

Introduction

- ✓ Children exposed to socioeconomic disadvantage are at heightened risk for overweight/obesity but face barriers to accessing pediatric weight management programs delivered in a clinic setting.
- ✓ One possible solution to increase accessibility is home visits.
- ✓ Home visit interventions shift costs from families to the program, potentially limiting scalability.
- ✓ There is limited research on the cost-effectiveness of home visit interventions for pediatric weight management.

Objective

Determine the cost-effectiveness of a pediatric weight management program delivered in the home compared to the clinic setting for children with overweight/obesity from lower-income households.

Methods

- ✓ Creating Healthy Environments for Chicago Kids (CHECK; NCT03195790) was a two-arm parallel group randomized controlled trial.
- ✓ It enrolled households with an annual income at or below 200% of the federal poverty level and at least one child aged 5-12 with a body mass index (BMI) at or above the 85th percentile.
- ✓ Input prices are described in Table 1.

Table 1. Input Prices

Input	Cost per Unit
Hourly wage rate for subject opportunity cost ¹	\$12.00
Child care provider hourly wage rate ²	\$12.40
Interventionist hourly wage rate	\$37.99
Transportation costs	
One-way bus fare	\$2.25
One-way train fare	\$2.50
Cost per mile driven ³	\$0.585
Parking at RUSH	\$10.00
Supplies	
Scale	\$12.00
Measuring cup	\$9.00
Portion plate	\$13.00

¹ Illinois minimum wage rate, 2022; ² Average hourly wage rate for childcare workers, Bureau of Labor Statistics, 39-9011; ³ IRS standard mileage rate, 2022

- ✓ Cost-effectiveness was evaluated from the societal perspective.
- ✓ Cost-effectiveness was measured as cost per change in BMI percentile and cost per clinically meaningful reduction in BMI z-score over a 12-month time period.
- ✓ The incremental cost-effectiveness ratio (ICER) was calculated with 95% confidence intervals computed using 1000 bootstrap samples.
- ✓ Sub-analyses were performed by COVID-19 era, and sensitivity analyses varied the hourly wages of parents and interventionists.
- ✓ All data were analyzed using SAS (version 9.4) and STATA (version 17.0).

Results

- ✓ Cost per encounter was similar between groups, however, the proportion of costs borne by families was substantially higher in the clinic group (Table 2).

Table 2. Cost per Encounter by Type of Encounter (Visit, Telephone Call)

	Clinic (N=136) Mean (sd)	Home (N=133) Mean (sd)
INTERVENTION VISITS		
Subject cost	77.54 (23.26)	78.24 (24.77)
Intervention cost	38.52 (15.55)	10.06 (4.45)
TELEPHONE CALLS		
Subject cost	39.02 (13.00)	68.18 (22.74)
Interventionist cost	10.69 (7.98)	9.49 (7.90)
	2.53 (1.84)	2.28 (1.90)
	8.16 (6.19)	7.22 (6.00)

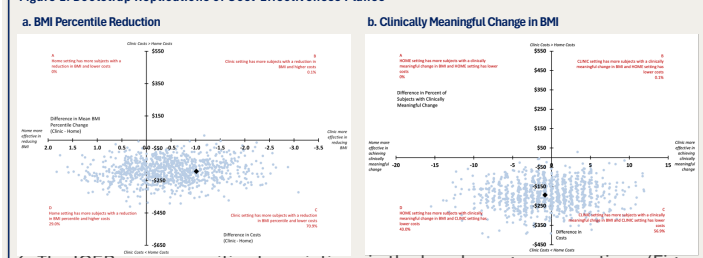
Results

- ✓ Of the 241 families with complete data, mean total cost was \$967 (sd=541) for the home-delivered arm and \$775 (sd=515) for the clinic-based arm (p<.001) (Table 3).
- ✓ Intervention costs were significantly higher in the home-delivered arm due to interventionist travel costs.
- ✓ The clinic-based setting had lower costs and greater reduction in BMI percentile, translating into an ICER of -\$431 (95% CI -3300 to 2902) (Table 3, Figure 1a).
- ✓ However, the clinic-based setting had fewer children achieving a clinically meaningful reduction in BMI z-score, translating to an ICER of \$229 (-1474 to 1117) (Table 3, Figure 1b).

Table 3. Incremental Cost Effectiveness Ratios

	N	Cost (sd)	Difference in Costs (Clinic - Home) M (95% CI)	Outcome (sd)	Difference in Outcome (Clinic - Home) M (95% CI)	ICER
Outcome: Change in BMI Percentile						
Home	124	967 (541)		-0.57 (3.83)		
Clinic	117	775 (515)	-193 (-320 to -65)	-1.01 (7.69)	-0.45 (-2.03, 1.13)	-431 (-3300 to 2902)
Outcome: Clinically Meaningful Reduction in BMI z-score						
Home	124	967 (541)		14.5%		
Clinic	117	775 (515)	-193 (-320 to -65)	13.7%	-0.84 (-9.63 to 7.94)	229 (-1474 to 1117)

Figure 1. Bootstrap Replications of Cost-Effectiveness Planes



- ✓ The ICERs were sensitive to variations in the hourly wage assumptions (Figure 2).

Figure 2. Bootstrap Replications of Cost-Effectiveness Plane at Different Parent and Interventionist Wages



Discussion and Conclusions

- ✓ Home-delivered interventions incur higher costs due to interventionist travel, while clinic-based interventions face lower family attendance rates.
- ✓ Families incur high opportunity costs to attend visits in the clinic setting, and clinic-based pediatric weight management programs should consider how to offset these costs to optimize attendance if it is not feasible to deliver in the home.

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