

The 2011 Colorado Early Childhood Obesity Prevention Report

Prepared by M. Colleen Domer, MS, RD

With contributions made by

Shana Patterson, RD

Tracy Miller, MSPH, RD

This project was funded by the Colorado Department of Public Health and Environment, Prevention Services Division. The following programs collaborated to complete this work: the Colorado Physical Activity and Nutrition Program, Child and Adult Care Food Program, Maternal and Child Health Program, Special Supplemental Food Program for Women, Infants, and Children, and the Epidemiology, Planning, and Evaluation Branch. Other state, local, public and private partners also contributed to this work.

September
2011



TABLE OF CONTENTS

TABLE OF CONTENTS	2
ACKNOWLEDGEMENTS	3
PURPOSE	6
BACKGROUND	6
FORMATIVE WORK	6
MEDICAL PROVIDER SCAN	6
STAFF PERCEPTIONS SURVEY AND INTERVIEWS.....	7
CHILD CARE PROVIDER ENVIRONMENTAL SCAN.....	7
PROJECT SCOPE	7
PHASE I: ANALYSIS OF BEST PRACTICES AND LITERATURE REVIEW.....	8
A. Phase I Methods.....	8
B. Phase I Results.....	9
C. Phase I Analysis.....	19
PHASE II: SURVEY AND INVENTORY OF COLORADO EFFORTS.....	19
A. Phase II Methods	19
B. Phase II Results and Analysis	20
Inventory of Colorado Programs and Initiatives.....	21
Identified Gaps Based on the Social Ecological Model	58
Identified Gaps Based on the Social Determinants of Health/Health Equity Framework ..	60
Identified Gaps in Addressing Behavioral Factors.....	62
Limitations of Phase I and Phase II.....	70
Phase I and II Discussion.....	72
PHASE III: STAKEHOLDER COLLABORATION.....	72
A. Phase III Methods	72
B. Phase III ARS Polling and Voting Results.....	73
Phase III Group Discussion Results.....	77
CONCLUSION	83
NEXT STEPS	84
REFERENCES	87

ACKNOWLEDGEMENTS

Colorado Foundation for Public Health and the Environment

Sara E Miller, MPA
Executive Director

Colorado Department of Public Health and Environment

Shana Patterson, RD
Colorado Physical Activity and Nutrition Program (COPAN)

Tracy Miller, MSPH, RD
Child and Adult Care Food Program (CACFP)

Heather Dubiel, MS, RN
Maternal Child Health (MCH) - Early Childhood Initiatives

Carsten Baumann, MA
Epidemiology, Planning & Evaluation

Linda Archer, RN
Maternal Wellness - Healthy Baby Campaign

Mandy Bakulski, RN
Maternal Wellness - Prenatal Plus

Jennifer Dellaport, RD, MPH
Prevention Services Division
Breastfeeding

Lynn Ireland, MPH, RD
Colorado Special Supplemental Program for Women, Infants, and Children Program (WIC)

Patricia Daniluk, MS, RD
Director of Nutrition Services and WIC

David Brendsel
Communications Specialist

Marion Morrison
Dietetic Intern
University of Northern Colorado

LiveWell Colorado

Michelle Harris, MPH, RD
Broomfield Public Health and Environment-HHS

Tracey Richers-Maruyama, MA
Health Program Administrator
Denver Public Health/ LiveWell Denver West

Barb Parnell, RN
Northwest Colorado LiveWell

Emily Montoya, RD
Prowers County LiveWell

Lisa Malde, MURP, MUD
LiveWell Chaffee County

Jessica Hinterberg, MPH, CHES
CanDo Obesity Prevention Specialist
Coalition for Activity & Nutrition to Defeat Obesity
LiveWell Fort Collins

Jana Wright, M.Ed.
Director of Health Literacy and Education
Partnerships for Healthy Communities
Commerce City

Local WIC Program Directors

Robin Trujillo, RN, BSN
Director of Public Health and WIC
Baca County Public Health Agency

Ingrid K. Rosoff, Med, RD
Larimer County WIC Director

Cynthia May, RD
Northeast Colorado WIC

Amy Usalavage, RD
Summit County WIC

Public Health Department Directors

Mary Meisner, Director
Garfield County Public Health Agency

Charity Beaman, RN, BSN, PHD
Jackson County Public Health Director

Andrea Clement-Johnson, M.S.
Health Education Supervisor
Larimer County Department of Health
& Environment

Lynn Procell
Associate Director of Community
Health Services
Pueblo City-County Health Department

Jacqueline Brown, RN, MSN
Director
Prowers County Public Health

Amanda Gersabeck, RD
Early Childhood Nutrition Specialist
Tri-County Health Department

Jennie Wahrer, R.N.
Maternal and Child Health Manager
Eagle County Health and Human
Services

Colorado Early Childhood Councils

Deb Hartman
Director
Las Animas and Huerfano Early
Childhood Council

Kathy Reinhardt
Director
Early Childhood Council of Logan,
Phillips and Sedgwick Counties

Additional Colorado Stakeholders

Laura Bellows, PhD, RD
Food Friends and Mighty Moves
Colorado State University

Jon-Paul Bianchi
Early Childhood Initiatives Director
Colorado Children's Campaign

Richard E. Boles, Ph.D.
Assistant Professor of Pediatrics
Children's Eating Laboratory
University of Colorado Denver

Cara Coxe
Wellness Programs Manager
Colorado Academy of Family
Physicians

Lindsay E. Dolce, J.D.
Technical Assistance
Policy and Finance Reform Project
Manager
Early Learning Ventures

Cynthia G. Dormer PhD, RD
Assistant Professor
Metropolitan State College

Denise Enriquez
Nutrition Manager
RMSER Western Slope Head Start

Susan Flood
Executive Director
Colorado Head Start Association

Amy Gammel
Child Care Licensing
Colorado Department of Human
Services

Jodi Hardin
Early Childhood Systems Specialist
Office of Lt. Governor Barbara O'Brien

Susan Johnson, PhD
Associate Professor of Pediatrics
University of Colorado at Denver

Becky Keigan, M.A.
Food Friends Program Coordinator
Colorado State University

Melissa L. Kelley
Executive Director
Colorado Parent & Child Foundation

Scott Liebler, Founder and Director
HEARTS Foundation
Funsicle Fitness

Chris Marchioni, MD
Executive Director
Healthy Learning Paths

Katie McGirr, MS, RD
Research Associate
Expanded Food and Nutrition
Education Program

Katherine Moos
Program Manager
Campaign to End Childhood Hunger

Linda Satkowiak, ND, RN, CNS
Child Care Health & Safety Nurse
Consultant

Healthy Child Care Colorado
Qualistar Colorado

Ruth Seedorf, BS, RN
Executive Director
Baby Bear Hugs

Ruth Stemler, M.S., R.D.
State Director
Share Our Strength

Terri Stowell
Director of Quality Rating Specialists
Qualistar Early Learning

Sara Schwankl
Project Manager
Health TeamWorks

Kathy Underhill
Executive Director
Hunger Free Colorado

Robyn Wearner, RD
Statewide Parent Education
Integrated Nutrition Education Program

Mary Willis
President
Colorado Association for the Education
of Young Children

PURPOSE

The purpose of this project was to identify factors associated with early childhood obesity prevention, determine which have the greatest levels of evidence, and explore how Colorado programs can strategically leverage and invest resources to prevent early childhood obesity.

BACKGROUND

Early childhood health is foundational to health throughout the life course. Good health in the earliest years of life is also associated with improved learning and school readiness. Preventing obesity poses a significant challenge to those who work with and care for young children and their families. Mounting evidence points to the importance of intrauterine life, infancy and the preschool years to establish long-term regulation of energy balance.

The Centers for Disease Control and Prevention's (CDC) Pediatric Nutrition Surveillance System (PedNSS) is a nationally compiled obesity surveillance system using data obtained at the state and local level for low-income children participating in federally funded maternal and child health and nutrition programs. In Colorado, PedNSS data specifically reflects health indicators of children served by the Special Supplemental Food Program for Women, Infants, and Children (WIC). The 2010 PedNSS indicates that 9.1% of Colorado's low income children, ages 2-5 years are obese (BMI greater than the 95th percentile) and an additional 14.1% of these children are overweight (BMI between the 85th and 95th percentile). Between 2001 and 2005, the percentage of low income children, ages 2-5 years, who were overweight or obese increased from 21.3% to 24.7%. This prevalence remained stable through 2007, and then slightly declined to 23.2% by 2010. Identifying effective interventions that encompass behavioral, environmental and policy strategies is key to addressing and preventing the problem of child obesity.

Several risk factors are associated with preventing childhood overweight and obesity. However, little guidance exists for effective, comprehensive approaches to address this problem. This report summarizes the factors associated with early childhood obesity; describes Colorado's current prevention efforts; identifies gaps that exist in addressing early childhood obesity; and provides recommendations for improved coordination of efforts.

FORMATIVE WORK

Three studies, funded by the Colorado Department of Public Health and Environment (CDPHE) informed the work of this project. These studies covered an evidence-based review of health care provider interventions, a child care provider environmental scan, and an exploration of staff perceptions of the nutrition and physical activity environment in early child care settings.

Medical Provider Scan

In 2007, Dr. Kathryn Bird conducted a review of evidence-based health care provider interventions, assessing perceived barriers for intervention by health care providers regarding childhood obesity. She identified low reimbursement for the length of the sessions; lack of awareness of best practices or clinical guidelines for overweight and obesity; unfamiliarity with appropriate communication techniques with a client who does not want to talk about obesity or may be offended; and feelings of treatment futility and client non-compliance as barriers for providers in addressing childhood

obesity. The study recommends increased education on body mass index (BMI) and use of BMI charts for health care providers. In addition, Bird recommended a statewide assessment of health care provider interventions for childhood obesity, as well as the development of intervention programs for communities.

Staff Perceptions Survey and Interviews

In 2008, Joy Markuson and Dr. Laura Bellows surveyed 155 child care providers and conducted 25 interviews investigating attitudes, perceptions and preferences regarding the early childhood nutrition and physical activity environment rating system and training. Markuson and Bellows recommended engaging early childhood program staff members in developing a nutrition and physical activity rating system and providing training opportunities that match their topics of interest. They also recommended exploring parent perceptions toward nutrition and a physical activity rating system, as well as resources for child care providers to implement recommended changes.

Markuson and Bellows found that the majority of early childhood program staff members were interested in participating in a rating system. They were also interested in multiple training and educational venues, but primarily in face-to-face workshops. Frequently desired training topics included physical activity and gross motor development for infants, toddlers and preschoolers; creating healthy nutrition and physical activity environments; nutrition and feeding of infants, toddlers and preschoolers; and integrating nutrition and physical activity into existing curricula. They recommended engaging early childhood program staff members in developing a nutrition and physical activity rating system and to provide training opportunities that match their topics of interest. In addition, an exploration of parent perceptions toward nutrition and physical activity rating should be considered.

Child Care Provider Environmental Scan

In 2009, using the Colorado Child Care Champions Best Practices, Dr. Cynthia Gillette Dormer conducted non-randomized interviews with 84 child care providers in Colorado to identify existing childhood obesity prevention programs focused on child care settings and explored barriers to additional prevention efforts. She found that 67% of those interviewed felt the children in their care were at risk for obesity. In addition, 87% of those interviewed felt that they could have an impact on their children's risk for developing obesity. Reported areas for potential improvement by the child care providers include the following:

- 40% - structured physical activity
- 45% - family style meals and division of responsibility
- 43% - support of continued breastfeeding and healthy infant feeding practices
- 49% - improved environment to promote nutrition

Resulting recommendations included increasing participation in the Child and Adult Care Food Program, providing a forum for providers to share prevention programs, and assisting child care providers with evaluation of existing prevention efforts.

PROJECT SCOPE

Building upon the foundational studies, as well as efforts external to Colorado, the CDPHE and contractor Colleen Domer conducted a three-phased early childhood obesity prevention project.

Phase One included a comparative analysis of the Colorado Child Care Champions Best Practices and other recommendations and guidelines, as well as a thorough review of the literature. In *Phase Two*, two survey tools were developed to inventory early childhood obesity prevention efforts in Colorado and identify gaps. *Phase III* involved a Stakeholder Meeting to discuss the evidence, review Colorado's existing efforts and discuss future priorities to guide the Colorado Department of Public Health and Environment's direction for early childhood obesity prevention.

Phase I: Analysis of Best Practices and Literature Review

A. Phase I Methods

The Colorado Child Care Champions Best Practices (CCCBP) were developed to help child care providers assess their use of nutrition and physical activity programs and processes. In Phase I, an analysis of the CCCBP was conducted by Domer, comparing the best practices to guidelines, recommendations and best practices utilized by other states and national programs.

Domer compiled a matrix comparing the CCCBP with the following:

- Nutrition and Physical Activity Self-Assessment for Child Care (NAP-SACC), North Carolina
- 5-2-1-Almost None, Nemour's Health and Prevention Services
- New York guidelines
- California guidelines
- Institute of Medicine (IOM) Expert Committee Recommendations
- American Dietetic Association position
- American Academy of Pediatrics position

Analysis of the Best Practice Matrix (Appendix A) suggested that the CCCBP was the most comprehensive and detailed approach for child care providers.

Next, a literature review was completed using the American Dietetic Association's (ADA) Evidence Analysis Manual. The purpose of the review was to identify the evidence base for risk factors associated with developing childhood overweight and obesity, and investigate recommendations and best practices for assessment, treatment and prevention of obesity. The following 25 factors associated with, or contributors to childhood overweight and obesity identified by the U.S. Centers for Disease Control and Prevention and risk factors included in the CCCBP were used to develop research questions.

1. Race and ethnicity
2. Pre-pregnancy BMI
3. Parental overweight
4. Gestational weight gain
5. Birth weight
6. Smoking
7. Sleep
8. Infant feeding Practices
9. Breastfeeding
10. Weight gain 0-2
11. Food preferences
12. Portion size
13. Breakfast Consumption
14. Fruit and vegetable intake
15. Sweetened beverage intake
16. Juice intake
17. Energy intake
18. Eating out
19. Access to healthy foods
20. Physical activity
21. Screen time and marketing
22. Built environment
23. Parenting behaviors
24. Child care
25. Policy

Between October 2009 and January 2010, Domer searched the PubMed data base using key words related to each research question. In addition, bibliographies from articles gathered were used to identify additional journal articles. Only journal articles with a study population between the ages of 0 and 5 years and those written in English were included. Articles which studied children > 5 years of age were excluded from the review. All abstracts were reviewed for relevance and validity, using the Research Quality Criteria of the ADA Evidence Analysis Process, and those articles which met the criteria were gathered for inclusion in the review. Domer created an Evidence Abstract Worksheet (Appendix B) which included citation, study design, class of study, research purpose, study protocol, data collection, data sample, summary/ results and conclusion for each of the research questions.

Domer authored brief statements of the relevant findings for each research article (i.e., author and year of publication, outcomes and measurements of interest, important sample characteristics and comparison factors, implications and limitations of findings). The articles were evaluated by writing an evidence summary. Using the Conclusion Grading Table (Appendix C), Domer assigned an evidence grade based on the quality of study designs and scientific rigor/validity, consistency of findings across studies, the quantity of studies and number of subjects in the studies, the clinical impact regarding the importance of studied outcomes and magnitude of effect, and the ability to generalize to the population.

Strength of evidence grades include: I Good/Strong; II Fair; III Limited/Weak; IV Expert Opinion Only; and V Grade Not Assignable (Appendix D).

Factors were grouped into six categories by natural association in the literature (Prenatal, Lifestyle, Infant Feeding Practices, Energy Intake, Energy Output, and Family and Community) as well as by age cohort (Prenatal, 0-2 years and 3-5 years) to evaluate the evidence base.

B. Phase I Results

There is no single factor that causes obesity. It is the interaction among genetic, environmental, behavioral, and other factors that can lead to an imbalance in caloric intake and energy expenditure, and result in obesity. The body of evidence supporting these factors as effective intervention strategies varies greatly.

A. Genetic Factors

An individual's susceptibility to excess weight gain may be increased based on their genetic characteristics (Faith et al., 2004; Berkowitz et al., 2005). There are some genetic conditions that can alone result in obesity (e.g., Prader-Willi syndrome, fat mass and obesity-associated gene and the Melanocortin 4-receptor gene; Farooqi & O'Rahilly, 2007). However, the genetic characteristics of humans have not changed in the last three decades; therefore it is more likely the contribution of environmental and behavioral factors in conjunction with genetic susceptibility that leads to the rise in childhood obesity (Berkowitz et al., 2005; Faith et al., 2004). From an intervention perspective, genetic factors do not lend themselves to change. Therefore, emphasis must rest with modifiable factors.

B. Behavioral

The following risk factors were identified as related to early childhood obesity prevention and therefore reviewed. The strength of evidence for each factor is a grade level I (high), II, III, or IV.

a. Parenting Behaviors, III

Limited evidence suggests a relationship between parenting behaviors and childhood overweight and obesity. Restriction of highly palatable foods, parental dietary disinhibition, restraint and concern about the child's weight status may be associated with childhood overweight and obesity. Using food as a reward, encouragement or pressure to eat and parental control over child dietary intake do not appear to be associated with childhood overweight and obesity.

b. Smoking, II

Maternal smoking during pregnancy may be related to an increased risk for early childhood obesity. Maternal smoking during pregnancy almost doubles the odds of being overweight at 4.5 years (Dubois et al., 2006). Early pregnancy smokers had children who were more overweight compared to those who didn't smoke (Oken et al., 2005). Children with parents who smoked near their child were more likely to be obese regardless of ethnicity (Brophy et al., 2009). Prenatal exposure to maternal smoking showed significantly increased odds of childhood overweight and obesity, with most odds ratios clustering around 1.5 to 2.0 (Huang et al., 2007). Children whose mothers smoked during pregnancy were at elevated risk for overweight (pooled adjusted odds ratio (OR) 1.50, 95% CI: 1.36, 1.65) at ages 3-33 years (Oken et al., 2008).

c. Sleep Duration, I

Shorter sleep duration may be independently associated with childhood overweight and obesity. The effect of sleep duration on obesity in children reflects a higher body fat composition and appears to be independent of other risk factors for childhood obesity (von Kries et al., 2002). Reilly et al., (2005) found short (< 10.5 hours) sleep duration at age 3 years (1.45, 1.10 to 1.89) associated with childhood overweight. Patel's systematic review (2008) showed short sleep duration appears independently associated with weight gain, particularly in younger age groups. The greatest effects of sleep duration were seen for the upper percentiles of the BMI and body fat distributions found in a study by Bayer et al., (2009). Average daily sleep duration of <12 h/day compared with at least 12 h/day, the odds ratio for overweight was 2.04 (95% CI 1.07, 3.91; Gillman et al., 2008).

d. Infant Feeding Practices, II

Infant feeding practices may be associated with child overweight and obesity. Feeding strategies that are responsive to children's hunger and satiety cues and encourage children's attention to hunger and fullness are needed to support self-regulation (Savage et al., 2007). Because family food choices influence what foods are offered to children, family-based approaches to developing healthy eating habits may be helpful (Fox et al., 2004). Results from one study did not suggest that there is a particular "feeding style" that is associated with overweight in young children (Baughcum et al., 2001). Of Latina women participating in the Special Supplemental Food Program for Women Infants Children (WIC) surveyed in New York, 72% believed that infant crying must indicate hunger and 53% believed that mothers should always make babies finish the bottle ("pressure to feed").

e. Breastfeeding, II

Breastfeeding duration appears to decrease the risk of early childhood obesity in non-Hispanic children. Mean BMI is lower among breastfed subjects (Owen et al., 2005). Owen and colleagues' meta-analysis (2005) found 28 of 29 estimates related breastfeeding to a lower risk of obesity. Breastfeeding is associated with a small but significant reduction in risk of child overweight (Simon et al., 2009; Arenz et al., 2004; Huus et al., 2008). The relationship appears to be portion dependent (Harder et al., 2005). Prolonged breastfeeding is associated

with a reduced risk of overweight among non-Hispanic white children (Grummer-Strawn & Mei, 2004). Breastfeeding longer than six months provides health benefits to children well beyond the period of breastfeeding. Armstrong & Reilly's (2002) results suggest that breastfeeding is associated with a reduction in childhood obesity risk.

f. Food Preferences, II

Food preferences may be associated with an increased risk of childhood overweight and obesity. Beuchamp and colleagues (1994) demonstrated that newborn infants tended to reject saline relative to water more than did 4 to 8-month-old infants. Sullivan and Birch (1994) showed that after 10 opportunities to consume vegetables, all infants significantly increased their intake. Infants fed breast milk showed greater increases in vegetable intake after exposure and had an overall greater level of intake than formula-fed infants. Practical advice for parents includes how to foster children's preferences for healthy foods and how to promote acceptance of new foods by children (Birch & Davison, 2001). Fox and group (2004) reported that family food choices (fruits and vegetables) influence what foods are offered to children. Wardle and colleagues (2003) concluded that a parent-led, exposure-based intervention involving daily tasting of a vegetable holds promise for improving children's acceptance of vegetables. Early variation, under more species-typical circumstances (e.g, via exposure to different flavors in amniotic fluid and mothers' milk), may underlie individual differences in food acceptability throughout the life span (Mennella et al., 2004). Breastfeeding confers an advantage in initial acceptance of a food, but only if mothers eat the food regularly. Once weaned, infants who receive repeated dietary exposure to a food eat more of it and may learn to like its flavor (Forestell & Mennella, 2007). Early experiences in milk and solid foods affect infants' taste acceptance patterns (Mennella et al., 2009). Volatile components of flavor detected by the olfactory system are strongly influenced by early exposure and learning beginning in utero and continuing during early milk (breast milk or formula) feedings (Beuchamp & Mennella, 2009). Prenatal and early postnatal exposure to a flavor enhanced the infants' enjoyment of that flavor in solid foods during weaning (Mennella et al., 2001).

g. Portion Sizes, II

Portion size may be associated with an increased risk of childhood overweight and obesity. By the end of the preschool period, the amount of food offered influences children's food intake (Rolls et al., 2000). Leahy et al., (2008) showed evidence that reducing the energy density of the diet is an effective strategy for moderating a child's energy intake. Portion size appeared to be a mechanism by which young children self-regulate energy intake (McConahy et al., 2002). Findings (Fox et al., 2006) confirm the presence of energy self-regulation among infants and young toddlers. Portion size as a single predictor explained the greatest amount of the variance in energy intake (McConahy et al., 2004). The children consumed 25% less of an entrée when allowed to serve themselves than when served a large entrée portion (Orlet et al., 2003). Self-selection resulted in decreased entrée and meal energy consumption only among those children who ate more when served the large portion (Fisher, 2007). In a study by Li et al, (2008) mothers' encouragement of bottle emptying was negatively associated with their infants' risk for excess weight during the second half of infancy.

h. Breakfast Consumption, III

There is a fair amount of evidence that consumption of breakfast may be associated with childhood overweight and obesity. BMI from age 3 to 6 years is significantly associated with eating breakfast for groups 2 (overweight at age 3, normal BMI at age 6) and 3 (normal BMI at age 3, overweight at age 6)(Sugimori et al., 2004). Breakfast eaters generally consumed

more daily calories, yet were less likely to be overweight. Not all studies associated breakfast-skipping with overweight (Rampersaud et al., 2005). Breakfast skippers' mean BMI increased as intake of energy, carbohydrates or servings of grain products increased; however, this was not the case for breakfast eaters (Dubois et al., 2009). The lowest mean BMI ($P \leq 0.05$) and mean waist circumference ($P \leq 0.05$) was found in children 1-12 years of age who consumed ready-to-eat cereal at breakfast, compared with other consumption groups (Williams et al., 2009). Brophy and colleagues (2009) reported children with sedentary lifestyles who were large at birth, with high-risk family health behaviors (overweight mothers, smoking near the child, missing breakfast) and from a family with low income or low educational attainment were more likely to be obese regardless of ethnicity.

i. Fruit and Vegetable Intake, III

There is a fair amount of evidence that intake of fruits and vegetables (FV) is inversely related to adiposity in children. Variables negatively related to overweight status include vegetable intake as a proportion of total daily energy (Melgar-Quinonez et al., 2004). A 0.09 kg greater weight change (CI 0.05 to 0.13 kg, $P=0.02$) for each additional serving of vegetables and fruit intake was not significantly related to weight change in pre-school children (Newby et al., 2003). Among preschoolers, FV servings increased in normal weight (MN=0.35, $p=0.02$) but not overweight children (MN=-0.10, $p=0.48$), relative to controls and parent's change in FV servings as a significant predictor of child's change in FV in the H5-KIDS group ($p=0.001$). (Haire-Joshu, et al., 2008). Sugimori et al., (2004) showed a significant relationship between Japanese boys in Group 2 (Overweight at age 3 years, normal at age 6 years) and Group 3 (Normal at age 3 years, overweight at age 6 years) and intake of fruit juice. Fiber consumption on the previous day was associated with a decreased risk of overweight (OR: 0.69, 0.47-0.99; Hanley et al., 2000).

j. Sweetened Beverages Intake, II

Intake of sugar-sweetened beverages (SSB) is positively related to adiposity in children. There was no significant relationship between beverage intake and weight or BMI change in any models (Newby et al., 2004). Troiano and colleagues (2000) reported soft drink energy contribution higher among overweight youths than among non-overweight youths for all age groups. O'Connor and group (2006) found no association with the weight status of the child and the amount of total beverages (milk, 100% fruit juice, fruit drink or soda) consumed. A review by Olsen and Heitman (2009) reporting no support for the association between intake of SSB and obesity is mediated via increased energy intake. A Malik et al. (2006) review suggests that the weight of epidemiologic and experimental evidence indicates that a greater consumption of SSB is associated with weight gain and obesity. Most studies suggest that the effect of SSB is small except in susceptible individuals or at high levels of intake (Gibson, 2008). Among a longitudinal cohort of African-American preschool children, high consumption of sugar-sweetened beverages was significantly associated with an increased risk for obesity (Lim et al., 2009).

k. Juice Intake, II

Consumption of 100% fruit juice is not associated with child overweight and obesity unless consumed in large quantities (> 12 oz). Sugimori et al., (2004) showed a significant relationship between Japanese boys in Group 2 (Overweight at age 3 years, normal at age 6 years) and Group 3 (Normal at age 3 years, overweight at age 6 years) and intake of fruit juice. Increased beverage consumption was associated with an increase in the total energy intake of the children but not with their BMI (O'Connor et al., 2006). Basch et al., (1994) showed that fruit juice accounted for a disproportionate amount of 5-A-DAY intake in this

population. Children consuming 12 fluid ounces per day of fruit juice were more overweight than those consuming less juice ($P < 0.005$; Dennison et al., 1997). Mean percentage of energy intake coming from juice: 7.8 ± 5.6 for BMI in the 85th percentile vs. 6.1 ± 5.3 for BMI < 85th percentile ($P = 0.03$); 8.3 ± 5.9 for BMI in the 95th percentile and 6.4 ± 5.3 for BMI < 95th percentile ($P = 0.04$; Melgar-Quinonez et al., 2004). Newby and colleagues' (2004) results are consistent with other prospective studies that have found that fruit juice is not related to obesity. No significant differences were found in weight status and the amounts of 100% juice consumed. There was no difference in the likelihood of being overweight between juice consumers and non-consumers (Nicklas et al., 2008). Kloben-Tarver (2001) found no relation between excessive fruit juice intake and obesity.

l. Total Energy Intake, II

Total energy (caloric) intake (using current dietary assessment tools, which may not accurately assess total energy intake) does not appear to have a strong association with overweight in children. Evidence for an association between each dietary factor and overweight is limited and inconclusive (Sherry, 2005). Total energy intake is not part of the mechanism by which consumption of sweet drinks leads to overweight; or total energy intake (measured by HFFQ) was not representative of true intake (Welsh et al., 2005). Total energy intake was not independently related to weight change (Newby et al., 2003). Total energy intake at age 1 year was not statistically different between overweight and non-overweight at 5 years of age (Scaglioni et al., 2000). Total kilo-calories (kcal) alone were found to relate to weight gain. However, when fat kcals are entered into the equation, it explained somewhat more of the variance than total kcal and was no longer a significant predictor of weight gain (Klesges et al., 1995). Davison & Birch (2001) reported that energy intake was not associated with any weight status or physical activity variable. Intakes of energy, total fat and saturated fatty acids did not differ significantly between overweight and non-overweight children and adolescents (Troiano et al., 2000).

m. Eating Out, IV

There is insufficient evidence to determine whether eating out is associated with an increased risk of early childhood overweight and obesity. Sugimori and colleagues (2004) found no association with eating out (fast food) and increased BMI at 3 and 6 years of age. For each one-hour increment of television viewing per day, the study found higher intakes of fast food (0.32 servings/month [95% CI 0.16, 0.49]; Miller et al., 2008).

n. Physical Activity, II

Participation in regular physical activity is associated with lower adiposity in youth. This association is stronger in boys than in girls. Our results suggest a significant proportion of overweight children may be at increased risk for further gains in adiposity because of low levels of physical activity during the preschool day (Trost et al., 2003). Data suggest that individuals from lower socioeconomic status (SES) neighborhoods may have limited ability to control their physical activity in the face of inaccessible environments (Estabrooks et al., 2003). Parental physical activity ($p = 0.03-0.008$), size of backyard ($p = 0.001$) and amount of outdoor play equipment ($p = 0.003$) were associated with more outdoor play (Spurrier et al., 2008). Mexican-American children were less active than white children at home ($p < .002$) and during recess ($p < .03$), thus adding to the adult literature that has found Hispanics to be less active than whites, and supporting the notion that physical activity life-style habits may be established in early childhood (McKenzie et al., 1992). Children who spent more time outdoors were more active than children who spent less time outdoors and age. BMI were consistently shown to have no association with preschool children's physical activity (Hinkley

et al., 2008). Variables observed concurrently with physical activity, such as time spent outdoors and prompts to be active, were highly associated with children's physical activity (Sallis et al., 1993). The children of obese families were rated as enjoying low-impact (sedentary) activities more ($t=2.06$, $p=0.04$) and being less active than other children ($t=2.37$; $p=0.02$; Wardle et al., 2001).

C. *Environmental*

Home, child care, school and community environments can influence children's behaviors related to food intake and physical activity (IOM, 2005). The strength of evidence for each of the following factors is a grade level I, II, III, or IV.

a. *Screen Time and Marketing, II*

Excessive television viewing may be associated with increased adiposity in youth. Excessive use of video games may be associated with increased adiposity in youth. Brief exposures (30 seconds) to televised food commercials can influence preschool children's food preferences (Borzekowski & Robinson, 2001). Duration of TV viewing was significantly higher among overweight groups (Sugimori et al., 2004). Children's television/video/ computer time also was positively related to the child's BMI at age 2 years ($r=0.33$, $p=0.006$; Skinner et al., 2004). Among 3-year-olds, more TV viewing is associated with adverse dietary practices (Miller et al., 2008). Children who watched the most television during childhood had the greatest increase in body fat over time (Proctor et al., 2003). A significant association was found between the proportion of children overweight and the number of advertisements per hour on children's television, especially those advertisements that encourage the consumption of energy-dense, micronutrient-poor foods ($r = 0.81$, $P < 0.005$; Lobstein et al., 2005).

b. *The Built Environment, III*

There is limited evidence that the built environment may be related to childhood overweight and obesity. Direct assessments of the links between the built environment and physical activity as it influences personal health are still rare in the field (Handy et al., 2002). Analysts do not know whether changes in the built environment have increased rates of obesity or whether improvements to the built environment will decrease them (Sallis & Glanz, 2006). Findings from a study by Grow and colleagues (2008) support the need for built environments and transportation policies that facilitate safe, active transport to recreation sites for youth physical activity. In a review by Kaczynski & Henderson (2008), most articles showed significant positive relationships between park and recreation settings and physical activity was more likely associated with exercise or utilitarian functions than for recreation. The odds of girls being overweight or obese were lower if they lived in walkable neighborhoods (Spence et al., 2008). Estabrooks and colleagues (2003) reported data to suggest that individuals from lower SES neighborhoods may have limited ability to control their physical activity in inaccessible environments. Aspects of the built environment may differentially influence the body weight status of children depending upon sex (Spence et al., 2006). No perceptions of the local neighborhood (heavy traffic and road safety) were associated with weight status among 5-6-year-old children (Timperio et al., 2005). Based on a review (Lovasi et al., 2009), increasing supermarket access, places to exercise, and neighborhood safety may also be promising strategies to reduce obesity-related health disparities.

c. *Access to Healthy Foods, III*

There is limited evidence to determine the relationship between access to healthy foods and risk of early childhood overweight and obesity. There are four times more supermarkets located in white neighborhoods compared to black neighborhoods ($PR=4.3$, $95\% CI=1.5-12.5$;

Morland et al., 2002). Differences in dietary factors across living situations appear to exist beyond the socio-demographic differences in these populations (Nelson et al., 2009). National and local studies across the United States suggest that residents of low-income, minority and rural neighborhoods are most often affected by poor access to supermarkets and healthful food (Larson et al., 2009). A qualitative study by Lindsay and colleagues (2009) reported participation in the WIC program helped families address food insecurity; and child care provided healthy eating and physical activity opportunities. While access to healthy, affordable, culturally appropriate foods is a necessary starting point, it would be valuable to conduct research that compares the impact of environmental changes with or without broader community education and health promotion to identify the most effective strategies for changing eating behaviors (Mikkelsen et al., 2007). Non-chain supermarkets and grocery stores are more prevalent in low-income and minority neighborhoods (Powell et al., 2007).

d. Child care, III

There is limited evidence that there is a relationship between child care and childhood overweight and obesity. Nicklaus and colleagues (2001) argue that caregivers (parents and child-care providers) can influence children's eating practices by controlling availability and accessibility of foods, meal structure, food modeling, food socialization practices and food-related parenting style. Children not in child care were significantly less likely and children in family, friend and neighbor care were significantly more likely to be obese than children in other primary child care arrangements (Maher et al., 2008). For Latino children, participation in some types of non-parental child care had protective effects on their likelihood of being obese. Limited center-based child care attendance during the preschool years was independently associated with a decreased risk of future overweight relative to no child care attendance (Lumeng et al., 2005). Overall time in child care was associated with an increased WFL z score at 1 year and BMI z score at 3 years of age, but not in skin fold thicknesses (Benjamin et al., 2009). Fleischacker et al., (2006) findings illustrate that this center's menu was not consistently followed and therefore could not be used as an estimate of the preschoolers' intake or used as an educational or informational tool for parents/ caregivers. Many states lack specific nutrition and physical activity regulations related to childhood obesity for child care facilities (Benjamin et al., 2008). Benjamin and colleagues (2009) showed great discrepancies between model child-care menu policies and current state regulations in most states. Opportunities exist for strengthening state licensing regulations to prevent childhood obesity (Kaphingst & Story, 2009). Story and colleagues (2006) have suggested Head Start be used as a model for other child care programs to set performance standards for nutrition. Drummond and colleagues (2009) have described the success of a program aimed at preventing childhood obesity and diabetes.

e. Policy Change, IV

There is insufficient evidence to determine the relationship between policy change and childhood overweight and obesity. Whole-population approaches that are “passive” (ie, have their effects through environmental and policy changes) improve opportunities for healthful eating and physical activity without requiring deliberate actions by individuals and can be particularly useful in addressing inequities (Kumanyika et al., 2008). Influencing policy and legislation, mobilizing neighborhoods and communities, changing organizational practices, and fostering coalitions and networks are four strategies consistent with a socio-ecological model. A positive association was shown between the length of maternity leave and mother's mental health and duration of breastfeeding (Staehelin et al., 2007). A maternity leave of six weeks or six to 12 weeks after delivery was associated, respectively, with fourfold and

twofold higher odds of failure to establish breastfeeding and an increased probability of cessation after successful establishment, relative to women not returning to work, after adjusting for covariates (Guendelman et al., 2009). During gestation, risk factors for obesity include maternal diet, overweight, and smoking and in early childhood, feeding practices, taste acquisition and eating in the absence of hunger must be considered (Esposito et al., 2009).

