



Investigating differences in household food factors and daily intake of regular soft drinks in European children with overweight/obesity: Feel4Diabetes Study

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Background

Strong evidence suggests that the obesogenic environment, including the home ⁽¹⁾, plays a crucial role in children's weight development ⁽²⁾.

Aim: To investigate differences in household food factors and daily intake of regular soft drinks in European children with overweight/obesity (OW/OB).

Material & Methods

- **Study Design:** Cross-sectional
- **Baseline data:** Feel4Diabetes-Cohort Study ^(3, 4).
- **Setting:** Primary schools (grades 1-3) in 6 EU countries
- **Population:** 12, 211 children (49% boys mean age 8 y.o)



<http://feel4diabetes-study.eu/>

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Material & Methods

- **Data collected via questionnaires:**
 - ✓ Family demographics, home food availability, soft drink intake
- **Anthropometry:** BMI (kg/m²) measured by skilled researchers during school hours
- ✓ Child overweight and obesity categorized based on IOTF sex-age thresholds ⁽⁵⁾
- **Statistics:** Associations between household food factors and daily soft drink intake by BMI group were investigated applying logistic regression models adjusted for children's sex, mothers' BMI and educational level.
- ✓ P-value significant at 0.05



Findings

In the multivariate regression model adjusted for children's sex, mothers' BMI and education, household availability of commercial fruit juice, soft drinks, and salty snacks/fast food 'always/often' were associated with ↑ daily intake of children's regular soft drinks, independent of BMI category; whereas availability of sugarless fruit juice was associated with ↓ intake (Table 1). Contrastingly, the availability of fresh fruit 'always/often' was associated with ↓ intake in the OW/OB group and diet soft drinks in the underweight/normal weight only.

Conclusion

This study implies that in the real-life family setting, consideration of the obesogenic home food environment and encouraging home availability of healthy food choices such as fresh fruit might effectively reduce children's regular soft drink intake.

References:

1. Kininmonth AR. *Int J Behav Nutr Phys Act.* 2021;18:4.
2. Anzman SI. *Int J Obes* 2010;34:1116-24.
3. Anastasiou C. *BMC Endocr Disord.* 2020;20:135.
4. Manios Y. *Public Health Nutr.* 2018;21:3281-90.
5. Cole TJ, & Lobstein T. *Pediatr Obes.* 2012;7:284-94.

Table 1 Associations between household food environment vs. children's daily intake of regular soft drinks by BMI category

Children's daily intake of regular soft drink intake (≥ 1 time/day)		
	Underweight/normal weight	Overweight/obese
Household food availability	OR _{adj} (95%CI), P _{adj}	OR _{adj} (95%CI), P _{adj} *
Fresh Fruit	Rarely/never	Ref
	Sometimes	2.65(1.07-6.51), P_{adj}=0.034*
	Always/often	1.43(0.60-3.39), P _{adj} =0.42
Fruit juice fresh (no sugar)	Sometimes	0.91(0.74-1.11), P _{adj} =0.35
	Always/often	0.54(0.45-0.66), P_{adj}<0.001
Fruit juice prepacked (+ sugar)	Sometimes	1.94(1.52-2.49), P_{adj}<0.001
	Always/often	5.59(4.50-6.94), P_{adj}<0.001
Regular Soft drinks	Sometimes	1.44(1.14-1.81), P_{adj}=0.002
	Always/often	3.74(3.04-4.59), P_{adj}<0.001
Diet soft drinks	Sometimes	0.81(0.65-1.03), P _{adj} =0.08
	Always/often	0.53(0.43-0.65), P_{adj}<0.001
Vegetables	Sometimes	0.75(0.35-1.62), P _{adj} =0.46
	Always/often	0.65(0.32-1.34), P _{adj} =0.24
Sweets	Sometimes	0.73(0.50-1.06), P _{adj} =0.10
	Always/often	0.72(0.50-1.05), P _{adj} =0.09
Salty snacks/fast food	Sometimes	1.24(0.98-1.57), P _{adj} =0.07
	Always/often	1.59(1.24-2.04), P_{adj}<0.001

*In bold significant P-values from the multivariate logistic regression model adjusted for children's sex, mothers' BMI and educational level.



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