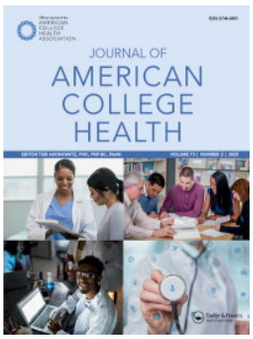

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BRIEF REPORT

Food insecurity among NCAA student athletes at a NCAA Division II university

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ABSTRACT

Objective: The primary purpose of this cross-sectional study was to understand food insecurity among athletes at one NCAA Division II university. **Participants:** Student-athletes at a medium-sized, rural university, aged 18 or older ($n=256$). **Methods:** Participants completed a survey with: demographics, the 10-item USDA Adult Food Security Survey Model, and an open-ended question about student-athletes' major barriers to fueling well. **Results:** Most student-athletes (50.4%) were classified as food insecure and 28.5% of student-athletes met the criteria for very low food security. Chi-square analysis showed student-athletes receiving both CalFresh and financial aid and living off campus were more likely to experience food insecurity ($p=0.045$ and $p=0.025$, respectively). Time and money were reported as the most common barriers to eating well. **Conclusion:** Collegiate athletes are a high-risk population for food insecurity. Interventions, including increasing CalFresh usage among student-athletes may help mitigate this risk.

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Introduction

Food insecurity is defined by the U.S. Department of Agriculture (USDA) as the lack of reliable access to safe, nutritionally adequate food or limited ability to acquire food in a socially acceptable manner.[1] Food insecurity affects many communities; however, certain populations such as college students are more at risk for many reasons. Many are moving away from home for the first time and experiencing financial independence. Between paying for tuition, rent, textbooks, and other living costs, it can be difficult to manage money. Lack of access to food can be associated with many adverse outcomes such as poorer mental health (depression, anxiety, stress and loneliness) and worsening of sleep quality.[2–4] Rates of food insecurity on college campuses are estimated to be between 20 and 50%,[5–7] more than twice the national rate of 10.5% for U.S. households.[1] Specifically, for college students, food insecurity is associated with poor academic performance (lower GPA, difficulty concentrating).[8] The Supplemental Nutrition Assistance Program (known as CalFresh in California) provides food benefits to low-income individuals and families. However, while many students are eligible, they do not participate in the program.[9]

A sub-population of college students who may be at risk for food insecurity are student-athletes, due to their high energy expenditures and tight schedules that balance classes and practice with limited time for employment.[10] Food insecurity can be detrimental to student-athletes, affecting both academic and athletic performance. Limited studies from National Collegiate Athletic Association (NCAA) Division I and III universities estimate food insecurity rates to be between 9.7 and 60% among student-athletes, which is comparable or slightly higher than the general student population.[10–13] A survey of 3506 student-athletes nationwide found rates of food insecurity between 24 and 39%, with higher rates of food insecurity among student-athletes at community colleges and NCAA Division II universities compared to student-athletes at NCAA Division I and III universities.[14] At California State University (CSU), Northridge, a Division I school, food insecurity among student-athletes was found to be 34.7%.[15]

Limited studies have been published documenting food insecurity among student-athletes and fewer studies examined food insecurity at NCAA Division II programs. Therefore, the primary purpose of this cross-sectional study was to establish the rate of food insecurity among student-athletes at an NCAA Division II university and assess factors associated with food security status.

Methods

The sample population consisted of NCAA Division II student-athletes 18 years and older participating in sports teams at CSU, Chico in the spring semester of 2019. After coaches granted researchers permission to attend a team meeting, the study was introduced, informed consent was obtained and participants completed a hard copy of the survey instrument. Of the 368 student-athletes in the 2018–2019 academic year, 256 completed the survey. The Human Subjects Research Committee at CSU, Chico approved the study.

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The survey was pilot tested by 14 student-athletes from a CSU, Chico club sports team prior to administering to NCAA student-athletes. The survey consisted of three sections: demographics, the 10-item USDA Adult Food Security Survey Model,[16] and an open-ended question about challenges to eating well. Demographic characteristics collected included ethnicity, sport, year in school, living situation, currently receiving CalFresh benefits, and scholarship and financial aid information. Ethnicity was reported as Black, Native American, Asian, Pacific Islander, Hispanic, White – non-Hispanic, two or more ethnicities, and international. For analysis purposes, ethnicities were collapsed to White – non-Hispanic, Hispanic, Black, and other. Living situation was collected as live on campus, off campus with friends or roommates, and live off campus with family or relatives.

