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USDA-Funded Summer Feeding Programs and Key Child Outcomes of Public Health Importance: A Rapid Review

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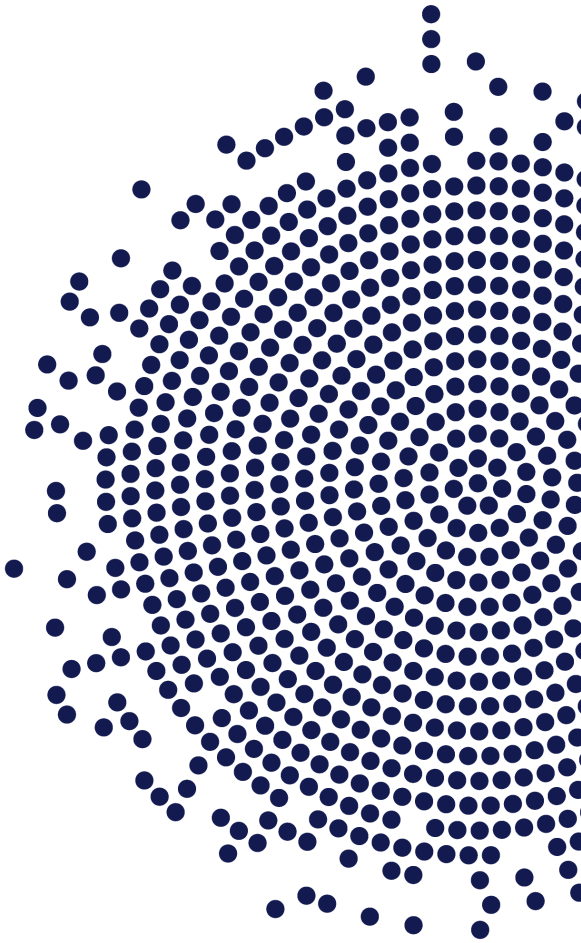

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Table of contents

Abstract

Background

The Nutrition Evidence Systematic Review (NESR) team, housed in the Center for Nutrition Policy and Promotion, Food and Nutrition Service (FNS), U.S. Department of Agriculture (USDA), specializes in conducting food- and nutrition-related reviews using rigorous, protocol-driven methodology. To inform Federal communication, research, and program guidance, the Office of Policy Support (OPS), FNS, USDA requested that the NESR team conduct a rapid review to answer the following question: What is the relationship between participation in USDA-funded summer feeding programs and food security, food sufficiency, diet quality, food acceptance, and weight-related outcomes?

Methods

The NESR team developed a protocol in collaboration with the review sponsor, the OPS Special Nutrition Research and Analysis Division team. The intervention or exposure of interest was USDA-funded summer feeding programs, including all types of models (e.g., Summer Food Service Program (SFSP), Seamless Summer Option (SSO), and electronic benefit), and USDA-funded multi-component summer programs with a food provision component in school-aged children and adolescents. The comparators were different types of summer feeding programs, including non-USDA funded programs, and no participation in a summer feeding program. The outcomes were food security, food sufficiency, diet quality, food acceptance, and weight-related outcomes in school-aged children and adolescents. All studies had to be conducted in the United States.

The NESR librarian conducted a comprehensive search for literature published between January 2000 and August 2020, which identified an existing narrative review on the same topic that covered literature published through April 2018. The review sponsor and NESR team decided to build upon this existing review and update its conclusions, if needed. To verify all relevant literature was captured by the existing review, as well as to capture literature published since its completion, two NESR analysts independently screened all results from the original, comprehensive search conducted by the NESR librarian.

NESR analysts compared the list of articles included during screening with the reference list from the existing review, and those not included in or published since the existing review were included in this rapid review. One NESR analyst extracted data from each study, and a second analyst verified all critical data. A single analyst assessed risk of bias with verification by a second analyst.

Results

Evidence included in this rapid review and findings from an existing narrative review provided the foundation for the following summary statement:

Summary statement:
Findings from this rapid review suggest USDA-funded summer feeding programs may benefit child food security and diet quality, and both in-person food provision and electronic benefit transfer formats appear beneficial.

Initial findings suggest multi-component interventions that include a feeding program may have a beneficial impact on summer weight gain prevention. However, further research is needed to determine the effects of USDA-funded summer feeding program participation on weight-related outcomes.

Summary of the evidence:
Few relevant articles have been published since the existing review. Six articles met inclusion criteria for this rapid review: four randomized controlled trials, one uncontrolled before-and-after study, and one prospective cohort study. Conducted primarily in lower income populations, studies found a beneficial impact of program participation on rates of food security. Findings were less consistent for diet quality and weight-related outcomes, but they tended to show beneficial changes in response to program participation, as well. More research in these areas could bolster the ability to draw conclusions about program effectiveness.

Introduction

This document describes a rapid review conducted to answer the following question: What is the relationship between participation in a USDA-funded summer feeding program and food security, food sufficiency, diet quality, food acceptance, and weight-related outcomes; and what best practices exist in summer feeding programs? The USDA-funded summer feeding programs exist in a variety of formats, including the Summer Food Service Program (SFSP), the Seamless Summer Option (SSO), and the Summer Electronic Benefits Transfer for Children (SEBTC). The SFSP provides reimbursement to approved food provision sites in low-income areas where healthy meals and snacks are served to school-aged children. This program includes schools as well as other approved sites, such as community centers, churches, and camps.[*] The SSO has a similar in-person food provision format but is a streamlined summer option specifically for schools participating in the National School Lunch or School Breakfast Programs, and it is governed by the rules of those feeding programs.[†] The SEBTC involves distribution of an electronic benefit amount during the summer months to families of children eligible for free- or reduced-price meals during the school year.[‡] All program types were under consideration for this rapid review.

The USDA's Nutrition Evidence Systematic Review (NESR) team conducted this rapid review with support from the USDA's Office of Policy Support (OPS). NESR specializes in conducting food- and nutrition-related systematic reviews using a rigorous, protocol-driven methodology. More information about NESR is available at the following website: NESR.usda.gov.

Methods

This rapid review was informed by an existing narrative review by Turner and Calvert[1] on the same topic. Given how recently the existing review[1] was published, the goal of this rapid review was to confirm the completeness of their literature search, identify relevant evidence published since their search ended in April 2018, and determine how the new literature aligns with the conclusions made by Turner and Calvert.[1]

Develop a protocol

The analytic framework for the rapid review examining the relationship between USDA-funded summer feeding programs and food security, food sufficiency, diet quality, food acceptance, and weight-related outcomes is presented in **Figure 1**. An analytic framework visually represents the overall scope of the rapid review question and depicts the contributing elements that were examined and evaluated. The intervention or exposure of interest is USDA-funded summer feeding programs, including all types of models (e.g., SFSP, SSO, and SEBTC), and USDA-funded multi-component summer programs including a food provision component in school-aged children and adolescents. The comparators are different types of summer feeding programs, including non-USDA funded programs, and no participation in a summer feeding program. The outcomes are food security, food sufficiency, diet quality, food acceptance, and weight-related outcomes in school-aged children and adolescents, as well as any identifiable best practices across different program types. The key

