

Review of Systematic Reviews on Interventions Addressing School Foods, Kids' Meals, and Sugar Sweetened Beverages impacting Black Youth

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Obesity is still one of the biggest public health challenges, with the highest rates impacting the Black community. In 2018, Blacks are 1.3 times more likely than whites to be obese (NIDDK, 2021). Black children face the same fate, experiencing 1.5 times more likely to be obese than non-hispanic black and non hispanic white children (NCHS, 2018). Obesity is defined as a person whose weight adjusted for height is higher than what is considered normal. Body Mass Index (BMI) is a common tool used to determine obesity in adults and children. BMI is weight in kilograms divided by height in meters squared. BMI at or above the 85th percentencile on CDC growth charts are considered to be overweight, at or above 95th percentile is obese and at or above the 120 percent of the 95th percentile is defined as extreme obesity for children and adolescents between 2 and 19 years old (NCHS, 2018). Prevalence of obesity in children has increased from 1994 and 2004 and there has been no significant change since (NIDDKD, 2021). Childhood obesity is linked to other comorbidities including asthma, sleep apnea, joint problems and type 2 diabetes (NCHS, 2018). These health outcomes are more prevalent among black youth than any other racial group (NCHS, 2018).

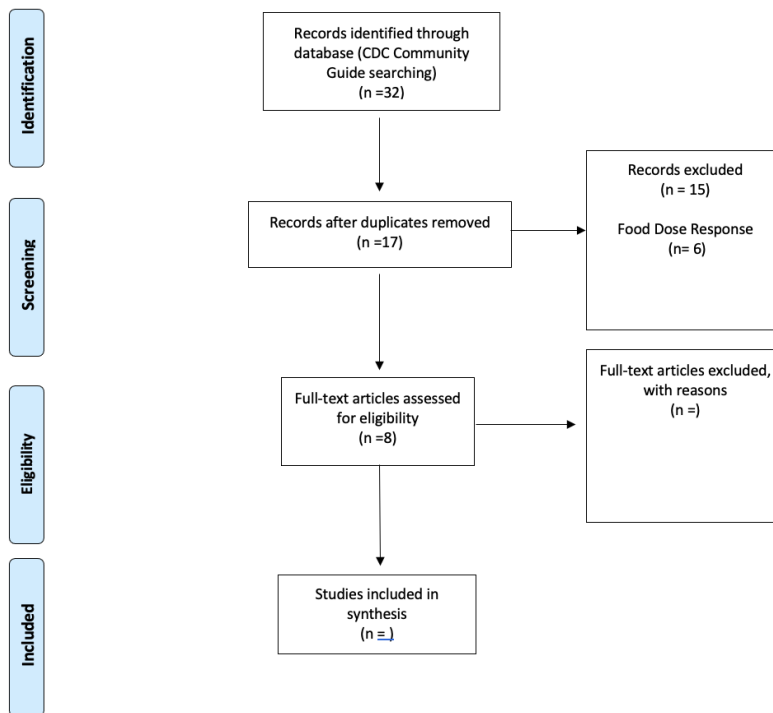
Interventions have attempted to change the course of obesity for black youth. Kids' meals, school meals, and sugar sweetened beverages are often a source of high caloric intake. Kids' meals are meals that are offered and available at fast food or quick food restaurants. School meals are breakfast, lunch and snack foods that are provided to students while at school. Sugar sweetened beverages are beverages with added sugar. Interventions used to address these sources of high caloric intake provide the opportunity to reduce the prevalence of obesity in black youth. The purpose of this study is to determine what systematic reviews address programs and interventions focused on kids' meals, school lunches and sugar sweetened beverages and if/how the reviews considered these interventions for black communities. Goal of this report is to highlight evidence-based interventions to improve health outcomes of black children through school food access and quick food restaurants.

Methods

A systematic method was used to identify and analyze relevant interventions on school foods, kids meals and sugar-sweetened beverages. A search was conducted in the Center for Disease Control and Prevention (CDC) Community Guide and PubMed via Covidence. The CDC Community Guide is a collection of evidence based findings identified by the Community Preventive Services Task Force. It aids in the selection of interventions to improve health and prevent disease in states, communities, businesses, healthcare facilities or schools based on effectiveness and cost-effectiveness (CDC, 2020). The Guide is organized in 22 topics that engage behavior change, disease prevention and environmental changes.

Through the CDC Community Guide 32 reviews were discovered that discussed the task force findings within nutrition and obesity, see figure 1. After removing duplicates, 18 reviews remained. Of the 18 reviews found, only 8 of them were intervention focused. The other 10 reviews looked at a food dose response on the outcome of a disease (i.e. obesity). Of the 8 articles only 3 were found to have sufficient evidence for efficacy. Of the 8 reviews only two mentioned black populations but did not provide significant data on how the population was impacted by the studies in the review. Of the remaining two, only one review specified an article focused on Black students.