Data were analyzed using IBM SPSS Version 25.0 (Armonk, NY: IBM Corp.). Descriptive statistics helped to characterize demographics for the study population. For the final analysis, using the four categories of food security status defined by the USDA,[16] categories were condensed into two groups: food secure (high and marginal food security) and food insecure (low and very low food security). Chi-square analysis was used to determine if demographic characteristics were associated with food insecurity. Ordinal logistic regression was conducted to determine if any demographic variables predicted food security status. All statistical tests utilized $p \leq 0.05$ to establish significance.

Results

The mean age of the participants ($N = 256$) was 20 years (SD = 1.4). Most participants were male (55.1%), White (56.6%), living off campus not with friends/family (77.6%), not receiving CalFresh (90.1%), receiving athletic scholarships (62.6%), and receiving financial aid (54.3%). The average athletic scholarship was $3227 (SD=$2343). Approximately half of student-athletes were classified as food insecure (50.4%). By level of food security, 32% of athletes reported high food security, 17.5% reported marginal food security, 21.9% were classified as low food secure and 28.5% of the total sample were classified as very low food secure.

Athletes reported time and money as the greatest challenges to eating well. Many expressed having a very tight schedule that did not leave time to prepare food or get something to eat between class and practice time. Many respondents also reported that healthy food was more expensive and that they did not have enough money to eat out every day.

Participant food security status in relation to ethnicity, sex, class standing, living situation, and sources of financial support can be seen in Table 1. Student-athletes receiving both CalFresh and financial aid and student-athletes living off campus (not with relatives or family) were more likely to experience food insecurity ($p = 0.045$ and $p = 0.025$, respectively).

Table 1. Food security status and ethnicity, CalFresh and financial aid status, and living situation.

		Food secure	Food insecure	
		n (%)	*n* (%)	*p* value[a]
Ethnicity				
	African American	11 (8.8%)	11 (8.5%)	0.955
	Hispanic	19 (15.2%)	18 (14%)	
	White non-Hispanic	76 (60.8%)	69 (53.5%)	
	Other[b]	19 (15.2%)	31 (24%)	
Sex				
	Female	55 (43.7%)	59 (45.7%)	0.738
	Male	71 (56.3%)	70 (54.3%)	
Class standing				
	Freshman	42 (33.6%)	27 (20.9%)	0.206
	Sophomore	21 (16.8%)	30 (23.3%)	
	Junior	35 (28%)	43 (33.3%)	
	Senior	24 (19.2%)	26 (20.2%)	
	Graduate	3 (2.4%)	2 (1.6%)	
Scholarship				
	Yes	85 (68%)	74 (57.4%)	0.105
	No	40 (32%)	55 (42.6%)	
CalFresh (CF)				
	Yes	6 (4.8%)	15 (11.8%)	0.084
	No	118 (95.2%)	114 (88.4%)	
Financial Aid (FA)				
	Yes	62 (49.6%)	76 (58.9%)	0.170
	No	63 (50.4%)	53 (41.1%)	
Receiving both CF + FA				
	Yes	5 (4%)	15 (11.6%)	0.045
	No	119 (96%)	114 (88.4%)	
Living off campus (not with relatives or family)				
	Yes	89 (71.2%)	108 (83.7%)	0.025
	No	36 (28.8%)	21 (16.3%)	

[a]Chi Square.
[b]American Indian/Alaskan Native, Asian American, Native Hawaiian or other Pacific Islander, 2 or more ethnicities, international students.

Discussion

The current study explored the food security status of NCAA Division II student-athletes and assessed athletes' greatest challenges to eating well. The percentage of food insecure student-athletes was 50% with 28.5% reporting very low food security, comparable to the rates among the student bodies of the California State University[17] and University of California[8] systems. These findings are also comparable to Reader et al.'s[13] findings that 60% of NCAA Division I student-athletes at a rural university were food insecure. However, our study and Reader et al.[13] differ from most studies conducted on collegiate athletes. In a survey of NCAA Division III student-athletes, Brown et al.[10] found 14.7% food insecurity among student-athletes, with Black and Hispanic students, those without meal plans, and students receiving Pell grants at greater risk of being food insecure. Poll et al.[12] reported 9.7% of male athletes at one NCAA Division I university were food insecure. Douglas et al.[11] reported 32% of female Division I athletes at one university were food insecure with 9% experiencing very low food security. Goldrick-Rab et al.[14] found a food insecurity rate of 23% among student-athletes at four-year universities; at NCAA Division II schools, 26% of student-athletes were food insecure and 16% reported very low food security. Athletes without meal plans were more likely to experience food insecurity.[14]

