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Understanding the cumulative burden of basic needs insecurities: associations with health and academic achievement among college students

Cindy W. Leung¹, Sara Farooqui², Julia A. Wolfson³, Alicia J. Cohen^{4,5}

¹Department of Nutritional Sciences, University of Michigan School of Public Health, Ann Arbor, MI

²Department of Biology, College of Literature, Science, and the Arts, University of Michigan, Ann Arbor, MI

³Department of Health Management and Policy, University of Michigan School of Public Health, Ann Arbor, MI

⁴Department of Family Medicine, Warren Alpert Medical School of Brown University, Providence, RI

⁵Department of Health Services Policy and Practice, Brown School of Public Health, Providence, RI

Abstract

PURPOSE: Food insecurity is a concern on college campuses, and is correlated with other basic needs insecurities. We examined the cumulative burden of food, financial, and housing insecurities on college students' health and academic performance.

DESIGN: Cross-sectional survey

SETTING: Large, public Midwestern university

SAMPLE: 793 college students completed an online survey in 2018 (43% response rate)

MEASURES: Food, financial, and housing insecurity were measured using validated instruments. Primary outcomes were general health status, anxiety and depression, and grade point average.

ANALYSIS: Weighted linear and logistic regression analyses were used to examine associations between cumulative basic needs insecurities and primary outcomes.

RESULTS: Approximately 11% of students experienced all three insecurities. Compared to fully secure students, students with all three insecurities were more likely to have anxiety and

Corresponding author: Cindy Leung, ScD, MPH, Department of Nutritional Sciences, University of Michigan School of Public Health, 1415 Washington Heights, Ann Arbor, MI 48109-2029, Phone: (734) 647-9087; Fax: (734) 936-7283, cindyleung@post.harvard.edu.

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depression (OR 4.65, 95% CI 4.31, 5.01), fair/poor health (OR 4.06, 95% CI 3.73, 4.42), and lower GPA ($\beta = -0.19$, 95% CI $-0.30, -0.09$), adjusting for sociodemographic characteristics.

CONCLUSION: Interventions that address multiple basic needs insecurities are needed to promote college students' well-being and foster academic success.

Keywords

food insecurity; college students; health status; mental health; grade point average

PURPOSE

Today, nearly three-quarters of college students are financially independent from their parents, work full-time, or are otherwise “non-traditional”.¹ Many students are also able to attend college due to financial aid and scholarships; however, these programs are often insufficient to cover the full cost of a four-year degree. Students who come from less privileged backgrounds sometimes sacrifice their basic needs to pay for academic expenses. Recently, reports of “hunger and homelessness” have brought awareness to invisible issues on college campuses.² Food insecurity, or inadequate food availability and access, affects 35–42% of college students.^{2, 3} Housing insecurity, ranging from difficulties in paying rent to homelessness, affects one-third of undergraduate students.² Financial insecurity, or insufficient monetary resources for basic needs, further contributes to food and housing insecurities among college students. Although food, housing, and financial insecurities are correlated, few studies have examined their cumulative burden on students' academic achievement. This study addresses this knowledge gap by examining the cumulative burden of basic needs insecurities on college students' health and academic performance.

METHODS

Design

An online survey was sent to students enrolled at the University of Michigan in 2018. The purpose of the survey was “to improve our understanding of students' health and well-ness.” Informed consent was obtained electronically at the beginning of the survey, and a second layer of consent was requested to link their responses to student record data from the Office of the Registrar. Details of the survey have been published elsewhere.⁴

Sample

A random sample of 2,000 students enrolled at the University of Michigan in 2018 was generated by the Office of the Registrar and included students at all academic levels, with an oversample of students from minority race/ethnicity backgrounds, from households with incomes <\$65,000, and first-generation college students. Of these, 851 (43%) responded. Respondents who were missing data on key variables were excluded, yielding an analytic sample of 793 students. The study was approved by the Health Sciences and Behavioral Sciences Institutional Review Board at the University of Michigan.