Figure 1: Community Guide interventions that impact Kids' Meals, School Lunches, and Sugar Sweetened Beverages Flow Diagram



The CDC Community Guide will be used to answer what programs and interventions that address Kids' Meals, School Lunches, and Sugar Sweetened Beverages and if/how the reviews consider Black communities. For the purpose of this review, interventions were searched in the nutrition and obesity topics with a sufficient evidence rating and notation was taken for interventions that mentioned Black populations. Of the 32 reviews found, only one mentioned a study conducted with a black population.

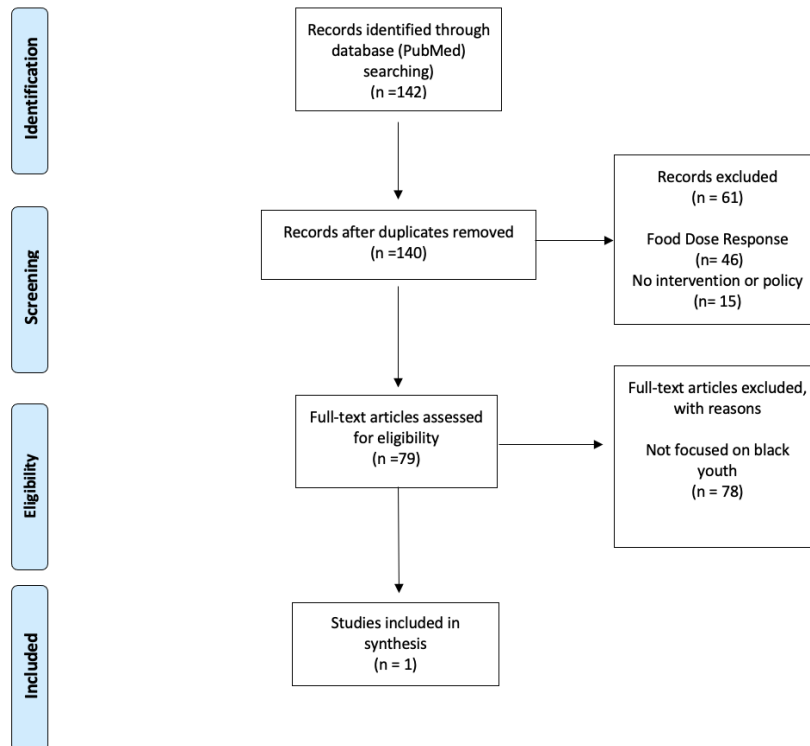
Covidence is a production tool used to streamline systematic reviews through title/abstract screening, full-text screening, data abstraction, and quality assessment for individuals or a team. Upon finding articles through PubMed, using these keywords ("sweetened beverages") OR ("school meals") OR ("school food") OR ("kids meals") OR ("quick meals") OR ("fast food") AND ("systematic review") OR ("meta analysis") AND ("intervention") OR ("policy"), 145 articles were found and imported into covidence, n=2 were removed as duplicates. The initial screening was an abstract and title screening to identify interventions or policies that address Kids' Meals, School Lunches, and Sugar Sweetened Beverages. An article was included if it was an intervention or policy that addressed Kids' Meals, School Lunches, and Sugar Sweetened Beverages, and was conducted in the US. A review was excluded if it was a food dose response to a disease outcome, or outside of the US context. Articles that were not conducted in the US but

focused on an intervention or policy analysis were marked as “maybe” for future review. International reviews could provide additional evidence for an effective intervention or policy. No time frame was required, to fully understand the scope of interventions focused on black populations.

Through the PubMed search 142 systematic reviews were identified through the search function stated previously, see figure 2. 63 reviews were excluded, food dose response n=46, no intervention or policy discussed n=15, duplicates n=2. 79 articles were available for full text screening. Of the remaining articles only one mentioned in Black populations in the abstract and title went under a full text review, *In developing obesity interventions for African American and Hispanic children it is recommended that researchers create instruments specifically tailored to these groups to account for cultural and socioeconomic dynamics* authored by Adam Knowlden Manoj Sharma.