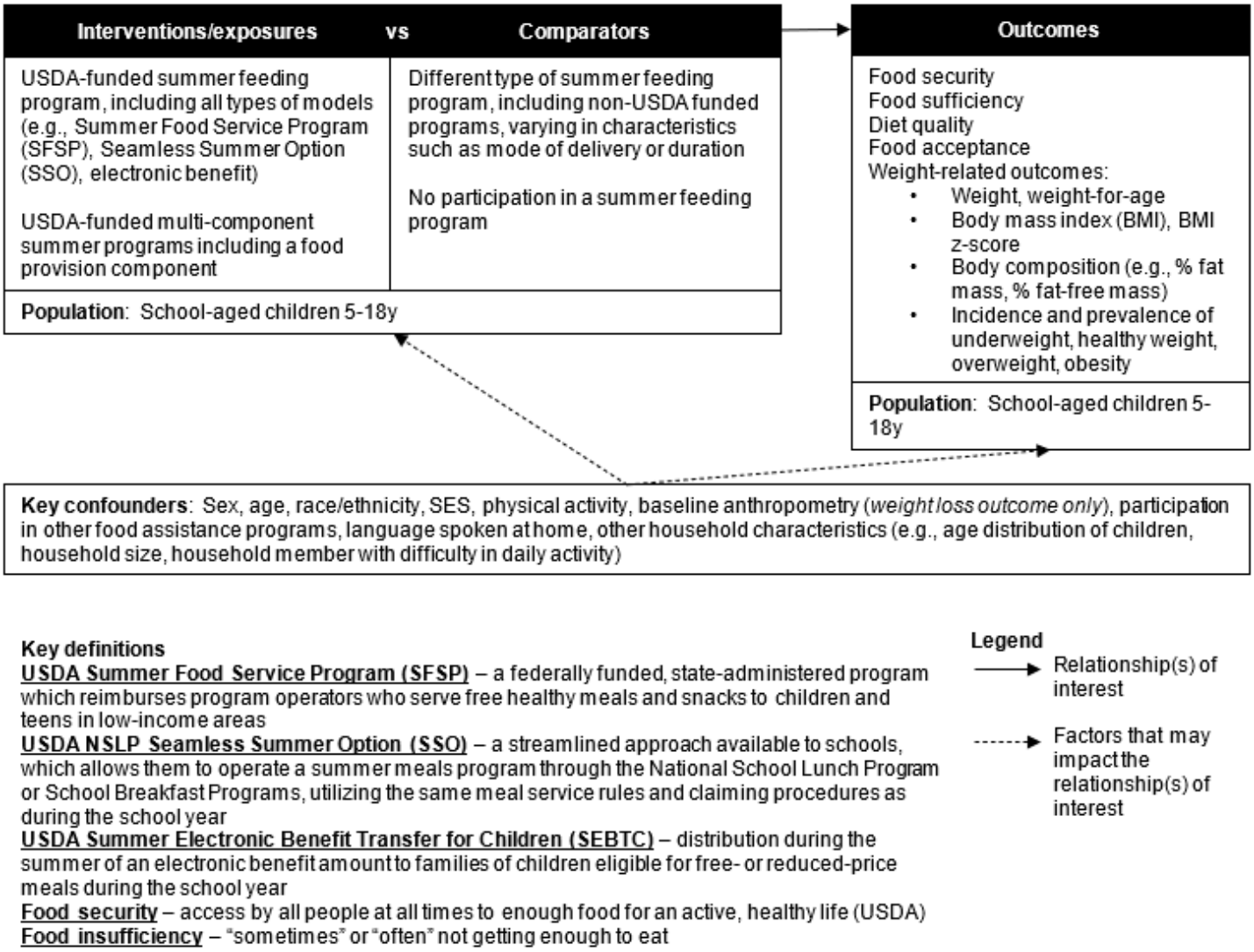
[*] Summer Food Service Program. Food and Nutrition Service, United States Department of Agriculture. Accessed August 25, 2021. https://www.fns.usda.gov/sfsp/summer-food-service-program

[†] Seamless Summer and Other Options for Schools. Food and Nutrition Service, United States Department of Agriculture. Accessed August 25, 2021. https://www.fns.usda.gov/sfsp/seamless-summer-and-other-options-schools

[‡] Summer Electronic Benefit Transfer for Children (SEBTC). Food and Nutrition Service, United States Department of Agriculture. Updated FY 2019. Accessed August 25, 2021. https://www.fns.usda.gov/ops/summer-electronic-benefit-transfer-children-sebtc

confounders are sex, age, race/ethnicity, socioeconomic status (SES), physical activity, baseline anthropometry (weight loss outcome only), participation in other food assistance programs, language spoken at home, and other household characteristics (e.g., age distribution of children, household size, household member with difficulty in daily activity). The confounders may impact the relationships of interest.

Figure 1: Analytic Framework



Search for and select studies

The inclusion and exclusion criteria for the rapid review examining the effect of USDA-funded summer feeding programs on food security, food sufficiency, diet quality, food acceptance, and weight-related outcomes are presented in **Table 1**. The inclusion and exclusion criteria are a set of characteristics used to determine which articles identified in the literature search will be included in or excluded from the rapid review.

Initial, informal evidence scanning identified an existing narrative review on the same topic covering literature published between January 2000 and April 2018[1]; therefore, the team decided to verify all relevant literature was captured by the existing review,[1] as well as to capture literature published since April 2018. The NESR librarian developed and NESR analysts reviewed a comprehensive search strategy to identify relevant articles

published between January 2000 and August 2020 that address the rapid review question. The search strategy was implemented in 3 databases: PubMed, Embase, and Education Resources Information Center (ERIC). The full search strategies are described in **Appendix 2**.

Two NESR analysts then independently screened all search results. Analysts compared the list of articles included during screening with the reference list from the existing narrative review, and those either not included in or published since the existing review[1] were included in this rapid review.

Table 1. Inclusion and exclusion criteria

Category	Inclusion Criteria	Exclusion Criteria
Study design	• Randomized controlled trials • Non-randomized controlled trials, including quasi-experimental and controlled before-and-after studies • Prospective cohort studies • Retrospective cohort studies • Cross-sectional studies • Uncontrolled before-and-after studies • Uncontrolled trials	• Case-control studies • Nested case-control studies • Narrative reviews • Systematic reviews • Meta-analyses
Intervention/ exposure	• USDA-funded summer feeding programs (e.g., Summer Food Service Program (SFSP), Seamless Summer Option (SSO), SEBTC (electronic benefits)) • Multi-component summer programs including a USDA-funded feeding component	• Feeding program during the school year
Comparator	• Different type of summer feeding program, including non-USDA funded programs, varying in characteristics such as mode of delivery or duration • No participation in a summer feeding program	

Outcomes	• Food security
	• Food sufficiency
	• Diet quality
	• Food acceptance
	• Weight-related outcomes:
	  ○ Weight, weight-for-age
	  ○ Body mass index (BMI), BMI z-score
	  ○ Body composition (e.g., % fat mass, % fat-free mass)
	  ○ Incidence and prevalence of underweight, healthy weight, overweight, obesity
		• Any other outcomes

Publication date	• January 2000 – August 2020	• Before January 2000

Category	Inclusion Criteria	Exclusion Criteria
Publication status	• Articles that have been peer-reviewed • Grey literature: reports that have not been peer-reviewed but are available from government, research, and nonprofit organizations (e.g., USDA, state-level reports, Feeding America, FRAC, No Kid Hungry)	• Articles that represent incomplete work, including unpublished manuscripts, abstracts, and conference proceedings
Language	• Articles published in English	• Articles published in languages other than English
Country*	• Studies conducted in the United States	• Studies conducted outside the United States
Study participants	• Human participants o Males o Females	• Non-human participants (e.g., animal studies, in-vitro models)
Age of study participants	• Age at intervention, exposure, outcome: o Children and adolescents (5-18 years)	• Age at intervention, exposure, or outcome: o Infants, toddlers, and young children (birth to 4y) o Adults (19-64 years) o Older adults (65 years and older)

Extract data and assess the risk of bias

One NESR analyst extracted data from each study, and a second analyst verified all data. One NESR analyst completed a risk of bias assessment for each study, and a second analyst verified their responses.