Measures

Food insecurity was measured using the 10-item U.S. Adult Food Security Survey Module.⁵ Questions assess experiences and behaviors attributed to insufficient resources to acquire food over the prior 12 months. Affirmative responses were summed to create a total score from 0–10. Food insecurity was defined as a score of ≥ 3 .⁵

Financial insecurity was measured using items from the Community College Survey of Student Engagement (CCSSE) on financial health.⁶ Students indicated agreement with statements using a four-point Likert scale, such as “I always find myself living paycheck-to-paycheck.” Affirmative responses were summed to create a total score ranging from 0–7. Financial insecurity was defined as a score of ≥ 2 .

Housing insecurity was measured using a two-item screener assessing ability to pay rent/mortgage on time and worry about losing housing.⁷ Housing insecurity was defined as an affirmative response to either or both questions.

Anxiety and depression was assessed using the Patient Health Questionnaire (PHQ-4), a clinically validated 4-item screener in which respondents report experiencing symptoms not at all (0) to nearly every day (3).⁸ A score of ≥ 6 is rated as moderate to severe for anxiety and depression.

General health status was assessed using the single-item measure: “Would you say your health in general is... excellent, very good, good, fair, or poor?” This item has been shown to have good stability and predictability among young adults.⁹

Cumulative grade point average (GPA) was obtained from students’ academic records. Data on students’ age, sex, race/ethnicity, degree type, receipt of financial aid, and parental educational attainment were obtained from students’ academic records and linked to their survey responses. Students who did not provide consent to link their survey data with their academic record (n=29) provided self-reported GPA and demographic data.

Analysis

Post-stratification weights were constructed to account for non-response and unequal representation by sociodemographic characteristics among survey respondents, and used in all statistical analyses. We first examined tetrachoric correlation coefficients between the three basic needs insecurities. Next, we examined bivariate associations between each basic need insecurity and general health status, anxiety and depression and GPA. A cumulative basic needs insecurities score (0–3) was created by summing the indicators for food, financial, and housing insecurity. Linear and logistic regression models were then used to examine associations between this cumulative score and outcomes our primary outcomes, adjusting for sociodemographic covariates. Statistical analyses were performed in SAS 9.4.

RESULTS

In the study sample, the mean age was 22.9 ± 0.2 years. Approximately 50% were female, 43% non-White, and 73% undergraduate students; 83% received financial aid,

and 26% were first-generation students. The prevalence of basic needs insecurities were: food insecurity, 33.6%; financial insecurity, 40.3%; and housing insecurity, 17.4%. The correlations between the basic needs insecurities were: food and financial insecurity (0.69), food and housing insecurity (0.60), and financial and housing insecurity (0.58).

In bivariate analyses, students experiencing food insecurity, financial insecurity, or housing insecurity were all more likely to have anxiety and/or depression, fair/poor health, and lower mean GPA than their secure counterparts (Table 1). Approximately one-quarter (24%) of students experienced one insecurity, 17% experienced two insecurities, and 11% experienced all three insecurities. Compared to fully secure students, students with all three insecurities were more likely to have anxiety and/or depression (OR 4.65, 95% CI 4.31, 5.01), fair/poor health (OR 4.06, 95% CI 3.73, 4.42), and lower GPA ($\beta = -0.19$, 95% CI $-0.30, -0.09$) (Figure 1).

DISCUSSION

For students at a large, public, four-year institution, there were modest correlations between food, financial, and housing insecurities, with 52% experiencing at least one insecurity and one in ten students experiencing all three. Dose-response relationships were observed between the increasing burden of basic needs insecurities and poorer physical health, mental health, and academic performance.

In prior studies among the general adult population, food insecurity,¹⁰ housing insecurity,¹¹ and financial insecurity¹² have each been associated with poorer physical and mental health. In studies of college students, food insecurity has also been associated with poorer physical health,¹³ mental health,^{14, 15} and GPA.^{16–18} However, to our knowledge, only one study has shown that food and housing insecurity together are jointly associated with lower mean GPA among college students,¹⁹ and no study has examined financial insecurity as an additional basic need insecurity that may be cumulatively associated with students' health and academic outcomes. Furthermore, these results show that health and academic disparities exist even at the college level, among students who have already overcome barriers to access college.