D. Other Factors

The following factors were also reviewed as risk factors for early childhood obesity. The strength of evidence for each factor is a grade level I, II, III, or IV.

a. Birth Weight, I

Birth weight at both ends of the spectrum (low birth weight and high birth weight) increase the risk of early childhood obesity. There is a positive association between birth weight and BMI where higher birth weight predicted increased risk of overweight in adolescence; and lower birth weight was associated with increased central obesity (Hitze et al., 2009). Birth weight may be associated with later child overweight and obesity. Most excess weight before puberty is gained before 5 years of age (Gardner et al., 2009). We are faced with the seeming paradox of increased adiposity at both ends of the birth weight spectrum - higher BMI with higher birth weight and increased central obesity with lower birth weight (Oken et al., 2003). Higher birth weight predicted increased risk of overweight in adolescence; whereas the odds ratio for adolescent overweight for each 1-kg increment in birth weight was 1.4 (95% confidence interval: 1.2-1.6) (Gillman et al., 2003).

b. Weight gain 0-2 years, I

Rapid weight gain within the first two years of life increases the risk for child overweight and obesity. More rapid increases in weight for length in the first six months of life were associated with sharply increased risk of obesity at 3 years of age (Taveras et al., 2009). Infants who are at the highest end of the distribution for weight or body mass index or who grow rapidly during infancy are at increased risk of subsequent obesity (Baird et al., 2005). The greatest proportion of 4.5-year-old overweight children was seen for children born in the normal weight-range category (3000-4000 g) who were in the highest quintiles of weight gain from birth to 5 months, and for children with high birth weights (more than 4000 g) who were in the lowest quintiles of birth-to-5-months weight gain (Dubois et al., 2006). Children who were ever overweight (> 85th percentile), that is, > or = 1 time at ages 24, 36, or 54 months during the preschool period were > 5 times as likely to be overweight at age 12 years than those who were below the 85th percentile for BMI at all three of the preschool ages (Nader et al., 2006).

c. Pre-pregnancy BMI, I

Pre-pregnancy BMI is associated with early childhood obesity. The strongest perinatal predictor for a child in the upper tertile for weight was maternal pre-gravid body mass index >30 and for percentage body fat was maternal pre-gravid BMI >30 (Catalano et al., 2009). Infant weight gain is associated with maternal pre-pregnancy BMI and with an interaction between the duration of breastfeeding and the timing of complementary food introduction (Baker et al., 2004). There is evidence from epidemiological studies that overweight and obese women are less likely to breastfeed than normal weight women (Amir & Donath, 2007). Among low-income children, maternal obesity in early pregnancy more than doubles the risk of obesity at 2 to 4 years of age (Whitaker, 2004). Wrotniak and colleagues (2008)

found the odds of overweight in offspring at age 7 years increased by 3% for every 1 kg of gestational weight gain.

d. Parental Overweight, II

Parental obesity was identified as one of eight risk factors associated with child obesity, after looking at the relationship between 25 risk factors (Reilly et al., (2005). The strongest of five independent risk factors for childhood overweight was parent overweight (Agras et al., 2004). Parental overweight is a major risk factor for childhood overweight in the first years of life (Scaglioni et al., 2000). The mean BMIs of the mothers and fathers of the overweight children were higher than those of the parents of the normal-weight children (Langstrom et al., 2008).

e. Gestational Weight Gain, I

Excessive gestational weight gain is a risk factor for early childhood obesity. Compared with inadequate weight gain, women with adequate or excessive weight gain had children with higher body mass index z-scores (Oken et al., 2007). Wrotniak and colleagues (2008) found the odds of overweight in offspring at age 7 years increased by 3% for every 1 kg of gestational weight gain. Oken et al., 2007 found greater weight gain was associated with higher child body mass index z-score, sum of subscapular and triceps skinfold thicknesses, and systolic blood pressure. Gillman et al., 2008 reported the predicted probability of overweight in childhood varied from 6% to 29%, depending on the levels of four potentially modifiable risk factors in pregnancy and infancy – maternal smoking during pregnancy, gestational weight gain, breastfeeding duration and daily sleep duration during infancy.

f. Race and Ethnicity, II

Race and Ethnicity is associated with childhood obesity and overweight. The highest prevalence is among American Indian/Native Alaskan children, for which obesity is twice as common as in non-Hispanic white or Asian children (Crawford et al., 2001; Anderson et al., 2009). Race and ethnic differences were less marked among 2 to 5-year-olds, and in this age group, white children experienced the largest increase in overweight (from 4% to 9%). In 1999-2002, the prevalence of extreme BMI levels (> or =99th percentile) reached 6% to 7% among Black girls and Mexican-American boys (Freedman et al., 2006). Race and ethnic differences in risk factors for obesity exist prenatally and in early childhood (Taveras et al., 2010).

Figure 1. Grade Level of Evidence by Category. Categories determined by natural association in the literature (Prenatal, Lifestyle, Infant Feeding Practices, Energy Intake, Energy Output, and Family and Community). Evidence Levels: Level 1 - Good; Level 2 - Fair; Level 3 - Limited/Weak; Level 4 - Expert Opinion

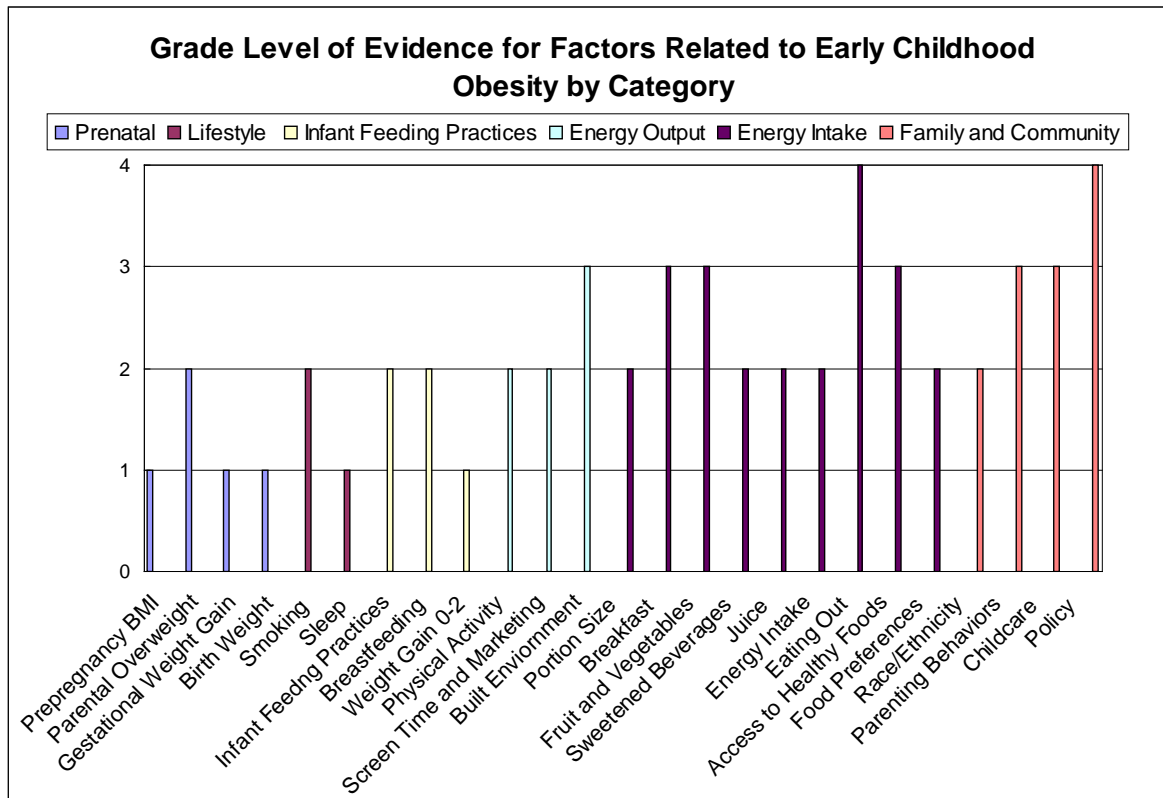
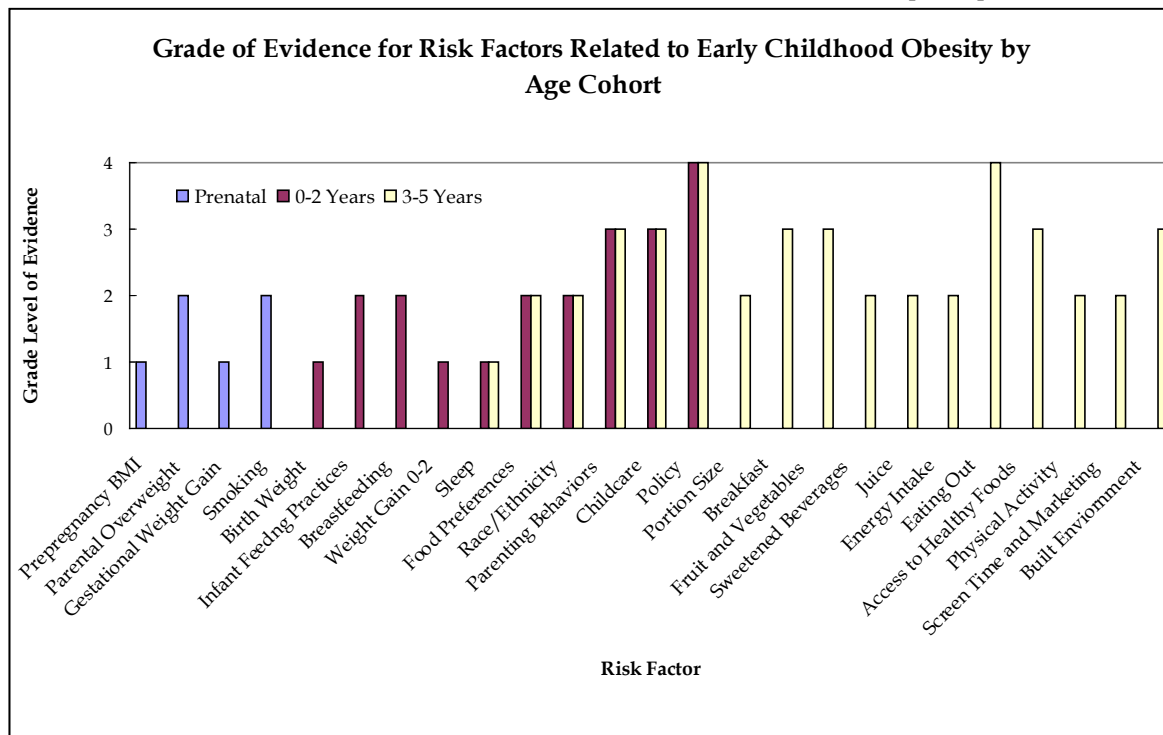


Figure 2. Grade Level of Evidence by Age Cohort
Evidence Levels: Level 1 - Good; Level 2 - Fair; Level 3 - Limited/Weak; Level 4 - Expert Opinion



C. Phase I Analysis

Findings from Phase I include:

1. Colorado's Child Care Champions Best Practices are comprehensive and detailed when compared with widely accepted guidelines and recommendations for child care.
2. A large, dynamic body of evidence exists regarding early childhood obesity prevention, providing a strong foundation for this work; this is also a limitation due to the inexhaustible nature of the issue.
3. The strongest evidence base for early childhood obesity prevention exists for the following factors: pre-pregnancy BMI, gestational weight gain, birth weight, weight gain age 0-2 years and sleep duration.

Phase II: Survey and Inventory of Colorado Efforts

A. Phase II Methods

For Phase II, two survey tools were developed to inventory early childhood obesity prevention efforts in Colorado. An environmental scan used by the state of Minnesota served as a model for developing and planning the survey.

The purpose of the survey process was to identify activities, initiatives, programs and interventions that promote physical activity and healthy eating during early childhood; coordinate prevention activities, initiatives, programs and interventions; and foster collaborations and leverage resources for an efficient, effective, and integrated approach to the obesity problem. The first tool gathered data from selected Colorado funders.

Three funders of obesity prevention programs in Colorado, the Colorado Health Foundation, Kaiser Permanente, and LiveWell Colorado, were interviewed to determine what types of programs, activities and interventions they were currently funding with regard to early childhood obesity prevention. The results of these key funders interviews suggested that additional contacts to grantees would be necessary to obtain more specific information about their programs, initiatives, activities and interventions that are currently addressing early childhood obesity prevention. Survey questions were crafted to interview additional stakeholders.

This list of grantees, in addition to contacts provided by the Colorado Child and Adult Care Food Program, the Colorado Physical Activity and Nutrition Program, and Maternal and Child Health Programs served as the list of potential contacts to survey. An online survey was sent electronically to 185 contacts throughout the state.

Program directors and coordinators from the Colorado Department of Public Health and Environment completed an electronic survey tool, distributed in August 2010. The respondents represented the following CDPHE programs: Child and Adult Care Food Program (CACFP), Special Supplemental Food Program for Women, Infants and Children (WIC), Healthy Baby Campaign, Prenatal Plus, Can-Do 5 Program, Business Case for Breastfeeding and Lactation Specialist Trainings. Between Oct. 8 and Nov. 15, 2010, the same survey was distributed statewide to directors and coordinators of county, local and community sectors to complete based on their child-focused programs.

Of the 185 electronic surveys distributed, a total of 64 partners responded (25.2%). This included 17/58 Public Health Directors, 12/40 WIC Directors and Coordinators, 8/32 Early Childhood Councils, 8/24 LiveWell Community Coordinators, 11/15 grantee recipients provided by the

Colorado Health Foundation, 2/15 Prenatal Plus Coordinators, 5/68 Head Start Directors and 1/2 Colorado Child Care Licensing Specialists. Of those 64, 27 (10.6%) completed a survey or interview. Additional data were collected through follow-up phone contacts.

Between Nov. 1 and Dec. 7, 2010, key informants (n=25) were contacted via phone to learn more about additional efforts pertaining to early childhood obesity prevention throughout Colorado. These informants were knowledgeable about the current project and asked to provide additional individual contacts, activities, initiatives, programs and interventions that would be pertinent to include in the scan.

Domer conducted a gap analysis to identify how well existing strategies in Colorado address the factors identified by the literature review as related to early childhood obesity prevention. Domer also analyzed how the reported strategies overlay with the Social Ecological Model (SEM) and the Social Determinants of Health/Health Equity (SDH) framework, to inform areas of focus for Colorado. Domer included recommendations for communities and public health to approach the early childhood obesity issue by addressing gaps identified from the Social Ecological and Social Determinants/Health Equity perspective.

B. Phase II Results and Analysis

The following summary describes the non-comprehensive inventory of current and future interventions, programs, initiatives, activities, strategies and policies related to early childhood obesity prevention.

- a. *Of the 72 reported early childhood obesity prevention strategies, there are a greater proportion impacting the age 3-5 Years (40%, n=50) and age 0-2 Years (35%, n=44) age cohorts compared to the Prenatal (25%, n=32) age cohort as shown in Figure 3.*
- b. *Reported survey results suggest that current efforts related to early childhood obesity prevention may be focused on factors that have a lower grade level of evidence, rather than those with a grade level of I or II (Prenatal, Infant Feeding Practices and Lifestyle; Figure 4).*

Figure 3. Summarized Percentage of Reported Strategies Addressing Factors By Age Cohort.

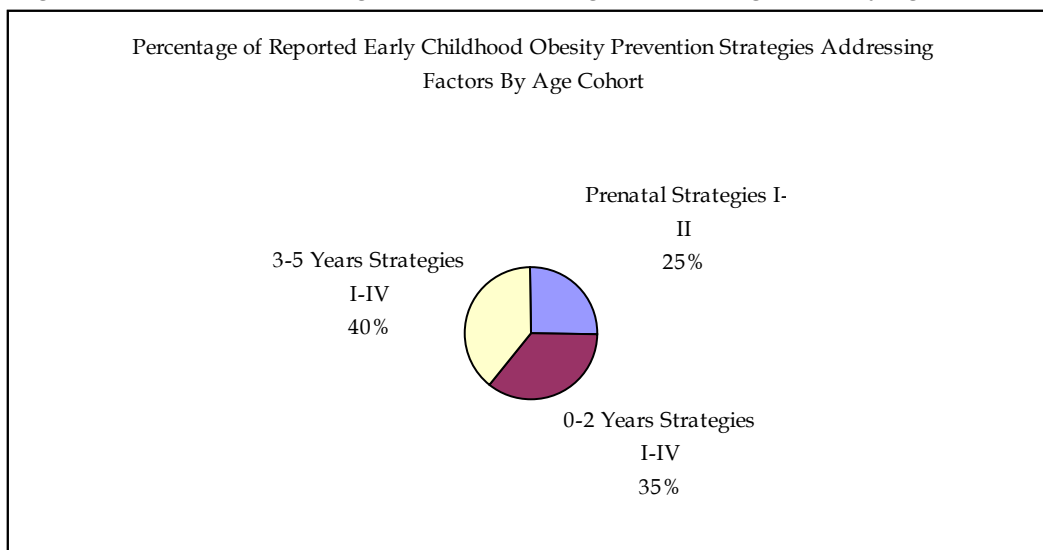
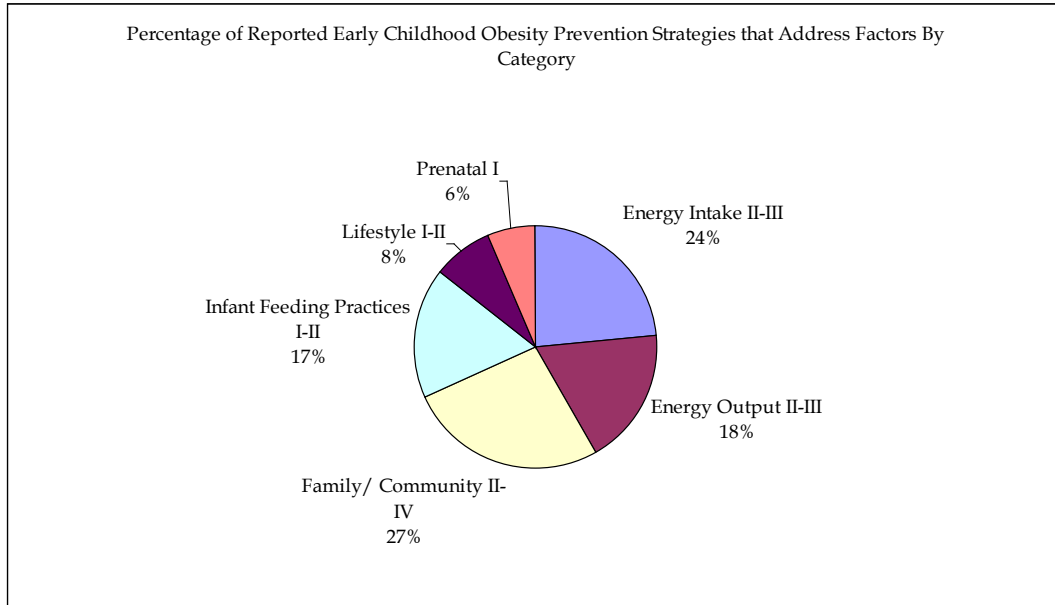


Figure 4. Summarized percentage of reported strategies addressing factors by category.



The following charts reflect overviews of the reported survey results and were used to summarize the findings. The following tables describe the survey results. The first two tables (Table 1 and Table 2) provide information about the group implementing the intervention, the intervention name and each intervention’s goal. Table 3 provides an overview of each reported intervention. Tables 4-10 describe which programs, activities, initiatives and interventions address the factors identified by the literature review as related to early childhood obesity prevention, by category (Energy Intake, Energy Output, Family and Community, Infant Feeding, Lifestyle and Prenatal). Table 11 documents the intervention approach, Table 12 summarizes the funding duration of the interventions and Table 13 documents reported funding partners and sources. Table 14 documents the intervention setting, Table 15 summarizes the interventions’ targeted age groups and Table 16 documents the program reach. Other survey results include documented, targeted racial/ ethnic groups, the intervention’s targeted population (Table 17), intervention coverage (Table 18) and intervention data indicator used (Table 19). Finally, Tables 20-25 summarize the overlay of programs, activities, initiatives and interventions and the factors addressed related to early childhood obesity prevention with aspects of the Social Ecologic Model and Social Determinants of Health/Health Equity framework, by age cohort.

Inventory of Colorado Programs and Initiatives

Table 1. Representing Internal (CDPHE) Groups, Interventions and Goals

CDPHE GROUP	INTERVENTION NAME	INTERVENTION GOAL
PSD Breastfeeding	Colorado Can Do 5! (CCD5)	Disseminate information and provide technical assistance to all 55 Colorado hospitals as a means to encourage policy and practice change to increase breastfeeding duration and exclusivity.
PSD Breastfeeding	Business Case for Breastfeeding (BCBF)	Educate and provide technical assistance to employers on workplace accommodation for

CDPHE GROUP	INTERVENTION NAME	INTERVENTION GOAL
		nursing mothers.
PSD Breastfeeding	Health Care Provider Training (BFHCPT)	Develop skill level in breastfeeding management of providers who consult with mothers prenatally and postpartum.
PSD Breastfeeding	Breastfeeding Support by Health Insurers (BFSHI)	Working with health insurers to provide reimbursement for breastfeeding supplies.
PSD Breastfeeding	Hospital Breastfeeding Support Discharge Bags (BFSDB)	Decrease number of hospitals giving formula in their discharge bags (Centura Health Facilities, Denver Health, Gunnison, Salida, Park View Medical Center, and Summit County).
PSD Breastfeeding	Evaluation of Hospital Breastfeeding Support Policies (BFEHSP)	Conduct survey of Can Do 5 and all 10 steps for Baby Friendly Hospital designation in March and April 2011. Determine how each hospital has institutionalized and implemented its policies. Present awards on Breastfeeding Excellence Starts Today in August during National Breastfeeding Week.
PSD Breastfeeding	Breastfeeding Training Website for Healthcare Providers (BFWTHCP)	Develop website to provide training materials based on the American Academy of Pediatrics curriculum.
PSD Breastfeeding	Breastfeeding Support for Health Care Providers (BFHCPT)	Provide pre-printed prescription tablets to health care providers for recommending breastfeeding support for women returning to work.
PSD Breastfeeding	Breastfeeding Support Social Marketing Campaign (BFSMC)	Use U.S. Breastfeeding Committee's nine objectives for breastfeeding to create a social marketing framework (focused on the Loving Support materials) used to target policy makers.
Child and Adult Care Food Program	Child and Adult Care Food Program (CACFP)	Assist licensed child care settings in serving healthy meals and snacks to children.
Child and Adult Care Food Program	Healthier Meals in Child Care Initiative (HMCCI)	Support child care providers in meeting higher nutrition standards.
Child and Adult Care Food Program	USDA Healthy Child Care Challenge (HCCC)	Reward child care providers for adopting healthy child care environments.
Maternal and Child Health	Huerfano/Las Animas Public Health (HLAPH)	Reduce overweight/obesity among children 2 - 14 years of age in Las Animas and Huerfano counties through healthy nutrition and physical activity.
Maternal and Child Health	Head Start: I am Moving I am Learning; Multiple (HSIMIL) Communities	Promote physical activity in early learning activities in early childhood education (ECE) settings.
Maternal and Child	Prenatal Plus & Healthy Baby	Improve birth outcomes by reducing the

CDPHE GROUP	INTERVENTION NAME	INTERVENTION GOAL
Health	Campaign (PPHBC)	prevalence of low birth weight infants among Medicaid-eligible women in Colorado.
Colorado Physical Activity and Nutrition	Early Childhood Task Force (ECTF)	Coordinate childhood obesity prevention stakeholders to create, implement and sometimes fund interventions.
Colorado WIC	Local Agency Nutrition Education Plans (LANEP)	Facilitate consistent improvement in the quality of nutrition services provided to WIC participants at the local agency level.
Colorado WIC	Compass (new software)	Improve support for all WIC activities, such as documentation of participant visits, voucher issuance, banking interactions, scheduling and tools to assist/support operations.
Colorado WIC	WIC	Improve the effectiveness of WIC services directly provided by WIC local agency staff members.
Colorado WIC	Breastfeeding Training and Breastfeeding Management Training (BFT)	Provide breastfeeding training to 50% of all WIC staff and provide more intensive breastfeeding training, open to all staff, to 150 WIC staff members.
Colorado WIC	Breastfeeding Peer Counselor Programs (BFPCP)	Serve >80% of WIC population through programs in 12 urban WIC agencies (Clear Creek, Tri-County, Jefferson, Denver, Boulder, Larimer, Weld, El Paso, Pueblo, Valley Wide, Mesa, San Juan Basin) and eight rural WIC agencies (Prowers, Baca, Eagle, Gunnison, Summit, Broomfield, Montrose and Montezuma).

Table 2. Representing External Groups, Interventions and Goals

EXTERNAL GROUP	INTERVENTION NAME	INTERVENTION GOAL
Baby Bear Hugs (BBH)	Healthy Living Program	Educate expectant mothers and families with children 0 to 3 years old about proper nutrition, increasing fruit and vegetable intake and physical activity.
Baca County Public Health Agency	Baca County WIC Program	Promote nutrition for pregnant and breastfeeding women and infants and children.
Broomfield County Health and Human Services/Public Health	Healthy Broomfield Early Childhood Wellness Seals (BCWS)	Increase the number of Broomfield licensed child care providers and/or Pre-schools assessing for current healthy eating/ active living environment.
Broomfield County Health and Human Services/Public Health	Broomfield County WIC Program	Provide supplemental foods, nutrition education and resources for pregnant, postpartum, infants and children as old as 5

EXTERNAL GROUP	INTERVENTION NAME	INTERVENTION GOAL
		years.
LiveWell Fort Collins CanDo/ Coalition for Activity and Nutrition to Defeat Obesity	Breastfeeding Strategy (CDBS)	Create hospital and community environments that encourage and support breastfeeding in the development of healthier babies.
Colorado Department of Human Services Division of Child Care (CDCC)	Rules Regulating Family Child Care Homes	Update the food and nutrition rules to fit CACFP recommendations.
Cooking Matters (CM; formerly Operation Frontline)	Cooking Matters for Adults, Teen Parents (Pregnant Mom)	Provide a nutrition education program that helps families help themselves by teaching them how to prepare healthy low-cost meals.
Denver Public Health/LiveWell West Denver	Baby Friendly Hospital Initiative (DHHBFI)	Expand number of hospitals earning Baby Friendly designation.
LiveWell Chaffee County (CCLW)	Physical Activity Goal	Increase the percentage of the population who reports meeting national physical activity guidelines by 20%.
LiveWell Chaffee County (CCLW)	Healthy Foods Goal	Increase the percentage of the population meeting the 5-a-day fruits and vegetable guidelines by 10%.
LiveWell Chaffee County (CCLW)	Worksite Wellness Goal	Increase the number of worksites that foster a wellness environment through the delivery of information or programs.
LiveWell Prowers County (PLW)	Early Childhood Care Providers Trainings (CCPT)	Provide technical assistance resources and six training seminars to early childhood care providers to support adoption of best practices for promoting healthy eating and physical activity habits.
El Paso County Health and Environment	El Paso County WIC Program	Improve nutrition.
El Paso County Health and Environment	Strong and Healthy Families (ECSF)	Facilitate work preparedness, Healthy Families and anticipatory guidance.
HEARTS Education Foundation	Funsicle Fitness (FF)	Improve motor, social and language development program for children age 2 – 5 years.
Garfield County Public Health Agency	RE2 School District	Improve the hot lunch program in RE2 School District.
Healthy Learning Paths (HLP)	Be Well Learn Well® School Wellness Program	Teach young children, parents and caregivers/teachers health behaviors in the areas of nutrition, activity and sleep. Show the connection between health practices and learning for children.

EXTERNAL GROUP	INTERVENTION NAME	INTERVENTION GOAL
Jackson County Public Health Agency	Jackson County WIC Program	Start educating families at an early age about proper nutrition.
Larimer County Department of Health & Environment (LCDHE)	Larimer County Business Case for Breastfeeding (BCBF)	Increase continuation rates of breastfeeding when women return to work after delivery to promote healthy weight gain and to decrease the likelihood of maternal or childhood obesity.
LCDHE	Healthy Me (LCHM)	Encourage physical activity for families with children aged 2 - 5 years who are at or above the 85% BMI rate.
LCDHE	WIC Breastfeeding Peer Counselor Program (BFPCP)	Encourage initiation and duration of breastfeeding and the many benefits to mothers and babies, including healthy weight for both.
Prowers County Public Health	WIC	Provide supplemental food and nutrition education to eligible pregnant, breastfeeding women and children 0- 5 years.
Prowers County Public Health	Breastfeeding Support (PCBS)	Provide Can Do 5 and additional breastfeeding training for hospital obstetric staff.
South Central Council of Governments and Early Learning Center (SCCOG)	USDA Food Program (CACFP)	Provide nutritional meals for children ages 1 to 10 years in a licensed child care facility.
SCCOG Early Learning Center	SCCOG Early Learning Center	Teach appropriate eating habits to young children and families and provide intervention to assist in eliminating childhood obesity.
Early Childhood Council Logan, Phillips and Sedgwick Counties (ECCLPS)	Parents and Early Educators Information	Provide education on nutrition and physical activity.
Northeast Colorado Health Department	Activity Promotion (NECHD)	Provide information on parks to WIC endorsers in all of our counties.
LiveWell Northwest Colorado (NWCLW)	Fun with New Foods (FNF)	Promote eating fruits and vegetables.
LiveWell Northwest Colorado (NWCLW)	Mighty Moves (MM)	Increase physical activity.
LiveWell Northwest Colorado (NWCLW)	Start Smart (SS)	Teach basic sports-related skills.
Pueblo City-County Health Department (PCCHD)	WIC - WICed cooking classes	Teach and encourage parents to serve healthy meals and snacks.
PCCHD	Fit WIC (FWK)	Increase parents' awareness of the need for

EXTERNAL GROUP	INTERVENTION NAME	INTERVENTION GOAL
		children to be active and to demonstrate ways to engage children in active play.
Summit County	WIC Program	Provide supplemental foods and nutrition education to pregnant, postpartum women and children age 5 years or younger who are financially eligible.
Western Slope Head Start	CACFP	Provide daily food requirements.
Western Slope Head Start (WSHS)	Head Start Performance Standard Nutrition	Teach menu planning.
CSU Programs	The Food Friends®: Fun with New Foods (FNF) and Get Movin' with Mighty Moves™ (MM)	Play a role in establishing healthful behaviors during the early childhood years.
Expanded Food and Nutrition Education Program (EFNEP)	Eating Smart Being Active and Pregnant and Parenting Teens	Assist limited-resource audiences in acquiring the knowledge, skills, attitudes and behavior necessary for nutritionally sound diets, and contribute to their personal development and the improvement of the total family diet and nutritional well-being.
Colorado Children's Campaign	No current initiatives in early childhood; works with the initiative for revamping Department of Health and Human Services to imbed Quality Rating Improvement System (QRIS)	Ensure rating system imbedded into licensing to improve nutrition and physical activity in child care centers.
Healthy Child Care Colorado	Caring for Our Children: Preventing Childhood Obesity in Early Care and Education Programs (HCCC COC)	Help child care providers improve healthy eating and physical activity in their programs.
Healthy Child Care Colorado	National Resource Center for Health and Safety Web Based Videos (HCCC NRC)	Help child care providers improve on their own guided physical activity exercise.
Healthy Child Care Colorado	Quality Improvement Rating System (HCCC QIRS)	Evaluate programs on five different quality components.
Cooking Matters and Hunger Free Colorado and Governor Bill Ritter	Summer Meals with Hunger Free Colorado (SMPP)	Increase participation in the Summer Meals program in Colorado through the Campaign to End Childhood Hunger in Colorado.
Early Learning Ventures Alliances (ELVA)	Healthy Options for Preschoolers	Work together to deliver services in a more streamlined and efficient way.
University of Colorado Denver	Efficacy of Food Friends and Mighty Moves (UCD)	Collect data longitudinally beginning in Head Start and through elementary school

EXTERNAL GROUP	INTERVENTION NAME	INTERVENTION GOAL
	EFNFMM)	to measure the efficacy of the program long term.
University of Colorado Denver	Web Based Materials for Child Care Staff and Parents (UCD Web)	Provide healthy eating and physical activity materials to child care providers and parents via the web.
University of Colorado Denver	Fruit and Vegetable Repeated Exposure with Parents (UCD REP)	Work with low-income, minority population and intervene with the parents to create a positive parental feeding environment. Explore treatment components that help change the behavior and standardize methods for positive parenting practices that lead to healthy lifestyle behaviors.
Colorado Department of Human Services	The Emergency Food Assistance Program (TEFAP)	Help supplement the diets of low-income needy persons, including elderly people, by providing them with emergency food and nutrition assistance.
Colorado Department of Human Services	Commodity Supplemental Food Program (CSFP)	Improve the health of low-income pregnant and breastfeeding women and other new mothers up to one year postpartum. Supplement the diets of infants, children up to age 6 years, and elderly people at least 60 years of age with nutritious USDA commodity foods.
Colorado Department of Human Services	Supplemental Nutrition Assistance Program (SNAP)	Provide food benefits to low income households. Issue electronic Benefit Transfer (EBT) cards used like cash at most grocery stores to buy food; ensuring that they have access to a healthy diet.
Hunger Free Colorado	Hunger Free Hotline (HFCH)	Provide a 1-800 number available statewide to provide information about government and charitable food access programs.
Hunger Free Colorado	Rocky Mountain Youth Free Medical Clinic (RMYFC)	Support a free one day a week clinic that serves food to insecure households lacking resources. Provide services through a pediatrician, registered dietitian and social worker.
University of Colorado Denver	Culture of Wellness in Preschools (UCD CWP)	Create sustainable Wellness Committees in each of the five delegates of Denver Great Kids Head Start.
Colorado Parent & Child Foundation	Parents as Teachers (PAT)	Provide an evidence-based parent education and family support program serving families throughout pregnancy until their child enters kindergarten. Increase parent knowledge of early childhood development

EXTERNAL GROUP	INTERVENTION NAME	INTERVENTION GOAL
		and improve parenting practices; provide early detection of developmental delays and health issues; prevent child abuse and neglect; and increase children's school readiness and school success.
Colorado Parent & Child Foundation	Home Instruction for Parents of Preschool Youngsters (HIPPIY)	Provide an evidence-based parent involvement, school readiness program that helps parents prepare their 3-, 4-, and 5-year-old children for success in school and beyond. Empower parents as the primary educators of their children in the home and foster parent involvement in school and community life to maximize the chances of successful early school experiences.
Family Star Montessori Head Start	Child Family Advocates	Provide a strength based approach that identifies individual goals for each family.
Colorado Association of Educators of Young Children	CAEYC District Groups	Serve early childhood educators through advocacy, leadership and professional development.
Partnerships for Healthy Communities	Eat Smart, Be Smart (ESBS)	Teach functional nutritional literacy to parents and their preschoolers so together they can make healthy choices as a family.
Lieutenant Governor's Office	Colorado Kids Outdoors (CKO)	Increase the amount of time our kids spend outside, in nature. Engage leaders in business, health, education, local government and natural resource communities to work together to address this challenge unique to today's children.
Lieutenant Governor's Office	Universal Application Subcommittee for Access to Federal Programs (LGUAS)	Develop procedures for creating and implementing a universal application to be used by all state agencies and school districts for applications for programs related to early childhood care and education, including but not limited to: Medicaid; Children's Basic Health Plan; Head Start Program; Colorado Preschool Program; Free or Reduced-cost Lunch Program; Colorado Child Care Assistance Program; Child and Adult Care Food Program; Colorado Works Program; Special Supplemental Food Program for Women, Infants, and Children; Supplemental Nutrition Assistance Program; Early Childhood Council programs; Low-income Energy

EXTERNAL GROUP	INTERVENTION NAME	INTERVENTION GOAL
		Assistance Program; and Affordable Housing Programs.
Lieutenant Governor's Office	Early Learning Challenge Fund (LGELCF)	Support early education programs, such as Head Start, Early Head Start, pre-kindergarten or quality child care that offer constructive environments for the healthy growth and development of young children in the first five years of life.
Lieutenant Governor's Office	Maternal, Infant, Early Childhood Home Visitation Program (MIECHV)	Fund and build partnerships at the federal, state and community levels to coordinate and deliver critical health, development, early learning, child abuse and neglect prevention and support services for families who live in at-risk communities.
Tri-County Health Department	WIC Tasting Cafes (TCHD TC)	Introduce participants to new fruits, vegetables and whole grains; encourage them to try new foods; promote quick, easy, affordable foods as well as family meals.
Tri-County Health Department	WIC Community Gardens (TCHD CG)	Increase participant knowledge about growing produce and access to healthy food.
Tri-County Health Department	Fit WIC Kits (FWK)	Increase physical activity by offering easy and affordable ideas as well as equipment for WIC participants to utilize in their homes.
Tri-County Health Department	Produce and Health Fairs (TCHD PHF)	Increase access to healthy food, address obesity prevention and promote health by hosting summer fairs where participants receive free food and health education.
Tri-County Health Department	Communities Putting Prevention to Work Gardens (TCHD CPPWG)	Develop sustainable community gardens to increase availability of fresh vegetables and exposure to new vegetables.
Tri-County Health Department	Communities Putting Prevention to Work (TCHD CPPWR)	Purchase fruit and vegetable commercial refrigeration for stores in food desert areas.
Tri-County Health Department	Baby and Me Tobacco Free Program (BMTF)	Increase the number of participants in WIC and TCHD nursing programs who commit to quitting smoking during pregnancy and who stay smoke-free after delivery.
Tri-County Health Department	Nursing Case Management Programs (NCMP)	Execute four separate nursing home visit programs to pregnant and parenting families. Provide one-on-one feeding assessments and education.