Synthesize the evidence and develop a summary statement

The findings of any newly published articles identified in the literature search were summarized in the context of conclusions drawn in the existing review.[1] Analysts noted areas of agreement and disagreement between the two reviews.

Identify limitations and recommend future research

The synthesis process identified key limitations in the existing body of evidence, as well as areas of future research that could bolster findings in this area.

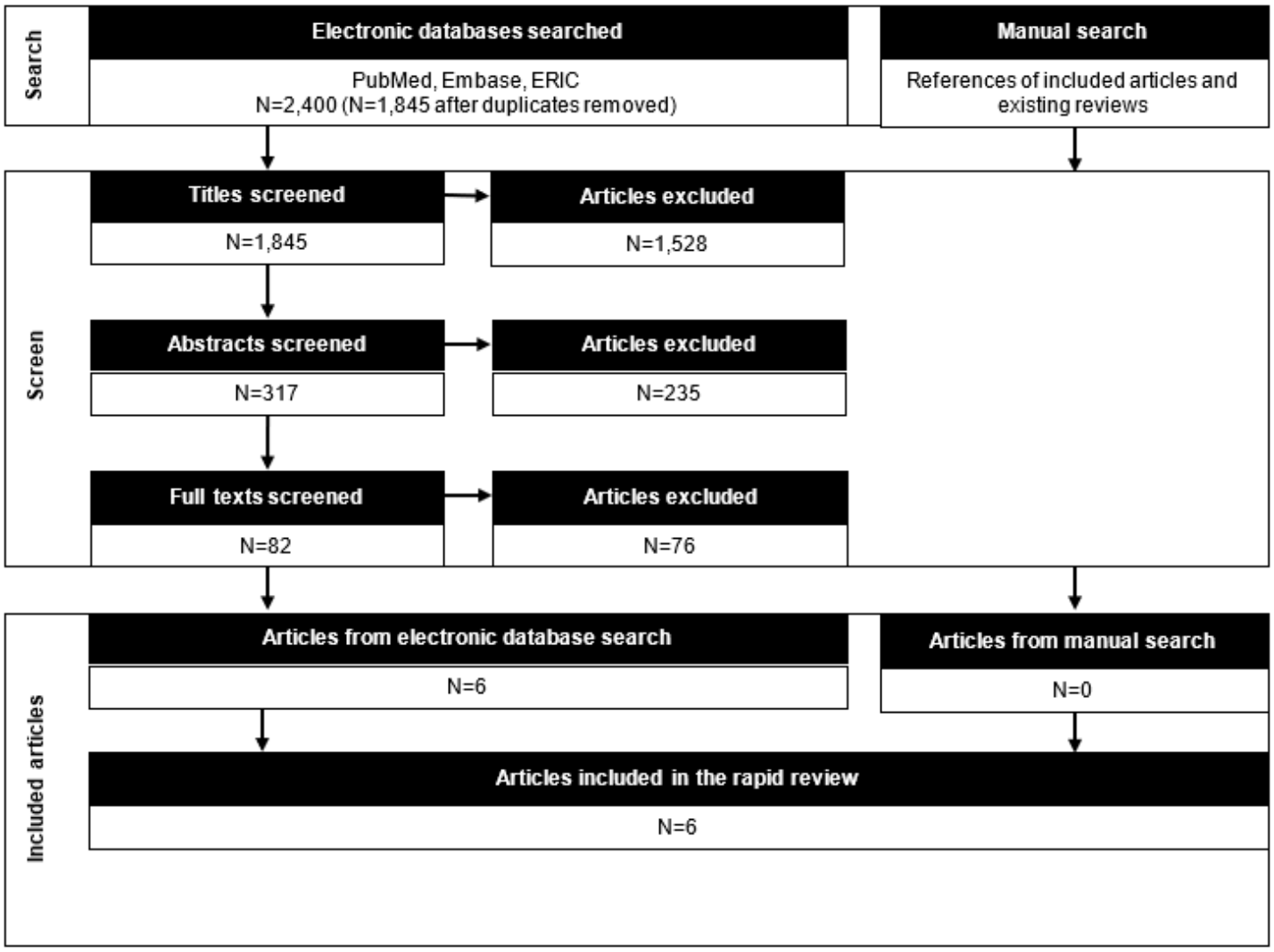
* In order to determine the inclusion exclusion criteria for country, the Human Development classification was used. This classification is based on the Human Development Index (HDI) ranking from the year the study intervention occurred or data were collected (UN Development Program. HDI 1990-2017 HDRO calculations based on data from UNDESA (2017a), UNESCO Institute for Statistics (2018), United Nations Statistics Division (2018b), World Bank (2018b), Barro and Lee (2016) and IMF (2018). Available from: http://hdr.undp.org/en/data). If the study did not report the year in which the intervention occurred or data were collected, the HDI classification for the year of publication was applied. HDI values are available from 1980, and then from 1990 to present. If a study was conducted prior to 1990, the HDI classification from 1990 was applied. If a study was conducted in 2018 or 2019, the most current HDI classification was applied. When a country was not included in the HDI ranking, the current country classification from the World Bank was used instead (The World Bank. World Bank country and lending groups. Available from: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world- country-and-lending-groups)

Results

Literature search and screening results

The literature search yielded 1,845 search results after the removal of duplicates (see **Figure 2**). Dual-screening resulted in the exclusion of 1,528 titles, 235 abstracts, and 76 full-texts articles. Reasons for full-text exclusion are in **Appendix 3**. The body of evidence included 6 articles.

Figure 2: Literature search and screen flowchart



Evidence description and synthesis

The existing narrative review by Turner and Calvert[1] provided a thorough summary of federally funded summer feeding programs, including their characteristics, practices, and reach; the nutrition standards of the summer meals; and the impact on food insecurity, dietary patterns, weight, and academic, behavioral, and cognitive outcomes. They searched four databases, using specific keywords to identify relevant evidence. Literature from peer-reviewed publications, as well as governmental and non-governmental organization (NGO) reports

were considered. The existing review[1] covered the different summer feeding program formats, including the SFSP, the SSO, and the SEBTC. The body of evidence was small (8 peer-reviewed papers and 10 government or NGO sponsored reports) but tended to find beneficial impacts of program participation. Further details on outcome-specific findings are provided below.

Evidence from this rapid review supports the findings published in the Turner and Calvert review. Results from six articles not included in Turner and Calvert[1] examine the relationship between USDA-funded summer feeding programs and food security, diet quality, food acceptance, and weight-related outcomes. This body of evidence includes four randomized controlled trials (RCTs) (two of which analyze the same dataset; the other two of which are treated as uncontrolled before-and after studies), one uncontrolled before-and-after study, and one prospective cohort study (PCS). See **Table 2** for additional information on each study. There was no evidence available to evaluate the impact of summer feeding programs on food sufficiency or to draw conclusions around best practices, which were also outcomes of interest.

