Unintended Consequences: The potential effect of childcare-based obesity prevention interventions on the home

EMORY | ROLLINS SCHOOL OF PUBLIC HEALTH

Laura Lessard, MPH[1] & David Frisvold, PhD[2]

[1]Department of Behavioral Sciences and Health Education, Rollins School of Public Health, Emory University, Atlanta, GA

[2]Department of Economics, Emory University, Atlanta, GA

BACKGROUND ON EARLY CHILDHOOD OBESITY

- **26.2% of children in the United States ages 2-5 are either overweight or obese**; this percentage ranges from 24% of non-Hispanic black children to 32.6% of Mexican-American children (Ogden, Carroll et al. 2006)
- Obesity in young children is of significant concern due to the numerous **adverse short- and long-term health effects** associated with excess weight (Dietz 1998)
- Several recent reports have suggested that **interventions delivered in the childcare setting** have the potential to impact both nutrition and physical activity levels in young children.
- Childcare settings in particular could prove to be an effective place to intervene in the lives of young children; **41% of children under the age of five are in childcare 35 or more hours per week** (Capizzano and Adams 2000; Story, Kaphingst et al. 2006).
- Clearly, though children are in childcare settings for a large portion of their day, there are eating and exercise opportunities (or a lack thereof) to be found before and after childcare as well as on weekends and holidays.
- It is important to consider **whether interventions delivered in childcare settings can impact the home environment** if the positive gains in obesity prevention are to be realized. This 'spillover effect' would consist of parents following suit when changes or education is offered during the childcare day.
- There is much to be learned about the extent to which obesity prevention interventions have a spillover effect on the home; this review **assessed the extent to which previous studies have examined this spillover effect**.

METHODS

- A **multi-stage comprehensive search strategy** was used to identify papers to include in this review.
- Studies were **eligible for review** if they 1) were published in English; 2) involved primary prevention of obesity among children age 5 and younger; 3) had at least one component that was conducted in the preschool or childcare environment; and 4) were conducted in the United States.
- Studies were excluded if they 1) did not measure any child-level outcomes (e.g. training childcare staff or parents); or 2) did not include an evaluation of the intervention (e.g. strictly descriptive).
- Search strategies resulted in **209 unique papers**; resulting abstracts were reviewed to assess eligibility. **Twelve papers representing studies of 10 different interventions were ultimately deemed eligible for review**.

Paper	Intervention	Measurement & Findings – Outside childcare
Bellows 2008	Food Friends Get Movin' and Mighty Moves: 18-week intervention designed to impact gross motor development, physical fitness, and physical activity. Materials sent home to parents.	Daily step counts over 6 days recorded by parents using pedometer No significant differences over time
Cason 2001	12 lesson (40 minutes per lesson) curriculum delivered by preschool teachers; covers healthy snacking, fruit and vegetable identification, and the Food Guide Pyramid.	Parent survey of eating habits and food attitudes; Significant increase in consumption of fruits, vegetables, meat, dairy and bread; significant decrease in consumption of fats, oils and sweets; significant increase in the number of fruits and vegetables children liked.
Davis et al 1983	Nutrition education curriculum designed for preschool children. Contains 35 different nutrition-related activities, sample parent newsletters and a list of resources integrated into a 6-week unit.	None measured
Dennison et al 2004	Brocodile the Crocodile: 7 session intervention designed to reduce screen viewing. Sessions were delivered by study staff directly to children, childcare staff and/or parents. Materials were sent home to parents to support activities conducted in the childcare setting.	Parent report of television/screen viewing and other home environmental characteristics related to screen viewing; Significant reduction in TV/video viewing on weekdays and Sundays; significant increase in number of children reporting <2 hours of television per day (as recommended)
Fitzgibbon et al 2005	Hip-Hop for Health, Jr: 14-week intervention delivered by trained study staff focused on healthy eating and physical activity. Lessons provide a combination of physical activity and in-class activities. Weekly newsletter was sent home to parents reinforcing the topics covered in class. Parents were also assigned small 'homework' assignment and were rewarded for completing them.	Parent report of percent of total calorie intake from fat and saturated fat (via 24-hour recall); parent report of physical activity and screen viewing; Significant difference in saturated fat intake at one-year follow-up; No other significant differences on parent-reported diet, physical activity or screen time.
Hafetz 2007	Go!Kids Obesity prevention program: 24 session program designed to increase child and parent knowledge of healthy eating, nutrition, and physical activity. Also includes optional parent workshops.	Parent report of child behavior (19 items on parent lifestyle survey); No significant differences due to small sample sizes and low attendance at parent workshops
Hannon & Brown 2008	Installation of portable playground equipment in outdoor play space	None measured
Johnson et al 2007	Food Friends: 12-week program including nutrition activities, food-related stories, opportunities to try new foods, an activity outline to guide the teachers and parent newsletters.	None measured
Qiu 2009	Physical activity focused intervention: 8-week intervention designed to increase moderate and vigorous physical activity in childcare settings. Consists of classroom-based curriculum and Planned Energetic Play.	None measured
Williams et al 2002	Healthy Start: Combination food service modification (focused on aligning center with the USDA meal pattern) and nutrition education intervention.	Parent report of home consumption for a 24-hour period; No significant differences for consumption between intervention and comparison children.
Williams et al 2004	Healthy Start (same as above)	None measured
Witt 2009	Color me Healthy: 12 lesson nutrition program designed to increase fruit and vegetable consumption. Six packets containing home-based activities were sent home to parents during the program.	Parent survey containing a 3-day food diary, food frequency questionnaire; No significant differences due to small sample sizes and low response rates

RESULTS & CONCLUSIONS

- The majority of the interventions (8/10) were traditional primary prevention interventions involving a combination of nutrition education and physical activity.
- Seven papers (58%) measured behavior outside the childcare setting in some way; three of these found significant program effects on these behaviors. (Cason 2001; Dennison, Russo et al. 2004; Fitzgibbon, Stolley et al. 2005). The other four papers that measured behavior outside the childcare setting found no significant effect.(Williams, Bollella et al. 2002; Hafetz 2007; Bellows 2008; Witt 2009)
- While consideration of spillover implies that the intervention was limited to the childcare setting, this review revealed that 6 of the 10 interventions included a direct-to-parent component, primarily in the form of parent newsletters (5 interventions) or parent workshops (1 intervention)
- This review found that while a slight majority of interventions consider behavior outside the childcare environment, the results of these studies show mixed effects of these interventions on the home.
- Child behavior away from the primary setting should be considered in future research evaluating the effect of childcare-based environmental change interventions.