Results

Figure 2: PubMed Policies and interventions that impact Kids’ Meals, School Lunches, and Sugar Sweetened Beverages Flow Diagram



One review found in the Community Guide, [Obesity Prevention and Control: Meal or Fruit and Vegetable Snack Interventions Combined with Physical Activity Interventions in Schools](#) noted only one study focused on Black students. The study was entitled *An Environmental Intervention to Prevent Excess Weight Gain in African American Students: A Pilot Study*. This randomized control trial used a Wise Mind, a Healthy Eating and Exercise (HEE) program to prevent excess weight gain (Newton et al, 2010). 77 Black 2nd-6th grade students attending the catholic school were included in the study (Newton et al, 2010). The intervention used social

learning theory, to “alter the classroom and cafeteria environments while simultaneously providing materials to the teachers through twelve, two-month long campaigns that could be used to increase children’s knowledge of healthy eating and exercise habits” (Newton

et al, 2010). A combination of dietary, physical activity and a parental component were used in the success of the HEE program (Newton et al, 2010). After 18 months of the interventions boys body fat percentage went unchanged, while girls body fat percentage increased. However, there was a positive change in nutrient intake (Newton et al, 2010).

Knowlden and Sharma “examine[d] the usefulness of school-based, obesity prevention interventions targeting Hispanic and African American children and develop a set of recommendations to enhance their effectiveness” (2013). Study inclusion criteria included completed studies, were experimental or quasi-experimental, focused on obesity or overweight, included prevention interventions, conducted in the United States, conducted between 2001-2012, targeted Black or Latino children, took place in school setting, used

at least one anthropometric outcome variable and article must be in CINAHL, ERIC, Medline, Psychology and Behavioral sciences Collection or CENTRAL (Knowlden & Sharma, 2013). 10 studies met the inclusion study for this review; 4 Latino, 3 Black and 3 included both groups (Knowlden & Sharma, 2013). Interventions were evaluated on use of behavioral models, socio-ecological and multi-level models, process evaluation, intervention duration, and cultural tailoring.

Box 1.

SUMMARY OF RECOMMENDATIONS FOR SCHOOL-BASED OBESITY PREVENTION INTERVENTIONS TARGETING AFRICAN AMERICAN AND HISPANIC CHILDREN

- Operationalization, reification, and measurement of social and behavioral theories
 - Create or adopt psychometrically valid and reliable instruments developed to capture the cultural dynamics of African American and Hispanic children
 - Reify the constructs according to the cultural dynamics of the targeted group
 - Measure changes in the constructs from before to after the intervention
- Incorporate multiple layers of implementation process evaluation
 - Checklists can be used to ensure accurate delivery of the intervention modalities
 - Process evaluation can be improved with two independent observers
 - Needs assessment can allow researchers to translate efficacy trials to effectiveness trials without compromising process evaluation
- Measure long-term intervention effects
 - Self-report measures can be applied to conduct long-term outcome evaluation if funding is limited
- Cultural tailoring
 - Incorporate focus groups and pilot testing when developing program components
 - Modify promotional materials to appeal to the culture
 - Include cafeteria workers when seeking to change school menus
 - Design exciting activities for physical education sessions, i.e. culturally appropriate dance classes
 - Attempt to coincide intervention activities with pre-established community events
 - Provide curriculum materials in both Spanish and English for Hispanic students and parents
- Inclusion of the family and home environment
 - Target parents over summer and winter break periods to preserve or improve school-based intervention effects
 - Consider newsletters to parents and parent-child homework activities for school break periods
 - If parents are involved in school-based intervention activities consider delivering components on the weekend or at the end of the workday
 - If home visitations are included in the intervention train recruit and train lay health educators from the target community to deliver the curricula to parents

Discussion and Future Recommendations

As evident from this review, there are limited systematic reviews that address the Black population. There are a plethora of interventions that focus on the black population however they are not included in reviews found in the CDC Community Guide or published on PubMed. It is evident in both studies reviewed in this paper that culturally relevant programs are critical to the success of the intervention

(Newton et al, 2010 and Knowlden & Sharma, 2013). Knowlden and Sharma stated

“Cultural tailoring was critical to those interventions that were able to improve body composition” (2013).

Future studies on interventions for Black populations in school based settings appear to be effective (Newton et al, 2010) and should have an emphasis on family and home environment (Knowlden & Sharma, 2013). Newton recommended future interventions to use stronger methodological designs, assess body maturity, the environment and education components together for increased effectiveness across genders (2010). Knowlden & Sharma recommended improved use of social and behavioral theories, multiple evaluations of the implementation process, and long-term follow up of intervention outcomes (2013). As depicted in Box 1, Knowlden & Sharma identify additional recommendations that should be taken into consideration for obesity prevention interventions specified for Black and Latino children (2013).

Systematic reviews identify, assess value, and synthesize all relevant studies on a particular topic. Without the cross comparison of interventions that specifically address black populations on school foods, quick food and sugar sweetened beverages, it is difficult to determine which programs are the most effective. The black population has the highest rates of obesity, hypertension, diabetes, etc. It is not for a lack of interventions focused on this demographic but a lack of published reviews on this topic within this demographic.

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