Table 3. Overview of Interventions Reported in both Internal and External Survey Responses

INTERVENTION NAME	OVERVIEW
Colorado Can Do 5! (CCD5)	Making institutional changes in maternity care practices has shown to significantly increase breastfeeding rates. Five practices in particular have been shown in Colorado to significantly extend breastfeeding duration among mothers of healthy infants. These five practices have been presented to all hospitals.
Larimer County Business Case for Breastfeeding (BCBF)	Educating mothers and employers about Colorado's Workplace Accommodation for Nursing Mothers Act and the Federal requirements through outreach workers, videos and materials.
Health Care Provider Training (BFHCPT)	Providing training for WIC staff to become specialists in lactation management.
Child and Adult Care Food Program (CACFP)	Providing reimbursement funds to child care centers and family day care homes for meals that comply with the USDA CACFP Meal Pattern requirements. Foods served as part of reimbursable meals must also be allowable by the CACFP. Foods such as chips, cake and sugar-sweetened beverages are not allowed as part of reimbursable meals. In addition to requirements for meals, the CACFP promotes a wide variety of nutritious foods including whole grain products, low fat milk, fresh and frozen fruits and vegetables, and lean meats and meat alternatives.
Healthier Meals in Child Care Initiative (HMCCI)	Supporting child care providers in the following policy changes for CACFP meals: Require low fat or skim milk instead of whole or 2%; limit juice to no more than twice per week on the menus; require at least one whole grain product each day on the menus; and limit processed and pre-fried meat products to no more than once per week on the menus. Plan for partnerships to provide education materials for providers (cookbooks, kid-tested menus, etc.), innovative cooking trainings, and parent materials. These materials and trainings were preferred by child care providers according to surveys completed by representatives of 240 of the approximate 350 participating institutions. The grant is also requested to plan partnerships with Healthy Child Care Colorado and the Division of Child Care to promote consistent messaging about these policy changes.
USDA Healthy Child Care Challenge (HCCC)	Developing a voluntary reward system for Child and Adult Care Food Program child care providers who show advancement in several areas including healthy menus, physical activity, a healthy environment, breastfeeding, nutrition education, and nutrition, health, and physical activity policy.
Huerfano/Las Animas Public Health (HLAPH)	Beginning a new early childhood obesity prevention program which will run from 2011 to 2013 for children 2 -14 years old, initially focusing on children 2 - 5 years old (early head start and head start ages). During the first three years perform nutrition and physical activity (NPA) staff assessments and training, pre & post training evaluations, parent outreach and education, collect BMI of children 2 - 4 years old.
Head Start: I am Moving I am Learning; Multiple (HSIMIL) Communities	Implementing a proactive approach for addressing childhood obesity in Head Start children. Increasing moderate to vigorous physical activity every day, improve the quality of movement activities intentionally planned and facilitated by adults, and promote healthy food choices every

INTERVENTION NAME	OVERVIEW
	day.
Prenatal Plus & Healthy Baby Campaign (PPHBC)	Providing a Medicaid-funded program that includes case management, nutrition, and psychosocial services to Medicaid-eligible pregnant women in Colorado who are assessed to be at high risk for delivering low-birth-weight infants. Complementing medical prenatal care by addressing the lifestyle, behavioral and non-medical aspects of a woman's life likely to affect her pregnancy. Increasing the number of women who stop smoking, gain an adequate amount of weight, and resolve psychosocial problems, and decrease the number of infants who are born at low birth weight.
Early Childhood Task Force (ECTF)	Using the book <i>Child Care Champions Best Practices</i> , with the target audience - child care providers in centers & homes. Identifying seven best practices for childhood nutrition and physical activity and developing instructional materials for child care providers.
Local Agency Nutrition Education Plans (LANEP)	Developing annual agency-specific nutrition education plans in all WIC agencies consistent with the State's nutrition education component of Program operations. The local agency submits its nutrition education plan to the State agency by Oct. 1 of each year and the state agency provides feedback to each plan by Oct. 31. For FY11, local agencies choose three objectives from four subject areas: Customer Service, Breastfeeding Promotion and Support, Participant-Centered Care and Pediatric Overweight. Colorado WIC's FY11 Local Agency Nutrition Education plans, in their entirety, will most likely address all of the six factors listed below.
Compass (new software)	Developing paperless computer system to provide local agency staff improved tools to perform nutrition assessments, nutrition education and counseling, tailor food instruments, promote and support breastfeeding. Due to its internet connectivity, local agencies will have more and faster access to participant records, thereby improving the quality and effectiveness of nutrition services provided.
WIC	Convening state/local WIC staff members to explore next steps in efforts to improve the comfort and expertise of the local WIC staff when discussing overweight-related issues with WIC endorsers/participants. 1) During October 2010, the CO WIC State Meeting's theme, <i>Moving in the Right Direction</i> , focuses on a variety of weight management issues. 2) Following State Meeting, a group of local/state WIC staff will convene to identify "next step" strategies to address.
WIC BFT	Providing every WIC educator with basic breastfeeding training; making available a three-day Colorado WIC Lactation Management Specialist training. The training is specifically designed to prepare WIC nutritionists, nurses and WIC paraprofessionals for providing effective assessment and counseling for program participants who have been identified as high risk according to Colorado WIC Program's breastfeeding nutrition risk factors.
WIC BFPCP	Providing an evidence-based foundation for the key instructional elements needed to train WIC peer counselors, the basic skills needed by successful WIC peer counselors, and strategies for providing appropriate breastfeeding education and support to WIC mothers.

INTERVENTION NAME	OVERVIEW
Baby Bear Hugs - Health Living Program (BBH)	Presenting the evidence-based "Eating Smart, Being Active" curriculum to families through ongoing home visitation or classes delivered by trained paraprofessional visitors.
Baca County WIC Program (WIC)	Covering women who are pregnant and/or breastfeeding and their infants and children; supplying food instruments to participants for certain nutritious foods to be purchased.
Healthy Broomfield Early Childhood Wellness Seals (BCWS)	Facilitating child care center/preschool to create action plans to implement and evaluate based on best practice changes in programming once assessment is complete.
Broomfield County WIC Program (WIC)	Providing foods to supplement diet and nutrition education based on nutritional assessment and anthropometric data.
Can Do Breastfeeding Strategy (CDBS)	Providing breastfeeding education and support targeting peer counselors and parents.
Denver Public Health/LiveWell West Denver Baby Friendly Hospital Initiative (DHHBFI)	<p>Promoting, protecting and supporting breastfeeding through The Ten Steps to Successful Breastfeeding for Hospitals, as outlined by UNICEF/WHO. The steps for the United States are:</p> <ol style="list-style-type: none"> 1. Have a written breastfeeding policy that is routinely communicated to all health care staff. 2. Train all health care staff in skills necessary to implement this policy. 3. Inform all pregnant women about the benefits and management of breastfeeding. 4. Help mothers initiate breastfeeding within one hour of birth. 5. Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants. 6. Give newborn infants no food or drink other than breast milk, unless medically indicated. 7. Practice "rooming in"-- allow mothers and infants to remain together 24 hours a day. 8. Encourage breastfeeding on demand. 9. Give no pacifiers or artificial nipples to breastfeeding infants. 10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.
LiveWell Chaffee County (CCLW) Physical Activity Goal	Establishing a baseline and means for tracking physical activity of Chaffee County residents; working with local government and agencies to increase infrastructure and policy supportive of access to physical activity; working with local government to provide infrastructure to increase access to physical activity in underserved areas; working with local government to encourage biking through increased infrastructure and education; working with local recreation departments to increase access to physical activity; and working with churches and faith based organizations to encourage physical activity
LiveWell Chaffee County (CCLW) Healthy Foods Goal	Providing education to increase awareness of healthy eating, and impact behavior change; increase affordability and accessibility of healthy foods for lower income populations; identify and engage local producers, restaurants and grocers as resources for healthy eating; establish additional facilities for community food production and education opportunities;

INTERVENTION NAME	OVERVIEW
	increase the amount of fruits and vegetables served in the schools through farm to school program; create a strategic plan for the local food organizations; and assess the local food economy.
LiveWell Chaffee County (CCLW) Worksite Wellness Goal	Partnering with Chamber of Commerce to establish baseline need; recruit businesses and educate business community on benefits of worksite wellness; and implement appropriate evidence-based wellness programs.
El Paso County WIC Program (WIC)	Providing USDA Nutrition Services for those under age 5 years and pregnant women who qualify financially.
LiveWell Prowers County Early Childhood Care Provider Trainings (PLWCCPT)	Providing training to day care centers and home day care providers. All trainings have used the CDPHE's Child care Champions Best Practices as the foundation for content of the training series.
El Paso County Strong and Healthy Families (EPCSF)	Serving pregnant women as much as two months postpartum and newborns through home visitation, classes and area referrals. This is an eight-week curriculum.
HEARTS Foundation Funsicle Fitness (FF)	Improving children's physical, mental and emotional strength and conditioning, as well as language comprehension and speaking skills. Provide them the opportunity to learn and practice the fundamental activities that build the skills necessary for achieving optimum proficiency and potential success in athletics, music, drama, dance, sports, speech and academics.
Garfield County Public Health Agency	Forming task force to make the hot lunch program more nutritional.
Healthy Learning Paths (HLP)- Be Well Learn Well®	Teaching nutrition, activity, sleep and stress management strategies as interdependent components for successful, lifelong wellness and learning; using child developmental appropriate curriculum; stimulating parental involvement and; guaranteeing consistent high quality results as we capitalize on the expertise of experienced health professionals to serve as the initial provider of health information; as well as trusted and approachable trainers for educators and parents. Addressing the interdependence of healthy nutrition, activity, and sleep strategies in order to positively improve children's wellness and school performance. These areas also directly affect normal growth, development and stress management, so early intervention is a focus to ensure best possible outcomes (National Survey of Children's Health 2003). The program is based on a collaborative approach that partners health professionals, teachers and parents to best serve the needs of children and to create long-term ownership for sustainability.
Jackson County WIC Program (WIC)	Purchasing life-like serving-size foods to do hands on education with the families.
Larimer County Department of Health & Environment WIC Healthy Me (LCHM)	Working with parents to set a nutrition or activities goal. If a goal is met at three months, families receive a child's activity book; if a goal is met at 6 months, families receive an activity DVD.
LCDHE WIC Breastfeeding Peer Counselor Program (BFPCP)	Contacting WIC pregnant and breastfeeding clients to discuss services, support, and to provide encouragement utilizing the "Loving Support" model.

INTERVENTION NAME	OVERVIEW
South Central Council of Governments Early Learning Center (SCCOG) CACFP	Preparing breakfast, lunch and afternoon snack for children according to CACFP regulations.
SCCOG Early Learning Center (SCCOG)	Utilizing the CACFP food program and celebrate all cultural holidays by guiding family participation in providing healthy meals and snacks and activities.
Early Childhood Council Logan, Phillips, Sedgwick Counties Parents and Early Educators Information (ECCLPS)	Providing information to parents and early educators about nutrition through handouts and face to face functions.
Northeast Colorado Health Department - Activity Promotion (NECHD)	Providing a county specific list of parks to endorsers over a three-month period. Handing out age-appropriate Physical Play Guide (provided by WIC).
Larimer County Department of Health and the Environment (BCBF)	Providing outreach to businesses to promote and encourage policies related to breastfeeding in the work place, with a particular emphasis on low-income employees. Promoting self-advocacy for pregnant women to approach employers about a breastfeeding plan when they return to work.
LiveWell Northwest Colorado (NWCLW) Fun with New Foods (FNF)	Introducing preschoolers to new foods.
NWCLW Mighty Moves (MM)	Teaching basic movement skills
NWCLW Start Smart (SS)	Encouraging parents and children to participate together in learning skills needed to play sports.
Pueblo City-County Health Department (PCCHD) WICed Cooking Classes	Offering class to all WIC participants on a quarterly basis; the WIC staff demonstrates and distributes written recipes for their clients to use featuring healthy recipes that are inviting and fun for children. These recipes use only foods that can be purchased with WIC vouchers. The classes have been very successful and attended by more than 100 participants each time.
PCCHD Fit WIC (FWK)	Featuring quarterly classes for WIC clients where games and ideas will be demonstrated that will engage children ages 2-4 years in physical activity. Educating parents as to why this is important and ways to incorporate more activity into each day.
Summit County WIC (WIC)	Generating display boards using sugar cubes to show how much sugar is in various drinks. Displaying boards at a few head-start preschools in our county.
CSU Programs Food Friends and Mighty Moves (FNF & MM)	Encouraging kids to be active in the classroom and at home to provide them the opportunity to for lifelong physical activity habits. Structured and sustained movement activities enhance gross motor development. Kids with strong motor skills tend to be physically active Exposing kids to new foods multiple times so they become more willing to try new foods. Children who try new foods may enhance food choice and increase dietary variety that lasts into adulthood. Adults who have varied diets are at decreased risk of chronic diseases.

INTERVENTION NAME	OVERVIEW
Prowers County Public Health WIC (WIC)	Providing nutritional information and assistance to children from birth to age 5 years, pregnant women and breast-feeding mothers.
Prowers County Public Health Breastfeeding Support (PCBS)	Providing trainings by Dr. Neifert in hospital for the Can Do 5 program and providing additional breastfeeding training for all OB staff
Western Slope Head Start CACFP (WSHS)	Providing required food portion sizes and production records.
Western Slope Head Start Performance Nutrition Standard (HS)	Soliciting input from all nutrition managers, parents and RDs.
Colorado Department of Human Services Division of Child Care (CDCC)	Changing the rules for child care centers.
Expanded Food and Nutrition Education Program Eating Smart Being Active (EFNEP)	Improving knowledge, attitudes and behaviors toward making healthy eating choices and getting regular physical activity. An EFNEP Educator conducts the eight, 60-90 minute lessons in the core curriculum in small groups or one-on-one.
Expanded Food and Nutrition Education Program Pregnant and Parenting Teens (EFNEP)	Providing teens <i>The 12 lessons in Teen Parents</i> on topics ranging from the special nutrient requirements for pregnant teens, the harmful effects of drugs and alcohol, meal planning, food resource management and food safety.
Healthy Child Care Colorado Caring for Our Children (HCCC COC)	Improving quality for nutrition and physical activity directed at child care providers.
Healthy Child Care Colorado National Resource Center Health and Safety Web Based Videos (HCCC NRC)	Providing scripted videos to show ways to increase physical activity in child care homes and centers. Video clips are four minutes in length.
HCCC QIRS	Certifying the five different quality components, including: Learning Environment; Family Partnerships; Adult-to-Child Ratios and Group Size; Accreditation.
Cooking Matters for Adults, Teen Parents (CM; Pregnant Moms)	Professional chefs and nutritionists volunteer their time and expertise to lead hands-on courses that instruct adults, teens and kids living in low-income families how to get the most nutrition out of a limited budget.
Summer Meals Campaign to End Childhood Hunger in Colorado (SMPP)	This campaign is a statewide, public-private coalition of key stakeholders who will immediately work to increase the number of Colorado children getting school breakfasts and summer lunches. If Colorado were able to boost participation to serve 40% of eligible low-income children, the state would feed an additional 58,636 children and gain \$3,853,875 in federal child nutrition funds.
Early Learning Ventures Alliances (ELVA)	Providing an operational infrastructure for early care and education providers to work collaboratively and realize savings in time and costs that can then be used to improve the quality of services. ELV has developed a web-based

INTERVENTION NAME	OVERVIEW
	IT platform to serve as a portal for each alliance and its affiliates to access information, track on-site operations and streamline business practices such as purchasing, data reporting and tuition collection. Through its partnership with the Colorado Health Foundation and Revolution Foods, ELV plans to increase the number of children who eat adequate amounts of fruits and vegetables daily and increase the number of children who receive healthy meals in the center and home-based child care settings.
UCD - Efficacy of Fun with New Food and Mighty Moves (UCD EFNFM)	Rural parts of the state (Ilf, Leadville, Buena Vista and Salida) will be participating in the nutrition and activity programming for at risk children to ensure best practices are in place throughout elementary school.
UCD - Web Based Materials for Child Care Staff and Parents (UCD Web)	A collaboration between University of Colorado at Denver, University of Idaho and Washington State University to provide content about child nutrition and active play with concrete strategies for child care staff and parents.
UCD - Fruit and Vegetable Repeated Exposure with Parents (UCD REP)	In a group setting, work with parents to keep them involved in exposing children to fruits and vegetables by setting up the home food environment so that the choice in food selection is lower calorie foods not competing with high caloric foods. Also, helping parents manage child refusal behaviors by interacting directly with the parents and providing feedback.
Colorado Department of Human Services (CDHS) TEFAP	The Food and Nutrition Service (FNS) of the United States Department of Agriculture (USDA) administers TEFAP through grants to individual states. The USDA buys the food, including processing and packaging, and ships it to the states. The amount received by each state depends on its low-income and unemployed population. State agencies work out details of administration and distribution. They select local organizations that either directly distribute to households, serve meals or distribute to other local organizations that perform these functions.
CDHS CSFP	Creating an opportunity for low-income persons who are especially vulnerable to malnutrition to receive specified nutritional foods that will provide them with a more adequate diet and help them achieve good health.
CDHS SNAP	The asset test is being eliminated October 2010. The online application, PEAK is currently scheduled to be "live" in early 2011 and a much-needed technical refresh will be completed in November 2010 to expand the computer capacity of the county/state system.
Hunger Free Colorado Hotline (HFCH)	Providing statewide resources for access to food through government and charitable programs.
Hunger Free Colorado - Free Rocky Mountain Youth Medical Care Clinic (RMYFC)	Providing services to children 0-36 months of age. Program will provide growth assessment and resources to access food, including vouchers for food and supplements through a pharmacy. Home visits will also be part of the program in Thornton, Colorado.
UCD Culture of Wellness in Preschools (UCD CWP)	Committees will choose from several evidence-based strategies as interventions that target children, staff and parents regarding physical activity opportunities, nutrition education and overall wellness education

INTERVENTION NAME	OVERVIEW
	in Head Start settings.
Colorado Parent & Child Foundation PAT	The PAT model includes four components: personal visits during which certified parent educators share age-appropriate child development information with parents and engage the family in activities that provide meaningful parent/child interaction; monthly group meetings designed to relay important information about child development and offer parents opportunities to interact and support one another; health and developmental screening; and a resource network to connect families with resources that meet their specific needs.
Colorado Parent & Child Foundation HIPPI	A peer-delivered model wherein trained home visitors provide weekly home visits, working one-on-one with parents of preschool aged children (age 3, 4 and 5). The Age 5 curriculum follows the child through the kindergarten year, thus reinforcing learning through a very intentional home-school connection. In addition to weekly home visits, the program provides monthly group meetings.
Family Star Montessori Head Start – Child Family Advocates (FSMCA)	Working with families to achieve individualized goals, including healthy well-rounded meals with variety, texture and flavor or attending Cooking Matters sessions, offered twice a year. Meals times are uninterrupted to focus on learning through family style dining and self-serve after 14 months of age. Also offered are 10-week pregnancy classes. Mental health coordinators are available onsite and after hours. In August, there are home based opportunities for families using parent educators. Next year, there are plans to build a garden on-site and the caterer will use the vegetables as a “farm to table” project. In addition, families will be offered some of the vegetables to take home.
Colorado Association of Educators of Young Children (CAEYC)	Promoting high quality, developmentally appropriate, accessible early childhood care and educational services for Colorado children from birth to age 8 years. Offering professional development opportunities to early childhood educators. Advocating for improved compensation, working conditions and recognition for individuals in the early childhood profession. Educating and influencing policymakers, elected officials and the public at large to achieve the mission and goals of CAEYC. Cooperating with local, state and national organizations and agencies working with and for young children. Providing two annual workshops to members. Each district group provides trainings or a workshop each year for child educators that may include healthy eating and physical activity.
Partnerships for Healthy Communities – Eat Smart, Be Smart Program (PHC ESBS)	Teaching parents how to read and cook from a recipe, read food labels, and shop on a budget. Teaching families the importance of eating as a family.
Lieutenant Governor’s Office - Colorado Kids Outdoors (LGCKO)	A collaboration among organizations in the public, private and nonprofit sectors for which the shared goal is increasing outdoor activity for children. The purpose of this effort is to create a comprehensive framework in Colorado to support efforts of many diverse organizations to provide opportunities, environments and infrastructure for children throughout the state to spend significant quality time in the outdoors. The elements of this framework must include:

INTERVENTION NAME	OVERVIEW
	<p>Development and adoption of public policies at the state and local levels that reflect a very high priority for the goal of ensuring that all Colorado’s children, in particular minority and underserved children, have access to safe and healthy, structured and unstructured, outdoor experiences;</p> <p>Support for the allocation of resources to support organizations and initiatives that seek to reconnect children and nature;</p> <p>Creation of mechanisms for communication, idea and best practice exchanges, and coordination among organizations, individuals and agencies that are working to expand childhood environmental education and outdoor activities; and</p> <p>Identification and elimination of barriers that prevent children in Colorado from free and safe access to outdoor experiences that enable them to lead a healthy and successful life and prepare for the future stewardship of Colorado’s environment.</p>
Lieutenant Governor’s Office – Universal Application Subcommittee (LGUAS)	At least every six months, shall submit to the chief information officer and the advisory board recommendations concerning protocols and procedures for creating and implementing a universal application to be used by all state agencies and school districts for applications for programs related to early childhood care and education.
Lieutenant Governor’s Office – Early Learning Challenge Fund (LGELCF)	Enable state to adopt best practices, including higher qualifications for teachers and caregivers. In addition, it encourages smaller class sizes, and early screening and treatment of mental, emotional and behavioral problems. It also encourages parent coaching, which teaches at-risk families ways to promote their children's development.
Lieutenant Governor’s Office – Maternal, Infant, Early Childhood Home Visitation Program (MIECHV)	Rely on evidence-based home visiting strategies to help families create a nurturing environment for young children and connect to a range of services – including health, early education, early intervention and more.
Tri-County Health Department – Tasting Cafes (TCHD TC)	After completing a WIC appointment, participants are invited to visit the tasting cafe where foods are attractively displayed. Recipes of the foods offered are available for participants. Approximately 96% of participants surveyed report having tried a new food at the cafe and a majority of those respondents state that they would be very willing to serve it to their families.
TCHD – WIC Community Gardens (CG)	WIC participants are invited to attend one of several community gardens to assist with preparing soil, planting and weeding. Individuals receive fresh produce when it is harvested. Classes are offered at the gardens, which include taste tests of a variety of foods categorized by type of flavor. WIC offices demonstrate container gardens in their window sills as an additional mechanism for education and marketing of the community garden. Data is being collected at this time regarding the 2010 growing season at each of the three established partner gardens.
TCHD – Fit WIC Kits (FWK)	A variety of ideas, including milk jugs, bean bags, balls, jump ropes and masking tape are shared with WIC participants along with handouts to

INTERVENTION NAME	OVERVIEW
	explain how to use the equipment. Educators have a complete kit with all of the items at their work stations. A featured item is discussed with participants. Surveys indicate that 68% of those participants offered information tried at least one Fit WIC activity at home.
TCHD – Produce and Health Fairs (PHF)	Local health departments partnered with food banks, Cooking Matters and other health organizations to host the Produce and Health Fairs. WIC participants and community members are invited to attend. Tri-County Health Department housed six fairs at two locations in 2010. Neighboring health departments (Jefferson and Denver) housed a total of six fairs in 2010. In 2010, 2,323 adults received food and information at the Adams and Arapahoe County Produce and Health Fairs. Food Bank of the Rockies donated close to 50,000 pounds of food for these summer events.
TCHD – Communities Putting Prevention to Work – Community Gardens (CPPWG)	Access to gardening and healthy food.
TCHD – Communities Putting Prevention to Work – Refrigeration (CPPWR)	Aurora applies for a CPPW grant to work within food desert areas of their city.
Baby and Me Tobacco Free Program (BMTF)	Requires participants to quit smoking during pregnancy and agree to take simple breath tests to verify their non-smoking status. Breath tests are repeated on a monthly basis after delivery to qualify for vouchers. After the birth of the baby, if participants continue to be smoke-free, they receive monthly vouchers for free diapers that can be used at Wal-Mart or other participating stores. The vouchers are nontransferable and are only good for purchase of diapers. Vouchers can be used for any brand/size of diapers.
TCHD – Nursing Case Management Programs (NCMP)	Provides regular home visits and one-on-one feeding assessments and education. Programs have similar goals and interventions regarding infant/child feeding and education regarding foods and activity.

Glossary of Terms (for use in the following tables)

ACRONYM	DEFINITION
BBH	Baby Bear Hugs
BCBF	Business Case for Breastfeeding
BCWS	Healthy Broomfield Early Childhood Wellness Seals
BFEHSP	PSD Breastfeeding Evaluation of Hospital Breastfeeding Support Policies
BFHCPT	Breastfeeding Health Care Provider Training
BFHCPT	PSD Breastfeeding Support for Health Care Providers Tablets
BFHDB	Breastfeeding Hospital Support Discharge Bags
BFPCP	Breastfeeding Peer Counselor Program (WIC)

ACRONYM	DEFINITION
BFSHI	PSD Breastfeeding Support by Health Insurers
BFSMC	PSD Breastfeeding Support Social Marketing Campaign
BFT	Breastfeeding Training and Management Training Program
BFWTHCP	PSD Breastfeeding Training Website for Healthcare Providers
BMI	Body Mass Index
BMTF	Baby and Me Tobacco Free Program
CACFP	Child and Adult Care Food Program
CAEYC	Colorado Association for the Education of Young Children
CCCBP	Colorado Child Care Champions Best Practice Assessment
CCCGCO	Colorado Clinical Care Guidelines for Childhood Obesity
CCD5	Colorado Can Do 5!
CCHLP	Commerce City Healthy Living Program
CCLW	Chafee County LiveWell
CDBS	CanDo Breastfeeding Strategy
CDCC	Colorado Department of Human Services Division of Child Care
CDHS	Colorado Department of Human Services
CDPHE	Colorado Department of Public Health and Environment
CECH	Campaign to End Childhood Hunger in Colorado
CM	Cooking Matters
Compass	New WIC administrative software
COPAN	Colorado Physical Activity and Nutrition
CPPWG	Communities Putting Prevention to Work Community Gardens
CPPWR	Communities Putting Prevention to Work Refrigeration
CSFP	Commodities Supplemental Food Program
CWP	University of Colorado at Denver Culture of Wellness in Preschools
DHHBFI	Denver Health and Hospitals - Baby Friendly Initiative
DPHD	Denver Public Health Department
Early HS	Early Head Start
ECCLPS	Early Childhood Council Logan, Phillips, Sedgwick Counties
ECE	Early Childhood Education

ACRONYM	DEFINITION
ECTF	Early Childhood Task Force
EFNEP	Expanded Food and Nutrition Education Program
ELVA	Early Learning Ventures Alliances
EPSF	El Paso County Strong and Healthy Families
FF	Funsicle Fitness
FNF	Fun with New Foods Food Friends®
FSMCFA	Family Star Montessori Child Family Advocates
FWK	Fit WIC Kits
GCSD	Garfield County School District
HBECWS	Healthy Broomfield Early Childhood Wellness Seals
HCCC	USDA Healthy Child Care Challenge
HCCC COC	Healthy Child Care Colorado Caring for Our Children Obesity Prevention
HCCC NRC	Healthy Child Care Colorado National Resource Center
HCCC QIRS	Healthy Child Care Colorado Quality Improvement Rating System
HCCC WBPA	Healthy Child Care Colorado - Web Based Physical Activity Videos
HFCH	Hunger Free Colorado Hotline
HIPPY	Home Instruction for Parents of Preschool Youngsters
HLAPH	Huerfano/Las Animas Public Health
HLP	Healthy Learning Paths Be Well Learn Well®
HMCCI	Healthier Meals in Child Care Initiative
HS	Head Start
HSIMIL	Head Start: I am Moving I am Learning
INACA	Improving Nutrition for America's Children Act
LANEP	Local Agency Nutrition Education Plans
LCB	Larimer County Business Case for Breastfeeding
LCHM	Larimer County Healthy Me
LGCKO	Lieutenant Governor's Colorado Kids Outdoors
LGELCF	Lieutenant Governor's Early Learning Challenge Fund
LGUAS	Lieutenant Governor's Universal Application Subcommittee
LWCC	LiveWell Chaffee County

ACRONYM	DEFINITION
LWP	LiveWell Prowers County
MCH	Maternal and Child Health
MIECHV	Maternal, Infant and Early Childhood Home Visitation Program
MM	Mighty Moves Food Friends®
NCMP	Nursing Case Management Programs
NECECC	Northeast Colorado Early Childhood Council
NECHD	Northeast Colorado Health Department
NFP	Nurse Family Partnership
NWCLW SS	Northwest Colorado LiveWell Start Smart
PAT	Parents as Teachers
PCBS	Prowers County Breastfeeding Support Training
PCECPT	Prowers County LiveWell Early Childhood Care Provider Trainings
PCWIC	Pueblo City-County WIC
PHC ESBS	Partnerships for Healthy Communities Eat Smart Be Smart Program
PPHBC	Prenatal Plus & Healthy Baby Campaign
PSD	Prevention Services Division
QS	Qualistar
RMYFC	Rocky Mountain Youth Free Clinic
SCCGELC	South Central Council of Governments Early Learning Center
SMPP	Summer Meal Program Participation
SNAP	Supplemental Nutrition Assistance Program
TCHD	Tri-County Health Department
TCHD PHF	Tri-County Health Department Produce and Health Fairs
TCHD TC	Tri-County Health Department Tasting Cafes
TCHD WCG	Tri-County Health Department WIC Community Gardens
TEFAP	The Emergency Food Assistance Program
UCD CWP	University of Colorado Denver - Culture of Wellness Preschools
UCD EFNFM	University of Colorado Denver - Efficacy of Fun with New Food and Mighty Moves
UCDREP	University of Colorado Denver - Fruit and Vegetable Repeated Exposure

ACRONYM	DEFINITION
UCDWeb	University of Colorado Denver - Web Based Materials for Parents and Child Care Providers
WIC	Special Supplemental Program for Women, Infants and Children
WICBFPC	WIC Breastfeeding Peer Counselor Program
WSHS	Western Slope Head Start

Programs, Activities, Initiatives and Interventions Addressing Known Factors Related to Early Childhood Obesity Prevention.

Table 4: Interventions addressing Energy Intake Factors describes which interventions address fruit and vegetable intake, portion size, promotion of breakfast consumption, intake of sweetened beverages, eating out or access to healthy foods.

