Associations between Water Insecurity and Beverage Intakes in Pediatric Patients

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Abstract

Purpose: Water insecurity can be defined as the inability to reliably access and benefit from safe water for all household uses. Families experiencing water insecurity may be inclined to consume other beverages including sugar-sweetened beverages (SSB) instead of water, which has implications for caries risk. This project is designed to explore associations between water security perceptions and beverage intakes amongst a pediatric population.

Methods: Parents of children aged 2-8 presenting for a new or recall appointment were recruited from the University of Iowa College of Dentistry's Pediatric Clinic for an ongoing study. Parents completed an anonymous Qualtrics survey querying demographics, perception of water security, and beverage intakes (Child's beverage Intake Questionnaire).

Results: Children (n=44) were 5.6±1.3 years old; 57% White, 21% Black/African American, and 18% Multiracial/Other; and 23% Hispanic or Latinx. The majority of respondents reported their highest education level was 8th grade or less (30%); the next highest level was a college graduate (28%). Regarding tap water, 70% of respondents either strongly or somewhat agreed that their local tap water was safe to drink. For bottled water, 55% of respondents agreed that bottled water is safer than tap water, with 34% neither agreeing nor disagreeing with that statement. The association between children's tap water intake and intake of SSBs was not statistically significant (P=1.0).

Conclusion: The majority of respondents consider bottled water safer than tap water. Preliminary results do not support an association between tap water and SSB intakes; continued investigation is necessary.

Background

- Water insecurity is defined as the inability to reliably access and benefit from safe and acceptable water for all household uses
- Families experiencing water insecurity may be inclined to consume other beverages including sugar-sweetened beverages (SSB) instead of water
- Consumption of SSBs instead of water has implications for caries risk

Objectives

- Describe prevalence of water security perceptions among patients attending the University of Iowa CoD Pediatric Clinic
- Describe beverage intakes among patients attending the University of Iowa CoD Pediatric Clinic
- Identify associations between water security perception and beverage intakes

Methods

Design

- Cross-sectional

Population (n=44)

- Children aged 2-8 who presented to the University of Iowa CoD Pediatric Clinic for a new patient or recall appointment
- Limited to one child per family

Recruitment

- Eligible participants were identified through Axium
- Patients' guardian(s) were approached in the clinic waiting room and informed of the nature of the study and invited to participate
- Patients' guardian(s) interested in participating were provided a consent form (English or Spanish)
- Participants include patients' guardian(s) who signed the consent form

Data Collection

- Survey development
  - The survey was designed to understand guardian's perceptions of water security and patients' beverage intakes
  - Questions were developed based on water security perception questions previously reported in the literature and validated beverage questionnaires
- Participants were provided an iPad with the appropriate Qualtrics survey (English or Spanish)
- Patients were compensated with a $5 HyVee gift card upon conclusion of survey

Statistics

- Descriptive statistics
  - Chi-square analyses

Results

Demographics (n=44)

- Race
  - 56% White
  - 20% Black or African American
  - 18% Multiracial/other
  - 4% Asian
  - 2% Middle Eastern
- Ethnicity
  - 25% Hispanic or Latinx
  - 75% Neither of these
- Education level
  - 30% 8th grade or less
  - 27% College graduate or more
  - 20% Some college
  - 16% High school diploma/GED
  - 5% 9th – 11th grade
  - 2% Technical school
- Household annual income
  - 24% $50,001-75,000
  - 18% $20,001-30,000
  - 18% $75,000 or more
  - 16% $40,001-50,000
  - 11% $30,001-40,000
  - 11% $0-20,000
  - 2% Refuse to answer/don't know
- Household supplemental food program usage within past year
  - 83% used at least one program
  - 17% did not use any programs

Water Security Perception

- "My local tap water is safe to drink"
  - 71% Agree
  - 16% Neither agree nor disagree
  - 13% Disagree
- "Bottled water is safer than tap water"
  - 53% Agree
  - 36% Neither agree nor disagree
  - 11% Disagree
- "My local tap water (i.e., water from your faucet) tastes good"
  - 73% Agree
  - 7% Neither agree nor disagree
  - 20% Disagree
- Beverage Intake

Table 1. Beverage Intake

Beverage	Frequency of intake (%)		
	<1/day	1/day	>1/day
Water	11	0	88
100% Fruit juice	81	14	5
Juice drinks	90	5	5
Animal milk	55	21	24
Soda-pop	93	5	2

- Water Security and Beverage Intake
  - Associations between perception of water security and frequency of beverage intakes were not statistically significant (P>0.1)
  - The association between children's tap water intake and SSB intakes was not statistically significant (P=1.0)

Limitations

- Data are self-reported
- Small sample size

Conclusions

- Majority of respondents consider bottled water safer than tap water
- Preliminary results do not support an association between tap water and SSB intakes; continued investigation is necessary

Future Directions

Continue recruiting subjects and collecting data

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