

Childhood Obesity Prevention Interventions in U.S.-Mexico Border States: A Systematic Literature Review and Meta-Analysis

INPLASY202440046

doi: 10.37766/inplasy2024.4.0046

Received: 09 April 2024

Published: 09 April 2024

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ADMINISTRATIVE INFORMATION

Support - CRDF Global Grant #OISE-20-66871-1.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202440046

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 09 April 2024 and was last updated on 09 April 2024.

INTRODUCTION

Review question / Objective We will use a three-phased approach to review and critically evaluate the literature on obesity prevention among Latinos living in the U.S. and Latin America at the US-Mexico border.

Rationale The high prevalence of childhood obesity U.S. & Mexico remains a public health concern. Childhood obesity is a complex problem that stems from multiple behavioral, social and environmental factors. While national efforts show promise, they do not directly address contextually-driven and regionally-unique obesity trends observed in border-regions, such as the U.S.-Mexico border region. The border region is a fluid exchange of ideas, language, cultural practices, social norms, and economic activities that make the border region a unique environment for obesity

prevention efforts. This project will identify novel and effective childhood obesity prevention strategies and their effect on obesity, nutrition, and physical activity outcomes among Latino children residing in US-Mexico border states.

Condition being studied Peer-reviewed and non-peer-reviewed literature on obesity interventions conducted among Latino children who are classified as obese/overweight or are at risk for being obese/overweight will be assessed. Clinical interventions for the treatment of obesity that include treatment with special diets or the use of some artificial or natural drug will be excluded.

METHODS

Search strategy The literature review process will involve searching the peer-reviewed and non-peer-reviewed literature for obesity interventions aimed

at Latinos. Peer-reviewed sources will consist of the following: MEDLINE/PubMed, CINAHL, PsycINFO, Cochrane Library, Scopus, LILACS (Latin American & Caribbean Health Sciences Literature), EBSCO, Global Index Medicus, Web of Science, Google Scholar, Sociological Abstracts, Sport Discus, Embase, Current Controlled Trials, ADOLEC, Global Health, Bibliomap, DoPHER, Virtual Health Library. Non-peer-reviewed sources will consist of the following: APHA conference, ProQuest: Theses and Dissertations, SSRN Social Sciences Research Network, Worldcat.org, Repositorio Institucional de la UNAM, Congreso del Colegio Mexicano de Nutriólogos, AMMFEN Asociación Mexicana de Miembros de Facultades y Escuelas de Nutrición A.C., and Repositorio CIAD.

The following search terms will be used:

Search Terms:

1) Obesity Measurement and Outcome Terms:

obesity; At risk for overweight; BMI; skin fold thickness; adiposity outcomes; rate of weight gain; weight gain; weight loss; body weight; percent fat content; weight and height; waist circumference; waist-to-hip ratio, abdominal obesity, percent body fat; overweight; obese; overfat; high fat; subcutaneous fat; visceral fat; intra-abdominal fat; abdominal fat; trunk fat; IAAT (intra-abdominal adipose tissue); heavy; BMI percentile; BMI Z-score; BMI category; weight trajectory; obesity rebound; excess fat; morbidly obese; massively obese; body fat distribution; fat mass; adipose tissue; quetelet index.

2) Children Terms:

children or child or preschoolers or pre-adolescent or school-age or childhood

3) Race and Ethnicity (Using USA terms):

latino or latinas or latinx or hispanics or chicanos or chicanas or mexican or Mexican-American or Spanish-speaking or Latin immigrant

4) Physical Activity Terms:

Physical activity, exercise, aerobic exercise, exercise training, fitness, capacity fitness, physical fitness, movement, cardiovascular fitness, sports, resistance training, endurance training, acute exercises, physical exertion, motor activity, physical functioning, isometric exercise, physical conditioning, gardening, steps, walking, leisure-time activity, moderate-to-vigorous physical activity.