The present study was ethnically diverse with 56.6% of participants identifying as White compared to 75,[13] 81.5[10]

and 86%,[14] which may explain the higher rates of food insecurity. The present study had a response rate of 66% which is much higher than the 14[13] and 27%[11] of other studies. Overall response rates are difficult to determine for other studies as surveys were emailed to NCAA Division III athletes[10] or college students[14] and it is unknown how many students received the survey. Students who were struggling financially may not have had the time or energy to respond to the emailed survey, which may skew the reported rates of food insecurity. Poll et al.[12] recruited participants at team meals, so all participants had at least some food provided by the university. Division I universities have larger budgets and more flexibility to feed their athletes compared to Division II and III programs, which may explain the higher rates of food insecurity among the student-athletes in these divisions.

Student-athletes living off campus (not with relatives or family) were more likely to experience food insecurity, possibly because they do not have access to dining halls and therefore have to purchase and prepare their own food. This is consistent with previous research that shows student-athletes without meal plans have higher rates of food insecurity.[10,13,14] Preparing food takes time, which a lot of student-athletes do not have due to their busy schedules. Living off campus without relatives and family requires most students to use their own money to purchase food rather than living with a family member who may buy and prepare food for them.

Athletes reported that the most common challenges for eating well were lack of time and lack of money. This finding is consistent with previous research which shows athletes and college students have reported the most common barriers to healthy eating as a lack of knowledge, lack of time, lack of financial resources, and lack of cooking skills.[11,18–20] A short-term solution to this problem is a fueling station near athletic facilities that allow athletes to refuel quickly and conveniently after training. A recent study found a fueling station to be a primary source of food for the day at a Division I school.[15] However, at smaller NCAA Division II and III programs, a fueling station cannot provide for all of student-athletes' nutritional needs. Longer term solutions such as enrollment in CalFresh will allow athletes to economically shop for and prepare their own foods; however, this study found that student-athletes enroll in CalFresh at lower rates than other populations. A study of general education students on this campus showed that 43.1% of students met the criteria for low or very low food security and only 24% of food insecure students participated in a food assistance program such as CalFresh, with students involved in university sponsored extracurricular activities being more likely to participate in a food assistance program.[21] Our findings show that 50.4% of athletes met the criteria for low or very low food security and only 11.8% of food insecure athletes were currently receiving CalFresh benefits. One possible reason for low rates of CalFresh utilization is that in order to quality for CalFresh benefits, college students must meet both the minimum income requirements and a student exemption. The most common student exemptions are working 20 h a week at a paid job or receiving a Pell grant. Between class and training, most student-athletes do not have time to work a paid job which makes it more difficult to qualify for CalFresh.

Student-athletes receiving both CalFresh and financial aid were also more likely to experience food insecurity. This is consistent with previous studies showing a direct link between financial aid or other university support and food security status.[10,11,22] Students who are receiving financial aid are most likely in need of financial assistance to pay for their college expenses. This includes those coming from low-income families who may not have enough money to pay for their child's college expenses. As a result, the student relies on earning their own money, which is often not enough to pay for rent, college tuition, and living expenses. Since financial aid status plays a role in whether the student is eligible for CalFresh, this finding suggests that the two are linked. Student-athletes who apply for CalFresh are most likely struggling with purchasing food and need direct assistance.[23] Though they are receiving money for groceries and financial assistance for their college expenses, the results from this analysis show that they are struggling financially.

There are several limitations to this study as it was conducted at one Division II school in a rural area of California so the results do not represent all NCAA student-athletes. The study was based on self-reported data and subjects may have misinterpreted questions or misreported data. Furthermore, the cross-sectional nature of the study makes it impossible to determine causal relationships. Future research should investigate the impacts of university sponsored fueling stations on food insecurity among student-athletes and other interfering factors associated with food insecurity such as classwork, employment, and hours spent in practice each week. Interventions can also be developed to expand CalFresh to more athletes and provide education to make healthy and quick meals on a budget. Finally, the effects of food insecurity on athletic performance should be explored.

Declaration of interest statement

The authors report there are no competing interests to declare.

Conflict of interest disclosure

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

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