ENERGY INTAKE FACTORS	INTERVENTION
Fruit and vegetable intake	CACFP, ECTF, CCCBP, WIC, FNF, HLP, BBH, LWCC, LWP, WSHS, CDCC, EFNEP, HCCC COC, CM, CECH, ELVA, UCD Web, UCD REP, CCHLP, CSFP, TEFAP, SNAP, RMYFC, UCD CWP, PAT, FSMCFA, ESBS, TC, CG, PHF, CPPWG, CPPWR, PPHBC, CCLW, ECCLPS, CCCGCO, Early HS, HS, PCECPT, INACA, HSIMIL
Reduce/Limit Sugar Sweetened Drinks, 100% Juice	CACFP, ECTF, CCCBP, WIC, BBH, HLP, CDCC, HCCC COC, CM, UCD Web, RMYFC, ESBS, PPHBC, ECCLPS, HLAPH, EFNEP, CCCGCO, PCECPT, CCHLP, INACA, HS, HSIMIL, UCD CWP
Improving overall healthiness of meals	CACFP, ECTF, HSIMIL, HLAPH, PPHBC, HCCC, HMCCI, WIC, BBH, HLP, HBECWS, LWCC, EPSF, SCCGELC, NECECC, LWP, WSHS, CDCC, CCHLP, EFNEP, HCCC COC, CM, CECH, ELVA, UCD Web, CSFP, TEFAP, SNAP, RMYFC, CWP, PAT, HIPPY, FSMCFA, CAEYC, ESBS, LGELCH, TC, CG, PHF, NCMP
Portion Size	CACFP, PPHBC, CCCBP, WIC, BBH, HLP, SCCGELC, WSHS, EFNEP, HCCC COC, CM, RMYFC, CWP, FSMCFA, ESBS, CCHLP, HSIMIL, HS, HIPPY, FNF, ELVA, LCHM, PCEPT, HLAPH, ECCLPS
Division of Responsibility in Feeding	CACFP, ECTF, WIC, LWP, CDCC, UCD Web, UCD REP, RMYFC, UCD CWP, ESBS, CCHLP
Role Modeling	MCH, ECTF, WIC, FNF, EPSF, HLP, LWP, CM, UCD REP, CWP, FSMCFA, ESBS, TC, WCG, CCHLP, PCEPT
Promotion of Breakfast	WIC, CCCBP, CACFP, CDCC, HLP, HS, BBH, WIC, SCCGELC, EFNEP, HCCC COC, CM, CECH, UCD Web, RMYFC, UCD CWP, ESBS, Early HS, HS, HSIMIL, ECCLPS, PCECPT, HIPPY, CCHLP,
Nutrition Education directed at children	ECTF, PPHBC, WIC Healthy Me, HS, WSHS, UCD CWP, FSMCFA, ESBS, TC, WCG, CCHLP

ENERGY INTAKE FACTORS	INTERVENTION
Access to Healthy Foods	WIC, CACFP, HCCC, HMCCI, CCLW, GCSD, HLP, CDCC, EFNEP, CM, CECH, ELVA, CSFP, TEFAP, SNAP, HFCH, RMYFC, UCD CWP, FSMCFA, ESBS, LGUAS, LGELCF, TC, CG, PHF, CPPWG, CPPWR, CCHLP, HSIMIL, Early HS, HS, INACA, LCHM, PCECPT, SMPP, HLAPH, BCWS
Eating Out	WIC, HLP, EFNEP, CM, ESBS, CCHLP

Table 5: Interventions addressing Energy Output Factors describes which interventions address physical activity, screen time (e.g., watching television, playing video games, time on the computer) or marketing (e.g., advertising, restaurant give-a-ways), or built environment (e.g., pedestrian/bike friendliness, safe areas to play, parks, recreation facilities, beautification).

ENERGY OUTPUT FACTORS	INTERVENTION
General promotion of physical activity	HLAPH, PPHBC, CCCBP, ECTF, BBH, MM, NWCLW SS, WIC, FWK, HLP, Early HS, HS, CCLW, LCHM, EPSF, SCCGELC, NECECC, NWLW, LWP, WSHS, DCC, EFNEP, HCCC NRC, CM, UCD Web, UCD CWP, PAT, HIPPY, CAEYC, LGCKO, LGELCF, WCG, FWK, PHF, CPPWG, NCMP, COPAN, CCCGCO, CCHLP, NECHD, HSIMIL, BCWS, CCLW, ECCLPS, PCECPT, HCCC, HCCC COC, HCCC QIRS, RMYFC, FF, UCD EFNFM
Promotion of structured physical activity	HSIMIL, ECTF, CCCBP, MM, NWCLW SS, FWK, HLP, HS, FF, SCCGELC, NWLW, HCCC NRC, UCD Web, LGCKO, FWK, COPAN, CCHLP
Physical activity policies (including supportive physical environment)	HCCC, HLAPH, PPHBC, ECTF, WSHS, DCC, CWP, LGCKO
Screen time or marketing	BBH, HLP, WIC, CCCBP, SCCGELC, WSHS, CCHLP, HCCC COC, HCCC QIRS, RMYFC, CCCGCO, UCD CWP, UCD Web, HSIMIL, LCHM, PCECPT, ECCLPS
Built environment (playgrounds)	HBECWS, CCLW, CDCC, LGCKO, COPAN, BCWS, CCLW, ECCLPS, PCECPT, LCHM, FWK, HSIMIL, CCHLP, UCD CWP

Table 6: Interventions addressing Family and Community Factors describes which interventions address parenting behaviors, family meals, child care, parental overweight (i.e., one or both parents being overweight).

FAMILY/COMMUNITY FACTORS	INTERVENTION
Parenting Behavior	ECTF, CCCBP, HLP, WIC, HMCCI, DHHBFI, CCLW, EPSF, BBH, NFP, MIECHV, SCCGELC, PCECPT, LCB, WSHS, EFNEP, CM, CCHLP, UCD Web, UCD REP, RMYFC, UCD CWP, PAT, HIPPY, FSMCFA, ESBS, LGCKO, TC, WCG, FWK, CPPWG, NCMP, BFT, BFPCP, BFSMC, BFHCPTab, BFHDB, NECHD, NWCLW SS, FWK, HSIMIL, Early HS, HS, NCMP, CCCGCO, ECCLPS, HLAPH, BCWS, PPHBC
Family Meals	CACFP, WIC, ECTF, CCCBP, BBH, HBECWS, SCCGELC, LWP, WSHS, EFNEP, HCCC COC, CM, CECH, UCD Web, RMYFC, CWP, FSMCFA, ESBS, TC, PHF, CCHLP

FAMILY/COMMUNITY FACTORS	INTERVENTION
Child Care	HLAPH, CCCBP, CACFP, HMCCI, HCCC, ECTF, HLP, HS, BCWS, FF, FNF & MM, SCCGELC, PCECPT, CDCC, HCCC COC, HCCC NRC, HCCC QIRS, CM, ELVA, UCD Web, UCD EFNFM, UCD CWP, FSMCFA, ESBS, LGUAS, ECCLPS, LGELCF, HSIMIL, CAEYC
Parental Overweight	WIC, PPHBC, CCLW, NFP, MIECHV, BBH, MIECHV, NCMP, HLP, LCB, CM, UCD Web, UCD CWP, ESBS, LGCKO, TC, CG, FWK, NCMP. Early HS, EFNEP, CCHLP, HSIMIL, UCD REP
Indirect Nutrition Education of Parents	CACFP, HMCCI, ECTF, HS, LWCC, LWP, PCBS, WSHS, CECH, CSFP, TEFAP, SNAP, LGCKO, CPPWG, CPPWR
Direct Nutrition Education of Parents	CACFP, HMCCI, HLAPH, WIC, BBH, HLP, HS, HBECWS, LWCC, EPSF, SCCGELC, NECECC, WSHS, EFNEP, CM, UCD Web, UCD REP, HFCH, RMYFC, CWP, PAT, HIPPY, FSMCFA, ESBS, TC, WCG, FWK, PHF, NCMP, BFT, BFPCP

Table 7: Interventions addressing Infant Feeding Factors describes which interventions address weight gain in the first two years of life, breastfeeding, infant feeding practices (e.g., introduction of formula, cow's milk, solid foods, cues for hunger and satiety), feeding styles and infant food preferences.

INFANT FEEDING FACTORS	INTERVENTION
Breastfeeding	CCD5, BCBF, BFHCPT, CCCBP, PPHBC, ECTF, CACFP, HCCC, HCCC COC, WIC, BBH, EPSF, HLP, NECECC, CDBS, DHHBF, PCBS, CDCC, EFNEP, RMYFC, NCMP, BFT, BFPCP, ECCLPS, NFP, MIECHV, Early HS, INACA, BFSHI, BFHDB, BFEHSP, BFWTHCP, BFHCPTab, BFSMC, UCD Web
Infant Meals	CACFP, ECTF, WIC, CDCC, EPSF, RMYFC
Cues for Hunger and Satiety	CACFP, ECTF, WIC, CDBS, RMYFC, BFT, BFPCP, UCD Web
Introduction of foods	WIC, BBH, HLP, NCMP, CACFP, ECTF, CDCC, PPHBC, ECCLPS, NFP, MIECHV, EFNEP, EPSF, RMYFC, PCECPT, CCCBP, HCCC COC, UCD Web

Table 8: Interventions addressing Lifestyle Factors describes which interventions address lifestyle factors such as hours of sleep each day and smoking (e.g., policies around smoking).

LIFESTYLE FACTORS	INTERVENTION
Sleep	HLP, BCWS, CDCC, UCD CWP, RMYFC, BMTF, CCCGCO
Smoking	WIC, PPHBC, NFP, MIECHV, BBH, HLP, CCLW, EPSF, BFPC, WSHS, CDCC, EFNEP, UCD CWP, PHF, BMTF, NCMP, Early HS, PCECPT, RMYFC, CCCBP
Stress management	EPSF, HLP, UCD CWP

Table 9: Interventions addressing Prenatal Factors describes which interventions address pre-pregnancy BMI, gestation weight gain and birth weight.

PRENATAL FACTORS	INTERVENTION
Pre-pregnancy BMI	WIC, PPHBC, ECCLPS, NFP, MIECHV, BBH, Early HS, CDBS, EFNEP, FSMCFA, NCMP, HLP, RMYFC
Gestational Weight Gain	WIC, PPHBC, NFP, MIECHV, NCMP, CDBS, EFNEP, FSMCFA, ECCLPS, BBH, Early HS, HLP, RMYFC
Birth Weight	WIC, EFNEP, RMYFC, NCMP, NFP, MIECHV, Early HS, ECCLPS, PPHBC

Table 10: Interventions addressing Other Factors describes which interventions address other factors related to the prevention of childhood obesity.

OTHER FACTORS	INTERVENTION
Systems Approach	ECTF, HCCC QIRS, ELVA, UCD CWP, LGUAS, LGELCF, MIECHV
Data Collection	CACFP, ECTF, WIC, CCCBP
Development/Implementation of Statewide policies and guidelines	CACFP, ECTF, WIC, LGUAS, MIECHV
Regulations for Child Care Providers	CACFP, QS, HS, HCCC, QIRS
Rating Systems/Recognition for Child Care Providers	CACFP, HCCC, QS, BCWS, HCCC QIRS
Self-Assessment tools for Child Care Providers	ECTF, QS, HCCC QIRS, CCCBP
Funding for Community Programs	ECTF, LGELCF
BMI Screening	WIC, HS, HLAPH
National Breastfeeding Month	WIC
Provide Park Space	LWCC, LGCKO
Family Cooking Classes	PCWIC, CM, FSMCFA, ESBS
Baby Friendly Hospital Initiative	DHHBFI, PCBS
Web Based Learning	UCD Web, HCCC NRC
Food Insecurity	CM, CECH, CSFP, TEFAP, SMPP, SNAP, HFCH, RMYFC, LGUAS
Community Gardening	CG, CPPWG

Table 11: Intervention Approaches Used can be categorized as Advocacy, Clinical, Research, Educational, Policy/Environment, Media, Recreational, Social Support and Awareness. Respondents could select one or more of these classifications and specify another approach. A large majority of interventions were specified as Educational. The second most frequently specified approach was Awareness. The table below specifies the breakdown for this attribute.

Advocacy	Clinical	Research	Educational	Policy/ Environmental	Media	Recreational	Social Support	Awareness	Other Approach
32	11	16	59	39	12	21	44	50	5

Table 12: Intervention Funding Duration Attribute includes permanency of funding and the start and end dates for funding. Funding duration may be categorized as Permanent, Pilot, Temporary, Non-pilot or Other. Forty-three interventions have permanent funding; four are pilot interventions; 16 are temporary, non-pilot; and 12 have other or undetermined funding. Funding dates were incompletely reported with most responders leaving them blank and others providing only a start or end date.

Permanent	Pilot	Time Limited Grant (non-pilot)	Undetermined
43	4	16	12

Table 13: Intervention Funding Partners/Sources documents reported funding sources including federal and state programs, business/industry, and other specified sources. The Special Supplemental Food Program for Women, Infants and Children was the most frequently cited funder with State being the second most referenced funder. The Colorado Health Foundation, Division of Child Care, Cooking Matters, LiveWell Colorado, David and Laura Merage Foundation, Healthy Child Care Colorado, The Children’s Hospital Research Institute and the Association Membership were cited as other partners and funding sources. The table below specifies the breakdown of funders.

CDC	HHS	NIH	HRSA	SFSP	USDA	WIC	MCH	State	County/ City	Business/ Industry	Other
9	7	0	2	0	24	30	7	23	18	13	30

Table 14: Intervention Settings documents where interventions take place. Child Care Centers were the most frequently cited setting with the Schools being the second most referenced setting. The table below specifies the breakdown of settings.

Child Care Center	Church, Faith-based	Community Center	Health Care	Home	School	University/ College	Worksite	Senior Center	Other
26	17	15	16	21	25	9	11	4	29

Table 15: Intervention’s Targeted Age Groups documents for which age groups an intervention is focused. Parents/Caregivers was the most frequently cited group targeted. Children ages 3 to 5 years were the second most targeted group. Older children were reported as the least targeted. All interventions targeted at least two groups.

Prenatal	0 -2 years	3 - 5 years	6 - 12 years	13 - 17 years	Parents/ Caregivers
38	41	53	20	12	56

Table 16: Intervention Reach documents how many individuals are reached or exposed to an intervention. Reach could be reported by age group or as total reach.

INTERVENTION GROUP	REACH
Baby Bear Hugs	700 families a year
Baca County WIC	80
Broomfield County’s Wellness Seals	200
Broomfield WIC	525
Breastfeeding Website Training for Health Care Providers	unknown
Campaign to End Childhood Hunger	25,000 individuals
CAEYC	16 regional districts groups
CDPHE - Colorado Can Do 5	55 Colorado hospitals
CDPHE - Breastfeeding Counselor Program	12 WIC Clinics that cover 80% population
CDPHE - Breastfeeding Training WIC	500 staff
CDPHE - Lactation Specialist Training WIC	150 staff
CDPHE- CACFP	40,000 children and adults in daytime care settings

INTERVENTION GROUP	REACH
CDPHE - WIC	>109,000
Chaffee County's LiveWell physical activity goal	16,242 people
Chaffee County's LiveWell healthy foods goal	2,862 people
Chaffee County's LiveWell worksite wellness goal	391 individuals
Colorado Division of Child Care Licensing	9,000 facilities
Cooking Matters	>9,000 families in 26 Colorado counties in 2010
Early Learning Ventures Alliances	3500 children through child care providers
EFNEP	928 families in 2010 and >1,000 families in 2009
El Paso WIC	15,000 individuals
Denver Baby Friendly Hospital Initiative	4000 babies born each year
El Paso County's Strong Families	450 prenatal women and children under the age of 2 years
ESBS program	100 preschoolers and 100 parents and caregivers
Food Friends® Fun with New Foods	950 preschool classrooms and 600 family day care homes; January 2011, 417 classrooms
Food Friends® Mighty Moves	430 classrooms
Food Friends® Longitudinal Efficacy Study	Iliff, Leadville, Buena Vista and Salida
Healthy Learning Paths	1500 families
Healthy Living Program (Commerce City)	1,000 parents and children
HIPPY Program	898 families in 2009
Jackson County WIC	24 pregnant women and children
Larimer County Breastfeeding Initiative	410 individuals
Larimer County Breastfeeding Peer Counseling WIC	300 prenatal women and 300 postpartum women
Larimer County WIC Healthy Me	500 preschoolers
NECECC program	350 individuals
Northeast Colorado WIC park program	1,500 individuals
Northwest Colorado LiveWell (NWLW)	100 children
NWLW Start Smart Program	55 children and parents/caregivers
PAT Program	2,689 families in 2009
Prowers LiveWell	36 child care providers
Pueblo County WIC Cooking Classes	400 individuals
SCCGECL Food Program	126 individuals

INTERVENTION GROUP	REACH
Summit County WIC sugar display boards	35 preschool students and their parents/caregivers each year
TCHD Tasting Cafes	1,176 WIC families
TCHD Community Gardens	1,000 WIC families
TCHD Fit WIC Kit	1,000 families since January 2010
TCHD Produce and Health Fairs	2,323 individuals
UCD Culture of Wellness Program	2,700 parents, child care providers and children
UCD – Fruit and Vegetable Exposure	30 families
Western Slope Head Start	453 children

Targeted Racial/Ethnic Groups

This attribute documents which races and ethnicities are a focus of an intervention. All interventions reported targeting all races and ethnicities except for LiveWell Northwest Colorado, which designated White/Caucasian as its focus.

Table 17: Intervention Targeted Population documents which populations are the focus of an intervention. Female, Family and Low Income were included as the focus of most interventions. Immigrant was reported the least as a target. Most interventions specified at least four populations as targets; some specified more. Breastfeeding women, children and early childhood educators, caregivers and worksites were examples specified as “Other” populations. The table below specifies the distribution of targeted populations.

Male	Female	Individual	Family	Community	Low Income	Immigrant	Pregnant Women	Other
43	55	47	54	45	53	21	39	14

Table 18: Intervention Coverage documents the coverage area or spread of the intervention’s reach. Coverage is divided into National, Statewide, County, Region, City, Neighborhood and Other. Interventions reported coverage at the national level (6), statewide (27), county (36), region (3), city (14) and neighborhood (2).

National	Statewide	County	Region	City	Neighborhood	Other
6	27	36	3	14	2	1

Table 19: Intervention Data Indicator documents the data indicator used to measure intervention outcome success. “Other” indicates a data collection system included in designated program. For instance, BBH uses the Eating Smart, Being Active curriculum and the Loving Support curriculum from CanDo will compare breastfeeding rates to national averages. EFNEP uses Entry and Exit Food Behavior Checklists and 24-hour Diet Recalls to evaluate. The HCCC Quality Improvement Rating System will use its rating system to measure quality in child care programs. Cooking Matters evaluates change in behaviors by having participants complete a pre- and post-test. The Campaign to End Childhood Hunger is using CDE comparison data from the summer food service program to measure participation. Workflow data, cost fluctuation and mechanisms to ensure long-term sustainability and efficiency of healthy vended meals will be evaluated through the Early Learning Ventures Alliances. The Culture of Wellness in Preschools will evaluate the interventions by Adaptive Intervention Mapping and use of Heart Smart.

BRFSS	PedNSS	PRAMS	MCH Data Sets	Other
4	5	3	1	39

Inventory of Programs, Activities, Interventions and Strategies in Colorado (based on coverage) by Age Cohort (Prenatal, 0-2 Years, 3-5 Years)

Table 20: Statewide Prenatal Programs, Activities, Initiatives, Interventions (n=13) Crossed with Obesity Prevention Risk Factors, Spheres of Influence based on the Social Ecological Model and Social Determinants of Health/Health Equity Framework.

Prenatal Program, Activity, Initiative, Intervention	Energy Input	Energy Output	Family/ Community	Infant Feeding	Lifestyle (smoking, sleeping)	Prenatal (pre-pregnancy BMI, gestational weight gain and birth weight)	Other	Individual (biological and personal history factors)	Relationship (peers, intimate partners, and family members)	Community (schools, hospitals, workplaces, and neighborhoods, child care)	Societal (health, economic, educational and social policies)	Economic Opportunities (Income, Jobs, Education)	Community Environment (Housing, schools, recreational facilities, healthy foods, Transportation, Healthcare, Clean and safe environment)	Social Factors (Participation, Social network / social support, Leadership, Political influence, Organizational networks, Racism)
BCBF				√				√		√	√	√	√	√
BFHCPT				√			√	√		√			√	√
BFWTHCP				√			√			√	√		√	√
BMTF					√			√	√					
CCD5				√			√	√	√	√	√		√	√
CSFP	√							√	√				√	
HFCH	√							√	√	√			√	
LGUAS	√		√				√		√				√	√
MIECHV										√	√		√	√
PPHBC	√	√	√	√	√	√	√	√					√	√
SMPP	√						√	√	√	√			√	
SNAP	√							√	√				√	
WIC	√	√	√	√	√	√		√	√		√		√	√

Table 21: Region/County or City/Local Prenatal Programs, Activities, Initiatives, Interventions (n=19) Crossed with Obesity Prevention Risk Factors, the Social Ecological Model’s Spheres of Influence and the Social Determinants of Health/Health Equity Framework.

Prenatal Program, Activity, Initiative, Intervention	Energy Input	Energy Output	Family/ Community	Infant Feeding	Lifestyle (smoking, sleeping)	Prenatal (pre-pregnancy BMI, gestational weight gain and birth weight)	Other	Individual (biological and personal history factors)	Relationship (peers, intimate partners, and family members)	Community (schools, hospitals, workplaces, and neighborhoods, child care)	Societal (health, economic, educational and social policies)	Economic Opportunities (Income, Jobs, Education)	Community Environment (Housing, schools, recreational facilities, healthy foods, Transportation, Healthcare, Clean and safe environment)	Social Factors (Participation, Social network/ social support, Leadership, Political influence, Organizational networks, Racism)
BBH	√	√	√	√	√			√	√			√	√	√
CCLW	√	√	√					√		√			√	√
CDBS				√		√		√	√	√		√	√	
CM	√	√	√				√	√	√			√	√	√
DHHBFI				√			√	√	√	√	√	√	√	
Early HS	√	√	√	√	√	√	√	√	√	√		√	√	√
ECCLPS	√	√	√	√		√		√		√			√	
EFNEP	√	√		√	√	√	√	√				√	√	√
EPSF	√	√	√	√	√			√	√			√	√	√
HLP	√	√	√	√	√	√		√	√	√		√	√	√
NCMP	√	√	√	√	√	√		√	√			√	√	√
NFP	√		√	√	√	√		√	√	√			√	√
PAT	√	√	√	√	√		√	√	√	√			√	√
PCBS				√				√	√	√		√	√	
TCHD CG	√	√	√				√	√	√	√		√	√	√
TCHD CPPWG	√	√	√				√	√	√	√		√	√	√
TCHD CPPWR	√	√	√				√	√	√	√			√	
TCHD PHF	√	√	√				√	√	√	√		√	√	√
TCHD TC	√						√	√	√				√	

Table 22: Statewide Programs, Activities, Initiatives, Interventions Targeting the 0-2 Years of Age Population (n=28) Crossed with Obesity Prevention Risk Factors, Spheres of Influence based on the Social Ecological Model and the Social Determinants of Health/Health Equity Framework.

0-2 Years Program, Activity, Initiative, Intervention	Energy Input	Energy Output	Family/ Community	Infant Feeding	Lifestyle (smoking, sleeping)	Prenatal (pre-pregnancy BMI, gestational weight gain and birth weight)	Other	Individual (biological and personal history factors)	Relationship (peers, intimate partners, and family members)	Community (schools, hospitals, workplaces, and neighborhoods, child care)	Societal (health, economic, educational and social policies)	Economic Opportunities (income, jobs, education)	Community Environment (Housing, schools, child care, recreation, healthy foods, transportation, healthcare, clean and safe environment)	Social Factors (participation, social network / social support, leadership, political influence, organizational networks, racism)
BCBF				√				√		√	√	√		√
BFEHSP			√	√			√			√	√	√		√
BFHCPT				√			√	√		√				√
BFHCPTab				√				√		√				
BFSHI			√	√			√			√	√			√
BFSMC				√			√	√	√	√	√			√
BFT				√			√	√	√					√
BFWTHCP				√			√			√	√			√
BMTF					√			√	√					
CACFP	√		√	√				√	√	√	√			
CAEYC			√							√				√
CCCBP	√	√	√	√			√	√	√	√	√			
CCCGCO	√	√	√	√	√			√	√	√	√			√
CCD5				√			√	√	√	√	√			√
CDCC	√			√						√	√			√
CSFP	√						√	√	√					
HCCC	√	√	√	√						√				√
HCCC COC	√	√		√				√		√	√			√
HCCC QIRS			√				√			√	√			√
HFCH	√						√	√	√	√				
LGUAS	√		√				√		√					√
MIECHV										√	√			√
PPHBC	√	√	√	√	√	√	√	√						√
SMPP	√						√	√	√	√				
SNAP	√						√	√	√					
TEFAP	√						√	√	√					
UCD Web	√	√	√				√	√	√	√	√			
WIC	√	√	√	√	√	√		√	√		√			√

Table 23: Region/County or City/Local Programs, Activities, Initiatives, Interventions that Target the Age 0-2 Population (n=16) Crossed with Obesity Prevention Risk Factors, the Social Ecological Model's Spheres of Influence and the Social Determinants of Health/Health Equity Framework.

0-2 Years Program, Activity, Initiative, Intervention	Energy Input	Energy Output	Family/ Community	Infant Feeding	Lifestyle (smoking, sleeping)	Prenatal (pre-pregnancy BMI, gestational weight gain and birth weight)	Other	Individual (biological and personal history factors)	Relationship (peers, intimate partners, and family members)	Community (schools, hospitals, workplaces, and neighborhoods, child care)	Societal (health, economic, educational and social policies)	Economic Opportunities (income, jobs, education)	Community Environment (Housing, schools, child care, recreation, healthy foods, transportation, healthcare, clean and safe environment)	Social Factors (participation, social network / social support, leadership, political influence, organizational networks, racism)
BBH	√	√	√	√	√			√	√				√	√
BCWS	√	√	√		√			√		√			√	√
BFHDB				√				√		√	√		√	√
BFPCP				√			√	√	√				√	√
CDBS				√		√		√	√	√			√	
CM	√	√	√				√	√	√				√	√
DHHBFI				√			√	√	√	√	√		√	
Early HS	√	√	√	√	√	√	√	√	√	√			√	√
ECCLPS	√	√	√	√		√		√		√			√	
ELVA	√	√	√				√	√	√	√	√		√	√
HLP	√	√	√	√	√	√		√	√	√			√	√
NFP	√		√	√	√	√		√	√	√			√	√
PAT	√	√	√	√	√		√	√	√	√			√	√
PCBS				√				√	√	√			√	√
PCECPT	√	√	√	√	√			√		√			√	√
RMYFC	√	√				√	√	√	√	√			√	√

Table 24: Statewide Programs, Activities, Initiatives, Interventions Targeting the 3-5 Years of Age Population (n=24) Crossed with Obesity Prevention Risk Factors, Spheres of Influence based on the Social Ecological Model and Social Determinants of Health/Health Equity Framework.

3-5 Years Program, Activity, Initiative, Intervention	Energy Input	Energy Output	Family/ Community	Infant Feeding	Lifestyle (smoking, sleeping)	Prenatal (pre-pregnancy BMI, gestational weight gain and birth weight)	Other	Individual (biological and personal history factors)	Relationship (peers, intimate partners, and family members)	Community (schools, hospitals, workplaces, and neighborhoods, child care)	Societal (health, economic, educational and social policies)	Economic Opportunities (income, jobs, education)	Community Environment (Housing, schools, child care, recreation, healthy foods, transportation, healthcare, clean and safe environment)	Social Factors (participation, social network/ social support, leadership, political influence, organizational networks, racism)
CACFP	√		√	√				√	√	√	√		√	
CAEYC			√							√			√	√
CCCBP	√	√	√	√			√	√	√	√	√		√	√
CCCGCO	√	√	√	√	√			√	√	√	√		√	√
CDCC	√			√						√	√		√	√
CSFP	√							√	√				√	
FF		√	√					√		√			√	
FNF and MM	√	√	√				√	√	√	√			√	
HCCC	√	√	√	√						√			√	√
HCCC COC	√	√		√				√		√	√		√	√
HCCC QIRS			√				√			√	√		√	√
HCCC WBPA	√	√	√	√				√	√	√	√		√	√
HFCH	√							√	√	√			√	
HMCCI	√		√							√			√	√
INACA	√							√		√	√		√	√
LGCKO		√	√					√	√	√			√	√
LGELCF	√		√							√			√	
LGUAS	√		√				√		√				√	√
SMPP	√							√	√				√	
SNAP	√							√	√				√	
TEFAP	√							√	√				√	
UCD Web	√	√	√				√	√	√	√	√		√	
WIC	√	√	√	√	√	√		√	√		√		√	√

Table 25: Region/County or City/Local Programs, Activities, Initiatives, Interventions Targeting the 3-5 Years of Age Population (n=26) Crossed with Obesity Prevention Risk Factors, the Social Ecological Model’s Spheres of Influence and the Social Determinants of Health/Health Equity Framework.

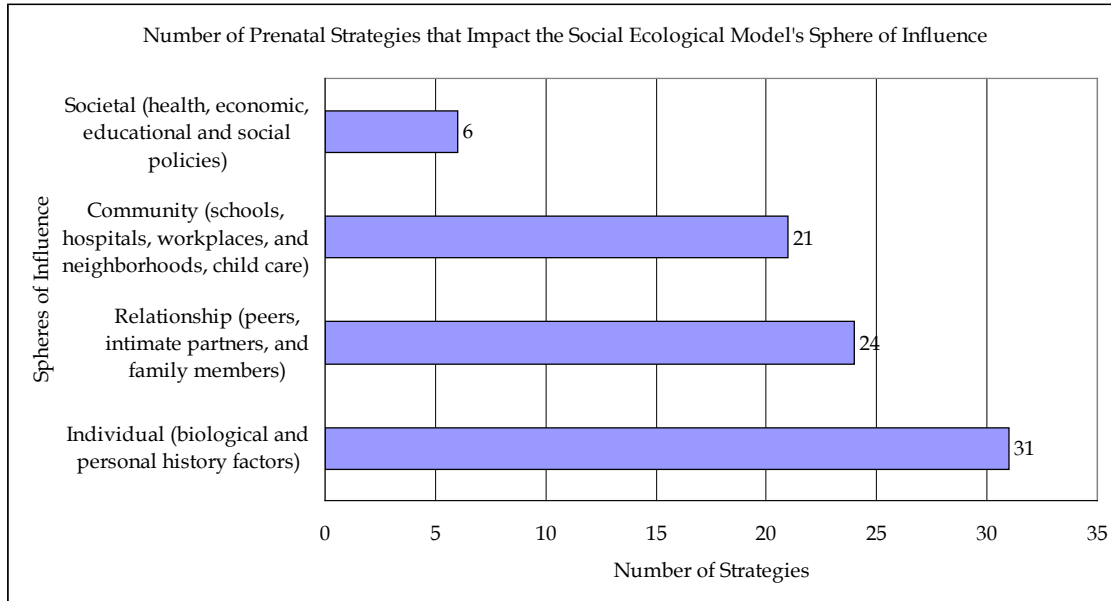
3-5 Years Program, Activity, Initiative, Intervention	Energy Input	Energy Output	Family/ Community	Infant Feeding	Lifestyle (smoking, sleep)	Prenatal (pre-pregnancy BMI, gestational weight gain and birth weight)	Other	Individual (biological and personal history factors)	Relationship (peers, intimate partners, and family members)	Community (schools, hospitals, workplaces, and neighborhoods, child care)	Societal (health, economic, educational and social policies)	Economic Opportunities (income, jobs, education)	Community Environment (Housing, schools, child care, recreation, healthy foods, transportation, healthcare, clean and safe environment)	Social Factors (participation, social network/ social support, leadership, political influence, organizational networks, racism)
BBH	√	√	√	√	√			√	√				√	√
BCWS	√	√	√		√		√	√		√			√	√
CCHLP	√	√	√				√	√	√	√			√	√
CCLW	√	√	√					√		√			√	√
CM	√	√	√				√	√	√	√			√	√
ECCLPS	√	√	√	√		√		√		√			√	
ELVA	√	√	√				√	√	√	√	√		√	√
FWK	√	√	√	√	√	√		√	√		√			
HIPPY	√	√	√	√	√		√	√	√	√			√	√
HLAPH	√	√	√					√					√	√
HLP	√	√	√	√	√	√		√	√	√			√	√
HS NPS	√		√					√		√			√	√
HSIMIL	√	√	√	√	√	√	√	√	√	√			√	
LCHM	√	√	√					√					√	
NECHD		√	√					√		√			√	
NWCLW SS		√	√					√		√			√	√
PAT	√	√	√	√	√		√	√	√	√			√	√
PHC ESBS	√		√				√	√	√				√	√
TCHD CG	√	√	√				√	√	√	√			√	√
TCHD CPPWG	√	√	√				√	√	√	√			√	√
TCHD CPPWR	√	√	√				√	√	√	√			√	
TCHD PHF	√	√	√				√	√	√	√			√	√
TCHD TC	√						√	√	√				√	
UCD CWP	√	√	√				√	√	√	√	√		√	√
UCD EFNMM	√	√	√				√						√	
UCDREP	√		√				√	√	√				√	√

Identified Gaps Based on the Social Ecological Model

The graphs below illustrate the percentage of programs addressing the sphere of influence in the Social Ecological Model according to answers in the survey and key informant interviews based on age cohort (prenatal, 0-2 years and 3-5 years).

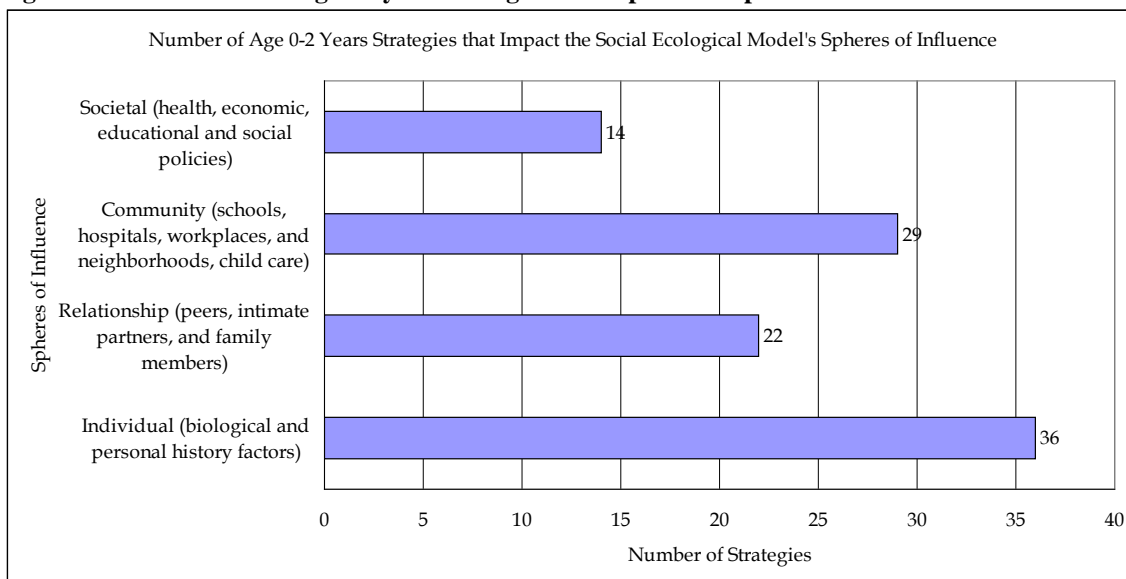
Of the 32 prenatal strategies described in this report, 31 (96.9%) impact the individual sphere of influence, 24 (75%) impact the relationship sphere of influence, 21 (65.6%) impact the community sphere of influence and 6 (18.8%) impact the societal sphere of influence.

