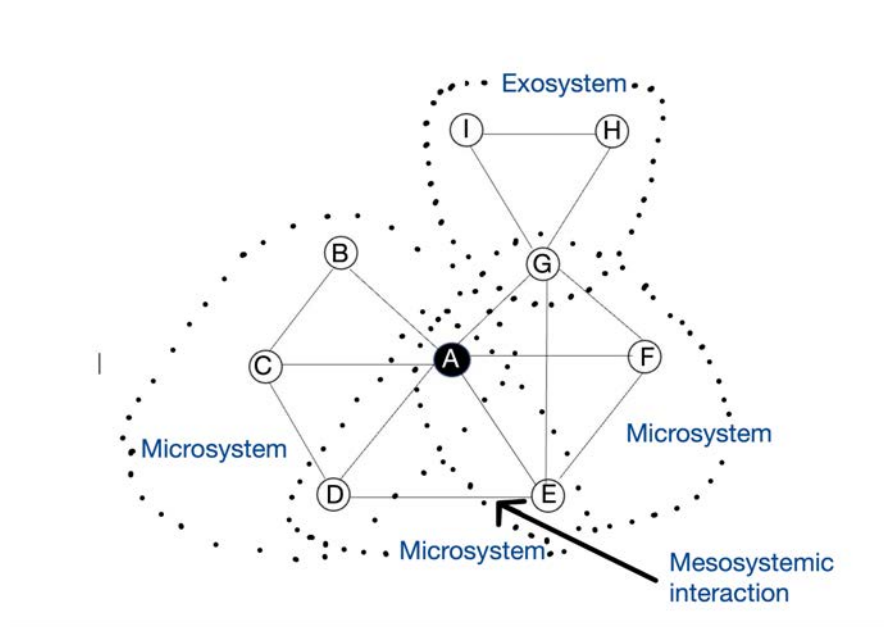
In a networked EST model, a mesosystem is a social interaction between participants in different settings that both include the minoritized college student (Neal & Neal, 2013). The

professionals working in the mesosystem can examine how the university addresses food insecurity among their college students, along with whether the student's family is able to intervene (Camelo & Elliott, 2019). The exosystem for a networked model, much like the traditional model, may have indirect effects on the development of minoritized college students, but the interactions are important because they influence the decision or abilities of the other key personnel who have direct connections to the student. In the illustrated model, it includes Person H, who may in this case represent a local food business or community partner like Kroger Food stores, and they have direct social interactions with Person G (Student Body President), who is in a microsystem with the minoritized college student. In this microsystem there is also Person I who represents the food pantry organization and is directly connected to the community partners and the Student Body President. This interaction can allow the student to have access to the resources that a person can provide to alleviate food insecurity, through social interactions of the exosystem. When a tight knit social flow of services occurs at an urban institution where food insecurity occurs in the external environment, it reinforces the goal of the model to reduce inconsistent access to food and build networks of support for students suffering from food insecurity on campuses.

One limitation of the networked model is that it sidelines the mesosystem, which, when used in the traditional model, captures the societal factors that a minoritized college student faces in an urban institution to cause a disadvantaged experience. If the mesosystem is included in the networked model, it can be listed as an internal factor with influences on social interactions and hence housed outside the main system as a meso-systemic interaction (shown in Figure 1). Pathways can be drawn to show the personnel/ systems that affect student status in college based on their food insecurity status, which include sociodemographic factors.

Figure 1

Networked conceptual model of ecological systems focused on minoritized college students in urban institutions



