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## Understanding Milk Consumption Habits Among College Students in Order to Redesign Outreach

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### Cover Page Footnote

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# Understanding Milk Consumption Habits Among College Students in Order to Redesign Outreach

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**Abstract.** College students consume less dairy milk than in the past. Increased competition in the beverage aisle influences their choices. However, much of the population is not meeting the recommended intake guidelines for calcium. A survey of undergraduate college students with university dining plans focused on milk consumption habits, beverage choices, and student attitudes toward healthful foods and nutrition. Results are guiding Extension program educational outreach campaigns to college students. By focusing on the healthful and nutritional benefits of milk, Extension educators could increase consumption among college age consumers, and their long-term healthful outcomes.

## INTRODUCTION

Most people in the United States are not meeting suggested daily calcium intake requirements for best health outcomes (McLean et al., 2010; Rose et al., 2018). Yet milk consumption continues to decrease even though it is an excellent source of calcium. This decrease, along with volatile pricing structures, remains a severe threat to dairy farm survival and profitability (Wang et al., 2016).

It is also understood that dairy milk consumption among college students continues to decrease (Rose et al., 2018). Tipton (2016) suggested that this circumstance is due to numerous beverage choices competing with milk. We believe that health and nutrition education outreach could be used to increase dairy milk consumption among college students. We hypothesize that promoting the health benefits of milk to college students could increase consumption.

We wanted to explore a way to increase milk consumption among university students. We began by examining beverage habits and attitudes, perceptions of health benefits of milk, and awareness of milk promotional campaigns among undergraduate students with University of Connecticut meal plans. We also explored the students' attitudes toward health and nutrition. Our goal is to use these findings as a formative evaluation to program planning and develop a campus-based education outreach communication campaign that would result in increased milk consumption.

## BACKGROUND

Milk consumption and its primary uses by consumers have changed over time. Milk consumption has decreased (Mintel, 2016), and dairy alternatives have influenced this decline (Mintel, 2016; Tipton, 2016). Sales of nondairy milk, such as soymilk, have increased, with approximately 49% of Americans now consuming nondairy milk (Mintel, 2016). Additionally, reports indicate that females consume less milk than males across all ages (Rose et al., 2018; Sebastian et al., 2010). With regard to use, adding milk to another food, such as cereal, is the primary use of milk for many consumers (Mintel, 2016; Rose et al., 2018).

Milk can play an important role in health and nutrition (Drewnowski, 2010). Milk and dairy products are a fresh, local source of nutrition, the lowest cost source of calcium, and an economical source of protein and essential nutrients (Drewnowski, 2010). Indeed, most consumers recognize milk as an important source of calcium and Vitamin D (Rose et al., 2018; Sebastian et al., 2010). Moreover, drinking milk can improve bone health and lower the risk of cardiovascular disease, hypertension, and type 2 diabetes, although these are often unrecognized benefits (Sebastian et al., 2010). Despite these benefits, negative health perceptions about milk related to fat content, hormones, and antibiotics exist (Mintel, 2016).

Regarding college students specifically, studies have shown that they have healthful eating patterns when their

knowledge of dietary guidelines increases (Kolodinsky et al., 2007; Rose et al., 2018). Additionally, dairy consumption increased to three servings per day in a group of college students who participated in a web-based intervention that involved use of social cognitive theory (Poddar et al., 2010) and described the healthful benefits of drinking milk.

Using education and communication methods has increased dairy consumption in multiple demographics, and reduced consumption of other beverages. Specifically, evidence suggests that consumer food choices, such as those regarding milk consumption, might be influenced through effective public awareness campaigns (Kolodinsky et al., 2007; Rose et al., 2018). For example, Schwartz et al. (2017) reported that a 3-year community public health campaign involving the use of television, social media, and online ads to decrease retail beverage sales of sugary drinks reduced consumption of soda, fruit drinks, sports drinks, flavored water, sweetened teas, and 100% juice. Regarding college students, emails, posted information, and personalized checklists delivered via an online course system were used to carry out educational outreach about milk and increase consumption (Poddar et al., 2010). As well, dietary interventions in a research project targeting female college students increased milk and calcium consumption (Rose et al., 2018).

Clearly, health and nutrition are related benefits of milk consumption, and educational outreach can influence audience choices. We wanted to explore using educational outreach tactics similar to those we have described. To understand what educational outreach tactics might be used to influence intake, we first needed to understand college student perceptions of milk consumption and healthful eating.