Food security

Turner and Calvert[1] reported a link between greater availability and accessibility of SFSP/SSO feeding programs and increased prevalence of food security. Programs that placed SFSP meal sites in locations with other summer activities for children, such as libraries, were positively perceived by recipients. Multiple studies on the SEBTC program, which provides a summer feeding option for families with limited access to in-person meal sites, also demonstrated a beneficial impact on food security.

Evidence on food security published since the Turner and Calvert review supports the conclusions drawn therein. Data from an RCT by Collins et al[2] show significant decreases in rates of very low food security among children (defined as reduction of food intake and disruption of normal eating patterns in a child due to lack of food) and rates of food insecurity in families of school-aged children receiving monthly SEBTC benefit of $60-per-eligible-child compared to $0. A $30 monthly benefit showed mixed results when compared to the full $60 monthly benefit amount; food insecurity rates were significantly lower in the $60 group compared to the $30 group, but both $60 and $30 had a similarly beneficial impact on rates of very low food security.

A prospective cohort study by Nalty et al[3] examined the impact of the SFSP in 6-11 year-old children in a group of small, recent immigrant towns, or *colonias*, on the Texas-Mexico border and found SFSP participation did not predict food security the following spring. These findings suggest school year feeding programs may have a greater long-term impact on food security, but the relationship between SFSP participation and summertime food security was not clearly evaluated in this study. The living conditions of participants in this study, which included a lack of running water, poor sanitation, and unpaved roads, limited generalizability; and this paper was not included in the existing review.[1]

Overall, the findings to date support a beneficial impact of federally funded summer feeding programs, both in-person and through electronic transfers, on food security.

Diet quality

Turner and Calvert[1] detailed evidence on the impact of federally funded summer feeding programs on child diet quality, specifically intake of certain food groups. Though there were no data on overall diet quality or dietary patterns, available RCT evidence suggested summer feeding program participation increased child consumption of fruits, vegetables, whole grains, and dairy, while decreasing overall consumption of added sugars, particularly from sugar-sweetened beverages (SSB).

Recent evidence parallels these findings. Briefel et al[4] conducted an RCT in school-aged children that found a $60 SEBTC benefit increased child intake of fruits, vegetables, whole grains, and dairy, and reduced intake of added sugars (excluding cereal) and SSB, compared to no benefit. The $60 benefit also produced greater child

intake of fruits, vegetables, whole grains, and dairy compared to a $30 benefit, though there was no significant difference in added sugars or SSB intake.

Hopkins et al[5] randomized Kindergarten-5th grade children to one of three multi-component groups, all of which included equal SFSP access. The three arms consisted of Active Control (non-nutrition, non-physical activity, non-mental health 4-H programming), Standard Care (nutrition and physical activity programming), and Enhanced Care (nutrition, physical activity, and mental health programming) groups. Between-group comparisons are not informative for this review since all participants had equal access to the SFSP; within-group comparisons are therefore treated as uncontrolled before-and-after data. Within-group comparisons show no significant effects on child dietary intake, specifically intake of fruits, vegetables, and SSB, from pre- to post-intervention.

In summary, the existing evidence suggests summer feeding programs may improve child intake of certain food groups. More research is needed to determine the magnitude and practical significance of these findings. In addition, more research is needed to examine the impacts of summer feeding programs on overall diet quality and/or dietary patterns.

Weight-related outcomes

Turner and Calvert[1] identified multiple articles that included a summer feeding component and examined weight-related outcomes, but only one that was clearly a federally funded program. That intervention study found a multi-component, education-based day camp, that included a SFSP component, decreased BMI for participants. However, the unique impact of the meal provision cannot be disentangled from the other intervention components.

Three studies identified by this rapid review examined the relationship between federally funded summer feeding programs and weight-related outcomes. All three included SFSP access as one of multiple intervention components. Therefore, the unique impact of in-person meal provision could not be determined from these studies; however, they provided evidence on the types of settings and joint activities that could bolster the impact of summer feeding programs on weight-related outcomes.

Evans et al[6] enrolled 6-12 year-old participants in an 8-week multi-component weight gain prevention program, which focused on increasing physical activity during half-day periods in which the SFSP provided the lunch meal. Within-group data were presented for the intervention group only; therefore, the study design is treated as an uncontrolled before-and-after and evaluated as such. Participants in the intervention group showed a significant decrease in BMI z-scores over the duration of the study. This effect was moderated by attendance, such that participants who attended roughly 80% of study days (>30 of 39 days) showed a significant improvement in BMI, while those who attended less frequently did not.

Hopkins et al[5] randomized Kindergarten-5th grade participants to one of three multi-component intervention groups aimed at weight gain prevention, all of which included equal SFSP access, and found no significant change in BMI within groups across eight weeks.

Hunt et al[7] utilized an uncontrolled before-and-after study design to assess the impact of a 7-week, multi-component summer learning program in 2nd and 3rd graders, which included an educational component; a SFSP breakfast, lunch, and snack; and physical activity time. They found it did not produce a significant change in BMI, BMI z-scores, or BMI percentile over seven weeks.

These findings suggest federally funded summer feeding programs may have a beneficial impact on weight-related outcomes, particularly summer weight gain prevention, but the findings are too mixed to draw definitive conclusions. There is a need for further research—particularly research focused on summer feeding program participation, exclusively—to determine the true impact on weight-related outcomes.

Food acceptance

No evidence was identified, in either the existing review[1] or the updated literature search, that directly assessed acceptance of the foods provided in these summer feeding programs; nor are there findings on the direct impact of a summer feeding program on general food acceptance.

However, indirect data from the multi-component trial by Hopkins and colleagues reported general food acceptance before and after the 8-week, 3-armed multi-component intervention described earlier.[5] Participants in all three groups had equal access to the SFSP. Within-group differences in food acceptance were found, though not for all groups. The Standard Care group participants reported a decreased liking for vegetables and fruit at eight weeks compared to baseline; they conversely reported an increased preference for healthy snacks at eight weeks. The Enhanced Care group also reported increased preference for healthy snacks. Although these findings cannot detect the impact of the SFSP on food acceptance, they do identify components of summer programs that could be combined with the SFSP to impact preferences and behaviors.

Conclusions

Summary statement

Based on the evidence included in this rapid review and the findings from an existing narrative review, the following summary statement was developed:

Findings from this rapid review suggest USDA-funded summer feeding programs may benefit child food security and diet quality, and both in-person food provision and electronic benefit transfer formats appear beneficial.

Initial findings suggest multi-component interventions that include a feeding program may have a beneficial impact on summer weight gain prevention. However, further research is needed to determine the effects of USDA-funded summer feeding program participation on weight-related outcomes.

Limitations and Research Recommendations

This rapid review highlights a need for additional research on USDA-funded summer feeding programs, particularly experimental research that can help clarify the unique impact of these programs on child health outcomes of interest, including food security, food sufficiency, diet quality, food acceptance, and weight-related outcomes. The existing evidence is limited by both the number of studies and by methodological challenges in the studies themselves. Although the study design is strong for many of the trials in this rapid review, much of the data are from multi-component interventions where the unique impact of the summer feeding program cannot be determined. Multiple studies are also limited by small sample sizes and high attrition. See **Table 3** for a risk of bias assessment by study.

Future research can strengthen the evidence base by including measures that give a complete picture of these outcomes, such as overall diet quality. Examining more recent, novel approaches to summer meal provision, such as those used during the COVID-19 pandemic, will also bolster these findings and help identify the most effective strategies for moving forward in this important area.