5) Sedentary Behavior Terms:

sedentary behavior, sedentary lifestyle, physical inactivity, lack of physical activity, sedentary time, screen time, watching TV, computer, playing video games, sitting

6) Nutrition Terms:

Nutrition, diet, nutritional status, healthy diet, healthy eating, dietary behavior, eating, dietary intake, nutritional intake, portion size, serving size, food and beverage, sugar-sweetened beverages, fruit, vegetables, grains, family meals, feeding behavior, food habits, eating habits, fast food, cooking, junk food, food insecurity, food security, food dessert, food swamps, food environment, food access, food availability, dietary practices, food purchasing, food beliefs, healthy eating index

7) Comparison and Intervention Terms:

Controlled clinical trials or clinical trial or randomized controlled trial or randomized clinical trial or randomized trial or group randomized trial or randomization or double-blind procedure or single-blind procedure or crossover procedure or comparative study or matched communities/matched schools/matched populations or comparison group or control group or matched pairs or outcome study/studies or quasi experimental/pseudo experimental or nonrandomized/pseudo or randomized/quasi or randomized or treatment & placebo or treatment or intervention or experimental or pre-post design or before-after or prospective cohort study or retrospective cohort study or case control or time series or adaptive trial or pragmatic trial or MOST design or step-wedge design or single-case study design or time-series design or interrupted time-series design or factorial design or longitudinal

We will first review abstracts and titles to see what intervention studies meet the inclusion criteria. Members of the research team will independently assess each abstract for inclusion in a full-text review. A separate reviewer will review 30% of the abstracts or until reviewer scores are similar by at least 90%. A full-text review will then be conducted to ensure all included studies meet the inclusion criteria.

Participant or population Participants must be children ages 3-12 years of age. Participants must identify as Latino/Hispanic including Hispanics (Mexicans), Latinos, Chicanos, Mexican-Americans, Colonias. The population must be at least 50% Latino or stratified by Latino populations. If parents are included, the study must at least present child data to be included.

Intervention Interventions that aim to reduce obesity/risk of obesity at multiple levels.

Comparator Usual care or no intervention group.

Study designs to be included Both randomized controlled trials and quasi-experimental studies will be included.

Eligibility criteria 1) Years: All years – up until 2022; 2) Language: Spanish and English; 3) Main focus: Community childhood obesity intervention programs in the Latino population in border states of Mexico and the United States; 4) Population defined: Hispanics (Mexicans), Latinos, Chicanos, Mexican-Americans, Colonias. The population must be at least 50% Latino or stratified by Latino populations. If parents are included, the study must at least present child data to be included; 5) Age of the population: Children of pre-school and school age. Age from 3 to 12 years. Baseline age must meet the range. If follow ups are past that age, then it would still be included; 6) For Behaviors: Physical activity/fitness, sleep, sedentary lifestyle, nutrition. Changes of healthy habits, healthy life; 7) Environments: Individual, family, community, school; 8) Type of study: Prevention Treatment. Clinical interventions for the treatment of obesity that include treatment with special diets or the use of some artificial or natural drug will be excluded.

Information sources This study will follow the Preferred Reporting Item of the Guidelines for Systematic Reviews and Meta-Analysis (PRISMA) guidelines.

Main outcome(s) Intervention effects on obesity outcomes including body mass index (BMI), BMI percentile; BMI Z-score, body fat percentage, and waist size circumference.

Additional outcome(s) Intervention effects on nutrition outcomes including fruit, vegetable, and sugar-sweetened beverages intake as well as on physical activity outcomes including minutes of moderate-vigorous physical activity, number of steps, and metabolic equivalent of task (METs).

Quality assessment / Risk of bias analysis Two reviewers will independently assess the quality of the studies to reduce risk of bias. A third reviewer will then review each study using the Cochrane risk-of-bias tool for randomized trials (RoB 2) and Risk Of Bias In Non-Randomized Studies – of Interventions (ROBINS-I) tool.

Strategy of data synthesis Data extraction from full-texts will be stored in a structured extraction Excel sheet, which will be pilot-tested with at least 5 studies. Data elements will be extracted in order of appearance in an article starting with participant characteristics, intervention description, statistical methods, and results. Adjusted and non-adjusted data will be extracted. Two to three independent reviewers will complete data extraction. Both study characteristics and outcome data will be extracted in duplicate. Means and standard deviations will be used when possible to calculate the overall effect size. Studies will be assessed for heterogeneity using the I-squared statistic and Q statistic. Funnel plots will also be used to assess heterogeneity and publication bias.

Subgroup analysis Subgroup analysis on parent involvement, country, whether the interventions were multilevel or not, and duration of the intervention will be conducted.

Sensitivity analysis Sensitivity analysis will not be conducted.

Country(ies) involved United States and Mexico.

Keywords Latinos; Hispanics; childhood obesity; intervention; meta-analysis; nutrition; physical activity; obesity.

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