## METHODS

We developed a survey to learn about undergraduate students' milk consumption and use, perceptions of milk, and interest in overall health and nutrition. Only students with a university meal plan could complete the survey. Our goal was to build consumer personas, or archetypes representative of college student populations, and use these to design relevant educational outreach (Lehnert et al., 2020). It was determined that our survey process did not require approval by the institutional review board at the University of Connecticut Office of Institutional Research and Effectiveness.

We administered the survey through Qualtrics, a statistical analysis software suite (Qualtrics Research Suite, 2015), from December 8, 2016, to January 24, 2017. Undergraduate students received notification of the request for them to participate in the anonymous survey and of their rights as survey participants if they chose to participate via a daily student email distribution. We also sent notifications

to student clubs and advertised through posters and social media.

The survey instrument comprised close-ended, multiple choice, scale, and slider questions. Several questions allowed for text entry.

## RESULTS

We obtained 683 responses from undergraduate students with university meal plans to the survey. Response rate decreased to 429 as the survey progressed. Females represented 81.7% of the respondents, and 87.3% of all respondents were between 18 and 21 years of age. Outliers in the age range represented non-traditional students. During this same period, of the 18,930 University of Connecticut undergraduate students, 49.5% were male, and 44.0% were underclassmen (University of Connecticut Office of Institutional Research and Effectiveness, 2018). There were 10,579 students with undergraduate meal plans (B. Nerbonne, personal communication, November 15, 2017).

We explored students' milk consumption and use habits, as well as reasons for not drinking milk. Of students surveyed, 22.3% indicated that they did not drink milk at all. Regarding their uses of milk, 40.4% stated they drank milk by itself, with the proportion of males (56.8%) drinking milk as a beverage being larger than that of females (22.6%). Adding milk to cereal was the primary use for 60.2% of respondents, mirroring findings of other studies. Flavor (45.8%) and lactose intolerance (41.1%) were the two primary reasons students gave for not drinking milk. Other reasons were fat content (14.0%), animal welfare concerns (14.0%), and healthful reasons (1% of responses in the "other" field).

Understanding students' overall beverage habits was also important, and we asked what beverages they usually consume in the dining halls (Table 1). Students consumed various types of milk, with 2.0% milk being the most popular. Plain water was the most popular beverage choice overall, with 62.8% of respondents regularly consuming it.

Students had limited knowledge about the healthful benefits of milk consumption related to hypertension, cardiovascular disease, or type 2 diabetes, or weight loss (Table 2).

Students were also asked about their preferences regarding drinking local or regional milk. Most respondents (62.3%) had no preference, whereas 32.1% preferred milk from a farm within 4 miles of campus, and 7.0% preferred milk produced regionally.

We asked a question about milk marketing campaigns to understand students' awareness of education outreach initiatives. Most respondents (98.7%) were familiar with the national "Got Milk" marketing campaign, which had been retired. Only 55.7% were familiar with "Milk Mustache,"

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**Table 1.** Usual Beverages Consumed by Students in University of Connecticut Dining Halls

Beverage option	Percentage of total respondents (n=683)
Cashew milk	0%
Coconut milk	2.3%
Diet coke	3.5%
Seltzer	4.7%
Dr. Pepper	10.5%
Soymilk	10.5%
Almond milk	11.6%
Other	12.8%
Apple cider	15.1%
Essence water (plain water with fruit or vegetable added to it)	16.3%
Hot chocolate	16.3%
Coca-Cola	17.4%
Sprite	19.8%
Tea	19.8%
Milk (skim)	20.9%
Milk (whole)	23.3%
Milk (chocolate)	24.4%
Powerade	26.7%
Coffee	27.9%
Milk (2%)	37.2%
Minute maid juices (orange, apple, cranberry)	45.4%
Plain Water	62.8%

**Table 2.** Healthful Benefits University of Connecticut Students Attribute to Milk Consumption

Healthful benefit	Percentage of total respondents (n=683)
Reducing risk of type 2 diabetes	7.1%
Helping weight loss, particularly from abdomen	8.2%
Reducing risk for cardiovascular disease	8.2%
Could reduce high blood pressure	9.4%
Excellent choice of fluid to re-hydrate body	30.6%
Preventing loss of calcium and phosphate from teeth enamel	69.4%
Supporting healthful bone growth and development	87.1%

another retired national campaign. Of two campaigns that were current at the time of the survey, only 7.6% of students knew of the national “Milk Life” and 3.8% knew of the regional “Must Be the Milk.”