Table 2: Evidence examining the relationship between summer feeding programs and food security, food sufficiency, diet quality, food acceptance, and weight-related outcomes[a]

Study and Population Characteristics	Intervention/Exposure, Comparator and Outcome(s)	Results*	Model adjustments and Study Limitations
Briefel, 2018, RCT, **2012: 10 grantees, 14 locations (Cherokee Nation, Chickasaw Nation, DE, NV, TX, WA, CT, MI, MO, OR)** **2013: 4 grantees, 6 locations (Chickasaw Nation, DE, MI, OR)** Spring survey N=38,833, Summer survey N=44,567; Power: In 2012, calculated as subsample size needed to estimate impact of 5% in very low food security among children at 95% confidence with 80% power. In 2013, calculated to detect a difference between the 2 benefit amounts. Participant characteristics: • Sex (female): NR • Age: 5-18y • Race/ethnicity of parent/guardian: 26% Hispanic, 23% Non-Hispanic black, 42% Non-Hispanic white • SES: 44% food insecure, 8% very low food security; 64% SNAP, 22% WIC; 100% eligible for free/reduced-price school meals; 71% below poverty line • Anthropometrics: NR	**Intervention:** $60/month EBT **Comparator:** $0/month (2012 control group) $30/month (2013 control group) Participants could choose for benefits to come through SNAP or WIC Intervention duration: Summer months (including prorated benefit for partial months) **Outcome assessment methods/timing:** • Baseline (spring months while school was still in session), 2012, 2013 (data pooled from 2012 & 2013) • Method: parent/guardian interview • Outcomes of interest: child frequency of certain food/bev consumption	**Diet quality**, Weighted least squares: Difference (SE) (n range=42,406-43,357) **2012: $60 vs. $0** **Fruit & vegetable: 0.36 (0.03)** **F&V w/o fried potatoes: 0.36 (0.03)** **Whole grains: 0.49 (0.05)** **Dairy: 0.22 (0.03)** Drank nonfat/low-fat milk: -0.54 (0.71) Added sugars: -0.18 (0.17) **Added sugars excluding cereals: -0.47 (0.15)** **SSB: -0.59 (0.16)** **2013: $60 vs. $30** **Fruit & vegetable: 0.20 (0.03)** **F&V w/o fried potatoes: 0.19 (0.03)** **Whole grains: 0.13 (0.06)** **Dairy: 0.07 (0.02)** Drank nonfat/low-fat milk: 0.34 (0.55) Added sugars: 0.13 (0.18) Added sugars excluding cereals: 0.02 (0.16) SSB: 0.06 (0.18) *Findings broken down by model distribution method found the SEBTC-WIC model had more favorable intake levels than the SEBTC-SNAP model (data in paper)*	**Confounders accounted for:** • N/A **Confounders NOT accounted for:** • Key confounders: Age, sex, race/ethnicity, SES, physical activity, baseline anthropometry, participation in other food assistance programs, language spoken at home, other household characteristics **Additional model adjustments:** • Sample design, differential survey nonresponse **Limitations:** • Participant/staff blinding not possible • Participants loss to follow up **Funding Source(s):** FNS, USDA

* Bold, shaded font indicates results are statistically significant at p<0.05—green shading indicates a beneficial association; red shading indicates a detrimental relationship.

Study and Population Characteristics	Intervention/Exposure, Comparator and Outcome(s)	Results*	Model adjustments and Study Limitations
Collins, 2018, RCT, **2012: 10 grantees, 14 locations (Cherokee Nation, Chickasaw Nation, DE, NV, TX, WA, CT, MI, MO, OR)** **2013: 4 grantees, 6 locations (Chickasaw Nation, DE, MI, OR)** Spring survey N=41,793, Summer survey N=48,449; Power: In 2012, calculated as subsample size needed to estimate impact of 5% in very low food security among children at 95% confidence with 80% power. In 2013, calculated to detect a difference between the 2 benefit amounts Participant characteristics: • Sex (female): NR • Age: 5-18y • Race/ethnicity of parent/guardian: (roughly) 26% Hispanic, 23% Non-Hispanic black, 42% Non-Hispanic white • SES: 43% food insecure, 7% very low food security; 65% SNAP, 25% WIC; 100% eligible for free/reduced-price school meals; 71% below poverty line • Anthropometrics: NR *Note: this is the same dataset used by Briefel, et al. 2018	**Intervention:** $60/month EBT **Comparator:** $0/month (2012 control group) $30/month (2013 control group) Participants could choose for benefits to come through SNAP or WIC Intervention duration: Summer months (including prorated benefit for partial months) **Outcome assessment methods/timing:** • Baseline (spring months while school was still in session), 2012, 2013 (data pooled from 2012 & 2013) • Method: parent/guardian-completed 18-item USDA Food Security Survey (last 30 days) • Outcomes of interest: food security, child frequency of certain food/bev consumption	Weighted least squares: Difference (SE) **2012: $60 vs. $0** **Very Low Food Security (VLFS-C):** **$0 benefit: 9.1% of households** **$60 benefit: 6.1% of households** **(p<0.01)** **Food Insecurity (FI-C):** **$0 benefit: 43.0% of households** **$60 benefit: 34.7% of households** **(p<0.01)** **2013: $60 vs. $30** Very Low Food Security (VLFS-C): $30 benefit: 6.7% of households $60 benefit: 6.1% of households (p=0.076) **Food Insecurity (FI-C):** **$30 benefit: 38.3% of households** **$60 benefit: 34.7% of households** **(p<0.01)** **Same nutrition/diet quality outcomes as in Briefel, 2018: sig. benefit for fruit & vegetable, whole grains, and dairy** Findings broken down by model distribution method found no significant differences in food security outcomes between the SEBTC-WIC and the SEBTC-SNAP model (data in paper)	**Confounders accounted for:** • N/A **Confounders NOT accounted for:** • Key confounders: Age, sex, race/ethnicity, SES, physical activity, baseline anthropometry, participation in other food assistance programs, language spoken at home, other household characteristics **Additional model adjustments:** • Sample design, differential survey nonresponse **Limitations:** • Participant/staff blinding not possible • Participants loss to follow up **Funding Source(s):** FNS, USDA

Study and Population Characteristics	Intervention/Exposure, Comparator and Outcome(s)	Results*	Model adjustments and Study Limitations
Evans, 2018 **Uncontrolled before-and-after study (using data from RCT), RI** Baseline N=81, Analytic N=75 (Attrition: 90% intervention group; 97% control group) Power: Not powered to test for intervention effects on BMIz Participant characteristics: Intervention group only • Sex (female): 52% • Age: 8.6 (1.9) y (6-12y) • Race/ethnicity: 10% Non-Hispanic white; 12% Non-Hispanic black; 39% Non-Hispanic other; 39% Hispanic • SES: 100% eligible for free/reduced-price school meals • Anthropometrics: 45% overweight/obese	**Intervention (n=51):** 8-wk multi-component weight gain prevention intervention; SFSP sponsoring elementary school open sites • 9am-1pm weekdays, ~3hr physical activity, SFSP lunch **Control group (n=30):** Similar access to SFSP, no access to intervention programming Intervention compliance: Attendance 66±10% of days **Outcome assessment methods/timing:** • Time point(s) of assessment: baseline, post-intervention (~3 mo later) • Outcomes: BMIz • Method: Weight and height measured using standard procedures	*These data are from the intervention group only since no within-person data were presented for the control group* **Mean change in BMIz by attendance rate:** 1-20 days (n=13): 0.08 21-30 days (n=20): -0.05 **31-39 days (n=13): -0.16**	**Confounders accounted for:** • N/A **Confounders NOT accounted for:** • Key confounders: Age, sex, race/ethnicity, SES, physical activity, baseline anthropometry, participation in other food assistance programs, language spoken at home, other household characteristics **Additional model adjustments:** • N/A **Limitations:** • Periodic low attendance • Missing data may have differentially impacted groups **Funding Source(s):** Hassenfeld Childhood Health Innovation Institute at Brown University; National Institute of Diabetes and Digestive and Kidney Diseases (K01DK110142, EWE); USDA (SFSP portion)

