6-2010

Beverage Consumption Among Low-Income Hispanics with Uncontrolled Type 2 Diabetes

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Funded by NIDDK Grant # 1 R18 DK65985

BACKGROUND

- Hispanics/Latinos are the largest (14% of the US population) and fastest growing minority group in the US.

- Hispanics suffer twice the incidence of type 2 diabetes as do non-Hispanic white individuals, and also exhibit poorer diabetes control and greater rates of diabetes-related complications and mortality. Identifying factors that contribute to these statistics is critical to reduce human suffering and societal costs.

- Soft drinks and other sugar-sweetened beverages (SSBs) are the number one source of added sugars in the American diet. Most women should consume no more than 100 calories of added sugars per day; most men, no more than 150 calories. SSB intake is a significant contributor to weight gain in the population and may contribute to increased risk of type 2 diabetes and cardiovascular disease.

- Little is known about the caloric contribution of beverages to total caloric intake among Hispanics with type 2 diabetes. SSBs may contribute to the epidemic of obesity and diabetes, and deter optimal metabolic control, among Hispanic individuals with type 2 diabetes.

Study Objective

This study sought to describe beverage consumption, caloric contribution of beverages to total caloric intake, and associations between beverage consumption and metabolic factors among a sample of low-income Hispanics participating in a trial of a diabetes self-management intervention.

METHODS

Population and Setting

- Subjects were participants in a randomized clinical trial (RCT) of a diabetes self-management intervention.
- Patients were recruited from five urban community health centers in central and western Massachusetts.
- Screening and recruitment followed a systematic multi-step process to ascertain eligibility based on the criteria listed below.

Eligibility Criteria for the RCT

- Hispanic/Latino origin.
- ≥ 18 years old.
- Documented diagnosis of T2DM.
- HbA1c ≥ 7.5 (in previous 7 months).
- Functionally capable of meeting the intervention goals (able to walk, no evidence of cognitive impairments, no medical contraindications).
- No current or recent (past 2 years) history of alcoholism/drug abuse; no psychiatric hospitalization or suicidality within past 5 years.
- Physician approval to participate in the study.
- Not planning to move out of the area.

Baseline Measurements

Laboratory Measures:
HbA1c,
Lipid profile (HDL, LDL and triglycerides)

Anthropometric Measures:
Height and weight ; calculated body mass index (BMI)
Waist circumference
Systolic and diastolic blood pressure (SBP, DBP)

Survey Measures:
Demographics: Age, gender, education, birth place, income, medical insurance, years since diabetes diagnosis.
Should we add medication status to table 1?

Analysis

Overall descriptive statistics are provided including frequencies and percents for categories and means and standard deviations for continuous variables.
{Stephenie to add}

RESULTS

Sample Characteristics (n=252)

Characteristic	N (%)
Age	
18-44	39 (14.6)
45-54	65(27.3)
55-64	81 (34.0)
≥65	53 (22.3)
Gender: Female	184(77.3)
Education	
< 4th grade	68 (28.6%)
4th-8th grade	68 (28.6%)
9th-12th grade (not HS)	45 (18.9%)
HS graduate	57 (23.9%)
Income: < $10K	113 (47.5%)
Birthplace: Puerto Rico	214 (91.5%)
Year since diabetes diagnosis	
< 5	74 (32.3%)
6-10	57 (24.9%)
11-15	43 (18.8%)
>15	55 (24.0%)
Have health insurance or receive free care	250 (98%)
HbA1c > 7.0	219 (86.9%)
Controlled blood pressure (SBP ≤130 mmHg and DBP ≥ 80 mmHg)	
LDL < 100 mg/dl	116 (48.7%)
HDL > _____ {Steph: how did you define it at the end?}	163 (68.5%)
Trygl < 150mg/dl	144 (60.5%)
Waist circumference < ___ {Steph: how did you define it at the end?}	22 (9.2%)
BMI > 30	(73.9%)

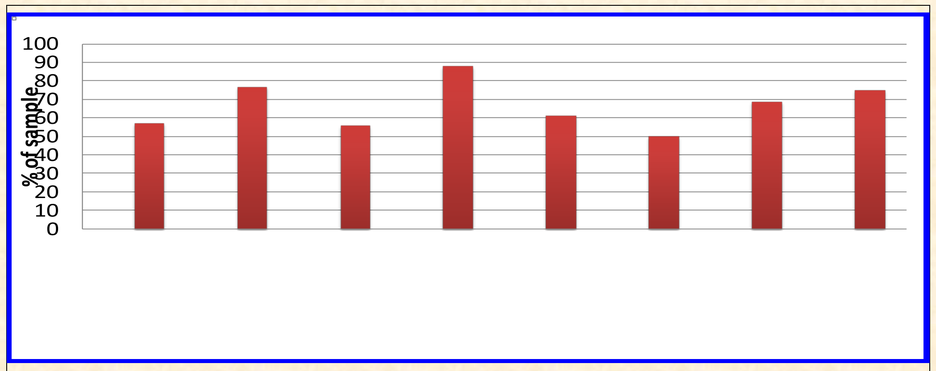
Total and Percentage of Calories from Beverages

	Mean (SD)
Total calories from beverages	344.2 (222.9)
Percent calories total beverages	20.6 (11.8)
Sugar sweetened beverages	9.0 (8.7)
All milk products (excluding coffee/tea additives))	8.7 (11.8)

Percentage of Calories by Beverage Type

Individual Beverage Types	
Whole milk	3.9 (6.4)
2% milk	3.0 (5.6)
1% milk	2.3 (4.6)
Skim milk	.06 (.53)
Soy milk	.05 (.82)
Sugared milk	.30 (2.1)
Juice	2.8 (4.9)
Fruit drinks	1.6 (3.7)
Regular soda	2.3 (4.3)
Diet soda	.08 (.19)
Cocoa	.41 (1.7,)
Coffee/tea/additives	.63 (1.3)
Shakes	.20 (2.2)
Alcohol	.28 (1.9)

Percentage of Calories from Beverages by Metabolic Characteristics



A1c > 7.0 (Yes/No); SBP ≥130 mmHg and DBP ≤ 80 mmHg (Yes/No); LDL > 100 (YES/NO); HDL <45 in men and < 55 in women(Yes/No); TG > 150 in men and women(Yes/

DISCUSSION

- Treatment strategies to improve glucose control and reduce diabetes complications among Hispanics are needed.
- There is a high consumption of calories from beverages, accounting for one-fifth of total caloric intake, among this high-risk Hispanic population
- Milk, juices, fruit drinks and regular soda are particular sources of calories.
- Beverage consumption is associated with metabolic markers, including HbA1c, cholesterol, blood pressure, BMI and waist circumference, and may thus increase risk for diabetic and cardiovascular complications in this population.
- Beverage consumption among low-income Hispanics warrants further clinical and research attention, including development of interventions that target all liquid calories, not just sugar-sweetened beverages.
- Targeting beverage consumption through simple messages that are in line with the literacy challenges posed by this population may be feasible. The vast benefit of clarifying a single food group that can be modified to reduce risk factors of diabetes and obesity in this population cannot be overstated.

ACKNOWLEDGEMENT

The authors wish to thank the study staff and the participants for making the study possible.