Limitations

This study is limited by the cross-sectional design, which prevents causal inferences of the results. Longitudinal studies are needed to understand patterns of basic needs insecurities among students and how they influence health and academic performance over time. Second, the response rate of the present study was 43%. Although this is lower than anticipated, it is higher than other studies of food and housing insecurities among college students.^{2, 19} Additionally, the data came from a sample of college students at one university and may not be generalizable to other universities.

Significance

A college education is meant to promote upward mobility. However, our study shows students experiencing one or multiple basic needs insecurities have poorer health and academic outcomes than their peers whose basic needs are met. These findings, combined

with prior evidence, underscore the need for national and institutional-level interventions to more comprehensively address multiple basic needs insecurities together, in order to create an environment for all students to achieve academic success.

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SO WHAT?**What is already known on this topic?**

Although food insecurity is a growing concern on college campuses, few studies have examined how experiencing multiple basic needs insecurities is related to students' well-being.

What does this article add?

This study extends the current literature to demonstrate that food insecurity intersects with other basic needs insecurities to exert cumulative consequences for students' health and academic performance.

What are the implications for health promotion or research?

Results highlight the need for institutional interventions and national policies to better identify and address students' basic needs insecurities in order to comprehensively promote academic success, especially among underprivileged students

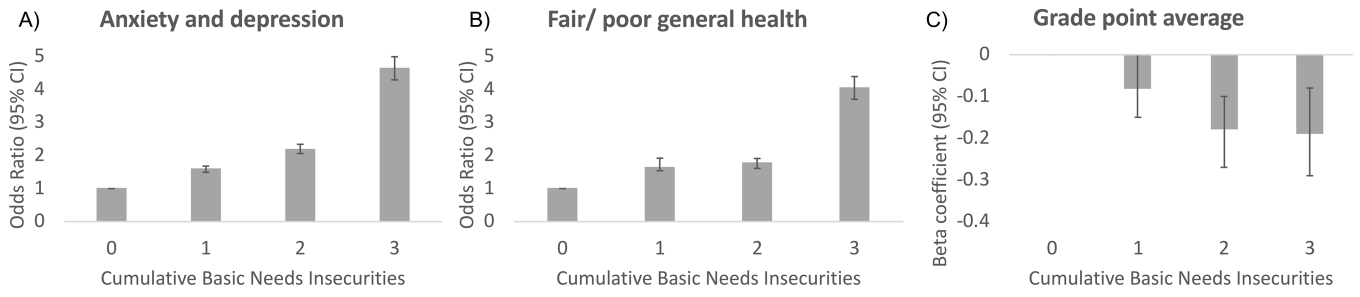


Figure 1: Multivariate-adjusted associations and 95% confidence intervals between cumulative basic needs insecurities and students' health and academic outcomes

Table 1: Bivariate associations between basic needs insecurities and students' health and academic outcomes

	Anxiety and depression				General health status			Grade point average (GPA)		
	Normal-mild, n (weighted %)	Moderate-severe, n (weighted %)	P-value ^a	Excellent-good, n (weighted %)	Fair/poor, n (weighted %)	P-value ^a	Weighted mean	SE	P-value ^a	
Food insecurity			<0.0001			<0.0001			0.0002	
No	405 (78.1)	107 (21.9)		437 (87.9)	75 (12.1)		3.49	0.02		
Yes	167 (61.3)	114 (38.7)		210 (77.9)	71 (22.1)		3.36	0.03		
Financial insecurity			<0.0001			<0.0001			0.02	
No	368 (79.8)	101 (20.2)		398 (88.2)	71 (11.8)		3.48	0.02		
Yes	204 (61.7)	120 (38.3)		249 (79.2)	75 (20.8)		3.40	0.02		
Housing insecurity			<0.0001			<0.0001			0.0001	
No	500 (76.7)	162 (23.3)		543 (86.1)	119 (13.9)		3.48	0.02		
Yes	72 (52.6)	59 (47.4)		104 (77.5)	27 (22.5)		3.29	0.04		

^aP-values for anxiety and depression are from chi-squared tests examining bivariate associations between food, financial or housing insecurity and students' health outcomes. P-values for grade point average are from t-tests examining bivariate associations between food, financial, or housing insecurity and students' GPA.