

Associations between Low-Calorie Sweetened Beverage Consumption and Diet Quality in Youth



Public Health

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INTRODUCTION

- Low-calorie sweetened beverages (LCSBs) are low-calorie/reduced sugar alternatives to sugar-sweetened beverages (SSBs).

- No studies to date have assessed the relationship between LCSB and diet quality in children

- Prior studies in adults report mixed findings

- Goals of this study were:**

- Investigate associations between LCSB consumption and diet quality in children and adolescents

- Compare diet quality of LCSB consumers with that of water, sugar-sweetened beverage (SSB) consumers and combined consumers of LCSBs+SSBs.



METHODS

- N=10,257 youth (2-17 yrs) participating in The *National Health and Nutrition Examination Survey (NHANES) 2007-2016*.

- Using dietary data collected in NHANES, participants were grouped into four categories:

- Water consumers (≥ 4 oz water, < 4 oz LCSB and sweetened beverages (SBs)); n=1452
- LCSB consumers (≥ 4 oz. LCSB, < 4 oz SBs); n=504
- SSB consumers (≥ 4 oz SBs, < 4 oz LCSB); n= 7250
- LCSB+SSB consumers (≥ 4 oz each); n= 1051

- Healthy Eating Index (HEI-2015)* was used to calculate total dietary quality and subcomponent scores.

- Models adjusted for sex, ethnicity, physical activity, and body mass index percentile covariates

CONCLUSIONS

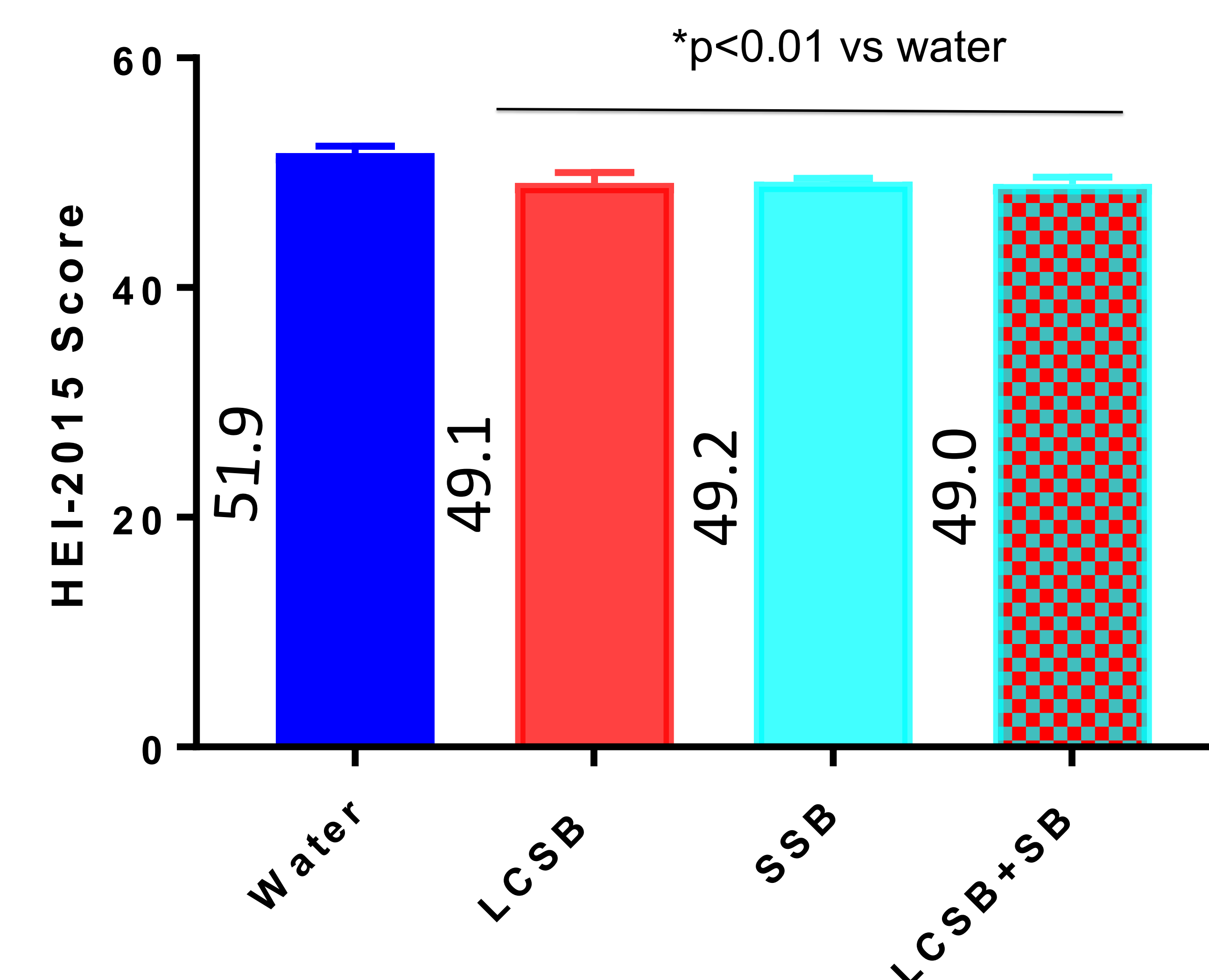
- Consumption of LCSBs does not appear to improve diet quality compared to water
- Diet quality was similar across all sweetened beverage consumers and significantly lower than among water consumers.
- The worst HEI and subcomponent scores were observed in SSB and combined LCSB+SSB consumers.
- These findings reinforce recommendations that SSBs should be replaced with water rather than LCSBs.