Figure 5: Number of the 32 prenatal strategies which impact each sphere of influence in the Social Ecological Model.



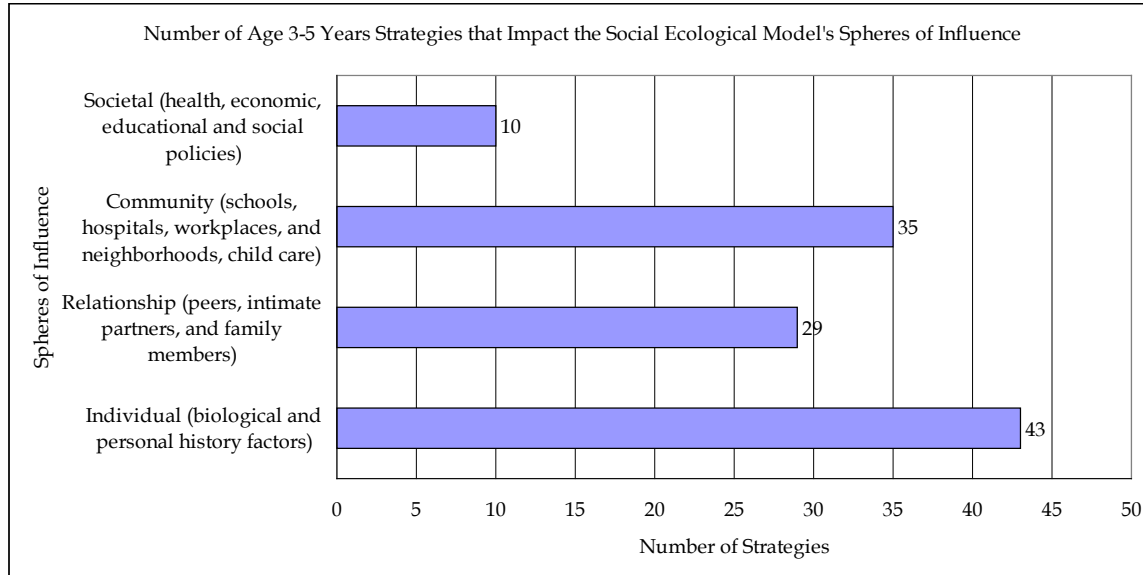
Of the 44 age 0-2 years strategies described in this report, 36 (81.8%) impact the individual sphere of influence, 22 (50%) impact the relationship sphere of influence, 29 (65.9%) impact the community sphere of influence and 14 (31.8%) impact the societal sphere of influence.

Figure 6: Number of the 44 age 0-2 years strategies that impact each sphere of influence in the Social Ecological Model.



Of the 50 age 3-5 years strategies described in this report, 43 (86%) impact the individual sphere of influence, 29 (58%) impact the relationship sphere of influence, 35 (70%) impact the community sphere of influence and 10 (20%) impact the societal sphere of influence.

Figure 7: Number of the 50 age 3-5 years strategies that impact each sphere of influence in the Social Ecological Model



Recommended strategies for communities and public health to address gaps in the social ecological model include the following:

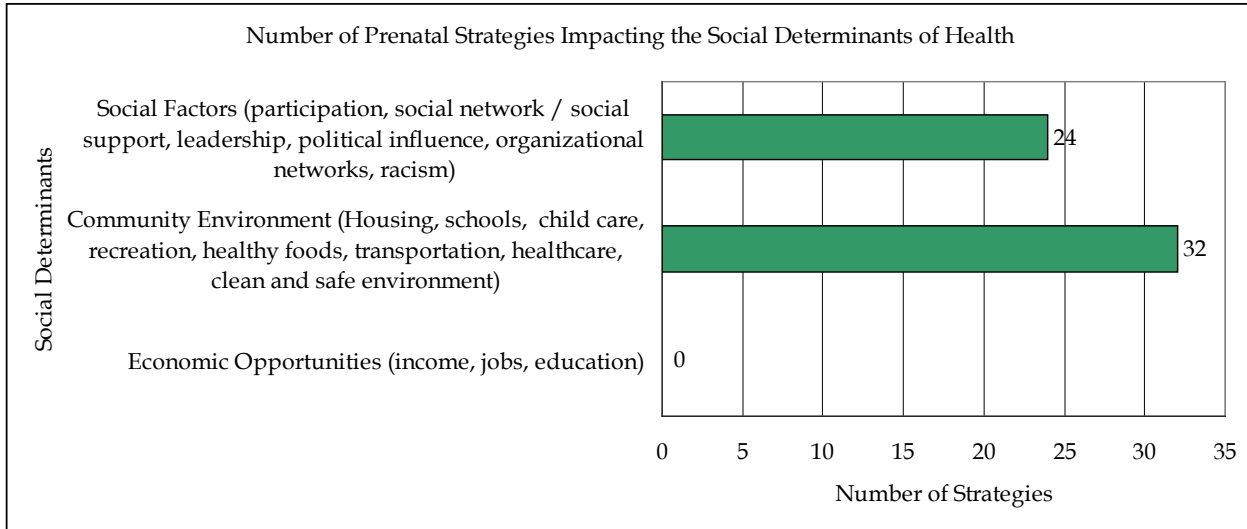
- 1. Partnering with federal, local and community agencies, universities and businesses*
- 2. Generalizing or making modifications to promising strategies, which work in multiple settings and impact all populations*
- 3. Designing culturally sensitive, evidence-based messages that address multiple behavioral risk factors*
- 4. Determining how the plan will be evaluated*
- 5. Developing and implementing a plan that is both feasible and self-sustaining*

Identified Gaps Based on the Social Determinants of Health/Health Equity Framework

The graphs below illustrate the percentage of programs addressing the indicators of the Social Determinants of Health/Health Equity Framework according to answers in the survey and key informant interviews by age cohort (prenatal, 0-2 years and 3-5 years).

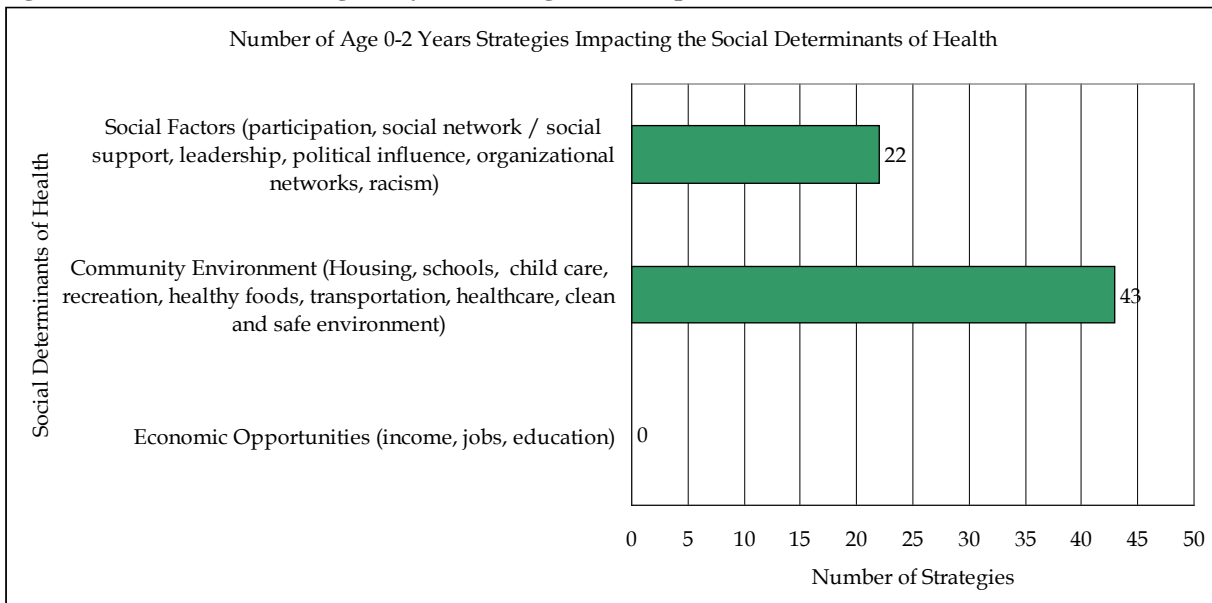
Of the 32 prenatal strategies described in this report, 0 (0%) provide economic opportunities, 32 (100%) impact the community and environment, 24 (75%) impact the social factors based on the Social Determinants of Health/Health Equity Framework.

Figure 8: Number of the 32 prenatal strategies that impact social determinants of health



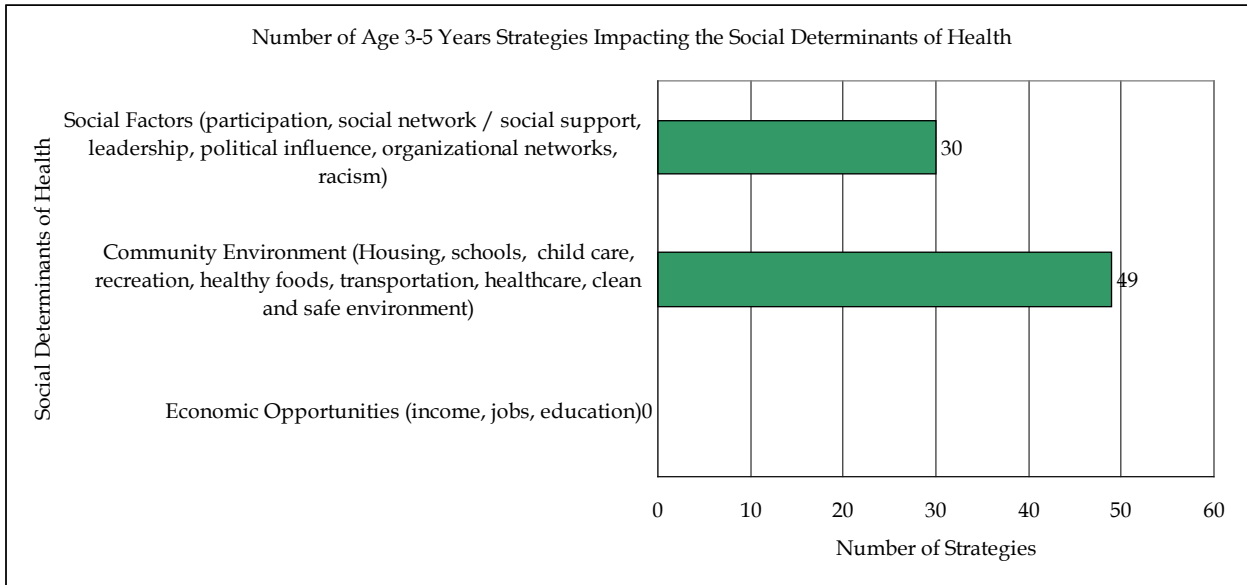
Of the 44 age 0-2 years strategies described in this report, 0 (0%) provide economic opportunities, 43 (97.7%) impact the community and environment, 22 (50%) impact the social factors based on the Social Determinants of Health/Health Equity Framework.

Figure 9: Number of the 44 age 0-2 years strategies that impact social determinants of health



Of the 50 age 3-5 years strategies described in this report, 0 (0%) provide economic opportunities, 49 (98%) impact the community and environment, 30 (60%) impact the social factors based on the Social Determinants of Health/Health Equity Framework.

Figure 10: Number of the 50 age 3-5 years strategies that impact social determinants of health



Recommended strategies for communities and public health to address social determinants of health include the following:

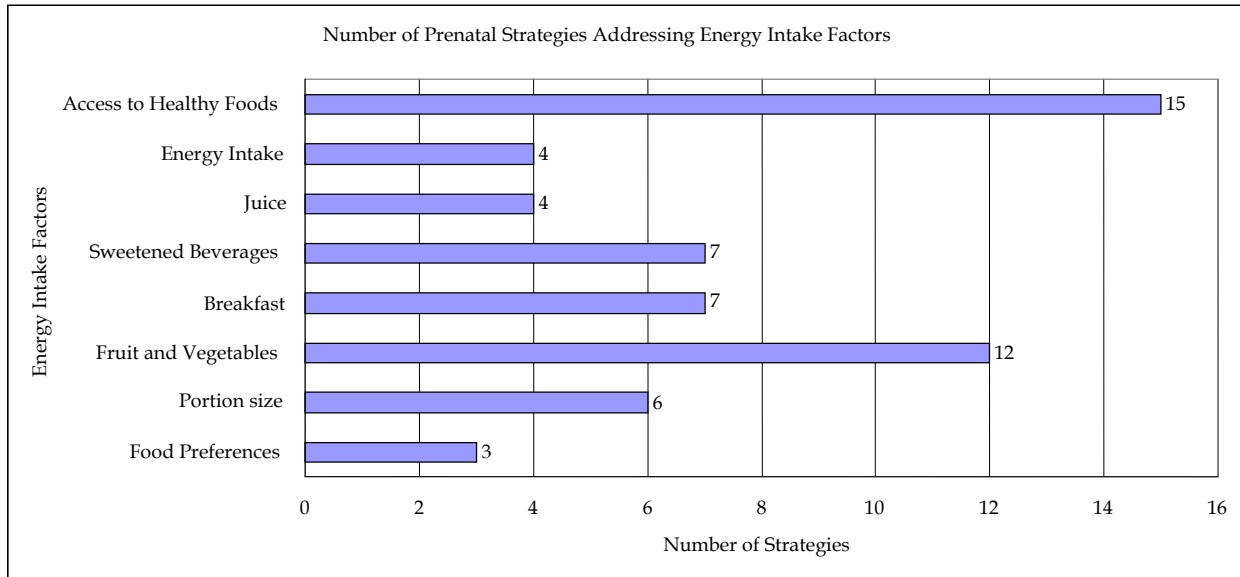
1. *Advocating for and defining public policy to achieve health equity*
2. *Coordinating interagency efforts for a more synergistic effect*
3. *Creating supportive environments to enable change*
4. *Implementing data collection, monitoring and surveillance*
5. *Providing population based interventions to address individual factors*
6. *Developing community engagement and capacity building*

Identified Gaps in Addressing Behavioral Factors

The graphs below illustrate the percentage of programs addressing the behavioral factors identified according to answers in the survey and key informant interviews based on age cohort (prenatal, 0-2 years and 3-5 years).

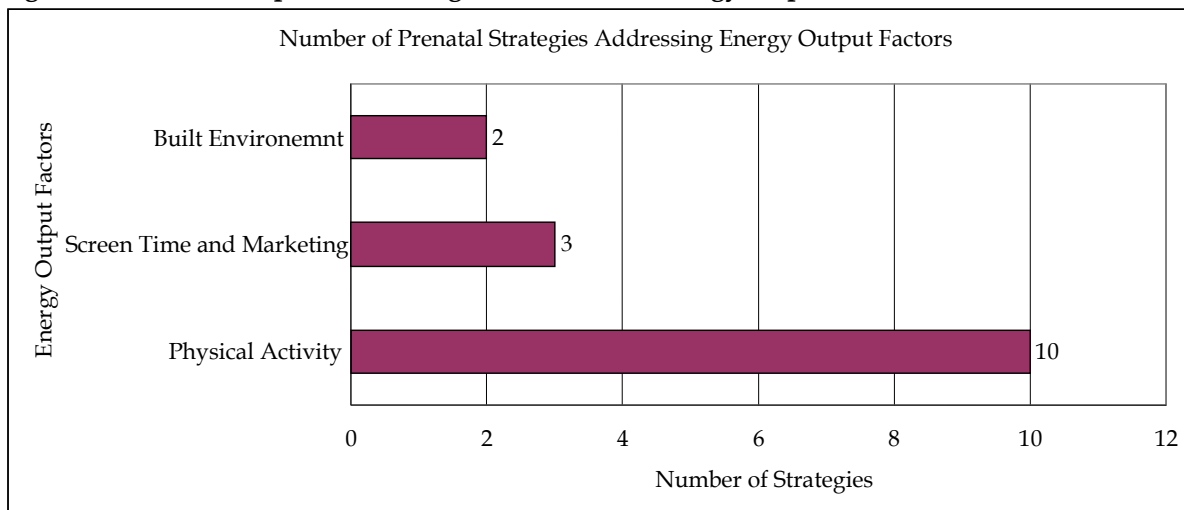
Of the 32 prenatal strategies described in this report, 24 (75%) address an aspect of energy intake (food preferences, portion size, fruit and vegetable consumption, breakfast promotion, sweetened beverages, juice intake or total energy intake).

Figure 11: Number of prenatal strategies that address energy intake factors



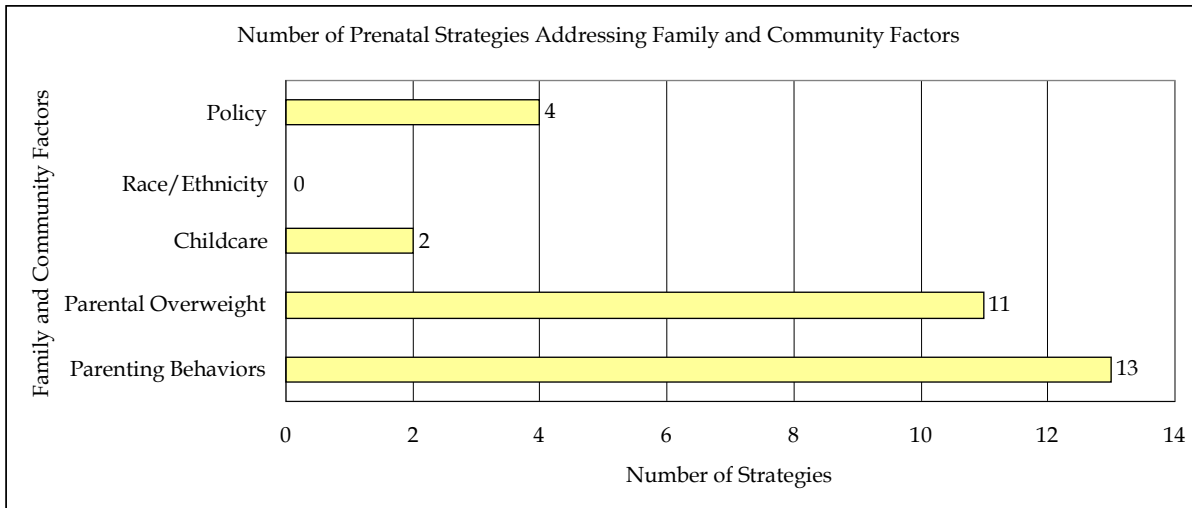
Of the 32 prenatal strategies described in this report, 15 (46.9%) address an aspect of energy output (promotion of physical activity, screen time and marketing, and the built environment).

Figure 12: Number of prenatal strategies that address energy output factors



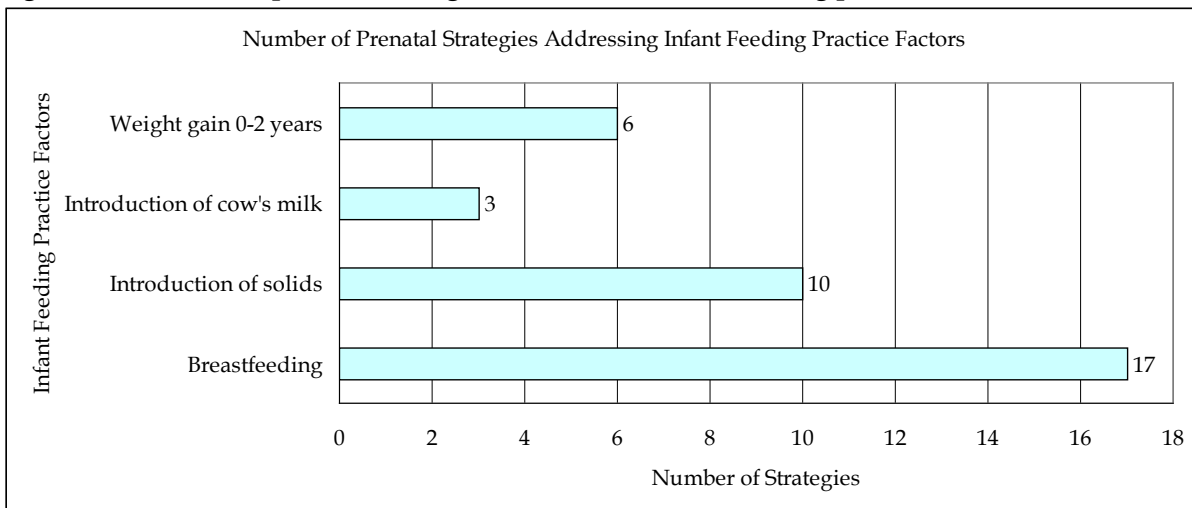
Of the 32 prenatal strategies described in this report, 19 (59.4%) address an aspect of family and community factors (parenting behaviors, parental overweight, child care, race/ethnicity, and policy).

Figure 13: Number of prenatal strategies that address family and community factors



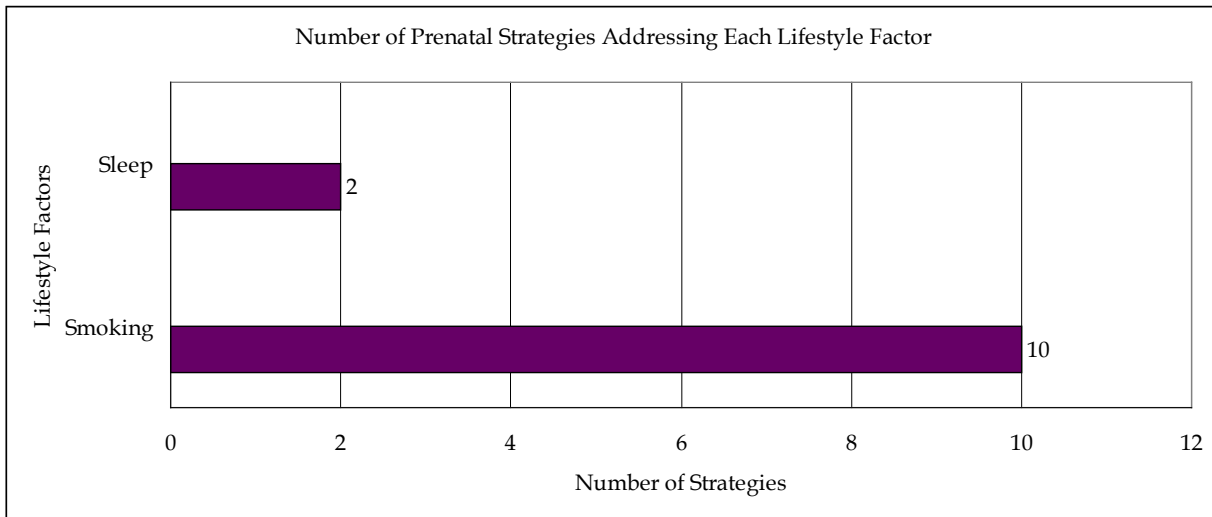
Of the 32 prenatal strategies described in this report, 19 (59.4%) address an aspect of infant feeding (infant feeding – hunger and satiety cues, breastfeeding, introduction of solids, introduction of cow’s milk and weight gain aged 0-2 years).

Figure 14: Number of prenatal strategies that address infant feeding practice factors



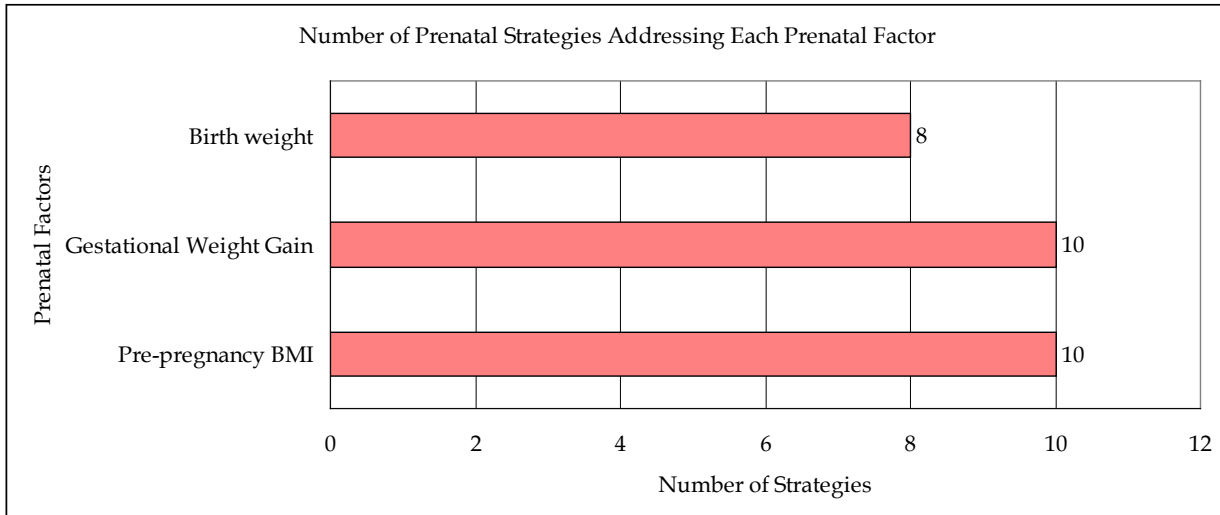
Of the 32 prenatal strategies described in this report, 10 (31.3%) address an aspect of lifestyle (sleep and smoking).

Figure 15: Number of prenatal strategies that address lifestyle factors



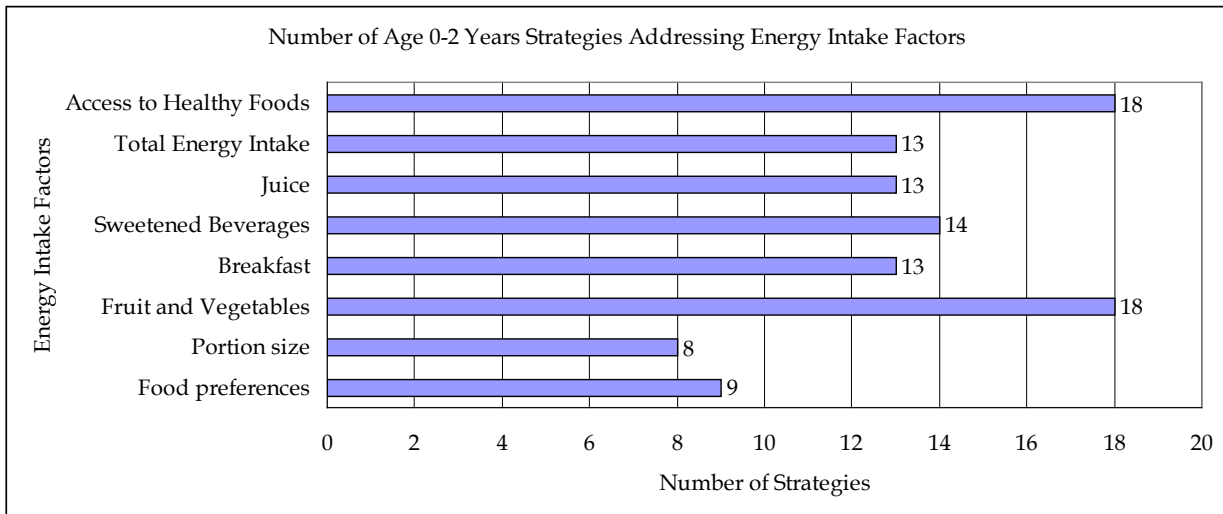
Of the 32 prenatal strategies described in this report 11 (34.4%) address an aspect specific to the prenatal period (pre-pregnancy BMI, gestational weight gain and birth weight).

Figure 16: Number of prenatal strategies that address prenatal factors



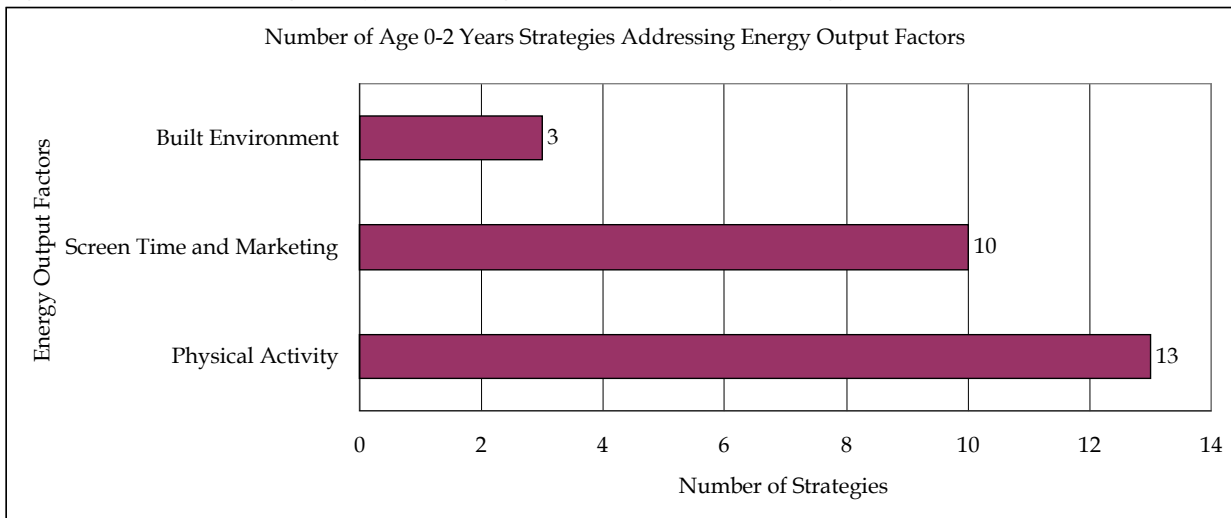
Of the 44 age 0-2 years strategies described in this report, 25 (56.8%) address an aspect of energy intake (food preferences, portion size, fruit and vegetable consumption, breakfast promotion, sweetened beverages, juice intake or total energy intake).

Figure 17: Number of the 25 age 0-2 years strategies that address each energy intake factor



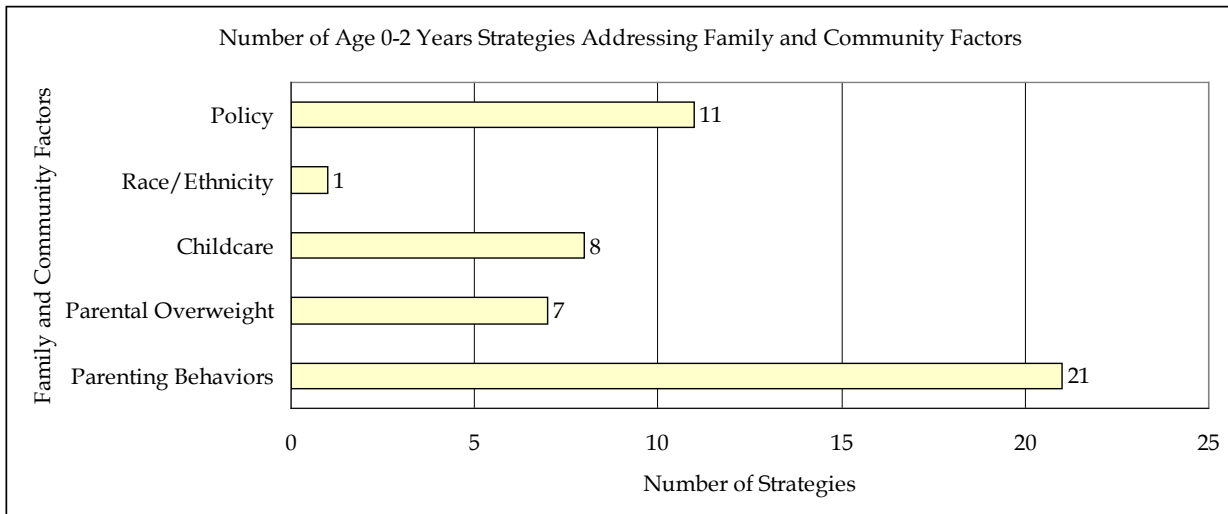
Of the 44 age 0-2 strategies described in this report, 15 (34.1%) address an aspect of energy output (promotion of physical activity, screen time and marketing and the built environment).

Figure 18: Number of age 0-2 years strategies that address each energy output factor



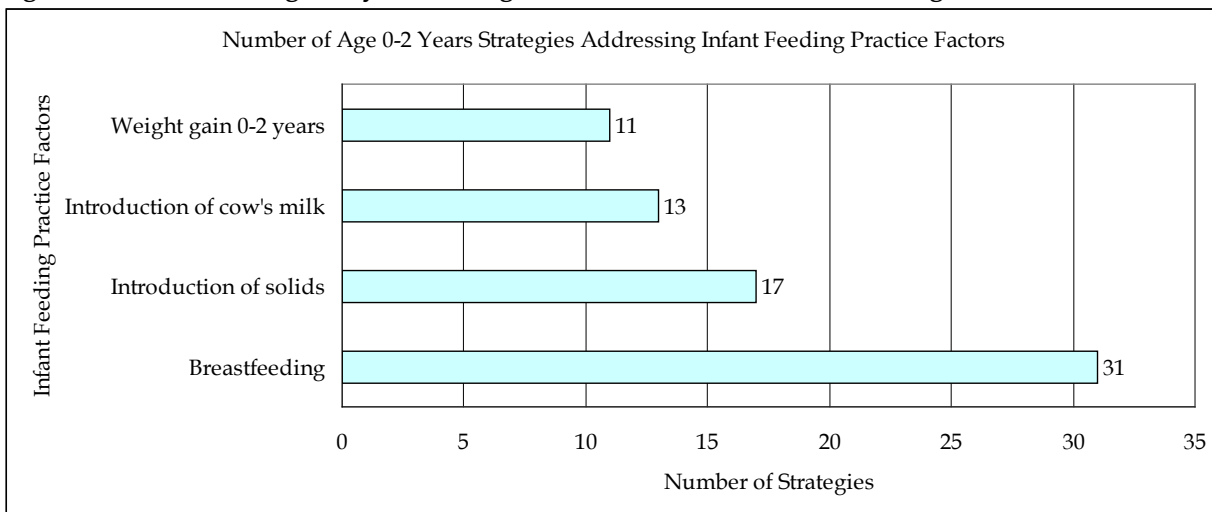
Of the 44 age 0-2 years strategies described in this report, 30 (68.2%) address an aspect of family and community factors (parenting behaviors, parental overweight, child care, race/ethnicity, and policy).