To develop consumer personas based on traits in college students, we asked questions using a liking scale (Duffy et al., 2009). The scale had a range of 1 to 100, with the strongest level of liking represented by 100. Regular exercise was a priority for students ( $M = 73.3, SD = 23.4$ ), and running was a preferred exercise choice for some students ( $M = 56.7, SD = 27.9$ ). Students expressed strong interest in nutritious foods such as broccoli ( $M = 75, SD = 22.7$ ) and bananas ( $M = 74.4, SD = 24.2$ ), although they also strongly liked ice cream ( $M = 78.3, SD = 22.4$ ) and cookies ( $M = 75.3, SD = 22.3$ ).

Regarding the relationship between foods and healthfulness, respondents expressed a strong preference for using food to be healthful and prevent disease and considered themselves knowledgeable about the healthful benefits of food (Table 3).

## DISCUSSION

We found several areas where implementing Extension educational outreach could change milk consumption habits:

- Female undergraduate students had lower milk consumption as a beverage than males. Educational outreach that targets females could increase consumption.
- Students drank slightly more chocolate milk than skim or whole milk, and flavor was a top reason for not drinking milk. Promoting flavored milk to college students may encourage consumption among those who dislike the flavor of plain milk.
- The higher frequency of plain water and juice consumption by students likely reduces milk consumption. The well-known benefits of drinking water should not be diminished, but juices are often high in sugars. Communication campaigns could address the additional healthful benefits that milk has as compared to water and the decreased sugar content as compared to juices.
- The healthful and nutrition benefits of milk represent the greatest area of opportunity to increase milk consumption, according to survey results. Most students were unaware of all the healthful benefits associated with drinking milk. Most were aware that milk provides calcium but did not associate other healthful benefits with milk. Additionally, our research suggests that college students are interested in leading healthful lifestyles and seek nutritious foods. Educational outreach from Extension focused on the healthful benefits of milk beyond calcium—that is, promoting milk as a

**Table 3.** University of Connecticut Students' Use of Food to be Healthful and Prevent Disease

Healthful statement	M <sup>a</sup>	SD
I am interested in using food to maintain good health	5.9	1.1
I am interested in using food to prevent disease	5.5	1.3
I am knowledgeable of the health benefits of the foods I eat	5.4	1.2
I eat conscientiously, but am not very serious about dieting	5.3	1.3
I consider myself a health-conscious person	5.1	1.3
I usually look for health information when I buy food products	4.9	1.6
I eat whatever I want	4.5	1.5
I eat according to how my doctor/personal trainer/other health care professional advises me to	3.8	1.5
I have poor eating habits	3.8	1.6
I have created a strict diet regimen for myself	3	1.7
I am not concerned with the health benefits of the foods I eat	2.7	1.6

<sup>a</sup>Scale was 1–7, with 1 being strongly disagree and 7 being strongly agree. (n=683)

nutritious option to be healthy and prevent disease could increase consumption in this population. Comparing the healthful and nutrition benefits of milk to other popular beverage choices may reinforce the message that milk is a healthful choice for college students.

Additionally, college students were not connecting to milk marketing strategies used during the survey period. Students had the most familiarity with retired national campaigns, and limited familiarity with more recent regional and national milk marketing campaigns. We suggest development of a unified marketing approach targeting college students that strengthens the messaging about dairy, based on nutritional benefits.

There were limitations in our research. Females made up the majority of respondents, and that circumstance limits interpretation of our results. The survey had a higher response rate from underclassmen versus upperclassmen. This was consistent with the demographics of students living on campus with meal plans that we surveyed.

Further research on Extension and educational outreach could target all dairy products instead of being specific to milk. Our research suggests that some students have concerns about animal welfare issues and negative healthful attributes of milk. Further research could determine whether these concerns lower consumption. The connection between consumption and economic viability of farms is another area for further exploration.

## CONCLUSION

Undergraduate college students are often living independently for the first time and shaping their future food consumption behaviors (Sogari et al., 2018). Our research suggests that current students seek foods and experiences that enhance a

healthful lifestyle. Our research further suggests that students may not be aware of all healthful benefits that milk provides.

Consequently, we believe that communication and marketing campaigns concerning the healthful benefits associated with milk could increase consumption in this important demographic. Extension educators can address healthful and nutrition benefits that are not traditionally associated with milk.