RESULTS

- Diet quality of LCSB consumers lower than that of water consumers and similar to SSB+LCSB consumers (Figure 1, right)

- In **Adequacy** subcategories (Table below in green),

- LCSB consumers scored lower for 'Whole Grains' and 'Total Vegetable Intake' vs. Water
- LCSB+SSB and SSB consumers scored similarly for most subcategories.



*Different superscripts indicate statistically different groups

	Water	LCSB	SSB	Both
Total Fruits	2.6 ± 0.1 ^a	2.5 ± 0.1 ^a	2.9 ± 0 ^b	2.8 ± 0.1
Whole Fruits	2.9 ± 0.1 ^a	2.7 ± 0.2	2.5 ± 0 ^b	2.4 ± 0.1 ^b
Total Vegetables	2.4 ± 0.1 ^a	2.1 ± 0.1 ^b	2.1 ± 0.03 ^b	2.2 ± 0.1 ^b
Greens & Beans	1.2 ± 0.1 ^a	1.1 ± 0.1	1.0 ± 0.04 ^b	0.9 ± 0.1 ^b
Whole Grains	3.8 ± 0.2 ^a	2.9 ± 0.2 ^b	2.5 ± 0.1 ^b	2.4 ± 0.2 ^b
Dairy	7.3 ± 0.1 ^a	7.2 ± 0.2	6.9 ± 0.1 ^b	7.1 ± 0.1
Total Protein	3.7 ± 0.1 ^a	3.8 ± 0.1 ^a	3.6 ± 0.03 ^b	3.5 ± 0.1
Seafood/Proteins	2.0 ± 0.1 ^a	1.7 ± 0.1	1.7 ± 0.04 ^b	1.6 ± 0.1 ^b
Fatty Acids	3.9 ± 0.1	3.9 ± 0.2	4.0 ± 0.1	4.3 ± 0.2

- Among the **Moderation** subcategories (Table below in red)

- LCSB consumers scored lower for added sugars vs. Water consumers (LCSB=7.7±0.2, Water=8.5±0.1).
- LCSB+SSB and SSB consumers scored similarly, with significantly lower added sugar scores (reflecting higher intake) compared to water or LCSB consumers (SSB= 5.8±0.1, SSB+LCSB=5.5±0.2).

	Water	LCSB	SSB	Both
Refined Grains	4.6 ± 0.1 ^a	4.2 ± 0.3 ^a	5.2 ± 0.1 ^b	5.3 ± 0.2 ^b
Sodium	3.9 ± 0.1 ^a	4.2 ± 0.2 ^a	5.2 ± 0.1 ^b	5.1 ± 0.2 ^b
Added Sugars	8.5 ± 0.1 ^a	7.7 ± 0.2 ^b	5.8 ± 0.1 ^c	5.5 ± 0.2 ^c
Saturated Fats	4.9 ± 0.1 ^a	5.1 ± 0.3 ^a	5.9 ± 0.1 ^b	6.0 ± 0.2 ^b

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