



# Outcomes from a Pediatric Primary Care Weight Management Program: Steps to Growing Up Healthy

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**Objective** To examine the efficacy of Steps to Growing Up Healthy, an obesity prevention intervention in preschool-age, urban-dwelling minority children.

**Study design** Thirty-two pediatric primary care clinicians used a brief (3- to 5-minute) evidence-based behavior change intervention with low-income mothers of children aged 2-4 years during each regularly scheduled clinic visit over a 12-month period to target 4 specific obesogenic behaviors (milk consumption, juice and sugar-sweetened beverage consumption, television/screen time, and physical activity). A written contract, self-monitoring calendar, and telephone follow-up at 5-7 days after the clinic visit reinforced the intervention. Body mass index (BMI) percentile over 12 months and obesogenic behaviors were compared with those of a sex- and age-matched historical control group drawn from the same clinic.

**Results** Between January 2009 and November 2012, 418 mother-child dyads (82% Hispanic and 18% African American; mean child age,  $35.8 \pm 8.6$  months; 21% overweight and 21% obese children) participated (218 in the control group and 200 in the intervention group). At 12 months, BMI percentile decreased by 0.33 percentile in the intervention group, compared with a mean increase of 8.75 percentile in the control group ( $P < .001$ ). In participants with an initial BMI <85th percentile, BMI percentile did not change over time in the intervention group but increased in the control group (from the 48th  $\pm 21$  to 63th  $\pm 29$  percentile;  $P < .01$ ). At 12 months, consumption of juice and milk were decreased in the intervention group ( $P < .001$ ).

**Conclusion** A brief, evidence-based intervention targeting 4 behaviors, coupled with a written contract and telephone follow-up, decreased the rate of increase in BMI percentile in young children, especially in normal weight children. (*J Pediatr* 2015;167:372-7).

Obesity is a national epidemic, especially in underrepresented, minority children<sup>1</sup> and preschool-age children.<sup>2</sup> Although some progress in reducing obesity rates in young children has been reported,<sup>3</sup> most previous efforts aimed at reducing the rate of childhood obesity have been only modestly successful and have focused on children of school age or on children who are overweight.<sup>4-7</sup> To date, few studies have addressed obesity prevention in young children.<sup>8-11</sup> Early recognition is important, considering that young children who are overweight and/or obese are at high risk for becoming obese adults.<sup>12</sup>

The pediatric primary care office is an ideal setting for weight management-related interventions in early childhood because of frequent scheduled and unscheduled office visits. Clinicians report numerous barriers to successful parental counseling about children's weight, however, including knowledge deficits and lack of self-efficacy, time, and effective obesity interventions.<sup>13,14</sup> With an average visit time of less than 20 minutes<sup>15</sup> to deliver care and provide more than 50 verbal advice directives,<sup>16</sup> pediatricians need brief, effective interventions.

Motivational interviewing (MI) has shown promise in establishing healthy lifestyles.<sup>17</sup> Although traditionally delivered in longer sessions, MI has been adapted and used in multiple, brief doses, which is ideal for the pediatric office setting.<sup>17</sup> Importantly, MI has been used successfully for weight loss in adults<sup>18</sup> and to a limited extent in children.<sup>9,19</sup>

We created an intervention that we termed Steps to Growing Up Healthy ("Steps" hereinafter), guided by the Chronic Care Model,<sup>20</sup> which uses an MI-like framework to decrease obesogenic behaviors in young children. The goals of the Steps program were to develop a brief (3- to 5-minute) intervention that could be delivered by the medical teamlet<sup>21</sup> (a clinician and a nurse) and that targeted a small number of obesogenic behaviors that mothers felt they could change, and to test the efficacy and fidelity of this intervention in low-income mothers and their young children. We hypothesized that a brief, evidence-based approach delivered by the medical teamlet to mothers during regular office visits would prevent childhood obesity and decrease the number of obesogenic behaviors in low-income, minority children.

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BMI Body mass index  
MI Motivational interviewing

## Methods

This preliminary efficacy intervention was conducted between October 2010 and November 2012 in a primary care clinic at a large urban, low-income medical center that serves minority (Hispanic and African American) families. Results for the intervention group were compared with those for a control group comprising children who met the same eligibility criteria as the intervention children and were enrolled from the same clinic between January 2009 and September 2010 with the same clinicians and received usual care (height and weight measurements, calculation of body mass index [BMI] percentile by most clinicians, and counseling as deemed appropriate by the clinician). Assessments were conducted at baseline and 12 months. All data collection for the control group were obtained before clinicians and nurses were trained in the Steps intervention. The study was approved by the Institutional Review Board of Connecticut Children's Medical Center.