Increasing dairy consumption among college students through educational outreach could shape their future food choices as they become primary consumers. Extension systems could help dairy farmers and processors bridge the gap with college student demographics. In turn, the increased consumption among undergraduate students could increase milk consumption throughout their adult life, thereby positively impacting their healthful outcomes.

## REFERENCES

- Drewnowski, A. (2010). The nutrient rich foods index helps to identify healthy, affordable foods. *Journal of Clinical Nutrition*, 91(4). <https://doi.org/10.3945/ajcn.2010.28450D>
- Duffy, V. B., Hayes, J. E., Sullivan, B. S., & Faghri, P. (2009). Surveying food and beverage liking: A tool for epidemiological studies to connect chemosensation with health outcomes. *International Symposium on Olfaction and Taste*, 1170(1). <https://doi.org/10.1111/j.1749-6632.2009.04593.x>
- Kolodinsky, J., Harvey-Berino, J. R., Berlin, L., Johnson, R. K., & Williams Reynolds, T. (2007). Knowledge of current dietary guidelines and food choice by college students: Better eaters have higher knowledge of dietary guidance. *Journal of the American Dietetic Association*, 107(8). <https://doi.org/10.1016/j.jada.2007.05.016>

## Understanding Milk Consumption Habits Among College Students to Redesign Outreach

- Lehnert, K., Goupil, S., & Brand, P. (2020). Content and the customer: Inbound ad strategies gain traction. *Journal of Business Strategy*. <https://doi.org/10.1108/JBS-12-2019-0243>
- McLean, M., Penniston, K., & Tanumiharkjo, S. (2010). Promoting dairy intake in rural Wisconsin by empowering youth. *Journal of Extension*, 48(5), Article 5IAW4. Available at: <https://archives.joe.org/joe/2010october/iw4.php>
- Mintel Group Ltd. (2016, April 20). *US sales of dairy milk turn sour as non-dairy milk sales grow 9% in 2015*. <http://www.mintel.com/press-centre/food-and-drink/us-sales-of-dairy-milk-turn-sour-as-non-dairy-milk-sales-grow-9-in-2015>
- Poddar, K. H., Hosig, K. W., Anderson, E. S., Nickols-Richardson, S. M., & Duncan, S. E. (2010). Web-based nutrition education intervention improves self-efficacy and self-regulation related to increased dairy intake in college students. *Journal of the American Dietetic Association*, 110(11). <https://doi.org/10.1016/j.jada.2010.08.008>
- Rose, A. M., Williams, R. A., Rengers, B., Kennel, J.A., & Gunther, C. (2018). Determining attitudinal and behavioral factors concerning milk and dairy intake and their association with calcium intake in college students. *Nutrition Research and Practice*, 12(2), 143-148. <https://doi.org/10.4162/nrp.2018.12.2.143>
- Schwartz, M. B., Schneider, G.E., Choi Y., Li, X., Harris, J., Andreyeva, T., Hyary, M., Vernick, N. H., & Appel, L. J. (2017). Association of a community campaign for better beverage choices with beverage purchases from supermarkets. *JAMA Internal Medicine*, 177(5), 666-674. <https://doi.org/10.1001/jamainternmed.2016.9650>
- Sebastian, R. S., Goldman, J. D., Wilkinson Enns, C., & LaComb, R. P. (2010). *Fluid milk consumption in the United States: What we eat in America, NHANES 2005-2006*. [https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/DBrief/3\\_milk\\_consumption\\_0506.pdf](https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/DBrief/3_milk_consumption_0506.pdf)
- Sogari, G., Velez-Argumedo, C., Gómez, M. I., & Mora, C. (2018). College students and eating habits: A study using an ecological model for healthy behavior. *Nutrients*, 10(12), 1823. <https://doi.org/10.3390/nu10121823>
- Tipton, J. A. (2016). Reducing sugar-sweetened beverage intake among students: School-based programs and policies that work. *NASN School Nurse*, 31(2), 102-110. <https://doi.org/10.1177/1942602X15578456>
- University of Connecticut Office of Institutional Research and Effectiveness. (2018). *Undergraduate degree seeking enrollment at Storrs campus...fall 2017*.
- Wang, Q., Parsons, R., Colby, J., & Castle, J. (2016). Value-Added dairy products from grass based dairy farms: A case study in Vermont. *Journal of Extension*, 54(3), Article 3RIB4. Available at: <https://archives.joe.org/joe/2016june/rb4.php>