Study and Population Characteristics	Intervention/Exposure, Comparator and Outcome(s)	Results*	Model adjustments and Study Limitations
Hopkins, 2018 **Uncontrolled before-and-after study (using data from an RCT), Franklin County, Columbus, OH** Baseline N=87, Analytic N=81 (Attrition: 7%); Power: 20 participants/site provided 70% power to detect difference of 0.5 BMIz change between intervention and control groups at 95% confidence Participant characteristics: • Sex (female): 57% • Age: 7.6 (SE=0.2) y (K-5th grade) • Race/ethnicity: 90% black; 10% non-black • SES: 59% 'low income' based on national poverty guidelines • Anthropometrics: 17% overweight; 13% with obesity	**Intervention:** 8-wk, 3-arm, multicomponent weight gain prevention summer camp -Standard Care (nutrition & PA) -Enhanced Care (nutrition, PA, mental health) **Comparator:** -Active Control (4-H programming—non nutrition-, PA-, or mental health-related) *All participants had access to SFSP* Intervention compliance: attendance reported by group in paper **Outcome assessment methods/timing:** • Baseline and post-intervention • Outcomes: BMIz, diet quality, food acceptance • Method: 24hr dietary recalls (parent-assisted for younger children) administered by study staff; height and weight measured by study staff using the NHANES protocol	**Weight-related outcomes** (analysis method) BMI Z-score: no sig. intervention effect **Food acceptance**, Mean change (SE) Liked fruit **Standard care: −1.57 (0·41)** Liked vegetable & fruit **Standard care: −3.08 (0.77)** **Enhanced care: −0.88 (1.16)** Healthy Snack Preference **Standard care: 0.77 (0.30)** **Enhanced care: 0.67 (0.32)** *There were no other sig. intervention effects on veg, fruit, healthy snack acceptance* **Diet quality** There were no sig. intervention effects on veg, fruit, snacking	**Confounders accounted for:** • Key confounders: Race/ethnicity, SES (income), physical activity **Confounders NOT accounted for:** • Key confounders: Sex, age, baseline anthropometry (weight loss outcome only), participation in other food assistance programs, language spoken at home **Additional model adjustments:** • N/A **Limitations:** • Missing data may have differentially impacted groups **Funding Source(s):** Aetna Foundation, The Ohio State University Office of Outreach and Engagement

Study and Population Characteristics	Intervention/Exposure, Comparator and Outcome(s)	Results*	Model adjustments and Study Limitations
Hunt, 2019 **Uncontrolled before-and-after study, Southeastern US** Baseline N=31, Analytic N=20 (Attrition: 35%); Power: NR Participant characteristics (*Analytic N): • Sex (female): 40% • Age: 6.4 (0.6) y • Race/ethnicity: 80% African American • SES: Parent/Guardian Education: No High School Diploma: 5%; high School Diploma: 20%; college Degree: 60% • Household Income: $19,999 or less: 5%; $20,000 - $39,999: 35%; $40,000 or more: 35% • Anthropometrics: BMI: BMI Underweight: 5%; Normal weight: 65%; Overweight/Obese: 15%	**Intervention:** Daily (Monday to Thursday) academic achievement program operated by a local community organization in collaboration with a local school district. -Structured reading opportunities and lessons, lunch, enrichment (e.g. social skills), and physical activity All children provided SFSP breakfast, lunch, and a snack, daily. **Comparator:** None Intervention duration: 7 weeks (with week 4 being a holiday break) Intervention compliance: NR **Outcome assessment methods/timing:** • Time point(s) of assessment: Height & weight: wks 1 & 7 Diet data: wks 2 & 4 • Method: Ht & wt measured by trained research assistants using standard methods and CDC growth charts to determine BMIz. • Diet data: Beverage and Snack Questionnaire (BSQ) completed by the participants' parents, represents last 7 days	**Weight-related outcomes** Median regression, median change (95% CI) • BMI: −0.2, 95% CI: (−0.9 1.4) • zBMI: 0.0, 95% CI: (−0.3 0.4) • BMI Percentile: 0.0, 95% CI: (−0.2 0.4)	**Confounders accounted for:** • Key confounders: Sex **Confounders NOT accounted for:** • Key confounders: Age, race/ethnicity, SES, physical activity, baseline anthropometry, participation in other food assistance programs, language spoken at home, other household characteristics **Additional model adjustments:** • Attendance **Limitations:** • Small sample limits generalizability • No control group • Time period does not capture the entire typical summer break • Many key confounders not controlled for • High attrition • No pre-registered protocol or data analysis plan **Funding Source(s):** • None

Study and Population Characteristics	Intervention/Exposure, Comparator and Outcome(s)	Results*	Model adjustments and Study Limitations
Nalty, 2013 **PCS, Texas-Mexico border colonias** Baseline N=50, Analytic N=48 (Attrition: 4%); Power: NR Participant characteristics: • Sex (female): 58% • Age: 8.5 (1.4)y (6-11y) • Race/ethnicity of mother: 100% Hispanic or Mexican • SES: Parent report: 4% very low food security, 54% low food security; 25% marginal food security; Child report: 10% very low food security; 52% low food security, 21% marginal food security; ≤$699 monthly income: 8.3% • Anthropometrics: NR	**Exposure of Interest**: SFSP participation **Comparator:** No SFSP participation Exposure assessment method and timing: Data collected through *promotora* researcher–administered surveys in participants' homes. Mothers reported participation in nutrition assistance programs **Outcome assessment methods/timing:** • Time point(s) of assessment: summer (baseline), following spring (follow up) • Method: child completed Food Security Survey Module for Youth (9-item); parent completed US Children's Food Security Scale (8-item)	**Food security** Logistic regression, OR (95% CI) SFSP: 0.90 (0.23, 3.54) Child report: Food security was more prevalent in summer than during school year (p=0.02) Parent report: Food security did not vary between summer and school year (p=0.46)	**Confounders accounted for:** • Key confounders: Race/ethnicity, SES (household income; education; marital status), participation in other food assistance programs, household size **Confounders NOT accounted for:** • Key confounders: Sex, age, physical activity **Additional model adjustments:** • Nativity: Mexico, Mothers' group relative to children **Limitations:** • Low participant generalizability due to living conditions • Small sample size also limits generalizability **Funding Source(s):** Robert Wood Johnson Foundation, NIH, CDC, USDA

[a] Abbreviations: BMI: Body mass index (kg/m^2); CDC: Centers for Disease Control and Prevention; CI: Confidence interval; NIH: National Institutes of Health; N/A: Not applicable; NR: Not reported; OR: Odds ratio; PCS: Prospective cohort study; RCT: Randomized controlled trial; SEBTC: Summer Electronic Benefit Transfer for Children; SES: Socioeconomic status; SFSP: Summer Food Service Program; SNAP: Supplemental Nutrition Assistance Program; SSO: Seamless Summer Option; USDA: United States Department of Agriculture; WIC: Nutrition Program for Women, Infants, and Children