Eligible caregiver-child dyads (95% mothers) met the following inclusion criteria: child aged 2-4 years, Hispanic or African American race/ethnicity by self-report (English- or Spanish-speaking), and Women, Infants, and Children program-eligible and receiving services. Dyads were excluded if the mother was aged <18 years, lived outside of the Hartford area, or planned to move out of the area within the next 12 months, or if the child had special needs (dietary, physical, and/or emotional) that would make the intervention inappropriate or BMI <5th percentile.

Participants were recruited in the waiting room by bilingual research staff who determined eligibility and obtained informed consent (Figure; available at [www.jpeds.com](http://www.jpeds.com)). Complete data were obtained on 200 intervention dyads and 218 control dyads at 12 months.

Assuming a change in BMI percentile of 4 percentiles over 12 months between the 2 arms, an  $\alpha$  value of 0.05, a regression with at least 4 covariates (group, age, sex, and ethnicity), and a 20% dropout rate, 200 children per group were needed to give the study 0.85 power to detect a significant difference between groups.

### Intervention

The intervention and training of the primary care teamlet have been described previously as part of a subsequent randomized controlled trial ([ClinicalTrials.gov](http://ClinicalTrials.gov): NCT01973153).<sup>22</sup> Intervention training and content also have been described previously.<sup>22</sup> In brief, 32 (of 36) primary care clinicians and nurses were trained by a certified MI trainer over two 2-hour training sessions to provide a brief (3- to 5-minute) intervention that focused on positive affirmation, use of open-ended questions with reflective listening, collaborative goal setting, and contracting. At each clinic visit, intervention mothers recruited by study staff completed the Steps survey, a 12-question survey that elicited responses about 4 specific evidence-based<sup>1</sup> obesogenic behaviors: milk consumption

(volume and type), juice and sugar-sweetened beverage consumption, television/screen time, and physical activity.

A teamlet member reviewed each mother's survey responses in either English or Spanish, focusing first on areas of strength, using a handout developed specifically for this program.<sup>22</sup> Using open-ended questions and reflective listening, the teamlet member focused the mother's attention on the 4 behavior targets, and together, they agreed on 1 behavior that the mother was ready and able to change. A plan of action, specific for that child, was documented in a written behavioral contract that stated the mother's goal. Each mother was provided with Steps-specific educational materials in either English or Spanish that provided practical suggestions for implementing the behavior change, along with a self-monitoring calendar to track goal progress. All intervention dyads also received a study toolkit containing a 6-oz cup, a measuring cup labeled with appropriate serving sizes for milk and juice, a portion size placemat, a foam ball (to encourage active play), and a pedometer (for the mother). At each visit over the next 12 months (sick or well child), the teamlet member was instructed to use the Steps survey and MI framework to reinforce the behavior change or to work with the mother to set a new goal.

At 5-7 days after each clinic visit, project staff telephoned the mother to review the visit, discuss initial implementation of the behavior change and any problems that the mother had encountered, and assess the fidelity of the intervention as rendered by the medical teamlet according to the mother's perception of the clinic visit. The clinic received \$10 each time staff documented the child's BMI percentile, discussed an obesogenic behavior from the Steps survey, and created a Steps action plan (ie, "delivered an intervention dose").

### Outcomes

Participants' BMI (in kg/m<sup>2</sup>) was calculated from the measured values of height (in cm) and weight (in kg) collected at baseline and at 12 months as described previously.<sup>22</sup> Using the Centers for Disease Control and Prevention's sex- and age-specific percentiles for BMI,<sup>23</sup> children with a BMI  $\geq$ 85th percentile and <95th percentile were classified as overweight, and those with a BMI  $\geq$ 95th percentile were classified as obese. The children's dietary intake and physical activity were assessed using the Steps survey.<sup>22</sup>

The number of interventions that each participant received and the type of intervention (written contract or telephone follow-up) were documented using medical record review and telephone logs. Intervention fidelity was assessed during the telephone call based on the caregiver's responses to 5 questions (3-point Likert scale) related to whether the clinician reviewed the survey with the caregiver, whether the clinician identified areas of strength and potential intervention targets, and how and by whom the decision was made to change a behavior. Higher scores reflected greater fidelity. Clinician feedback on intervention fidelity was provided.

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