Figure 19: Number of age 0-2 years strategies that address each family and community factor



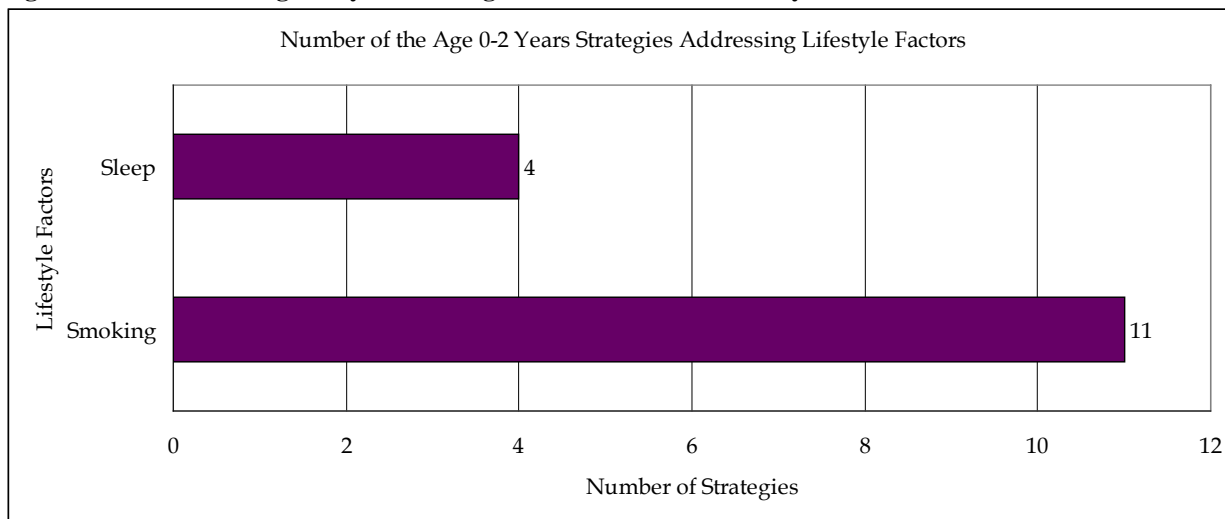
Of the 44 age 0-2 years strategies described in this report, 31 (70.5%) address an aspect of infant feeding (infant feeding – hunger and satiety cues, breastfeeding, introduction of solids, introduction of cow’s milk and weight gain between ages 0-2 years).

Figure 20: Number of age 0-2 years strategies that address each infant feeding factor



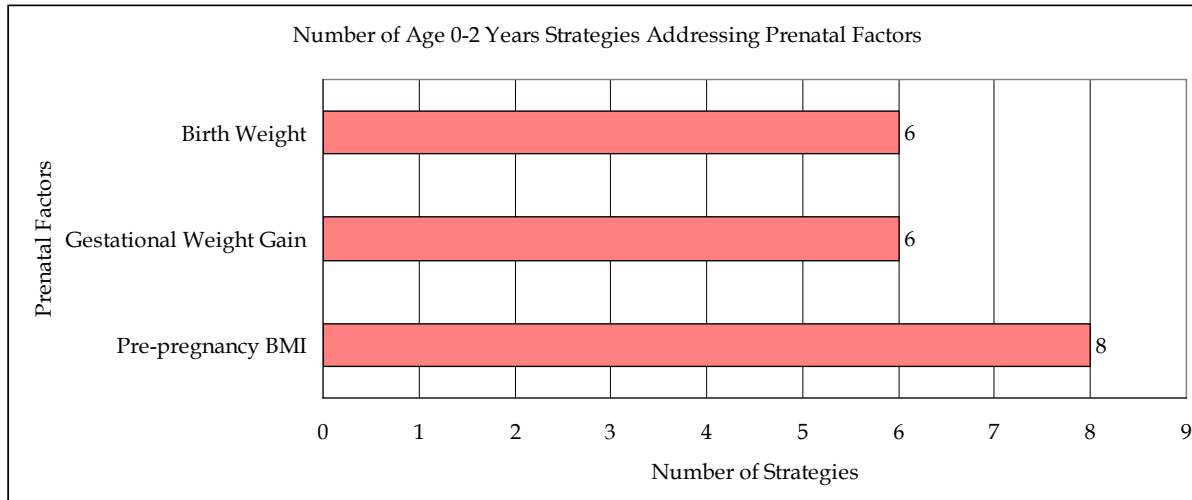
Of the 44 age 0-2 years strategies described in this report, 14 (31.8%) address an aspect of lifestyle (sleep and smoking).

Figure 21: Number of age 0-2 years strategies that address each lifestyle factor



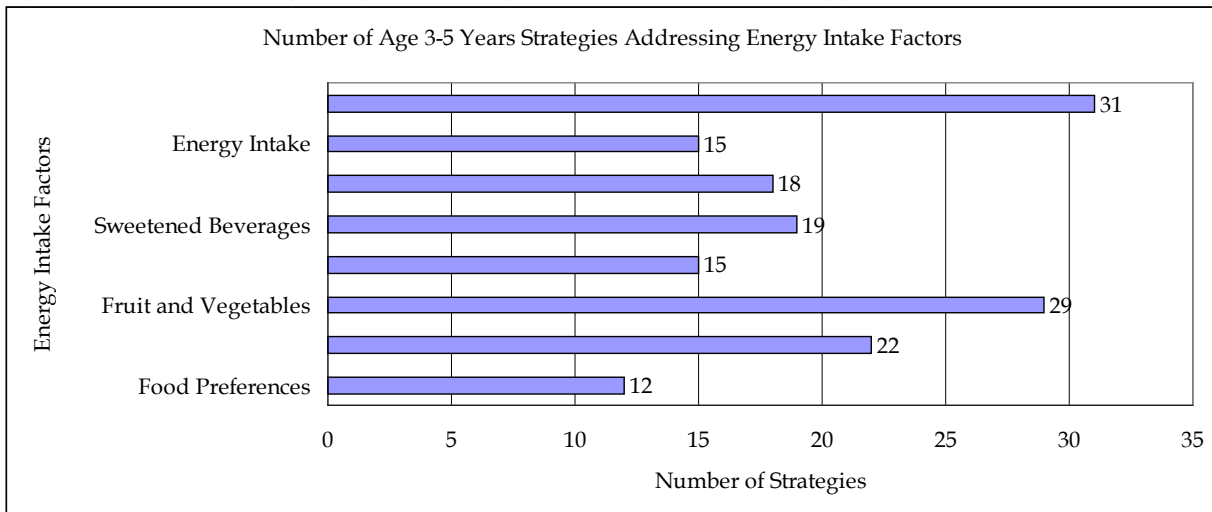
Of the 44 age 0-2 years strategies described in this report, 8 (18.2%) address a prenatal factor (pre-pregnancy BMI, gestational weight gain, birth weight).

Figure 22: Number of age 0-2 years strategies that address each prenatal factor



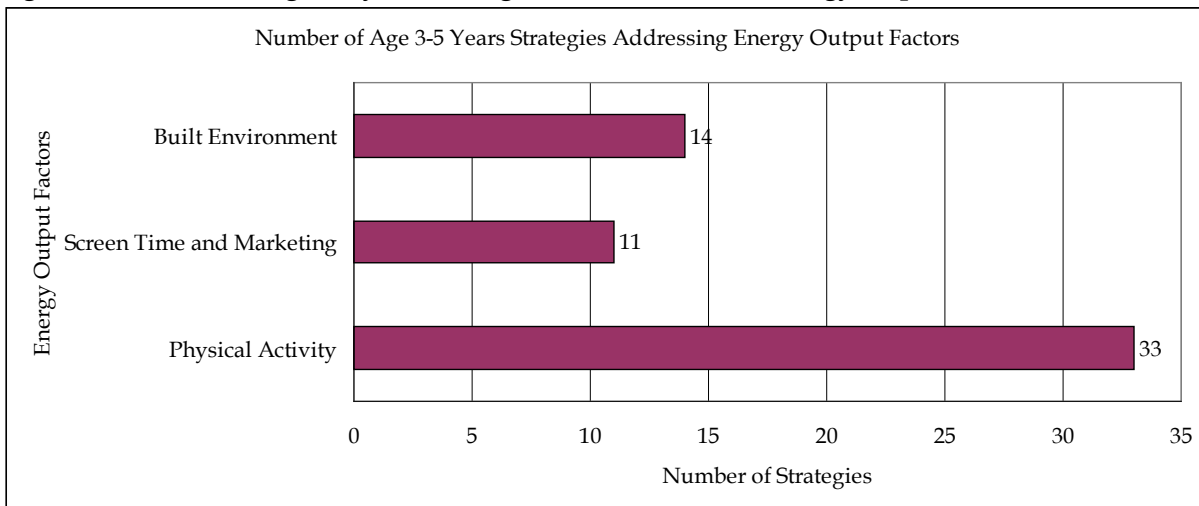
Of the 50 age 3-5 years strategies described in this report, 40 (80%) address an aspect of energy intake (food preferences, portion size, fruit and vegetable consumption, breakfast promotion, sweetened beverages, juice intake or total energy intake).

Figure 23: Number of age 3-5 years strategies that address each energy intake factor



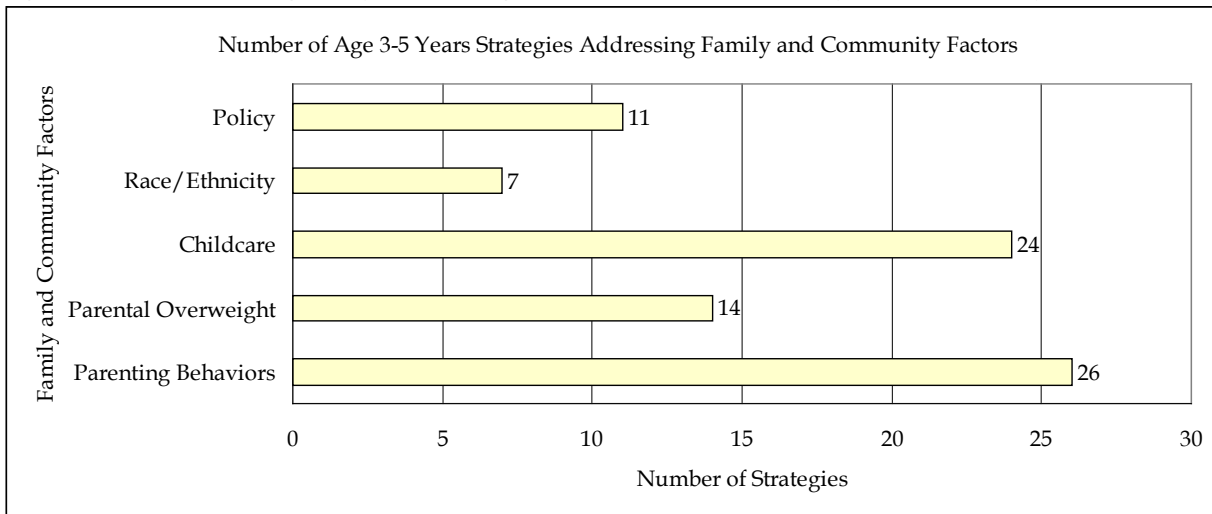
Of the 50 age 3-5 years strategies described in this report, 33 (66%) address an aspect of energy output (promotion of physical activity, screen time and marketing, and the built environment).

Figure 24: Number of age 3-5 years strategies that address each energy output factor



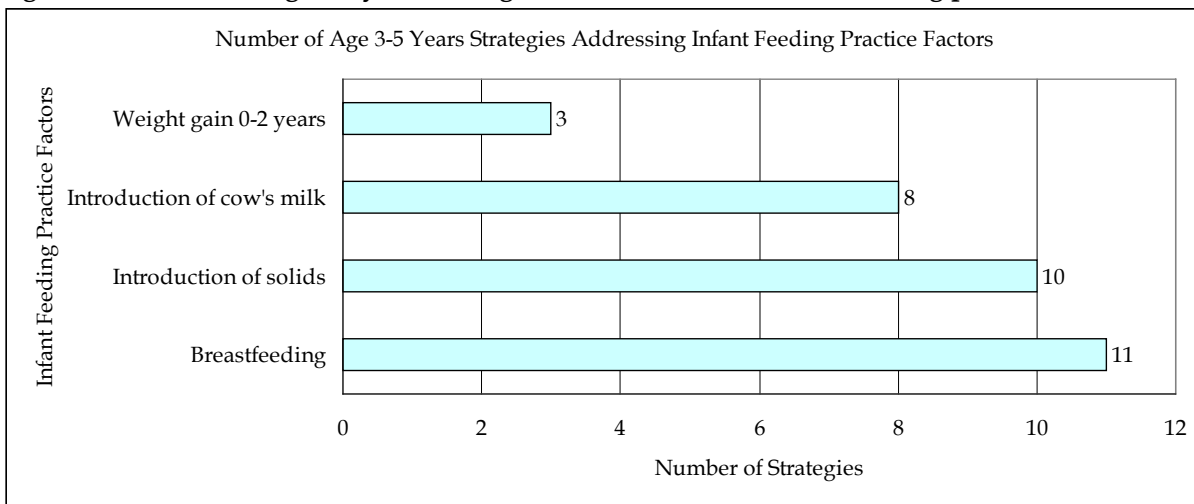
Of the 50 age 3-5 years strategies described in this report, 39 (78%) address an aspect of family and community factors (parenting behaviors, parental overweight, child care, race/ethnicity and policy).

Figure 25: Number of age 3-5 years strategies that address each family and community factor



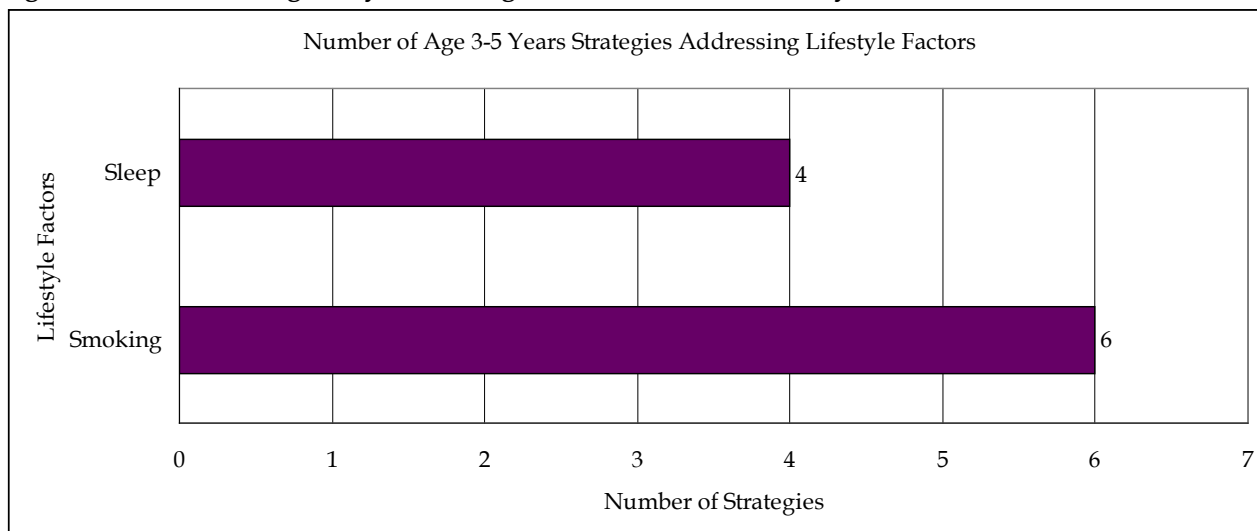
Of the 50 age 3-5 years strategies described in this report, 12 (24%) address an infant feeding factor (breastfeeding, introduction of solids, introduction of cow's milk, weight gain age 0-2 years).

Figure 26: Number of age 3-5 years strategies that address each infant feeding practice factor



Of the 50 age 3-5 years strategies described in this report, 9 (18%) address lifestyle factors (sleep and/or smoking).

Figure 27: Number of age 3-5 years strategies that address each lifestyle factor



Recommended strategies for communities and public health to address the behavioral factors related to early childhood obesity include:

- 1. Sharing of resources, including handouts, talking points, websites, trainings and/or community events for health care providers, parents and/or caregivers*
- 2. Coordinating the development of simple, consistent key messages that can be used in a variety of settings (e.g., health care, child care, work place, grocery stores, TV, radio, etc.) that reach different populations*
- 3. Leveraging financial and political resources so that programs that have proven success can receive advocacy and legislative support to create permanent funding sources*

Limitations of Phase I and Phase II

While the literature review conducted was extensive, the body of literature related to early childhood obesity prevention is vast and growing. Also, while this study was able to identify factors with the greatest level of evidence based on current research, some factors rated lower due limited research. Specifically, published studies, which evaluate the impact of policy change on early childhood obesity prevention, are limited.

Noted here are several limitations of this report. The reach of the survey is not comprehensive, but did include federal, state and privately funded programs at the state, county, city, local and community levels. The survey was administered electronically, and due to time constraints, it was not possible to contact all non-responders through other means (via phone or face-to-face meetings). Participants were given a week to complete the survey and this proved to be insufficient for some, with requests to extend the deadline for survey completion. In addition, the survey was written in a PDF format. Many individuals had difficulty saving their input and had to send their information in another format (i.e., text document, email and/or faxing their completed survey). This added additional time to data collection and analysis.

For those who did not respond the first time, attempts to contact them via phone and email with an extended response date were provided. In addition, individuals were requested to respond if additional time was needed to complete the survey, if there were additional questions regarding the survey, or if respondents did **not** have any activities, programs, initiatives, interventions or strategies specifically aimed at promoting physical activity or healthy eating during early childhood.

The following is a list of individuals who are acknowledged for providing their time to respond to the survey request. They reported that their organizations currently do not have any activities, programs, initiatives, interventions or strategies specifically aimed at promoting physical activity or healthy eating during early childhood. Some forwarded the survey onto others who might be able to complete the survey.

Jennifer Mortimeyer
Coordinator
Teller/Park Early Childhood Council (TPECC)

Angela Rothermel, M.Ed.
Director
Early Childhood Partnership of Adams County

Bobbie Puckett, RD
LiveWell Project Coordinator
Weld County Department of Public Health & Environment

Sandy Gregory
Director
Douglas County Early Childhood Coalition

Beverly Wood Thurber
Executive Director
Early Childhood Council of Larimer County

Holly Jacobson
Coordinator
Mesa County Partnership for Children and Families

Julie Geiser, R.N.
Director
Alamosa County Public Health Department

Hilda Scott
Director
Mineral County Public Health Department

Phase I and II Discussion

Although not exhaustive or comprehensive, this report informs early childhood obesity prevention efforts in Colorado. This work provides data to inform future targeted efforts to prevent early childhood obesity and improve coordination of Colorado's collective efforts.

Data reported here indicate a number of promising efforts that address a variety of factors related to early childhood obesity. In addition, the *White House Task Force on Childhood Obesity Report to the President* (Appendix E) provides additional recommendations and guidance. The following are important next steps in applying and continuing this work.

Use Evidence to Inform Colorado's Efforts

The CDPHE will share report findings with early childhood and obesity prevention stakeholders in Colorado to inform further work and collaborative efforts in early childhood obesity prevention.

Focus on Preconception, Prenatal, and Birth through Age Two

The levels of evidence for early childhood obesity prevention factors are strongest for the preconception, prenatal and birth through age two years cohorts. This finding warrants further investigation into how Colorado's obesity efforts can be focused on these age groups.

Identify Opportunities and Gaps

As survey results demonstrate, there are a number of early childhood obesity prevention efforts and related efforts occurring in Colorado. Based on these survey findings and the evidence-based factors, next steps must involve the identification of opportunities to build on existing efforts. In light of new evidence and models, it will also be important to identify critical gaps in Colorado's early childhood obesity prevention efforts.

Develop Integrative Models

The evidence-based factors and programs contained in the inventory have been cross-walked with the Social Ecological Model and the Social Determinants of Health/Health Equity Framework. These models can be used to ensure that efforts related to early childhood obesity factors are implemented at various levels and focus on root cause.

Monitor Research

The research on early childhood obesity prevention is vast and growing. Levels of evidence for some factors rated lower due to inconclusive or limited research. Continuous monitoring of the literature is needed to adequately inform Colorado's future efforts.

Phase III: Stakeholder Collaboration

A. Phase III Methods

As a result of this study, an Early Childhood Obesity Prevention (ECOP) Stakeholder Meeting was held on Jan. 13 and 14, 2011, at Daniel's Fund in Denver, Colorado. The purpose of this meeting was to share the findings of the literature review and scan of Colorado prevention efforts in early childhood, and discuss future priorities for Colorado and the most appropriate role for the Colorado Department of Health and Environment in this effort. Attendees included representatives from several health department divisions, childhood obesity councils, the Lt. Governor's Office, the state Licensing Division, Colorado universities and research programs, and community advocacy and funding organizations.

As part of this meeting, stakeholders heard a presentation of the literature review findings, including grade levels of evidence for the 25 factors associated with early childhood overweight and obesity. The 25 factors were placed into six categories by natural association in the literature. Below is an outline of the categories and the associated factors.

1. Prenatal (pre-pregnancy BMI, gestational weight gain and birth weight)
2. Lifestyle (maternal smoking and sleep duration)
3. Infant feeding practices (infant feeding - introduction of solids and feeding based on hunger and satiety cues, breastfeeding duration and weight gain age 0-2 years)
4. Energy output (Physical activity, screen time and marketing, and the built environment)
5. Energy intake (portion size, breakfast consumption, sugar-sweetened beverage intake, juice intake, fruit and vegetable consumption, total energy intake, eating outside the home, access to healthy food and food preferences)
6. Family and community (parental overweight, race and ethnicity, parenting behaviors, child care and policy and environmental change)

In addition to the review of each factor, the number and percentage of strategies (i.e., programs, activities, initiatives, interventions, etc.) identified through the Colorado Early Childhood Obesity Prevention Survey that addressed each factor was reported. After each factor and survey results were presented, the audience was polled using an Audience Response System (ARS). Each participant had the opportunity to respond to the questions described below, which related to importance, capacity, interest, and partnerships, for each of the 25 factors. The number of participants voting on each factor ranged from 27-37.

Following the presentation of the evidence and polling session, stakeholders participated in a basic voting activity to vote on which factors should be priority focuses for Colorado. In the next section, the results of the polling and voting activity are described.

B. Phase III ARS Polling and Voting Results

- a. From your perspective, how **important** is it to address this factor in early childhood obesity prevention (ECOP)? ($\geq 90\%$ response rate)
 1. Child care - 96%
 2. Pre-pregnancy BMI - 94%
 3. Screen time and marketing - 94%
 4. Physical activity - 93%
 5. Access to healthy food - 93%
 6. Policy - 93%
 7. Breastfeeding - 92%

The lowest ranking four factors were sleep, screen time and marketing, eating out and birth weight.

Table 26: Top 10 perceived most important factors to address, according to ARS polling.

For each top 10 factor for perceived importance, the table displays the percentage of stakeholders reporting: (1) Their organization currently addresses the factor, (2) Enough partners exist to address the factor, (3) Interest in addressing the factor, and (4) Sufficient capacity to address the factor.

<i>Factor</i>	<i>Important</i>	<i>Organization addresses</i>	<i>Enough Partners address</i>	<i>Interest in Addressing</i>	<i>Capacity to Address</i>
Childcare (n=27)	96%	68%	29%	83%	71%
Pre-preg BMI (n=33)	94%	68%	29%	60%	60%
Screen Time and Marketing (n=31)	94%	33%	6%	50%	31%
Physical Activity (n=30)	93%	70%	47%	87%	73%
Access to Healthy Food (n=29)	93%	66%	15%	69%	52%
Policy (n=28)	93%	50%	9%	62%	65%
Breastfeeding (n=37)	92%	83%	73%	84%	81%
Inf Feeding	89%	84%	67%	92%	87%
Race/Ethnicity	89%	62%	12%	78%	77%
Gest Weight Gain	89%	59%	51%	63%	78%

- b. My agency or organization **currently conducts activities** in alignment with the research on this factor ($\geq 80\%$ response rate).
1. Fruit and vegetable intake – 88%
 2. Infant feeding practices – 84%
 3. Breastfeeding – 83%
 4. Weight gain age 0-2 years – 80%

The lowest ranking four factors were sleep, screen time and marketing, eating out and birth weight.

Table 27: Top 10 factors for which stakeholder organizations are currently conducting activities and addressing from the ARS polling.

For each top 10 factor reported as currently addressed by stakeholder organizations, the table displays the percentage of stakeholders reporting: (1) Perceived high importance of the factor, (2) Interest in addressing the factor (3) Sufficient capacity to address the factor, and (4) Enough partners exist to address the factor.

<i>Factor</i>	<i>Organization Addresses</i>	<i>Important</i>	<i>Interest</i>	<i>Capacity</i>	<i>Enough Partners Address</i>
Fruit & Vegetable intake	88%	84%	82%	81%	71%
Infant Feeding	84%	89%	92%	87%	67%
Breastfeeding	83%	92%	84%	81%	73%
Weight Gain 0-2 years	80%	86%	82%	84%	43%
Sweetened Beverages	77%	86%	79%	79%	57%
Juice Intake	73%	61%	53%	69%	79%
Physical Activity	70%	93%	87%	73%	47%
Parenting Behaviors	68%	81%	75%	69%	13%
Childcare	68%	96%	83%	71%	29%
Pre-preg BMI	68%	94%	60%	60%	29%

- c. In my perspective, there are **enough partners** that currently address this factor ($\geq 70\%$ response rate).
1. Juice intake - 79%
 2. Breastfeeding - 73%
 3. Fruit and vegetable consumption - 71%
 4. Maternal smoking - 71%

The lowest ranking four factors were screen time and marketing, policy, race/ethnicity and parenting behaviors.

Table 28: Top 10 factors for which enough partners exist to address them from the ARS polling.

For each top 10 factor for which enough partners exist to address the factor, the table displays the percentage of stakeholders reporting: (1) Perceived high importance of the factor, (2) Interest in addressing the factor (3) Their organization currently addresses the factor, and (4) Sufficient capacity to address the factor.

<i>Factor</i>	<i>Enough Partners addressing</i>	<i>Important</i>	<i>Interest</i>	<i>Organization Addresses</i>	<i>Capacity to Address</i>
Juice	79%	61%	53%	73%	69%
Breastfeeding	73%	92%	84%	83%	81%
Fruit & Vegetable intake	71%	84%	82%	88%	81%
Smoking	71%	66%	39%	53%	62%
Energy Intake	67%	64%	59%	61%	70%
Infant Feeding	67%	89%	92%	67%	87%
Birth weight	65%	70%	49%	44%	48%
Breakfast	61%	68%	35%	52%	70%
Sweetened Beverages	57%	86%	79%	77%	79%
Gestational weight gain	51%	89%	63%	59%	78%

- d. What is your level of **interest** in addressing this factor ($\geq 80\%$ response rate)?
1. Infant feeding practices - 92%
 2. Physical activity - 87%
 3. Breastfeeding - 84%
 4. Child care - 83%
 5. Fruit and vegetable intake - 82%
 6. Weight gain age 0-2 years - 82%

The lowest ranking four factors were breakfast, smoking, eating out and built environment.

Table 29: Top 10 factors of greatest interest for their organization to address from the ARS polling. For each top 10 factor of greatest interest, the table displays the percentage of stakeholders reporting: (1) Perceived high importance of the factor, (2) Their organization currently addresses the factor, (3) Enough partners exist to address the factor, and (4) Sufficient capacity to address the factor.

<i>Factor</i>	<i>Interest</i>	<i>Important</i>	<i>Organization addresses</i>	<i>Enough Partners addressing</i>	<i>Capacity to Address</i>
Infant Feeding	92%	89%	84%	67%	87%
Physical Activity	87%	93%	70%	47%	73%
Breastfeeding	84%	92%	83%	73%	81%
Childcare	83%	96%	68%	29%	71%
Fruit & Vegetable intake	82%	84%	88%	71%	81%
Weight Gain 0-2 years	82%	86%	80%	43%	84%
Sweetened Beverages	79%	86%	77%	57%	79%
Race/Ethnicity	78%	89%	62%	12%	77%
Parenting Behaviors	75%	81%	68%	13%	69%
Food Preferences	71%	66%	50%	30%	62%

- e. What is your organization’s **capacity** in addressing this factor (≥ 80% response rate)?
1. Infant feeding practices – 87%
 2. Weight gain 0-2 years – 84%
 3. Fruit and vegetable intake – 81%
 4. Breastfeeding – 81%

The lowest ranking four factors were screen time and marketing, built environment, eating out and sleep.

Table 30: Top 10 factors for which sufficient capacity exists to address them, from the ARS polling.

For each top 10 factor for sufficient capacity , the table displays the percentage of stakeholders reporting: (1) Perceived high importance of the factor, (2) Interest in addressing the factor, (3) Their organization currently addresses the factor, and (4) Enough partners exist to address the factor.

<i>Factor</i>	<i>Capacity to Address</i>	<i>Important</i>	<i>Interest</i>	<i>Organization Addresses</i>	<i>Enough Partners addressing</i>
Infant Feeding	87%	89%	92%	67%	67%
Weight Gain 0-2 years	84%	86%	82%	80%	43%
Fruit & Vegetable intake	81%	84%	82%	88%	71%
Breastfeeding	81%	92%	84%	83%	73%
Sweetened Beverages	79%	86%	79%	77%	57%
Gestational weight gain	78%	89%	63%	59%	51%
Race/Ethnicity	77%	78%	89%	62%	12%
Physical Activity	73%	93%	87%	70%	47%
Childcare	71%	96%	83%	68%	29%
Energy Intake	70%	64%	59%	61%	67%

After learning about the evidence base and survey results for each of the 25 factors, each participant voted on which factors are the most important priorities on which Colorado should focus. Based on this vote, the following eight factors were identified to be the highest priority for Colorado:

- A. Child care (Level III Grade)
- B. Policy (Level IV Grade)
- C. Physical activity (Level II Grade)

- D. Parenting behaviors (Level III Grade)
- E. Access to healthy food (Level III Grade)
- F. Breastfeeding (Level II Grade)
- G. Gestational weight gain (Level I Grade)
- H. Weight gain age 0-2 years (Level I Grade)

As previously described, stakeholders were asked to respond about the importance of each of the factors presented. Then, they were asked which factors should be priorities for Colorado. Collective responses to these two questions were different. Pre-pregnancy BMI and screen time and marketing were identified as highly important during the evidence presentation and polling session; however, these factors were not in the top eight list of priority factors for Colorado. Factors that consistently emerged in perceived importance and the top eight priority list were child care, physical activity, access to healthy food, policy, and breastfeeding. Parenting behaviors, gestational weight gain, and weight gain age 0-2 years emerged as Colorado priorities, which were previously ranked lower for importance.

Phase III Group Discussion Results

Eight small discussion groups were formed as a result of this survey. The participants self-selected to join groups based on personal interest. Each group was assigned a specific factor on which to comment and discuss further. Each group was asked to answer seven questions. However, due to time constraints only the following five questions were answered. Because question No. 7 (No. 5 below) was identified as being the most important to answer, it was answered by all groups.

1. What did you hear about how this factor relates to early childhood obesity prevention (ECOP)?
2. How are organizations currently addressing this factor?
3. What are the gaps in addressing this factor?
4. What more can be done to address this factor?
5. What should CDPHE's role be in addressing this factor?

Following are some of these responses, specifically relating to the gaps in addressing the factor and what CDPHE's role should be.

A. Child Care

What are the gaps?

1. What is the technical support for child care providers in meeting Child Care Champions Best Practices (CCCBP) recommendations (they have the assessment and then what do they do?). Could we provide support to more child care centers along quality improvement continuum related to CCCBP?
2. CCCBP identifies need for improvement, but not how to make change - need technical assistance and resources to change. Could this technical assistance and training count towards the 16 hours/year requirement?
3. Inconsistency of recommendations from Child Care Health Consultants and licensing - need for consistency of recommendations.
4. Not all child care providers are licensed or not every provider has access to a Child Health Liaison (Boulder, El Paso, Pueblo, Summit, also has online Child Health Liaison - Boulder is leader).

5. Consultants are required to be in center for one hour a month – this is not enough time, need more time (feel they don't have time to talk about nutrition and physical activity too many other topics).
6. Curriculum gap for early childhood care programs regarding “physical activity” – have Mighty Moves, Funsicle Fitness, and Wiggle, Squiggle, Giggle and Learn.
7. Infrastructure is a gap – Colorado's unique physical environment.

What is CDPHE's role?

1. Develop relationships – connecting with the Child and Adult Care Food Program.
2. Giving best practices and referrals, working together by partnering with other groups – have all groups at the table for a broader scope
3. Licensing base for quality improvement – incorporation of best practices being able to infuse practices into Quality Improvement Rating System.
4. Quality improvement should evolve on a continuum using the best practices for nutrition, physical activity and healthy lifestyle (CCCBP).
5. There is great work being done. We want to know more and do more. Have more involvement as a test site – how can local communities learn more and be more involved?
6. Emerging leadership role is new and lots of people are looking for direction.
7. The emerging issue of ECOP – child care can look to CDPHE to provide new information and recommendations; Child Health Liaisons are better poised to address than Child Care Health Consultants but is part of the internal team.
8. Be the clearing house for consistent messaging – may not need to create the messaging but, make sure it is consistent and has common language for all who interface with child care.
9. There is some overlap between the Colorado Department of Public Health and Environment and Health and Human Services – Health and Human Services being more regulatory but, should be sharing the message as well.
10. Child care identifies with Health and Human Services/licensing rather than health – increased standards are improving.
11. Model policies for child care setting.
12. Translation to public affect final product – best practice.
13. Providing technical and training assistance to child care providers for education credits.
14. Providing consistent messages and communication for those who interface with child care.
15. Technical assistance with child care, Qualistar, point person to pull in expertise to make improvements and provide different types of resources.

B. Policy

What are the gaps?

1. Need to develop an idea package for Medicaid so we know what it might look like to offer a comprehensive nutrition package and obesity prevention package. Would like to have a way for the nutritionist to bill for services.
2. Need to fix the Food Stamp Program; it is severely underutilized. Think of policies to impact early childhood obesity.

What is CDPHE's role?

1. Key participant: Subject matter expertise that we can't get from anywhere else; easy partnership from other organizations.
2. LiveWell can bring lobbying resources. So much that CDPHE can do to inform the process.