Table 3. Risk of bias for studies examining USDA-funded summer feeding programs and food security, food sufficiency, diet quality, food acceptance, and weight-related outcomes

	Randomization	Confounding	Selection of participants	Classification of interventions	Classification of exposures	Deviations from intended interventions	Deviations from intended exposures	Missing outcome data	Outcome measurement	Selection of the reported result
Briefel, 2018, RCT*	**Low**	N/A	N/A	N/A	N/A	**Low**	N/A	**Some concerns**	**Some concerns**	**Low**
Collins, 2018, RCT	**Low**	N/A	N/A	N/A	N/A	**Low**	N/A	**Low**	**Some concerns**	**Low**
Evans, 2018, Uncontrolled before/after†	N/A	**Serious**	**Low**	**Low**	N/A	**Moderate**	N/A	**Moderate**	**Low**	**Moderate**
Hopkins, 2018, Uncontrolled before/after	N/A	**Serious**	**Low**	**Low**	N/A	**Moderate**	N/A	**Low**	**Low**	**Low**
Hunt, 2018, Uncontrolled before/after	N/A	**Serious**	**Low**	**Low**	N/A	**Low**	N/A	**Moderate**	**Low**	**Moderate**
Nalty, 2013, PCS‡	N/A	**Serious**	**Low**	N/A	**Low**	**Some concerns**	**No information**	**Moderate**	**Moderate**	**Moderate**

* Possible ratings of low, some concerns, or high determined using the "Cochrane Risk-of-bias 2.0" (RoB 2.0) (August 2019 version)"

† Possible ratings of low, moderate, serious, critical, or no information determined using the "Risk of Bias in Non-randomized Studies of Interventions (ROBINS-I) tool"

‡ Possible ratings of low, moderate, serious, critical, or no information determined using the "Risk of Bias for Nutrition Observational Studies" tool (RoB-NObs)

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NESR staff: developed the protocol for examining the scientific evidence, including the inclusion and exclusion criteria; reviewed all studies that met the set criteria; discussed the body of evidence for each question; and wrote the summary statements.

NESR staff worked with the review sponsors, the OPS SNRAD team, to determine the scope of the question and develop the rapid review protocol.

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- Holly Figueroa, MSW
- Conor McGovern, MA
- Kelley Scanlon, PhD, RD

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References of the articles included in the rapid review

1. Turner L, Calvert HG. The Academic, Behavioral, and Health Influence of Summer Child Nutrition Programs: A Narrative Review and Proposed Research and Policy Agenda. *J Acad Nutr Diet.* 2019;119(6):972-983.
2. Collins AM, Klerman JA, Briefel R, et al. A Summer Nutrition Benefit Pilot Program and Low-income Children's Food Security. *Pediatrics.* 2018;141(4).
3. Nalty CC, Sharkey JR, Dean WR. School-based nutrition programs are associated with reduced child food insecurity over time among Mexican-origin mother-child dyads in Texas Border Colonias. *J Nutr.* 2013;143(5):708-713.
4. Briefel RR, Collins AM, Wolf A, Gordon AR, Cabili CL, Klerman JA. Nutrition impacts in a randomized trial of summer food benefits to prevent childhood hunger in U.S. schoolchildren. *Journal of Hunger & Environmental Nutrition.* 2018;13(3):304-321.
5. Hopkins LC, Holloman C, Melnyk B, et al. Participation in structured programming may prevent unhealthy weight gain during the summer in school-aged children from low-income neighbourhoods: feasibility, fidelity and preliminary efficacy findings from the Camp NERF study. *Public Health Nutr.* 2019;22(6):1100-1112.
6. Evans EW, Bond DS, Pierre DF, Howie WC, Wing RR, Jelalian E. Promoting health and activity in the summer trial: Implementation and outcomes of a pilot study. *Prev Med Rep.* 2018;10:87-92.
7. Hunt ET, Whitfield ML, Brazendale K, Beets MW, Weaver RG. Examining the impact of a summer learning program on children's weight status and cardiorespiratory fitness: A natural experiment. *Eval Program Plann.* 2019;74:84-90.

Appendices

Appendix 1: Abbreviations

Table A 1. List of abbreviations

Abbreviation	Full name
BMI	Body mass index (kg/m^2)
CNPP	Center for Nutrition Policy and Promotion
FNS	Food and Nutrition Service
HHS	United States Department of Health and Human Services
NESR	Nutrition Evidence Systematic Review
NGAD	Nutrition Guidance and Analysis Division
NGO	Non-governmental Organization
OPS	Office of Policy Support
PCS	Prospective cohort study
RCT	Randomized controlled trial
SEBTC	Summer Electronic Benefits Transfer for Children
SES	Socioeconomic status
SFSP	Summer Food Service Program
SNAP	Supplemental Nutrition Assistance Program
SNRAD	Special Nutrition Research and Analysis Division
SSB	Sugar-sweetened beverage
SSO	Seamless Summer Option
USDA	United States Department of Agriculture
WIC	Nutrition Program for Women, Infants, and Children

Appendix 2: Literature search strategy

Databases and search terms

Database: PubMed
Provider: U.S. National Library of Medicine

Date(s) Searched: August 21, 2020
Date range searched: January 1, 2000-August 21, 2020

Results: 1,016

#1 - summer*[tiab] OR holiday*[tiab]

#2 - "Meals"[Mesh] OR meal*[tiab] OR breakfast*[tiab] OR break fast*[tiab] OR lunch*[tiab] OR snack*[tiab] OR dinner*[tiab] OR supper*[tiab] OR "Food Assistance"[Mesh] OR food*[tiab] OR feed*[tiab] OR nutrition service*[tiab] OR nutrition intervention*[tiab] OR nutrition program*[tiab] OR nutritional program*[tiab] OR nutrition educat*[tiab] OR nutritional intervention*[tiab] OR nutritional educat*[tiab] OR "Food Supply"[Mesh] OR "Health Status Disparities"[Mesh] OR health disparit*[tiab] OR "Poverty"[Mesh] OR poverty[tiab] OR "Socioeconomic Factors"[Mesh] OR social economic*[tiab] OR socialeconomic[tiab] OR "Hunger"[Mesh] OR hunger[tiab]

#3 - "Child"[Mesh] OR child*[tiab] OR youth*[tiab] OR "Adolescent"[Mesh] OR adolescen*[tiab] OR teen*[tiab] OR preteen*[tiab] OR pre-teen*[tiab] OR pre-adolesc*[tiab] OR preadolesc*[tiab] OR boy[tiab] OR boys[tiab] OR girl[tiab] OR girls[tiab] OR schoolchild*[tiab] OR elementary school*[tiab] OR primary school*[tiab] OR secondary school*[tiab] OR middle school*[tiab] OR junior high*[tiab] OR high school*[tiab] OR juvenile*[tiab] OR pubescent[tiab] OR pre pubescent[tiab] OR prepubescent[tiab] OR kid[tiab] OR kids[tiab]

#4 - (#1 AND #2 AND #3)

#5 - (#1 AND #2 AND #3) NOT ("Animals"[Mesh] NOT ("Animals"[Mesh] AND "Humans"[Mesh] NOT (editorial[ptyp] OR comment[ptyp] OR news[ptyp] OR letter[ptyp] OR retracted publication[ptyp] OR retraction of publication[ptyp] OR retraction of publication[tiab] OR retraction notice[ti]) Filters: English, from 2000 - 2020 Sort by: Publication Date

