

**Food Security, Diet and Health Behaviors of Undergraduate Urban College Students**

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**Learning Outcome:** Describe the impact of food security and daily fruit and vegetable intake on GPA among undergraduate students in an urban setting.

**Background:** Food insecurity is prevalent in the youth, specifically among college students, and may be detrimental to health in later adulthood. This pilot study evaluates food security, nutrition literacy, and health behaviors of students in an urban US campus setting.

**Methods:** New York University undergraduate students ( $\geq 18$ y) were recruited via email to participate in a Qualtrics survey, which included validated tools to assess scores for food security, nutrition literacy, sleep and consumption of fruit and vegetable and beverage. Demographics, race/ethnicity health status and grade point average were self-reported. Descriptive statistics, bivariate and regression analyses were conducted, as appropriate.

**Results:** The survey was completed by 257 current students (age=20.1 $\pm$ 2.5; 81.3% female, 97.3% full-time enrollment). Forty-one percent of students met criteria for food insecurity (score $>$ 2). Ninety percent of respondents met criteria for adequate nutrition literacy (Score $>$ 5). T-test revealed a significant ( $p < 0.05$ ) difference in daily vegetable intake between those who identified as Hispanic (0.5 $\pm$ 0.7) as compared to those who did not (0.9 $\pm$ 1.2 servings/day). Daily fruit and vegetable intake were associated with higher GPA; students with higher vegetable intake were 49.3% more likely to have a GPA greater than 3.0 ( $p = 0.05$ ), controlling for race, ethnicity, sex, and food security. Sugar-sweetened beverage intake was not associated with study outcomes.

**Conclusion:** Our data suggests high prevalence of food insecurity on campus that was associated with lower academic performance, which may be due, in part, to inadequate daily fruit and vegetable intake. Interventions to alleviate food insecurity should be considered by university administration.

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**Frequent and Unnecessary Provision of Pediasure to Healthy U.S. Infants and Toddlers**

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**Learning Outcome:** Understand the concerns related to the prevalent use of Pediasure in early childhood and the relationship with parental race/ethnicity, education, and income.

**Objective:** Experts caution against unnecessary use of Pediasure, a nutritional supplement formulated for malnourished children. This study explored the provision of Pediasure to healthy U.S. infants and toddlers.

**Research methodology:** Online survey (Qualtrics) of U.S. caregivers of healthy infants (6-11 mos) and toddlers (12-36 mos). Data collection occurred from April to June 2017. SAS software was used to run descriptive statistics and a logistic regression with provision of Pediasure as the outcome variable and age, race, education, and income as predictors.

**Major findings:** Participants ( $n=1607$ ) were caregivers of infants ( $n=544$ ) and toddlers ( $n=1063$ ). One hundred eighteen (22%) caregivers provided Pediasure to their infant, 89% of which did so at least weekly; 345 (32%) caregivers provided Pediasure to their toddler, 76% of which did so at least weekly. The odds of providing Pediasure significantly increased in caregivers of toddlers (OR 1.88 CI 1.46-2.42) compared to caregivers of infants. Increased odds of providing Pediasure were also significant for Black (OR 1.82, CI 1.34-2.5), more-acculturated Hispanic (OR 1.76, CI 1.23-2.53), and Asian caregivers (OR 2.313, CI 1.59-3.37) compared to non-Hispanic White. Odds of serving Pediasure decreased for caregivers with the highest level of education (OR 0.62), and highest annual income (OR 0.51).

**Conclusions:** Healthy U.S. infants and toddlers are frequently consuming Pediasure. This is particularly troubling during infancy when the only acceptable beverages are breastmilk (or infant formula) and water. More research is needed to determine why Pediasure is misused by minority populations at risk for maladaptive health behaviors.

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**Healthy Eating Social Marketing Campaigns: A Systematic Review of the Literature**

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**Learning Outcome:** Describe healthy eating social marketing campaigns that have been successful in the last 10 years with limited resource children and/or parents.

**Background:** Limited resource families face hunger and food insecurity, poor nutrition, lack of physical activity and higher than average rates of chronic disease. The use of social marketing principles have been shown to change behaviors. This study reviewed U.S. social marketing interventions targeting children and/or parents for their best practices, outcomes and use of social marketing principles. The purpose of this study was to inform a healthy eating social marketing campaign for limited resource families in Mississippi.

**Methods:** A systematic review of articles published since January 2007 was conducted, using Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) guidelines. Four hundred forty-two articles were searched of which eight social marketing campaigns spanning 18 articles were finally reviewed.

**Results:** Six campaigns documented positive behavioral changes including an increase in vegetable and fruit consumption or physical activity or both among children. One campaign, which used the most social marketing principles, reached over 125,000 monthly users, successfully empowered limited resource mothers to incorporate fruits and vegetables into affordable meals. This approach of marketing to mothers and children seemed to elicit the more sustainable long-term behavioral changes.

**Conclusion:** Addressing barriers to nutrition in the consumer perspective can make campaigns more effective. The findings underscore that social marketing could be an advantageous approach to encouraging healthy eating among limited resource families in Mississippi.

**Funding source:** Mississippi Agricultural and Forestry Experimental Station, Mississippi State University

**How Does the Public Find Credentialed Nutrition Care? Trends in Internet Searches from 2007-2018**

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**Learning Outcome:** Assess the public search term trends for seeking nutrition care and identify the most frequently searched terms.

**Introduction:** Registered Dietitian Nutritionists (RDN) are the trained health professionals in medical nutrition therapy. Most individuals report utilizing the internet to find healthcare information and providers. Yet, little is known about the search patterns of the public when seeking nutrition care, specifically prior to and after the implementation of the RDN title.

**Methods:** Google trends was used to collect and assess internet searches on December 31, 2019. Search terms "nutritionist," "dietitian," "dietician," "registered dietitian nutritionist" and "registered dietitian" were assessed from January 1, 2007 through December 31, 2018 to assess changes in preferred search terms after adoption of the RDN title on March 14, 2012. Search interest was measured relative to the highest point within the given time. Median rank and Mann-Whitney-U tests were used to assess changes in search terms.

**Results:** Prior to the RDN title, "nutritionist" was the preferred search term with a median relative search interest of 82 (IQR 75-88), followed by "dietitian," "dietician," "registered dietitian," and "registered dietitian nutritionist." In the 6 years following the RDN title, order of relative search interest remained unchanged, with "nutritionist" being the preferred search term (85, IQR 80-89,  $p = 0.2$ ). However, overall search interest increased for "dietitian" ( $p < 0.0001$ ), "dietician" ( $p < 0.0001$ ), "registered dietitian nutritionist" ( $p < 0.01$ ), and "registered dietitian" ( $p < 0.0001$ ).

**Discussion:** Overall search interest for qualified nutrition professional terms have increased since implementation of the RDN title. However, "nutritionist" continues to be the preferred search term within the United States.

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