3. What is CDPHE seeing are the issues? Then maybe others can get the opportunity to keep convening on issues.
4. Seen as the health experts for the issues. When the department speaks, community listens.
5. Work with others that are outside the department. Then others can move work forward in a different way to get the work done. LiveWell has adopted national convergence partnership; will set an agenda for what we will do over the next year. Policy blueprints...building on this work for early childhood for LiveWell to inform state policies and in the LiveWell Communities.
6. CDPHE role of also connecting agencies is now important. CDPHE is uniquely positioned to convene agencies to have these conversations. Convene all of these different sectors for all of this very work.
7. LiveWell will be doing blueprint work for early childhood. Determines priorities and work toward verifying efforts. New for Health Care Policy and Financing to take on health area. Key area of expertise. LiveWell to disseminate policy blueprint.

C. Physical Activity

What are the gaps?

1. Need partners - recreation centers, access (community safety).
2. When recommending to avoid sedentary activities, need to identify other ideas, such as strollers, bouncy chairs.
3. Little has been done in Colorado - bring in national experts for toddler physical activity, education and implementation.

What is CDPHE's role?

1. Ensuring transportation to public health sites
2. Community safety concern
3. Child care providers
4. Messages
5. Supportive licensing standards
6. Messaging around healthy development
7. Non-typical partners who have resources:
 - a. Recreation centers
 - b. Community safety experts
 - c. Training examples
 - d. No body of experts for physical activity
 - e. Is the focus avoidance of sedentary behaviors?
 - f. Increase occupational therapy for activity
 - g. Attach messages to gross motor, etc.
 - h. Less understanding of how to direct others on physical activity intervention/recommendations compared to nutrition
 - i. Built environment, active transportation
 - j. Set foundation in how body moves, including confidence (e.g., tummy time)

D. Parenting Behaviors

What are the gaps?

1. Need to make sure the messages we give relate to the parent (picky eating vs. mealtime).
2. Give parents real ideas about what they can do as a family - that's where the real success happens.

3. Find ways to make learning associated with child development.

What is CDPHE's role?

1. Do parenting classes on overall health and development.
2. Set groundwork for communication
3. Healthy eating and activity
4. Resource handouts at well-child checks
5. Don't message to take a class "parenting" because doing it wrong but, take it so you can grow and enjoy in your child's development (anticipatory guidance).
6. How to package/integrate teaching to get around barriers about how much time it takes (last thing on people's mind)?
7. Messaging - what are the right messages that various people can use consistently when talking to parents?
8. School districts, Head Start, WIC, extensions
9. Parenting is across the spectrum.

E. Access to Healthy Foods

What are the gaps?

1. 60% of population is under 20.
2. Lots of pregnant women are on Medicaid.
3. Food access is a population issue - how to focus on this in early childhood?
4. Need more education on shopping, cooking, food.
5. Food deserts - just because people get a check doesn't mean they know what to do with them.

What is CDPHE's role?

1. Lots of opportunity for cross-over and partnering
2. Need to hit some of the broader areas-does this become more important that we can start good parental habits in the household?
3. Mentality in Hispanic families is to introduce food early.
4. Need to start behaviors and thoughts early.
5. Latino families believe babies need to be fat to be healthy.
6. Need to address cultural issues.

F. Breastfeeding

What are the gaps?

1. Benefit not available for lactation consultation in Medicaid (military does cover this benefit)
2. Limited access to follow up after discharge
3. Breast pumps are not DME, insurance does not cover
4. Maintain connection to PN+ moves to HCPF
5. Child care - competent and supportive of breastfed baby and breast milk handling
6. Breastfeeding not marketed like other products - Marketing breast milk
7. Not a lot of experts in lactation - lack of IBCLCs

What is CDPHE's role?

1. Writing and enforcing policies
2. Providing evidence base to change policy and Medicaid coverage
3. Involvement in development of health insurance exchange

4. Working with health insurance companies to change benefit policies and create incentives
5. Convince employers that this should be a component of insurance plan
6. Create/fold into work place wellness programs
7. Health care reform exchange include in the basic package
8. Child care staff as BF support

G. Gestational Weight Gain

What are the gaps?

1. Health care providers don't have an easy way to refer to programs (1-800#).
2. Need 5 bullets or less in messaging on what to say and not what to say.
3. Medical home model can improve connectedness of partners in community on this issue.
4. Need resources, not just programs/agencies - tools to identify partners and for providers to give advice and counsel.
5. Health plan involvement in covering counseling as a benefit - supporting reimbursement for this issue
6. Self-efficiency of client education (cooking, shopping, etc.,)

What is CDPHE's role?

1. Have it as a goal.
2. Keep locals involved around the state.
3. Provide resources to direct line resources.
4. Coordinate all efforts working on this - environmental scan about what's going on so everyone knows what everyone else is addressing to create the platform.
5. Providers are challenged to manage all this and their programs - How do we make it simpler for providers and other programs?
6. We don't have to create the evidence - Guidelines for prenatal wt gain helps direct structure - adjunct to adult/child obesity guidelines with Health TeamWorks
7. Keeping local providers informed across the state not just the local area.

H. Weight gain age 0-2 years

What are the gaps?

1. Consistency across providers issue - early interventions
2. Under-recognition of this problem
3. Look holistically - reducing stress in families result in obesity
4. Addressing cognitive/emotional development
5. Agree on consistent message (Providers, WIC, Child care providers)

What is CDPHE's role?

1. Related to WIC: Training, education, training on how to read growth grids, when excessive weight gain is identified how is it flagged, how to address it with families in the holistic way suggested above. Not only is it an issue, but how do we address it with families.
2. Address sleep...how to help child self-soothe, so you aren't feeding them to sleep. Decreasing stress of day care person, mother. Included in that training as a method of getting the message across.
3. Need training. Education. Decreasing sedentary behaviors strollers, bouncers... That message could be included with training.

4. CDPHE could participate in the nutrition and sedentary behavior reduction in child care specifically for this weight gain 0-2 age period - same training for nutrition and physical activity for everyone
5. Continued work on smoking
6. Breastfeeding hotline huge role of CDPHE
7. Use the healthy gestational weight gain information promoted by the CDPHE to learn from in messages used in other settings
8. WIC info doesn't match with the doctor's information. WIC sees it often before the Dr. is ready to address it.
9. Agree on consistent messages between CDPHE, health care sector and child care providers.
10. Goals, messages, action items that are consistent among all of the sectors - And agree on the need for early intervention.

Following the small group discussions, the entire group reconvened, and the following questions were discussed.

A. What was not covered today, that needs future conversation?

1. We aren't thinking about health reform and opportunities that might exist with this.
2. Consistent messaging, connecting, prioritizing, but who is your obesity prevention specialist person. There should be someone there to coordinate. A visible position around early childhood obesity prevention. Who is that main contact? Someone to focus the efforts and move it forward.
3. We didn't hear about what we are all doing? As we move forward, keep hearing about what we are all doing. Helps keep the rest of us informed of what we are doing? Create a platform for sharing each other's efforts and interventions.
4. Come back on a regular basis and have others present what they are doing. Stay connected. We all are working throughout the state. Share experiences, projects, etc.
5. Identify how to keep the public health focus without losing the individual work that is happening.
6. Social Determinants of Health Equity are missing. Who are those partners that are in those areas?

B. Role for CDPHE

1. Ensure transportation options to local public health sites.
2. A person to coordinate ECOP efforts
3. Employee wellness
4. Start with prenatal messages.
5. Ensure licensing standards are supportive.
6. Consistent messaging
7. Role in child care policy development - writing and enforcing policies
8. Training and education
9. Coordinating efforts and keeping state, local and community partners informed
10. Subject matter experts - coordination of information and what is done with the information (related to early childhood obesity in the state)
11. Cross-over and partnering of a broader advisory group

C. Did we meet our objectives?

1. Did you learn something new? Response: Gaps in the research. Information of what wasn't out there was alarming. Content expertise in the room was really thoughtful in responses about the research.

D. What are some concrete examples of what you might do when you get back of the office?

1. Large list of people to call.
2. Fact sheets for Medicaid and health organizations.

E. What are some ideas for next steps?

- a. Coalition of this group.
- b. LiveWell Colorado's role. LiveWell to start outlining the BluePrint for this area in 2012.
- c. CDPHE to bring right state people to table, all else to help bring people to table.
- d. Many conferences coming up. How can we connect to make them possible?
- e. Will get out contact list: How do we keep moving forward?

CONCLUSION

Good health in the early years of a child's life provides a foundation for a healthy lifestyle and academic success throughout life. Childhood obesity threatens long-term health and poses a significant challenge to families and those who care for young children. It is becoming clear that efforts to combat childhood obesity must focus on the earliest stages of life with evidence-based interventions and components that address root cause.

This report summarizes the evidence supporting factors associated with early childhood obesity; describes statewide efforts already underway; identifies gaps in addressing factors, levels of influence that impact health and key areas of root cause; summarizes areas of priorities determined by key stakeholders; and provides recommendations for improved coordination and next steps for Colorado's early childhood obesity efforts.

Phase I involved a review of best practices and current literature to identify the evidence base and level for risk factors, recommendations and guidelines related to early childhood obesity. The analysis uncovered a large, dynamic body of evidence providing a solid foundation for future efforts. The levels of evidence for early childhood obesity prevention factors are strongest for the preconception, prenatal and birth through age two years cohorts.

Phase II involved a survey of activities, initiatives, programs and interventions that promote physical activity and healthy eating during early childhood. Many promising efforts were identified; but the survey suggests that overall, many of these efforts may be focused on factors with low levels of evidence. To improve and target childhood obesity prevention efforts, we must now share the evidence we've gathered, identify opportunities and gaps in current initiatives, focus on a child's earliest years and develop integrated prevention models that include social, community and environmental factors.

Phase III involved a stakeholder meeting to share the findings of the literature review and scan of Colorado prevention efforts in early childhood, and discuss future priorities for Colorado and the most appropriate role for the Colorado Department of Public Health and Environment in this effort.

Stakeholders prioritized the following factors for Colorado: Child care, policy, physical activity, parenting behaviors, access to healthy food, breastfeeding, gestational weight gain and weight gain age 0-2 years. Common stakeholder themes for the role of the Colorado Department of Public Health and Environment were to serve as the subject matter expert, promote consistent messaging, support healthy child care licensing standards, prioritize early childhood obesity prevention, designate a point person to coordinate efforts and support healthy policies.

NEXT STEPS

Obesity has been selected as one of Colorado's 10 Winnable Battles. These 10 Winnable Battles provide the greatest opportunities for ensuring the health of Colorado's citizens and visitors, and the improvement and protection of Colorado's environment. Furthermore, the prevention of obesity among all children, age birth to 5 years has been identified as a Maternal and Child Health priority for Colorado.

Based upon the vast body of evidence, information and stakeholder input obtained during this project, the leadership and staff of the Colorado Department of Public Health and Environment (CDPHE), Prevention Services Division established the general direction and role of the Department for early childhood obesity prevention. The current focus of CDPHE's work related to early childhood obesity prevention is:

- Identify and implement targeted interventions in CDPHE community-based efforts
- Align early childhood obesity prevention activities with internal programs
- Prioritize factors and provide content for effective and consistent messaging
- Support and expand breastfeeding interventions
- Strategically partner with external organizations
- Collect, analyze and disseminate evidence base for early childhood obesity prevention
- Collect, analyze and disseminate data on early childhood obesity prevention

The Colorado Department of Public Health and Environment has also created and hired a full-time position dedicated to early childhood obesity prevention to lead the efforts described above. The leadership team and staff at CDPHE look forward to working collaboratively across Colorado to prevent and reduce early childhood obesity and ensure long and healthy lives for future generations of Coloradans.

Participants of Phase III Stakeholder Meeting

Marisa Allen
Director of Evaluation
Colorado Health Foundation

Linda Archer
Maternal Wellness Project Specialist
CDPHE

Carsten Baumann
Director of External Evaluations
CDPHE

Jill Bednarek
CDPHE

Laura Bellows, PhD, RD
Assistant Professor & Extension Specialist
Colorado State University

Richard Boles, M.D.
University of Colorado Denver

Mandy Bukulski
CDPHE

Patricia Daniluk
Director of Nutrition
CDPHE

Richard Delaney
HCPF

Jennifer Dellaport
Breastfeeding Coordinator
CDPHE

Colleen Domer
Consultant
CFPHE

Nancy Donnelly
Program Assistant
CDPHE

Cynthia Dormer, PhD, RD
Assistant Professor
Metropolitan State College of Denver

Heather Dubiel,
Early Childhood Initiatives Director
CDPHE

Heidi Fritz
Nutrition Manager
Tri-County Health Department

Amanda Gersabeck, RD
Public Health Dietitian
Tri-County Health Department.

Geneva Hallett
ECE Specialist
Booz | Allen | Hamilton

Angela Hansen
WIC Nutrition Consultant
CDPHE

Jodi Hardin
Early Childhood Systems Specialist
Office of the Lt. Governor

Sandra Hoyt Stenmark, M.D.
Physician Lead of Colorado Pediatric
Cardiovascular Health
Kaiser Permanente

Rachel Hutson
Child, Adolescent and School Health Unit
Director
CDPHE

Lynn Ireland
WIC Nutrition Coordinator
CDPHE

Susan Johnson, PhD
University of Colorado Denver

Kyle Legleiter
Physical Activity Coordinator
CDPHE

Kristin McDermott
CDPHE

Tracy Miller
Child and Adult Food Program
CDPHE

Khanh Nguyen
Senior Program Officer

Colorado Health Foundation

Shana Patterson
Nutrition Coordinator
CDPHE

Linda Reiner
Director of Planning and Evaluation
Caring for Colorado Foundation

Gina Robinson
HCPF

Linda Satkowiak
Qualistar

Sara Schwankl
Project Manager
Health Team Work

Sarah Scully
Boulder County Public Health

Brenda Sears
Colorado Health Foundation

Ruth Stemler
State Director
Share Our Strength

Pat Stiles
Nutrition Consultant/WIC Supervisor
Mesa County Health Department

Kim Strenge
Boulder County Public Health
Child Health Promotion Nurse

Lynne Torpy
CDPHE

Karen Trietweiler
Center for Healthy Families and Communities
Director
CDPHE

Jason Vahling
CDPHE

Lisa Walvoord
VP of Policy
LiveWell Colorado

Lisa Waugh
Health Initiatives Policy Specialist
HCPF

Jana Wright
Director of Health Literacy and Education
Partnerships for Healthy Communities

REFERENCES

- Agras WS, Hammer LD, McNicholas F, Kraemer HC. Risk factors for childhood overweight: a prospective study from birth to 9.5 years. *J Pediatr*. 2004 Jul;145(1):20-5. Erratum in: *J Pediatr*. 2004 Sep;145(3):424.
- Aktaş Arnas Y. The effects of television food advertisement on children's food purchasing requests. *Pediatr Int*. 2006;48(2):138-45.
- Albertson AM, Anderson GH, Crockett SJ, Goebel MT. Ready-to-eat cereal consumption: its relationship with BMI and nutrient intake of children aged 4 to 12 years. *J Am Diet Assoc*. 2003 Dec;103(12):1613-9.
- Alexy U, Sichert-Hellert W, Kersting M, Manz F, Schoch G. Fruit juice consumption and the prevalence of obesity and short stature in German preschool children: results of the DONALD study. *J Ped Gastroenterology & Nutr* 1999; 29: 343-249.
- American Academy of Pediatrics (AAP). Prevention of pediatric overweight and obesity. *Pediatrics*. 2003; 112 (2): 424-30.
- American Academy of Pediatrics (AAP). Committee on Environmental Health. The built environment: Designing communities to promote physical activity in children. *Pediatrics* 2009;123: 1591-1598.
- American Dietetic Association.(ADA) Position of the American Dietetic Association: benchmarks for nutrition programs in child care settings. *J Am Diet Assoc*. 2005 Jun;105(6):979-86.
- American Dietetic Association (ADA). Position of the American Dietetic Association: individual-, family-, school-, and community-based interventions for pediatric overweight. *J Am Diet Assoc*. 2006 Jun;106(6):925-45.
- American Dietetic Association (ADA). Position of the American Dietetic Association: Dietary guidance for healthy children ages 2 to 11 years. *J Am Diet Assoc*. 2004; 104: 660-677.
- Amir LH, Donath S. A systematic review of maternal obesity and breastfeeding intention, initiation and duration. *BMC Pregnancy Childbirth*. 2007;4:7:9.
- Anderson SE, Whitaker RC. Prevalence of obesity among US preschool children in different racial and ethnic groups. *Arch Pediatr Adolesc Med*. 2009 Apr;163(4):344-8.
- Anzman SL, Rollins BY, Birch LL Parental influence on children's early eating environments and obesity risk: implications for prevention. *Int J Obes (Lond)*. 2010 Mar 2
- Arenz S, Ruckerl R, Koletzko B, von Kries R. (Breast feeding and childhood obesity – a systematic review. *Int J Obes Relat Metab Disord* 2004; 28:1247-1256).
- Armstrong J, Reilly JJ; Child Health Information Team. Breastfeeding and lowering the risk of childhood obesity. *Lancet*. 2002 Jun 8;359(9322):2003-4.
- Atkin Lisa-Marie, Davies PS. Diet composition and body composition in preschool children. *Am J Clin Nutr* 2000; 72: 15-21.
- Baird J, Fisher D, Lucas P, Kleijnen J, Roberts H, Law C. Being big or growing fast: systematic review of size and growth in infancy and later obesity. *BMJ*. 2005;331(7522):929
- Baker JL, Michaelson KF, Rasmussen KM, Sorensen TI. Maternal prepregnant body mass index, duration of breastfeeding, and timing of complementary food introduction are associated with infant weight gain. *Am J Clin Nutr*. 2004; 80: 1579-88.
- Baranowski T, Thompson WO, DuRant RH, Baranowski J, Puhl J. Observations on physical activity in physical locations: Age, gender, ethnicity, and month effects. *Res Q Exerc Sport*. 1993; 64 (2): 127-33.
- Basch CE, Zybert P, Shea S. 5-A-Day: dietary behavior and the fruit and vegetables intake of Latino children. *Am J Public Health*. 1994; 84 (5): 814-8.
- Baughcum AE, Powers SW, Johnson SB, Chamberlin LA, Deeks CM, Jain A, Whitaker RC. Maternal feeding practices and beliefs and their relationships to overweight in early childhood. *J Dev Behav Pediatr*. 2001 Dec;22(6):391-408.
- Bayer O, Rosario AS, Wabitsch M, von Kries R. Sleep duration and obesity in children: Is the association dependedn on age and choice of the outcome parameter? *Sleep*. 2009 Sep 1;32(9):1183-9.
- Beauchamp, GK, Mennella, JA. Early Flavor Learning and Its Impact on Later Feeding Behavior. *J Pediatr Gastroenterol Nutr*. 2009;48: S25-S30.
- Beauchamp GK, Cowart BJ, Mennella JA, Marsh RR. Infant salt taste: developmental, methodological, and contextual factors. *Dev Psychobiol*. 1994;27(6):353-65
- Bellows L, Anderson J, Gould SM, Auld G. marketing campaign for obesity prevention in preschoolers. *J Community Health*. 2008 Jun;33(3):169-78.
- Benjamin SE, Cradock A, Walker EM, Slining M, Gillman MW. Obesity prevention in child care: a review of U.S. state regulations. *BMC Public Health*. 2008 May 30;8:188.
- Benjamin SE, Copeland KA, Cradock A, Neelon B, Walker E, Slining MM, Gillman MW. Menus in child care: a comparison of state regulations with national standards. *J Am Diet Assoc*. 2009 Jan;109 (1):109-15.
- Benjamin SE, Neelon B, Ball SC, Bangdiwala SI, Ammerman AS, Ward DS. Reliability and validity of a nutrition and physical activity environmental self-assessment for child care. *Int J Behav Nutr Phys Act*. 2007 Jul 5;4:29.
- Benjamin SE, Rifas-Shiman SL, Taveras EM, Haines J, Finkelstein J, Kleinman K, Gillman MW. Early child care and adiposity at ages 1 and 3 years. *Pediatrics*. 2009; 124(2):555-62.
- Berkowitz RI, Stallings VA, Maislin G, Stunkard AJ. Growth of children at high risk of obesity during the first 6 y of life: implications for prevention. *Am J Clin Nutr*. 2005; 81: 140-6.
- Birch LL. Development of food preferences. *Annual Review of Nutrition*.1999; 19: 41-62.

- Birch LL, Davison KK. Family environmental factors influencing the developing behavioral controls of food intake and childhood overweight. *Pediatr Clin North Am.* 2001; 48 (4): 893-907.
- Birch LL, Marlin DW. I don't like it; I never tried it: Effects of exposure on two-year-old children's food preferences. *Appetite.* 1982; 3 (4): 353-60.
- Borzekowski DL, Robinson TN. The 30-second effect: An experiment revealing the impact of television viewing on food preference of preschoolers. *J Am Diet Assoc.* 2001; 101: 42-6.
- Botton J, Heude B, Maccario J, Ducimetiere P, Charles MA. Postnatal weight and height growth velocities at different ages between birth and 5 y and body composition in adolescent boys and girls. *Am J Clin Nutr.* 2008; 87:1760-8.
- Brophy S, Cooksey R, Gravenor MB, Mistry R, Thomas NE, Lyons RA, Williams R. Risk factors for childhood obesity at age 5: Analysis of the Millennium Cohort Study. *BMC Public Health.* 2009 Dec 16;9(1):467
- Brownson RC, Hoehner CM, Day K, Forsyth A, Sallis JF. Measuring the built environment for physical activity: state of the science. *Am J Prev Med.* 2009 Apr;36(4 Suppl):S99-123
- Butte NF. Impact of infant feeding practices on childhood obesity. *J Nutr.* 2009 Feb;139(2):412S-6S.
- Campbell K, Hesketh K, Crawford D, Salmon J, Ball K, McCallum Z. The Infant Feeding Activity and Nutrition Trial (INFANT) an early intervention to prevent childhood obesity: cluster-randomised controlled trial. *BMC Public Health.* 2008 Mar 31;8:103.
- Catalano PM, Farrell K, Thomas A, Huston-Presley L, Mencin P, de Mouzon SH, Amini SB. Perinatal risk factors for childhood obesity and metabolic dysregulation. *Am J Clin Nutr.* 2009 Nov;90(5):1303-13.
- Catalano PM, Ehrenberg HM. The short- and long-term implications of maternal obesity on the mother and her offspring. *BJOG.* 2006;113(10):1126-33.
- Centers for Disease Control and Prevention. *Breastfeeding among U.S. children born 1990--2005, CDC National Immunization Survey.*
- Centers for Disease Control and Prevention (CDC). Obesity prevalence among low-income, preschool-aged children - United States, 1998-2008. *MMWR Morb Mortal Wkly Rep.* 2009 Jul 24;58(28):769-73.
- Centers for Disease Control and Prevention National Immunization Survey, Provisional Data, 2006 births. http://www.cdc.gov/breastfeeding/data/NIS_data/index.htm.
- Claesson IM, Sydsjö G, Brynhildsen J, Cedergren M, Jeppsson A, Nyström F, Sydsjö A, Josefsson A. Weight gain restriction for obese pregnant women: a case-control intervention study. *BJOG.* 2008 Jan;115(1):44-50.
- Collins CE, Warren J, Neve M, McCoy P, Stokes B. Measuring effectiveness of dietetic interventions in child obesity: a systematic review of randomized trials. *Arch Pediatr Adolesc Med* 2006;160:906-922.
- Coon KA, Tucker KL. Television and children's consumption patterns. A review of the literature. *Minerva Pediatr* 2002;54:423-436.
- Crawford PB, Story M, Wang MC, Ritchie LD, Sabry ZI. Ethnic issues in the epidemiology of childhood obesity. *Pediatr Clin North Am.* 2001 Aug;48(4):855-78.
- Danielzik S, Czerwinski-Mast M, Langnase K, Dilba B, Müller MJ. Parental overweight, socioeconomic status and high birth weight are the major determinants of overweight and obesity in 5-7 y-old children: baseline data of the Kiel Obesity Prevention Study (KOPS). *Int J Obes Relat Metab Disord.* 2004 Nov;28(11):1494-502.
- Davis K, Christoffel KK. Obesity in preschool and school-age children. Treatment early and often may be best. *Arch Pediatr Adolesc Med.* 1994 Dec; 148(12): 1257-61.
- Davis MM, Gance-Cleveland BG, Hassink S, Johnson R, Paradis G, Resnicow K. Recommendations for prevention of childhood obesity. *Pediatrics.* 2007; 120 (Suppl 4): S229-53.
- Davison KK, Birch LL. Child and parent characteristics as predictors of change in girls' body mass index. *Int J Obes* 2001; 25: 1,834-1,842.
- Deheeger M, Akrouf M, Bellisle F, Rossignol C, Rolland-Cachera MF. Individual patterns of food intake development in children: A 10 months to 8 years of age follow-up study of nutrition and growth. *Physiol Behav.* 1996; 59: 403-407.
- Dennison BA, Boyer PS. Risk evaluation in pediatric practice aids in prevention of childhood overweight. *Pediatr Ann.* 2004 Jan;33(1):25-30
- Dennison BA, Rockwell HL, Nichols MJ, Jenkins P. Children's growth parameters vary by type of fruit juice consumption. *J Am College Nutr.* 1999; 18: 346-352
- Dennison BA, Rockwell HL, Baker SL. Excess fruit juice consumption by preschool-aged children is associated with short stature and obesity. *Pediatrics,* 1997; 99: 15-22.
- Dennison BA, Edmunds LS, Stratton HH, Pruzek RM. Rapid infant weight gain predicts childhood overweight. *Obesity.* March 2006; 14(3): 491-499.
- Dennison BA, Erb Ta, Jenkins PL. Television viewing and television in bedroom associated with overweight risk among low-income preschool children. *Pediatrics.* 2002; 109(6): 1028-1035.
- Dietz WH. Periods of risk in childhood for the development of adult obesity--what do we need to learn? *J Nutr.* 1997 Sep;127(9):1884S-1886S.
- Division of Nutrition, Physical Activity and Obesity, National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), 2009.
- D'Onise K, Lynch JW, Sawyer MG, McDermott RA. Can preschool improve child health outcomes? A systematic review. *Soc Sci Med* 2010 Feb 12
- Drucker RR, Hammer LD, Agras WS, Bryson S. Can mothers influence their child's eating behavior? *J Dev Behav Pediatr.* 1999 Apr;20(2):88-92.

- Drummond RL, Staten LK, Sanford MR, Davidson CL, Magda Ciocazan M, Khor KN, Kaplan F. A pebble in the pond: the ripple effect of an obesity prevention intervention targeting the child care environment. *Health Promot Pract*. 2009 Apr;10(2 Suppl):156S-167S.
- Dubois L, Girard M. Early determinants of overweight at 4.5 years in a population-based longitudinal study. *Int J Obes (Lond)*. 2006 Apr;30(4):610-7.
- Dubois L, Girard M, Potvin Kent M, Farmer A, Tatone-Tokuda F. Breakfast skipping is associated with differences in meal patterns, macronutrient intakes and overweight among pre-school children. *Public Health Nutr*. 2009; 12(1):19-28.
- Dubois L, Farmer A, Girard M, Peterson K, Tatone-Tokuda F. Problem eating behaviors related to social factors and body weight in preschool children: A longitudinal study. *Int J Behav Nutr Phys Act*. 2007;4:9.
- Dwyer GM, Higgs J, Hardy LL, Baur LA. What do parents and preschool staff tell us about young children's physical activity: a qualitative study. *Int J Behav Nutr Phys Act*. 2008 Dec 11;5:66
- Eck LH, Klesges RC, et al. Children at familial risk for obesity: an examination of dietary intake, physical activity and weight status. *International Journal of Obesity* 1992; 16: 71-78.
- Eposito L, Fisher JO, Mennella JA, Hoelscher DM, Huang TT. Developmental perspectives on nutrition and obesity from gestation to adolescence. *Prev Chronic Dis*. 2009 Jul;6(3):A94. Epub 2009 Jun 15.
- Epstein LH, Wing RR, Valoski A. Childhood obesity. *Pediatr Clin North Am*. 1985; 32:363-79.
- Estabrooks PA, Lee RE, Gyurcsik NC. Resources for physical activity participation: does availability and accessibility differ by neighborhood socioeconomic status? *Ann Behav Med*. 2003; 25(2):100-4.
- Faith MS, Berkowitz RI, Stallings VA, Kerns J, Storey M, Stunkard AJ. Parental Feeding Attitudes and Styles and Child Body Mass Index: Prospective Analysis of a Gene-Environment Interaction. *Pediatrics*. 2004; 114 (4): e429-e436.
- Faith MS, Scanlon Ks, Birch LL, Francis LA, Sherry B. Parent-child feeding strategies and their relationships to child eating and weight status. *Obes Res*. 2004; 12 (11): 1711-22.
- Farooqi IS, O'Rahilly S. Genetic factors in human obesity. *Obesity Reviews* 2007; 8 (Suppl 1): 37-40.
- Fein SB, Grummer-Strawn LM, Raju TNK. Infant feeding and care practices in the United States: Results from the infant feeding practices study II. *Pediatrics*. 2008; 122: S25-S27.
- Fisher JO, Birch LL, Smiciklas-Wright H, Picciano MF. Breastfeeding through the first year predicts maternal control in feeding and subsequent toddler energy intakes. *J Am Diet Assoc*. 2000; 100(6): 641-6.
- Fisher JO. Effects of Age on Children's Intake of Large and Self-selected Food Portions. *Obesity*. 2007;15:403-412.
- Fisher JO, Birch LL. Restricting access to foods and children's eating. *Appetite*. 1999; 32 (3): 405-19.
- Fisher JO, Mitchell DC, Smiciklas-Wright H, Birch LL. Parental influences on young girls' fruit and vegetable, micronutrient, and fat intakes. *J Am Diet Assoc*. 2002; 102 (1): 58-64.
- Fitzgibbon ML, Stolley MR. Environmental changes may be needed for prevention of overweight in minority children. *Pediatr Ann*. 2004; 33(1): 45-9.
- Fleischhacker S, Cason KL, Achterberg C. "You had peas today?": a pilot study comparing a Head Start child-care center's menu with the actual food served. *J Am Diet Assoc*. 2006 Feb;106(2):277-80.
- Flynn MA, McNeil DA, Maloff B, Mutasingwa D, Wu M, Ford C, Tough SC. Reducing obesity and related chronic disease risk in children and youth: a synthesis of evidence with 'best practice' recommendations. *Obes Rev*. 2006 Feb;7 Suppl 1:7-66.
- Forbes GB. Body fat content influences the body composition response to nutrition and exercise. *Ann N Y Acad Sci*. 2000; 904: 359 - 365.
- Forestell CA, Mennella JA. Early Determinants of Fruit and Vegetable Acceptance. *Pediatrics*. 2007; 120(6): 1247-1254.
- Foster GD, Makris AP, Bailer BA. Behavioral treatment of obesity. *Am J Clin Nutr*. 2005;82 (suppl 1): 230S-235S.
- Fox MK, Pac S, Devaney B, Jankowski L. Feeding infants and toddlers study: What foods are infants and toddlers eating? *J Am Diet Assoc*. 2004; 104 (Suppl 1): S22-30.
- Fox MK, Devaney B, Reidy K, Razafindrakoto C, Ziegler P. Relationship between portion size and energy intake among infants and toddlers: evidence of self-regulation. *J Am Diet Assoc*. 2006;106:S77-S83.
- Francis LA, Hofer SM, Birch LL. Predictors of maternal and child characteristics. *Appetite* 2001; 37: 231-243.
- Francis LA, Birch LL. Does eating during television viewing affect preschool children's intake? *J Am Diet Assoc*. 2006;106:598-600
- Francis LA, Hofer SM, Birch LL. Predictors of maternal child-feeding style: maternal and child characteristics. *Appetite*. 2001; 37 (3): 231-43.
- Freedman DS, Khan LK, Serdula MK, Ogden CL, Dietz WH. Racial and ethnic differences in secular trends for childhood BMI, weight, and height. *Obesity*. 2006 Feb;14(2):301-8.
- Gable S, Chang Y, Krull JL. Television watching and frequency of family meals are predictive of overweight onset and persistence in a national sample of school-aged children. *J Am Diet Assoc*. 2007 Jan;107(1):53-61.
- Gardner DS, Hosking J, Metcalf BS, Jeffery AN, Voss LD, Wilkin TJ. Contribution of early weight gain to childhood overweight and metabolic health: a longitudinal study (Early Bird 36). *Pediatrics*. 2009; 123(1): e67-73.
- Gibson LJ, Peto J, Warren JM, dos Santos Silva I. Lack of evidence on diets for obesity for children: a systematic review. *Int J Epidemiol* 2006;35:1544-1552.
- Gibson S. Sugar-sweetened soft drinks and obesity: a systematic review of the evidence from observational studies and interventions. *Nutr Res Rev*. 2008 Dec;21(2):134-47.

