Describing Beverage Intake and Factors Related to Beverage Intake Among College Students
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Abstract

Background: More than 68% of American adults are overweight or obese. Sugar sweetened beverages (SSB) are a primary source of added sugars and calories and may promote weight gain.

Methods: This study was approved by the Institutional Review Board. College students provided informed consent prior to completing an electronic survey. The survey included questions to determine participants’ demographics, self-reported height, weight, physical activity level, total beverage intake, health perceptions, and factors affecting health and beverage choices. Beverage kcals and intake were determined using the validated BEVQ15 Beverage Questionnaire.

Results: Participants (N=103) were 19.6±1.9 years of age with a mean BMI of 23.3±3.7. Almost 70% (n=48) of participants had a healthy BMI, 25% (n=17) were overweight, 6% (n=4) were obese, -81% (n=83) reported that they were lightly to very active, and 5% (n=5) reported that they were sedentary. Average beverage kcals/day (BKD) was 180.8±156.2 and ranged from 0-795 BKD. Among participants (n=75) that completed the BEVQ15, 33% (n=26) consumed ≤100 BKD, 47% (n=38) consumed 100-300 BKD, and 19% (n=14) consumed ≥300 BKD. Healthy BMI participants on average consumed 191 BKD/ 168.3, overweight BMI participants consumed 204+/131.4 BKD and obese BMI participants consumed 212+/122.1 beverage BKD. There was a significant correlation between BMI and BKD. Participants chose the three primary factors contributing to beverage choices as taste, quenching thirst, and health reported by 54% (n=55), 46% (n=47) and 44% (n=45), respectively.

Conclusion: There was a positive correlation (r=0.23, p<0.05) between choosing health and choosing calories as a primary determinants of beverage choices. Beverage kcal intake was significantly associated with portion size intake of 100% fruit juice (r=0.34, p<0.05), sugared/creamed coffee (r=0.41, p<0.01), hard liquor (r=0.36, p<0.05) and frequency of intake of sugar/creamed coffee (r=0.37, p<0.01), beer/ale/wine coolers (r=0.33, p<0.01), liquor (r=0.41, p<0.01), and mixed drinks (r=0.34, p<0.01). There was a positive correlation between caffeine intake and average calories from beverages consumed (r=0.30, p<0.01). There was a positive correlation between BMI and weight, and body dissatisfaction (r=0.41, p<0.01). Among individuals, 58.3% (n=14) of overweight and obese BMI participants reported that they were dissatisfied with their body weight, compared to normal BMI participants who reported that they were satisfied with their body weight (p<0.05).

Purpose

• Describe beverage consumption of participants.
• Discuss factors that influence overall beverage choices of participants.
• Identify correlations between participants’ beverage intake, Body Mass Index (BMI), and overall subjective health status.

Methods

An electronic survey utilizing Survey Monkey was created to determine age, gender, height, weight, typical hours of sleep/night, physical activity level, total beverage intake, perceptions of health, body, diet and energy level, and factors affecting health and beverage choices of participants. The survey contained 62 questions total. The study was approved by the Institutional Review Board. A random sample of college-aged participants from Texas Christian University were recruited to take the survey. Researchers emailed organization officers, faculty, and staff to send out the survey link to students. In addition, researchers distributed paper recruitment slips on campus. Participants provided informed consent prior to completing the survey. Beverage intake was determined using a validated BEVQ15, Beverage Questionnaire and Scoring Tool. The questionnaire includes questions regarding both the quantity and frequency of intake for nineteen different beverages. Total calories for each participant were determined from the computed beverage scoring tool. Participants’ BMI values were computed using self-reported height and weight. The data were coded and analyzed in SPSS 25 to determine frequencies and correlations. Frequencies were determined for activity level, sleep level, factors that contribute to individuals’ beverage choices, and participants’ perceptions on health, body, diet, and energy level. Correlations were determined between BMI values and average calories consumed from SSB and between BMI and participants’ perceptions on health, body, diet, activity, and energy levels. Correlations were also determined for BMI and participants reported activity and sleep levels. The mean and standard deviation was computed for age, BMI, and average calories and fluid ounces consumed from SSBs.

Body Satisfaction Rating Among Participants Based Upon BMI Values

Average Daily Calories Consumed from Beverages Among Participants Based on BMI Category

Conclusions

Overall total calories consumed from SSBs varied widely among participants from 0-795 daily. Participants with a normal BMI consumed less calories from SSBs than participants with an overweight BMI. However, obese participants consumed the least amount of calories from SSBs overall. The decreased consumption of SSBs among obese participants could be caused by an effort among obese individuals to try to reduce total energy intake. Although there were no significant correlations between participants’ BMI and beverage intake, many factors were identified for reasons influencing individuals’ beverage choices. Taste, thirst and health were the most frequently reported reasons for individuals’ beverage consumption choices. Taste was the primary reason individuals consumed beverages indicating that calories and SSB contribution to total energy intake was not the main focus among majority of participants. Thirst was the second most reported factor contributing to participants’ beverage intake and health was the third most reported factor. According to Valero et al., participants who valued health also valued the impact of beverages on physical appearance, as well as freshness, and quality of food and drink. These participants consumed less added sugars and calories from SSBs compared to individuals who valued taste, convenience, routine, and the ability to feel full.

Additionally, in the current study caffeine intake, calories, and convenience were commonly reported factors contributing to SSB consumption but were not reported as frequently as taste, thirst, and health. Although many factors and trends among BMI categories were detected for SSB consumption, the sample size from the study is not representative of the larger population. Overall this sample had healthier BMI values than typically seen in the United States. Additionally, BMI was calculated using participants’ self-reported height and weight which is a study limitation.

Overall, SSBs contribute added sugars and calories potentially leading to weight gain and the development of obesity in the future. Many factors are related to SSB consumption trends. Nutrition intervention efforts directed to reduce the rising obesity rates are needed.

Factors Contributing to Beverage Intake Reported by Participants

Correlations (n=103) between participants’ beverage intake and factors related to beverage intake included age, weight, BMI, and sleep/night.

Average Daily Calories Consumed from Beverages Among Participants Based on BMI Category

Overall total calories consumed from beverages among participants varied widely from 0-795 kcals/day. Participants with a normal BMI consumed less calories from beverages than participants with an overweight BMI. However, obese participants consumed the least amount of calories from beverages overall. The decreased consumption of calories from beverages among obese participants could be caused by an effort among obese individuals to try to reduce total energy intake. Although there were no significant correlations between participants’ BMI and beverage intake, many factors were identified for reasons influencing individuals’ beverage choices. Taste, thirst and health were the most frequently reported reasons for individuals’ beverage consumption choices. Taste was the primary reason individuals consumed beverages indicating that calories and SSB contribution to total energy intake was not the main focus among majority of participants. Thirst was the second most reported factor contributing to participants’ beverage intake and health was the third most reported factor. According to Valero et al., participants who valued health also valued the impact of beverages on physical appearance, as well as freshness, and quality of food and drink. These participants consumed less added sugars and calories from beverages compared to individuals who valued taste, convenience, routine, and the ability to feel full.

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