

# Maternal BMI Change Linked to Child Activity Change in Family-Based Behavioral Interventions for Pediatric Weight Management

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## Background

- Family-based behavioral interventions (FBBIs) for pediatric weight management encourage weight loss through modification of the family's dietary intake and activity practices using behavioral techniques.
- Moderate-to-vigorous physical activity (MVPA) and prolonged sedentary time (SED) have significant implications on health, yet little is known about factors that influence change in these child behaviors in FBBIs.
- Although evidence suggests that parental modeling of physical activity is associated with change in child physical activity in FBBIs, it is unknown if general parental role modeling of healthy behaviors can predict change in child MVPA and prolonged SED in FBBIs.

## Objectives

- Primary: determine whether change in maternal body mass index (BMI) is a significant predictor of change in child MVPA and prolonged SED in FBBIs for pediatric weight management.
- Exploratory: determine whether the effect of maternal BMI change on child MVPA and prolonged SED is moderated by child gender, race/ethnicity, and age.

## Methods

### Participants

- 126 children and their families were enrolled in one of three similar FBBIs for pediatric weight management that were 8-12 weeks in duration.
- Inclusion criteria: BMI  $\geq$  85<sup>th</sup> percentile, at least one caregiver present, and English or Spanish as primary language.

## Methods (cont.)

### Measures

- Administered at baseline and follow-up (6-12 months)
  - Demographics
  - Child and maternal height/weight
  - Accelerometers (Evenson cut points); prolonged SED defined as min/day in sedentary bouts lasting  $\geq$ 10 min

### Statistical Analysis

- Mixed effects regression models explored the relationship of child characteristics and maternal change in BMI to child change in 1) min/day of MVPA and 2) proportion/day of prolonged SED.
- Longitudinal change variables were calculated as residualized change scores to account for baseline levels on the given variable.

## Results

Participant Characteristics			
Baseline			
Age (years)	9.03 (1.73)	Male	67 (53.2%)
BMIz	1.80 (0.50)	Race/Ethnicity	
BMI %ile	94.7 (4.58)	White	86 (68.3%)
Prolonged SED <sup>a</sup> (proportion/day)	12.06% (8.04%)	Latinx/Hispanic	27 (21.4%)
		Multiracial/Other	13 (10.3%)
MVPA (min/day)		Maternal BMI	30.47 (6.30)
Longitudinal			
% treatment sessions attended	92% (17%)	Prolonged SED $\Delta$ (proportion/day)	2.72% (11.02%) <sup>c</sup>
Maternal BMI $\Delta$	-0.22 (1.48 <sup>b</sup> )	MVPA $\Delta$ (min/day)	-4.59 (22.02)

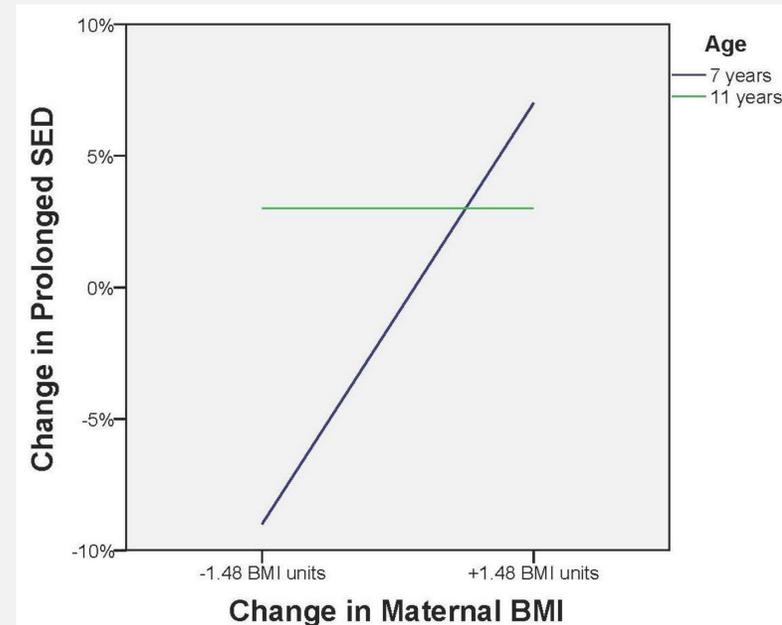
<sup>a</sup>Accumulated in bouts of  $\geq$ 10 minutes <sup>b</sup>Adjusted for baseline BMI <sup>c</sup>Statistically significant at  $p < .05$

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- For more information, please contact Ashleigh Pona at aap9q7@mail.umkc.edu.

## Results

- $\downarrow$  in maternal BMI was associated with  $\uparrow$  in child MVPA from baseline to follow-up,  $B = -4.13$ ,  $t = -2.03$ ,  $p = 0.048$ .
  - Children with a mother who  $\downarrow$  BMI by 1.48 units (1 SD in maternal BMI  $\Delta$ )  $\uparrow$  MVPA by 4.13 min/day, whereas children with a mother who  $\uparrow$  BMI by 1.48 units  $\downarrow$  MVPA by 4.13 min/day (8.26 min/day difference)
- $\downarrow$  in maternal BMI was associated with  $\downarrow$  in proportion/day of prolonged SED from baseline to follow-up,  $B = 0.04$ ,  $t = 2.40$ ,  $p = 0.02$ .
  - Children with a mother who  $\downarrow$  BMI by 1.48 BMI units showed a 4%  $\downarrow$  in prolonged SED from baseline to follow-up, whereas children with a mother who  $\uparrow$  BMI by 1.48 units  $\uparrow$  their prolonged SED by 4% (8% difference).

- Child age moderated the association between maternal BMI change and change in child prolonged SED ( $p = 0.095$ ).



## Conclusions

- Improvement in maternal BMI showed important positive associations with child MVPA and prolonged SED in FBBIs.
- Maternal changes appeared to have the greatest impact on younger children's health behaviors versus older children's.
- Targeting parent weight loss could improve child outcomes in FBBIs. Additional strategies are needed to promote increased MVPA and decreased prolonged SED among older children in FBBIs.
- Future research: influence of maternal diet vs activity.