Implications For Practice

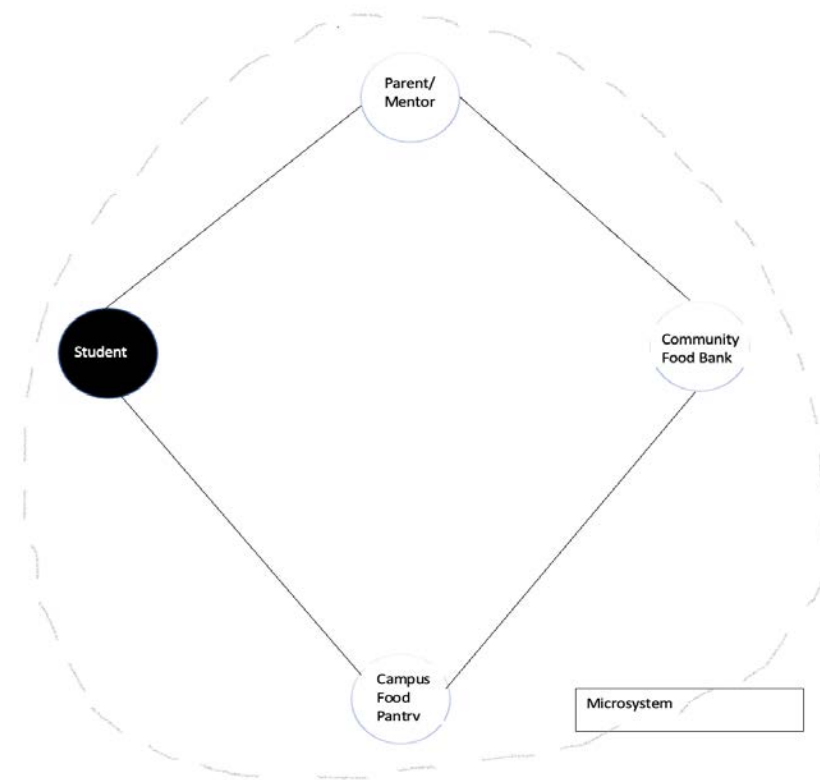
There are a significant number of minoritized students studying at urban higher education institutions in the United States who are considered food insecure (Olfert et al., 2021). It is not only an internal higher education institution ecological concern, but there are community-level factors that impact minoritized college students' success and food insecurity status at urban institutions. Current research has shown that there is progress to alleviate the burden on all students (Ellison et al., 2021; Freudenberg et al., 2019); however, higher education institutions may not fully capture the scope of food insecurity faced by minoritized students on their campuses. This is often due to the complex and ecological nature of their burden, which includes co-occurring burdens such as racial injustices, housing insecurity, financial barriers, and high family or household demands (Hagedorn-Hartfield et al., 2022). Evidence still shows that where there is a heightened prevalence of food insecurity, and combined with correlations that increase the risk, there are detrimental health outcomes with not having a secure source of food and major academic implications (Hagedorn-Hartfield et al., 2022). Minoritized students at urban institutions continue to report higher rates of fair/poor health, symptoms of depression, higher prevalence of obesity, decreased academic

productivity, and choosing between academic expenses and food (Bruening et al., 2017). The research continues to show that there is a deficit in effective support for the students in need. A conceptual support model, centering the minoritized food insecure student/s in need, allows for all the key academic, family, peer, and community personnel to have direct or indirect access to alleviation of food insecurity.

By addressing food insecurity in a networked-ecological manner, it allows for intrapersonal, interpersonal, institutional, community, and family level tools and interventions to be used. From the model created above (Figure 1), higher education professionals can create microsystems that are effective for specific urban areas, institutions, and students. One example can be seen in Figure 2., where the minoritized student is directly connected to a parent or mentor who has a connection or a network with the community food bank. The community food bank has a direct connection or relationship with the on-campus food pantry, which the student can directly access. This microsystem was built through networking and ecological systems. Urban institutions are challenged with similar food source issues as their external community. It is important for urban institutions to use their local food pantry in the networked approach to food insecurity alleviation. However, because urban communities do not have sustainable, conventional food systems, this can be challenging. This means that there is not always access to fresh or healthy food in neighborhoods of minoritized persons or low-income persons (Pothukuchi & Molnar, 2015). Because the university is a part of this community and student and their families often live there, it often directly affects them by leading to diet-related illness and academic challenges (Bruening et al., 2017; Pothukuchi & Molnar, 2015). For some urban communities and urban higher education institutions, the solution has been urban agriculture, farmers markets, and farm-to-college programs (Pothukuchi & Molnar, 2015). It not only addresses food insecurity challenges, but also addresses urban community and institutional food sustainability goals, with many urban institutions across the United States installing campus gardens, farm-to-dining hall programs, and college farms (Pothukuchi & Molnar, 2015).

Figure 2

Example of a microsystem from the networked conceptual model of ecological systems focused on food insecure minoritized college students in urban institutions



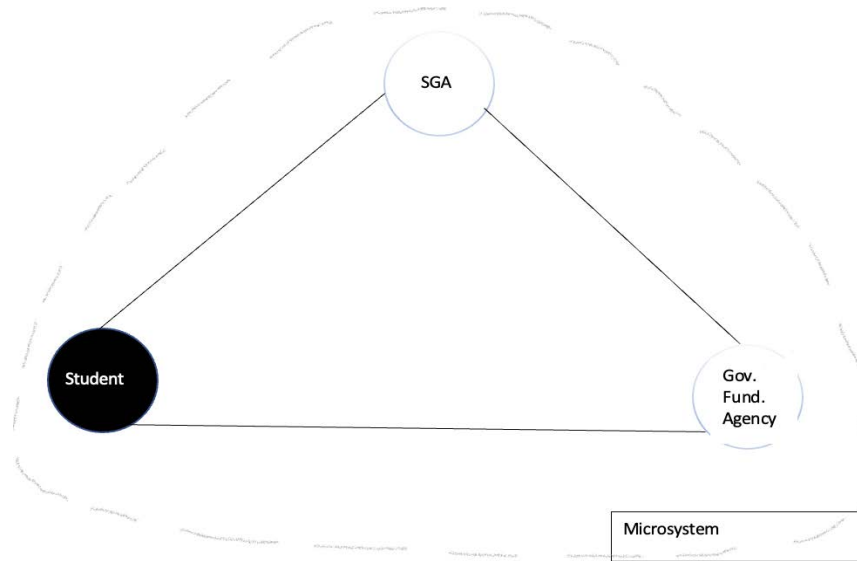
There is a variation of challenges experienced by students who are food insecure. Specifically, minoritized students at urban higher education institutions are experiencing hunger, they have past experiences with food insecurity (childhood), they most likely depend on on-campus housing or live at home with relatives and have family obligations, so they have a part-time job (Broton et al., 2018). Urban higher education institutions are often home to many low-income students, minoritized students, first-generation, or students with the challenges listed above (Kresge Foundation, 2020; Broton et al., 2018). These institutions have historically been underfunded, hence making it difficult to provide student support services to address academic and social needs (Jordan, 2017). Parallel to food insecurity, minoritized students at urban higher education institutions have lower graduation rates than their racial/ethnic majoritized counterparts (National Center for Education Statistics, 2023; Carey,