- Gillman MW, Rifas-Shiman SL, Kleinman K, Oken E, Rich-Edwards JW, Taveras EM. Developmental origins of childhood overweight: potential public health impact. *Obesity* . 2008;16(7):1651-6.
- Gillman MW, Rifas-Shiman SL, Berkey CS, Field AE, Colditz GA. Maternal gestational diabetes, birth weight, and adolescent obesity. *Pediatrics*. 2003; 111:e221- e226.
- Gross RS, Fierman AH, Mendelsohn AL, Chiasson MA, Rosenberg TJ, Scheinmann R, Messito MJ. Maternal Perceptions of Infant Hunger, Satiety, and Pressuring Feeding Styles in an Urban Latina WIC Population. *Acad Pediatr*. 2010; 10 (1): 29-35.
- Grow HM, Saelens BE, Kerr J, Durant NH, Norman GJ, Sallis JF. Where are youth active? Roles of proximity, active transport, and built environment. *Med Sci Sports Exerc*. 2008; 40(12): 2071-9.
- Grummer-Strawn LM, Mei Z; Centers for Disease Control and Prevention Pediatric Nutrition Surveillance System. Does breastfeeding protect against pediatric overweight? Analysis of longitudinal data from the Centers for Disease Control and Prevention Pediatric Nutrition Surveillance System. *Pediatrics*. 2004 Feb;113(2):e81-6.
- Grundy SM. Multifactorial causation of obesity: implications for prevention. *Am J Clin Nutr*. 1998; 67 (suppl 3): 563S-572S.
- Guendelman S, Kosa JL, Pearl M, Graham S, Goodman J, Kharrazi M. Juggling Work and Breastfeeding: Effects of Maternity Leave and Occupational Characteristics. *Pediatrics*. 2009 Jan;123(1):e38-46
- Haire-Joshu D, Elliott MB, Caito NM, Hessler K, Nanney MS, Hale N, Boehmer TK, Kreuter M, Brownson RC. High 5 for Kids: the impact of a home visiting program on fruit and vegetable intake of parents and their preschool children. *Prev Med*. 2008; 47(1): 77-82.
- Handy SL, Boarnet MG, Ewing R, Killingsworth RE. How the built environment affects physical activity: Views from urban planning. *Am J of Prev Med*. 2002; 23(2): 64-73.
- Hanley AJG, Harris SB, Gittelsohn J, Wolever TMS, Saksvig B, Zinman B. Overweight among children and adolescents in a Native Canadian community: prevalence and associated factors. *Am J Clin Nutr*, 2000; 71: 693-700.
- Harder T, Bergmann R, Kallischnigg G, Plagemann A. Duration of breastfeeding and risk of overweight: a meta-analyses. *Am J Epidemiol* 2005; 162:397-403.
- Hayne CL, Moran PA, Ford MM. Regulating environments to reduce obesity. *J Public Health Policy*. 2004;25(3-4):391-407
- Herrick H, Miles DR, Sullivan C. Does Breastfeeding Reduce the Risk of Child Overweight in North Carolina? *SCHS Studies*. North Carolina State Center for Health Statistics. Study No. 164; October 2010.
- Herring SJ, Oken E, Haines J, Rich-Edwards JW, Rifas-Shiman SL, Kleinman ScD KP, Gillman MW. Misperceived pre-pregnancy body weight status predicts excessive gestational weight gain: findings from a US cohort study. *BMC Pregnancy Childbirth*. 2008;8:54.
- Herzog E. Fit WIC: Programs to prevent childhood overweight in your community. *Special Nutrition Program Report Series, WIC-05-FW*. U. S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation, Alexandria, VA. 2005; 78.
- Hinkley T, Crawford D, Salmon J, Okely AD, Hesketh K. Preschool children and physical activity: a review of correlates. *Am J Prev Med*. 2008;34(5):435-441.
- Hitze B, Bosity-Westphal A, Plachta-Danielzik S, Bielfeldt F, Hermanussen M, Müller MJ. Long-term effects of rapid weight gain in children, adolescents and young adults with appropriate birth weight for gestational age: the Kiel obesity prevention study. *Acta Paediatr*. 2009.
- Huang JS, Lee TA, Lu MC. Prenatal programming of childhood overweight and obesity. *Matern Child Health J*. 2007 Sep;11(5):461-73.
- Huus K, Ludvigsson JF, Enskär K, Ludvigsson J. Exclusive breastfeeding of Swedish children and its possible influence on the development of obesity: a prospective cohort study. *BMC Pediatr*. 2008 Oct 9;8:42
- Institute of Medicine (IOM). *Preventing Childhood Obesity-Health in the Balance*. The National Academies Press, Washington, DC; 2005.
- Institute of Medicine (IOM). *Weight Gain During Pregnancy: Reexamining the Guidelines*. National Academy of Science. May 2009. Food and Nutrition Board.
- Institute of Medicine (IOM) **Working Families and Growing Kids: Caring for Children and Adolescents**. 2003; Board on Children, Youth and Families.
- Jackson DM, Djafarian K, Stewart J, Speakman JR. Increased television viewing is associated with elevated body fatness but not with lower total energy expenditure in children. *Am J Clin Nutr*. 2009; 89(4): 1031-6.
- Jakicic JM. The role of physical activity in prevention and treatment. *J Nutr*. 2002; 132: 3826S-3829S.
- James DC, Lessen R. Position of the American Dietetic Association: promoting and supporting breastfeeding. *J Am Diet Assoc*. 2009 Nov;109(11):1926-42
- Janz KF, Levy SM, Burns TL, Torner JC, Willing MC, Warren JJ. Fatness, physical activity, and television viewing in children during the adiposity rebound period: The Iowa bone development study. *Preventative Medicine* 2002;35:563-71
- Jiang F, Zhu S, Yan C, Jin X, Bandla H, Shen X. Sleep and obesity in preschool children. *J Pediatr*. 2009; 154 (6): 814-8.
- Johnson DB, Birkett D, Evens C, Pickering S. Statewide intervention to reduce television viewing in WIC clients and staff. *Am J Health Promot*. 2005 Jul-Aug;19(6):418-21
- Kaczynski AT, Henderson KA. Parks and recreation settings and active living: a review of associations with physical activity function and intensity. *J Phys Act Health*. 2008;5(4):619-32.
- Kalies H, Heinrich J, Borte N, Schaaf B, von Berg A, von Kries R, Wichmann HE, Bolte G; LISA Study Group. The effect of breastfeeding on weight gain in infants: results of a birth cohort study. *Eur J Med Res*. 2005 Jan 28;10(1):36-42.

- Kaphingst KM, Story M. Child care as an untapped setting for obesity prevention: state child care licensing regulations related to nutrition, physical activity, and media use for preschool-aged children in the United States. *Prev Chronic Dis.* 2009 Jan;6(1):A11. Epub 2008 Dec 15.
- Kavanagh KF, Habibi M, Anderson K, Spence M. Caregiver- vs infant-oriented feeding: a model of infant-feeding strategies among special supplemental nutrition program for women, infants, and children participants in rural east Tennessee. *J Am Diet Assoc.* 2010 Oct;110(10):1485-91.
- Kavey RE. How sweet it is: sugar-sweetened beverage consumption, obesity, and cardiovascular risk in childhood. *J Am Diet Assoc.* 2010; 110(10):1456-60
- Kirk S, Scott BJ, Daniels SR. Pediatric obesity epidemic: treatment options. *J Am Diet Assoc.* 2005; 105(suppl 1):44-51.
- Klesges RC, Eck LH, Hanson CL, Haddock CK, Klesges LM. Effects of obesity, social interactions, and physical environment on physical activity in preschoolers. *Health Psychol.* 1990;9(4):435-49.
- Klesges RC, Klesges LM, Eck LH, Shelton ML. A longitudinal analysis of accelerated weight gain in preschool children. *Pediatrics* 1995; 95: 126-130.
- Kloebler-Tarver AS. Fruit juice consumption not related to growth among preschool-aged children enrolled in the WIC program. *J Am Diet Assoc.* 2001;101:996
- Koivisto U, Fellenius J, Sjoden. Relations between parental mealtime practices and children's food intake. *Appetite* 1994; 22: 245-258.
- Kumanyika SK, Obarzanek E, Stettler N, Bell R, Field AE, Fortmann SP, Franklin BA, Gillman MW, Lewis CE, Poston WC 2nd, Stevens J, Hong Y Association Council on Epidemiology and Prevention, Interdisciplinary Committee for Prevention. Population-based prevention of obesity: the need for comprehensive promotion of healthful eating, physical activity, and energy balance: a scientific statement from American Heart Association Council on Epidemiology and Prevention, Interdisciplinary Committee for Prevention (formerly the expert panel on population and prevention science). *Circulation.* 2008;118(4):428-64
- Lamb MM, Dabelea D, Yin X, Ogden LG, Klingensmith GJ, Rewers M, Norris JM. Early-Life Predictors of Higher Body Mass Index in Healthy Children. *Ann Nutr Metab.* 2009 ;56(1):16-22.
- Lagström H, Hakanen M, Niinikoski H, Viikari J, Rönnemaa T, Saarinen M, Pakkala K, Simell O. Growth patterns and obesity development in overweight or normal-weight 13-year-old adolescents: the STRIP study. *Pediatrics.* 2008 Oct;122(4):e876-83.
- Larson NI, Story MT, Nelson MC. Neighborhood environments: disparities in access to healthy foods in the U.S. *Am J Prev Med.* 2009; 36(1):74-81.
- Leahy KE, Birch LL, Rolls BJ. Reducing the energy density of multiple meals decreases the energy intake of preschool-age children. *Am J Clin Nutr.* 2008 Dec;88(6):1459-68.
- Levin BE. The obesity epidemic: Metabolic imprinting on genetically susceptible neural circuits. *Obes Res.* 2000; 8 (4): 342-47.
- Li R, Fein SB, Grummer-Strawn LM. Association of breastfeeding intensity and bottle-emptying behaviors at early infancy with infants' risk for excess weight at late infancy. *Pediatrics.* 2008;122 Suppl 2:S77-84.
- Lim S, Zoellner JM, Lee JM, Burt BA, Sandretto AM, Sohn W, Ismail AI, Lepkowski JM. Obesity and sugar-sweetened beverages in African-American preschool children: a longitudinal study. *Obesity.* 2009 Jun;17(6):1262-8.
- Lindsay AC, Sussner KM, Greaney ML, Peterson KE. Influence of social context on eating, physical activity, and sedentary behaviors of Latina mothers and their preschool-age children. *Health Educ Behav.* 2009 Feb;36(1):81-96
- Lobstein T, Dobb S. Evidence of a possible link between obesogenic food advertising and child overweight. *Obes Rev.* 2005 Aug;6(3):203-8.
- Loprinzi PD, Trost SG. Parental influences on physical activity behavior in preschool children. *Prev Med* 2010 Mar;50(3):129-33
- Lovasi GS, Hutson MA, Guerra M, Neckerman KM. Built environments and obesity in disadvantaged populations. *Epidemiol Rev.* 2009; 31:7-20.
- Ludwig DS, Peterson KE, Gortmaker SL. Relation between consumption of sugar-sweetened drinks and childhood obesity: a prospective, observational analysis. *Lancet* 2001; 357:505-508.
- Lumeng JC, Gannon K, Appugliese D, Cabral HJ, Zuckerman B. Preschool child care and risk of overweight in 6- to 12-year-old children. *Int J Obes.* 2005; 29(1): 60-6.
- Maher EJ, Li G, Carter L, Johnson DB. Preschool child care participation and obesity at the start of kindergarten. *Pediatrics.* 2008 Aug;122(2):322-30.
- Malik VS, Schulze MB, Hu FB. Intake of sugar-sweetened beverages and weight gain: a systematic review. *Am J Clin Nutr* 2006; 84: 274-288.
- Manios Y, Moschonis G, Grammatikaki E, Anastasiadou A, Liarigkovinos T. Determinants of childhood obesity and association with maternal perceptions of their children's weight status: the "GENESIS" study. *J Am Diet Assoc.* 2010 Oct;110 (10): 1527-31.
- Mayer-Davis EJ, Dabelea D, Lamichhane AP, D'Agostino RB Jr, Liese AD, Thomas J, McKeown RE, Hamman RF. Breast-feeding and type 2 diabetes in the youth of three ethnic groups: the SEARCH for diabetes in youth case-control study. *Diabetes Care.* 2008 Mar;31(3):470-5.
- McConahy KL, Smiciklas-Wright H, Birch LL, Mitchell DC, Picciano MF. Food portion are positively related to energy intake and body weight in early childhood. *J Pediatr.* 2002; 140 (3): 340-7.
- McConahy KL, Smiciklas-Wright H, Mitchell DC, Picciano MF. Portion Size of Common Foods Predicts Energy Intake among Preschool-Aged Children. *J Am Diet Assoc.* 2004 Jun;104(6):975-9
- McKenzie TL, Sallis JF, Nader PR, Broyles SL, Nelson JA. Anglo- and Mexican-American preschoolers at home and at recess: activity patterns and environmental influences. *J Dev Behav Pediatr.* 1992;13(3):173-80.

- McWilliams C, Ball SC, Benjamin SE, Hales D, Vaughn A, Ward DS. Best-Practice Guidelines for Physical Activity at Child Care. *Pediatrics*. 2009 Dec;124(6):1650-9.
- Melgar-Quinonez HR, Kaiser LL. Relationship of child-feeding practices to overweight in low-income Mexican-American preschool-aged children. *J Am Diet Assoc*. 2004 Jul;104(7):1110-9.
- Mennella JA. Development of food preferences: Lessons learned from longitudinal and experimental studies. *Food Qual Prefer*. 2006; 17(7-8): 635-637.
- Mennella JA, Griffin CE, Beauchamp GK. Flavor programming during infancy. *Pediatrics*. 2004; 113:840-5.
- Mennella JA, Beauchamp GK. Maternal diet alters the sensory qualities of human milk and the nurslings behavior. *Pediatrics*. 1991; 88 (4): 737-44.
- Mennella JA, Beauchamp GK. Early flavor experiences: Research update. *Nutr Rev*. 1998; 56 (7): 205-11.
- Mennella JA, Forestell CA, Morgan LK, Beauchamp GK. Early milk feeding influences taste acceptance and liking during infancy. *Am J Clin Nutr*. 2009; 90(3):780S-788S.
- Mennella JA, Jagnow CP, Beauchamp GK. Prenatal and postnatal flavor learning by human infants. *Pediatrics*. 2001; 107: E88.
- Mennella JA. Mother's milk: A medium for early flavor experiences. *J Hum Lact*. 1995; 11 (1): 39-45.
- Mennella JA, Beauchamp GK. Understanding the origin of flavor preferences. *Chem Senses*. 2005; 30 (Suppl 1): i242-3.
- Mendoza JA, Zimmerman FJ, Christakis DA. Television viewing, computer use, obesity, and adiposity in US preschool children. *Int J Behav Nutr Phys Activity*. 2007; 4: 44.
- Messiah SE, Natale R, Sanders L, Lopez-Mitnik G, Barth J. American Heart Association's Conference on Nutrition, Physical Activity and Metabolism. . Preschoolers benefit from daycare program to prevent obesity. <http://www.newsroom.heart.org/index.php?s=43&item=361>
- Michels KB, Willett WC, Graubard BI, Vaidya RL, Cantwell MM, Sansbury LB, Forman MR. A longitudinal study of infant feeding and obesity throughout life course. *Int J Obes (Lond)*. 2007 Jul;31(7):1078-85.
- Mikkelsen L, Chehimi S. The links between the neighborhood environment and childhood nutrition. Prevention Institute. Prepared for the Robert Wood Johnson Foundation.
- Miller SA, Taveras EM, Rifas-Shiman SL, Gillman MW. Association between television viewing and poor diet quality in young children. *Int J Pediatr Obes*. 2008;3(3):168-76
- Moore LL, Nguyen UDT, Rothman KJ, Cupples LA, Ellison RC. Preschool physical activity level and change in body fatness in young children. *American Journal of Epidemiology* 1995;142:982-988
- Moore, L.L., Gao, K., Bradlee, M.L., Cupples, L.A., Sundarajan-Ramamurti, A., Proctor, M.H., Hood, M.Y., Singer, M.R., & Ellison, R.C. (2003). Does early physical activity predict body fat change throughout childhood? *Preventive Medicine*, 37, 10-17.
- Morland K, Wing S, Diez Roux A, Poole C. Neighborhood characteristics associated with the location of food stores and food service places. *Am J Prev Med*. 2002; 22: 23-29.
- Morrill AC, Chinn CD. The obesity epidemic in the United States. *J Public Health Policy*. 2004;25(3-4):353-66.
- Nader PR, O'Brien M, Houts R, Bradley R, Belsky J, Crosnoe R, Friedman S, Mei Z, Susman EJ; National Institute of Child Health and Human Development Early Child Care Research Network. Identifying risk for obesity in early childhood. *Pediatrics*. 2006;118(3):e594-601.
- NHANES data on the Prevalence of Overweight Among Children and Adolescents: United States, 2003-2006. CDC National Center for Health Statistics, Health E-Stat.
- Nelson Laska M, Larson NI, Neumark-Sztainer D, Story M. Dietary patterns and home food availability during emerging adulthood: do they differ by living situation? *Public Health Nutr*. 2009 Aug 20:1-7.
- Newby PK, Peterson KE, Berkey CS, Leppert J, Willett WC, Colditz GA. Beverage consumption is not associated with changes in weight and body mass index among low-income preschool children in North Dakota. *J Am Diet Assoc*. 2004; 104: 1,086-1,094.
- Newby PK, Peterson KE, Berkey CS, Leppert J, Willett WC, Colditz GA. Dietary composition and weight change among low-income preschool children. *Arch Pediatr Adolesc Med*. August 2003;157(8):759-64.
- Niederer I, Kriemler S, Zahner L, Bürgi F, Ebenegger V, Hartmann T, Meyer U, Schindler C, Nydegge A, Marques-Vidal P, Puder PJ. Influence of a lifestyle intervention in preschool children on physiological and psychological parameters (Ballabeina): study design of a cluster randomized controlled trial. *BMC Public Health* 2009; 9:94.
- Nicklas TA, Hayes D. Position of the American Dietetic ; American Dietetic Association: nutrition guidance for healthy children ages 2 to 11 years. *J Am Diet Assoc*. 2008 Jun;108(6):1038-44, 1046-7
- Nicklas TA, Baranowski T, Baranowski JC, Cullen K, Rittenberry L, Olvera N. Family and child-care provider influences on preschool children's fruit, juice, and vegetable consumption. *Nutr Rev*. 2001 Jul;59(7):224-35.
- Nicklas TA, O'Neil CE, Kleinman R. Association between 100% juice consumption and nutrient intake and weight of children aged 2 to 11 years. *Arch Pediatr Adolesc Med*. 2008 Jun;162(6):557-65.
- Nohr EA, Vaeth M, Baker JL, Sorensen TIA, Olsen J, Rasmussen K. Combined associations of prepregnancy body mass index and gestational weight gain with the outcome of pregnancy. *Am J Clin Nutr*. 2008; 87: 1750-9.
- Obesity: Preventing and Managing the Global Epidemic*. WHO Technical Report Series No. 894. Geneva, Switzerland: World Health Organization; 2000.
- O'Connor TM, Yang SJ, Nicklas TA. Beverage intake among preschool children and its effect on weight status. *Pediatrics*. 2006;118(4):e1010-8.
- Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA*. 2006 Apr 5;295 (13) :1549-55.

- Ogden CL, Carroll MD, Flegal KM. High Body Mass Index for Age Among US Children and Adolescents, 2003–2006. *JAMA* 2008;299:2401–2405.
- Oken E, Gillman MW. Fetal origins of obesity. *Obes Res.* 2003; 11:496–506.
- Oken E, Huh SY, Taveras EM, Rich-Edwards JW, Gillman MW. Associations of maternal prenatal smoking with child adiposity and blood pressure. *Obes Res.* 2005; 13:2021–2028.
- Oken E, Kleinman KP, Belfort MB, Hammitt JK, Gillman MW. Associations of gestational weight gain with short- and longer-term maternal and child health outcomes. *Am J Epidemiol.* 2009 Jul 15;170(2):173-80
- Oken E, Taveras EM, Kleinman K, Rich-Edwards JW, Gillman MW. Gestational weight gain and child adiposity at age 3 years. *Am J Obstet Gynecol.* 2007;196: 322.e1– e8.
- Oken E, Taveras EM, Popoola FA, Rich-Edwards JW, Gillman MW. Television, walking, and diet: associations with postpartum weight retention. *Am J Prev Med.* 2007 Apr;32(4):305-11.
- Oken E, Levitan EB, Gillman MW. Maternal smoking during pregnancy and child overweight: systematic review and meta-analysis. *Int J Obes (Lond).* 2008 Feb;32(2):201-10.
- Olsen NJ, Heitmann BL. Intake of calorically sweetened beverages and obesity. *Obes Rev.* 2009 Jan;10(1):68-75.
- Olstad DL, McCargar L. Prevention of overweight and obesity in children under the age of 6 years. *Appl Physiol Nutr Metab.* 2009; 34 (4): 551-70.
- Orlet JF, Rolls BJ, Birch LL. Children's bit size and intake of an entrée are greater with large portions than with age-appropriate or self-selected portions. *Am J Clin Nutr.* 2003; 77 (5): 1164-70.
- Owen CG, Martin RM, Whincup PH. Effect of infant feeding on the risk of obesity across the life course: a quantitative review of published evidence. *Pediatrics* 2005; 115:1367-77.
- Owen CG, Martin RM, Whincup PH, Davey-Smith G, Gillman MW, Cook DG. The effect of breastfeeding on mean body mass index throughout life: a quantitative review of published and unpublished observational evidence. *Am J Clin Nutr.* 2005;82(6):1298-307.
- Pagnini DL, Wilkenfeld RL, King LA, Booth ML, Booth SL. Mothers of pre-school children talk about childhood overweight and obesity: The Weight Of Opinion Study. *J Paediatr Child Health.* 2007 Dec;43(12):806-10.
- Patel SR, Hu FB. Short sleep duration and weight gain: a systematic review. *Obesity.* 2008; 16(3):643-53
- Patel S. Reduced sleep as an obesity risk factor. *Obesity Reviews.* 2009;10 (Suppl 2):61-68.
- Pilant VB; American Dietetic Association. Position of the American Dietetic Association: local support for nutrition integrity in schools. *J Am Diet Assoc.* 2006 Jan;106(1):122-33.
- Polhamus B, Dalenius K, Borland E, Mackintosh H, Smith B, Grummer-Strawn L. *Pediatric Nutrition Surveillance 2007 Report.* Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2009.
- Powell LM, Slater S, Mirtcheva D, Bao Y, Chaloupka FJ. Food store availability and neighborhood characteristics in the United States. *Prev Med.* 2007; 44(3):189-95.
- Proctor MH, Moore LL, Gao D, Cupples LA, Bradley ML, Hood MY, Ellison RC. Television viewing and change in body fat from preschool to early adolescence: The Framingham children's study. *Inter J Obesity.* 2003; 27: 827-833.
- Rampersaud GC, Pereira MA, Girard BL, Adams J, Metz J. Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. *J Am Diet Assoc.* 2005;105(5):743-60.
- Reedy J, Krebs-Smith SM. Dietary sources of energy, solid fats, and added sugars among children and adolescents in the United States. *J Am Diet Assoc.* 2010 Oct;110(10) :1477-84
- Reilly JJ, Armstrong J, Dorosty AR, Emmett PM, Ness A, Rogers I, Steer C, Sherriff A. Early life risk factors for obesity in childhood: cohort study. *BMJ.* 2005; 330(7504): 1357.
- Reinehr T, Widhalm K, l'Allemand D, Wiegand S, Wabitsch M, Holl RW. Two-year Follow-up in 21,784 Overweight Children and Adolescents With Lifestyle Intervention. *Obesity* (2009) 17: 1196–1199.
- Reinold C, Dalenius K, Smith B, Brindley P, Grummer-Strawn L. *Pregnancy Nutrition Surveillance 2007 Report.* Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2009
- Riddick H, Kramer-LeBlanc C, Bowman SA, Davis C. Is fruit juice dangerous for children? U.S. Department of Agriculture, *Center for Nutrition Policy and Promotion. Nutrition Insights*, March 1997.
- Ritchie LD, Welk G, Styne D, Gerstein DE, Crawford PB. Family environment and pediatric overweight: what is a parent to do? *J Am Diet Assoc.* 2005 May;105(5 Suppl 1):S70-9.
- Robertson SM, Cullen KW, Baranowski J, Baranowski T, Hu S, de Moor C. Factors related to adiposity among children aged 3 to 7 years. *J Am Diet Assoc* 1999; 99: 938-943
- Robinson TN, Borzekowski DL, Matheson DM, Kraemer HC. Effects of fast food branding on young children's taste preferences. *Arch Pediatr Adolesc Med.* 2007 Aug;161(8):792-7
- Robinson TN, Hammer LD, Killen JD, et al. Does television viewing increase obesity and reduce physical activity? Cross-sectional and longitudinal analyses among adolescent girls. *Pediatrics* 1993;91:273–280.
- Rogers I; EURO-BLCS Study Group. The influence of birthweight and intrauterine environment on adiposity and fat distribution in later life. *Int J Obes Relat Metab Disord.* 2003 Jul;27(7):755-77.
- Rolland-Cachera MF, Deheeger M, Akrou M, Bellisle F. Influence of macronutrients on adiposity development: a follow up study of nutrition and growth from 10 months to 8 years of age. *Int J Obes Relat Metab Disord* 1995; 19: 573-578.

- Rolls BJ, Engell D, Birch LL. Serving portion size influences 5-year-old but not 3-year-old children's food intakes. *J Am Diet Assoc*. 2000; 100 (2): 232-4.
- Ruwei L, Fein SB, Grummer-Strawn LM. Association of breastfeeding intensity and bottle-emptying behaviors at early infancy with infants' risk for excess weight at late infancy. *Pediatrics*. 2008; 122 (suppl 2): S77-84.
- Sacks G, Swinburn B, Lawrence M. Obesity Policy Action framework and analysis grids for a comprehensive policy approach to reducing obesity. *Obes Rev*. 2009 Jan;10(1):76-86
- Sacks G, Swinburn BA, Lawrence MA. A systematic policy approach to changing the food system and physical activity environments to prevent obesity. *Aust New Zealand Health Policy*. 2008 Jun 5;5:13.
- Sallis JF, Glanz K. The role of built environments in physical activity, eating, and obesity in childhood. *Future Child*. 2006; 16(1):89-108.
- Sallis JF, Nader PR, Broyles SL, Berry CC, Elder JP, McKenzie TL, Nelson JA. Correlates of physical activity at home in Mexican-American and Anglo-American preschool children. *Health Psychol*. 1993 Sep;12(5):390-8.
- Savage JS, Fisher JO, Birch LL. Parental influence on eating behavior: conception to adolescence. *J Law Med Ethics*. 2007; 35(1): 22-34.
- Scaglioni S, Agostoni C, De Notaris R, Radaelli G, Radice N, Valenti M, Giovannini M, Riva E. Early macronutrient intake and overweight at five years of age. *Int J Obes*. 2000; 24: 777-781
- Schaefer-Graf UM, Hartmann R, Pawliczak J, Passow D, Abou-Dakn M, Vetter K, Kordonouri O. Association of breast-feeding and early childhood overweight in children from mothers with gestational diabetes mellitus. *Diabetes Care*. 2006 May;29(5):1105-7.
- Schoeller DA, Bucholz AC. Energetics of obesity and weight control: does diet composition matter? *J Am Diet Assoc*. 2005;105 (suppl 1): S24-S28.
- Sekine M, Yamagami T, Handa K, Saito T, Nanri S, Kawaminami K, Tokui N, Yoshida K, Kagamimori S. A dose-response relationship between short sleeping hours and childhood obesity: results of the Toyama Birth Cohort Study. *Child Care Health Dev* 2002; 28: 163-170.
- Sewell MF, Huston-Presley L, Amini SB, Catalano PM. Body mass index: a true indicator of body fat in obese gravidas. *J Reprod Med*. 2007;52(10):907-11.
- Sharma AJ, Cogswell ME, Li R. Dose-Response associations between maternal smoking during pregnancy and subsequent childhood obesity: effect modification by maternal race/ethnicity in a low-income US cohort. *Am J Epidemiol*. 2008 Sep 18 (e-publication).
- Sherry B. Food behaviors and other strategies to prevent and treat pediatric overweight. *Intl J Obesity* 2005; 29: S116-S126.
- Siega-Riz AM, King JC. American Dietetic Association; American Society of Nutrition, Position of the American Dietetic Association and American Society for Nutrition: obesity, reproduction, and pregnancy outcomes. *J Am Diet Assoc*. 2009;109(5):918-27.
- Simon VG, Souza JM, Souza SB. Breastfeeding, complementary feeding, overweight and obesity in pre-school children. *Rev Saude Publica*. 2009 Feb;43(1):60-9.
- Skidmore PM, Cassidy A, Swaminathan R, Richards JB, Mangino M, Spector TD, MacGregor AJ. An obesogenic postnatal environment is more important than the fetal environment for the development of adult adiposity: a study of female twins. *Am J Clin Nutr*. 2009 Aug;90(2):401-6
- Skinner JD, Carruth BR, Bounds W, Ziegler P, Reidy K. Do food-related experiences in the first 2 years of life predict dietary variety in school-aged children? *J Nutr Educ Behav*. 2002; 34 (6): 310-15.
- Skinner JD, Carruth BR, et al. Fruit juice intake is not related to children's growth. *Pediatrics*. 1999; 103:58-64.
- Skinner JD, Carruth BR. A longitudinal study of children's juice intake and growth: the juice controversy revisited. *J Am Diet Assoc*, 2001; 101: 432-437.
- Skinner JD, Bounds W, Carruth BR, Morris M, Ziegler P. Predictors of children's body mass index: a longitudinal study of diet and growth in children aged 2-8 y. *Int J Obes Relat Metab Disord*. 2004 Apr;28(4):476-82.
- Sonestedt E, Roos C, Gullberg B, Ericson U, Wirfalt E, Orholm-Melander M. Fat and carbohydrate intake modify the association between genetic variation in the FTO genotype and obesity. *Am J Clin Nutr*. 2009
- Spence JC, Cutumisu N, Edwards J, Evans J. Influence of neighbourhood design and access to facilities on overweight among preschool children. *Int J Pediatr Obes*. 2008; 3(2):109-16.
- Spurrier NJ, Magarey AA, Golley R, Curnow F, Sawyer MG. Relationships between the home environment and physical activity and dietary patterns of preschool children: a cross-sectional study. *Int J Behav Nutr Phys Act*. 2008; 5:31
- Staehelein K, Berteau PC, Stutz EZ. Length of maternity leave and health of mother and child—a review. *Int J Public Health*. 2007;52(4):202-9.
- Stang J, Taft Bayerl C, Flatt MM; Association Positions Committee Workgroup. Position of the American Dietetic Association: child and adolescent food and nutrition programs. *J Am Diet Assoc*. 2006 Sep;106(9):1467-75
- Strasburger VC. Children and TV advertising: nowhere to run, nowhere to hide. *J Dev Behav Pediatr*. 2001; 222: 185-7.
- Strauss RS, Knight J. Influence of the home environment on the development of obesity in children. *Pediatrics*. 1999 Jun;103(6):e85.
- Story M, Kaphingst KM, French S. The role of child care settings in obesity prevention. *Future Child*. 2006 Spring;16(1):143-68.
- Sugimori H, Yoshida K, Izuno T, Miyakawa M, Suka M, Sekine M, Yamagami T, Kagamimori S. Analysis of factors that influence body mass index from ages 3 to 6 years: A study based on the Toyama cohort study. *Pediatr Int*. 2004; 46(3):302-10.
- Sullivan SA, Birch LL. Infant dietary experience and acceptance of solid foods. *Pediatrics*. 1994; 93 (2): 271-7.

- Summerbell CD, Waters E, Edmunds L, Kelly SAM, Brown T, Campbell KJ. Interventions for preventing obesity in children. *Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD001871. DOI:10.1002/14651858.CD001871.pub2.
- Taveras EM, Gillman MW, Kleinman K, Rich-Edwards JW, Rifas-Shiman SL. Racial/ Ethnic Differences in Early-Life Risk Factors for Childhood Obesity. *Pediatrics*. 2010 Mar 1.
- Taveras EM, Rifas-Shiman SL, Belfort MB, Kleinman KP, Oken E, Gillman MW. Weight status in the first 6 months of life and obesity at 3 years of age. *Pediatrics*. 2009; 123(4):1177-83.
- Thornton YS, Smarkola C, Kopacz SM, Ishoof SB. Perinatal outcomes in nutritionally monitored obese pregnant women: a randomized clinical trial. *J Natl Med Assoc*. 2009; 101(6):569-77.
- Tibbs T, Haire-Joshu D, Schechtman KB, Brownson RC, Nanney MS, Houston C, Auslander W. The relationship between parental modeling, eating patterns, and dietary intake among African-American parents. *J Am Diet Assoc*. 2001; 101 (5): 535-41.
- Timperio A, Salmon J, Telford A, Crawford D. Perceptions of local neighbourhood environments and their relationship to childhood overweight and obesity. *Int J Obes*. 2005 Feb;29(2):170-5
- Troiano RP, Briefel RR, Carroll MD, Bialostosky K. Energy and fat intakes of children and adolescents in the United States: data from the National Health and Nutrition Examination Surveys. *Am J Clin Nutr* 2000; 72 (suppl): 1343S-53S
- Trost SG, Sirard JR, Dowda M, Pfeiffer KA, Pate RR. Physical activity in overweight and nonoverweight preschool children. *Int J Obes Relat Metab Disord*. 2003;27(7):834-9.
- US Department of Health and Human Services, US Department of Agriculture. *Dietary Guidelines for Americans, 2005*.
- Ventura AK, Birch LL. Does parenting affect children's eating and weight status? *Int J Behav Nutr Phys Act*. 2008;5:15.
- Verhulst SL, Schrauwen N, Haentjens D, Suys B, Rooman RP, Van Gaal L, De Backer WA, Desager KN. Sleep-disordered breathing in overweight and obese children and adolescents: prevalence, characteristics and the role of fat distribution. *Arch Dis Child*. 2007; 92(3): 205-8.
- Visness CM, Kennedy KI. Maternal employment and breastfeeding: findings from the 1988 National Maternal and Infant Health Survey. *Am J Public Health*. 1997;87(6):945-950
- Von Kries R, Toschke AM, Wurmser H, Sauerwald T, Koletzko B. Reduced risk for overweight and obesity in 5- and 6-year-old children by duration of sleep - a cross-sectional study. *Int J Obes Relat Metab Disord* 2002; 26: 710-716.
- Wake M, Gold L, McCallum Z, Gerner B, Waters E. Economic evaluation of a primary care trial to reduce weight gain in overweight/obese children: the LEAP trial. *Ambul Pediatr*. 2008; 8(5): 336-41.
- Wardle J, Sanderson WS, Guthrie CA, Rapoport L, Plomin R. Parental feeding style and the intergenerational transmission of obesity risk. *Twins Early Development Study*. *Obes Res* 2002; 10: 453-462.
- Wardle J, Guthrie C, Sanderson S, Birch L, Plomin R. Food and activity preferences in children of lean and obese parents. *Int J Obes* 2001; 25: 971-7.
- Wardle J, Cooke LJ, Gibson EL, Sapochnik M, Sheiham A, Lawson M. Increasing children's acceptance of vegetables: A randomized trial of parent-led exposure. *Appetite*. 2003; 40 (2): 155-162.
- Welsh JA, Cogswell ME, Rogers S, Rockett H, Mei Z, Grummer-Strawn LM. Overweight among low-income preschool children associated with the consumption of sweet drinks: Missouri 1999-2002. *Pediatrics* 2005; 115: e223-e229.
- Wen LM, De Domenico M, Elliott D, Bindon J, Rissel C. Evaluation of a feasibility study addressing risk factors for childhood obesity through home visits. *J Paediatr Child Health*. 2009 Oct;45(10):577-81.
- Wen LM, Baur LA, Rissel C, Wardle K, Alperstein G, Simpson JM. Early intervention of multiple home visits to prevent childhood obesity in a disadvantaged population: a home-based randomised controlled trial (Healthy Beginnings Trial). *BMC Public Health*. 2007 May 10;7:76
- Whitaker RC. Predicting preschooler obesity at birth: The role of maternal obesity in early pregnancy. *Pediatrics*. 2004;114 (1): e29-36.
- Williams BM, O'Neil CE, Keast DR, Cho S, Nicklas TA. Are breakfast consumption patterns associated with weight status and nutrient adequacy in African-American children? *Public Health Nutr*. 2009; 12(4): 489-96.
- Woods SC, Seeley RJ, Porte D Jr, Schwartz MW. Signals that regulate food intake and energy homeostasis. *Science*. 1998; 280:1378 -1383.
- Wrotniak BH, Shults J, Butts S, Stettler N. Gestational weight gain and risk of overweight in the offspring at age 7 y in a multicenter, multiethnic cohort study. *Am J Clin Nutr*. 2008; 87: 1818-24.