2008). From an ecological and network approach, there needs to be a systems level solution to help in the mitigation of food insecurity and other co-occurring challenges for minoritized students. Like the well-functioning ecosystems developed by The Kresge Foundation, which encourages universities to engage with other institutions, non-profits, government agencies, school districts, and employers to increase student credentials, urban higher education institutions can use their networks to target food insecurity in a similar way.

Since we have identified that institutional underfunding and past exposure to childhood food insecurity are issues faced by the food insecure student and the urban higher education institution, another microsystem example can include the minoritized food insecure students, the student government association (SGA) at the institution, and a governmental funding agency (See Figure 3). The minoritized food insecure student can share their challenges with the SGA at one of their open meetings, allowing the SGA to gather local student body information based on student requests for food resources. The SGA can advocate and use their network to connect to a governmental funding agency, with a well-developed proposal for a longitudinal funding plan for food and student support resources. The governmental funding agency is only networked to the minoritized food insecure student if they fund the proposed plan. By using this approach, it not only helps the students in need, but it also strengthens the institutional relationships with cross-sector partnerships and has the capacity to be redone to address urban community food insecurity.

Figure 3

Example of a microsystem from the networked conceptual model of ecological systems focused on food insecure minoritized college students in urban institutions



Higher education professionals and community partners like those included in the ecological systems conceptual models above (Figures 1-3) and those such as university presidents, student affairs offices, and resident life etc., must take action to address food insecurity for the minoritized students in an individualistic or systems level approach. There is a desperate need for urban higher education institutions to understand the dimensions by which their students encounter, experience and express food insecurity. Higher education professionals are often students' first point of professional contact at their institutions. Hence, they can create a network for their students by helping them gain knowledge about governmental food resource programs like SNAP (Supplemental Nutrition Assistance Program) (Taylor, 2023). Administrators can also work with federal funding agencies and private funding corporations to offer students more financial assistance (Taylor, 2023). Here the administrators are taking the role of an advocate. Another important institutional push administrators can advocate for is the participation in the Hope Center Real College Survey. This survey is the nation's largest and most well-established assessment of students' basic needs (The Hope Center, 2022). It collects and provides data on food and housing insecurity

among college students (Baker-Smith et al., 2020). Having timely, accurate data can aid in institutions aggressively addressing students' basic needs (Baker-Smith et al., 2020).

To better understand the severity of food insecurity among minoritized students at urban institutions, there needs to be additional studies done on targeted subpopulation like minoritized graduate students, professional students, etc. This study has several limitations including: (a) time of study, (b) positionality, and (c) statistical analysis. This study may have been a bit more appropriate before the global pandemic and the introduction of the COVID-19 global pandemic added complication to how persons socialize, how universities access and allocate resources, and the overall increased burden for minoritized students. Our positionality as researchers, and instructors at a large Predominantly White Institution also has an impact. Finally, this study could be strengthened with data collection and a sample of students to share their experiences with food insecurity. This study is significant in various ways. Not only is it filling a gap in the existing research around the experiences of food insecurity by minoritized students at urban higher education institutions, but it serves as a tool for administrators to inform practice at these institutions. In addition, professors can use the reconceptualized EST model as a tool to inform classroom and school practice for all ages. This study can also inform advocacy and policy strategies through proper implementation of solutions for vulnerable populations (Willis, 2019).

Conclusions

Food insecurity among minoritized college students is an educational epidemic and a complex system-level issue for urban higher education. Previous research highlighted that there is still a need to pursue solutions to alleviate food insecurity for minoritized students at urban higher education institutions. By reconceptualizing the EST, it highlights that intrapersonal, interpersonal, institutional, community, and family level approaches may be the way forward to helping minoritized college students with food insecurity and co-occurring challenges. Urban higher education institutions can provide resources, programming, and advocate for their institutions, community, and minoritized students' basic needs support. By addressing food insecurity on urban college campuses using the conceptual model, there is potential to have community level impact and can influence policy development for college students' food access.

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