Database: Embase

Provider: Elsevier

Date(s) Searched: August 21, 2020
Date range searched: January 1, 2000-August 21, 2020
Results: 880

#1 - summer*:ab,ti OR holiday*:ab,ti

#2 - 'meal'/exp OR meal*:ab,ti OR breakfast*:ab,ti OR 'break fast*':ab,ti OR lunch*:ab,ti OR snack*:ab,ti OR dinner*:ab,ti OR supper*:ab,ti OR 'food assistance'/exp OR food*:ab,ti OR feed*:ab,ti OR 'nutrition service*':ab,ti OR 'nutrition intervention*':ab,ti OR 'nutrition program*':ab,ti OR 'nutritional program*':ab,ti OR 'nutrition educat*':ab,ti OR 'nutritional intervention*':ab,ti OR 'nutritional educat*':ab,ti OR 'food insecurity'/exp OR 'health disparity'/exp OR 'health disparit*':ab,ti OR poverty:ab,ti OR 'socioeconomics'/exp OR 'social economic*':ab,ti OR socialeconomic:ab,ti OR 'hunger'/exp OR hunger:ab,ti

#3 - 'child'/exp OR child*:ab,ti OR youth*:ab,ti OR 'adolescent'/exp OR adolescen*:ab,ti OR teen*:ab,ti OR preteen*:ab,ti OR 'pre teen*':ab,ti OR 'pre adolesc*':ab,ti OR preadolesc*:ab,ti OR boy:ab,ti OR boys:ab,ti OR girl:ab,ti OR girls:ab,ti OR schoolchild*:ab,ti OR 'elementary school*':ab,ti OR 'primary school*':ab,ti OR 'secondary school*':ab,ti OR 'middle school*':ab,ti OR 'junior high*':ab,ti OR 'high school*':ab,ti OR juvenile*:ab,ti OR pubescent:ab,ti OR 'pre pubescent':ab,ti OR prepubescent:ab,ti OR kid:ab,ti OR kids:ab,ti

#4 - #1 AND #2 AND #3 AND [humans]/lim AND [english]/lim AND [2000-2020]/py NOT ([conference abstract]/lim OR [conference paper]/lim OR [conference review]/lim OR [editorial]/lim OR [erratum]/lim OR [letter]/lim OR [note]/lim)

Database: Education Resources Information Center (ERIC)

Provider: Institute of Education Sciences within the United States Department of Education

Date(s) Searched: August 21, 2020
Date range searched: January 1, 2000-August 21, 2020
Results: 504

((summer* OR holiday*) AND (meal* OR breakfast* OR 'break fast*' OR lunch* OR snack* OR dinner* OR supper* OR food* OR feed* OR 'nutrition service*' OR 'nutrition intervention*' OR 'nutrition program*' OR 'nutritional program*' OR 'nutrition educat*' OR 'nutritional intervention*' OR 'nutritional educat*' OR 'health disparit*' OR poverty OR 'social economic*' OR socialeconomic OR hunger) AND (child* OR youth* OR adolescen* OR teen* OR preteen* OR 'pre teen*' OR 'pre adolesc*' OR preadolesc* OR boy OR boys OR girl OR girls OR schoolchild* OR 'elementary school*' OR 'primary school*' OR 'secondary school*' OR 'middle school*' OR 'junior high*' OR 'high school*' OR juvenile* OR pubescent OR 'pre pubescent' OR prepubescent OR kid OR kids))

Appendix 3: Excluded articles

The following table lists the articles excluded after full-text screening for this rapid review question. At least one reason for exclusion is provided for each article, though this may not reflect all possible reasons. Information about articles excluded after title and abstract screening is available upon request.

	Citation	Rationale
1	(2003). Summer snacking. CDS Rev, 96(3), 34. doi:#electronic resource number#.	Publication Status
2	(2011). Cooperation in USDA studies and evaluations, and full use of federal funds in nutrition assistance programs nondiscretionary provisions of the Healthy, Hunger-Free Kids Act of 2010, Public Law 111-296. Final Rule. Fed Regist, 76(125), 37979-83. doi:#electronic resource number#.	Study Design; Publication Status; Other
3	Barnidge, EK, Chapnick, M, Sawicki, M, Baker, EA, Huang, J. Food Insecurity in the Summer: A Rural–Urban Comparison of African American Households With Children. Journal of Hunger and Environmental Nutrition. 2017. 12:221-236. doi:10.1080/19320248.2016.1255581.	Outcome
4	Bleiweiss-Sande, R.,Sacheck, J. M.,Chui, K.,Goldberg, J. P.,Bailey, C.,Evans, E. W. (2020). Processed food consumption is associated with diet quality, but not weight status, in a sample of low-income and ethnically diverse elementary school children. Appetite, 151(#issue#), 104696. doi:10.1016/j.appet.2020.104696.	Intervention/Exposure; Comparator
5	Bohnert, A. M.,Bates, C. R.,Heard, A. M.,Burdette, K. A.,Ward, A. K.,Silton, R. L.,Dugas, L. R. (2017). Improving Urban Minority Girls' Health Via Community Summer Programming. J Racial Ethn Health Disparities, 4(6), 1237-1245. doi:10.1007/s40615-016-0333-x.	Intervention/Exposure
6	Brazendale, K.,Beets, M. W.,Turner-McGrievy, G. M.,Kaczynski, A. T.,Pate, R. R.,Weaver, R. G. (2018). Children's Obesogenic Behaviors During Summer Versus School: A Within-Person Comparison. J Sch Health, 88(12), 886-892. doi:10.1111/josh.12699.	Intervention/Exposure
7	Brown, C. W.,Alexander, D. S.,Warren, C. A.,Anderson-Booker, M. (2017). A Qualitative Approach: Evaluating the Childhood Health and Obesity Initiative Communities Empowered for Success (CHOICES) Pilot Study. J Racial Ethn Health Disparities, 4(4), 549-557. doi:10.1007/s40615-016-0257-5.	Intervention/Exposure
8	Bruce, J. S.,De La Cruz, M. M.,Lundberg, K.,Vesom, N.,Aguayo, J.,Merrell, S. B. (2019). Combating Child Summer Food Insecurity: Examination of a Community-Based Mobile Meal Program. J Community Health, 44(5), 1009-1018. doi:10.1007/s10900-019-00675-0.	Outcome
9	Bruce, J. S.,De La Cruz, M. M.,Moreno, G.,Chamberlain, L. J. (2017). Lunch at the library: examination of a community-based approach to addressing summer food insecurity. Public Health Nutr, 20(9), 1640-1649. doi:10.1017/s1368980017000258.	Population
10	Carpenter, L. R.,Smith, T. M.,Stern, K.,Boyd, L. W.,Rasmussen, C. G.,Schaffer, K.,Shuell, J.,Broussard, K.,Yaroch, A. L. (2017). Meals for Good: An innovative community project to provide healthy meals to children in early care and education programs through food bank catering. Prev Med Rep, 8(#issue#), 210-214. doi:10.1016/j.pmedr.2017.10.015.	Intervention/Exposure; Outcome; Population
11	Cobern, J. A.,Shell, K. J.,Henderson, E. R.,Beech, B. M.,Batlivala, S. P. (2015). The Summer Food Service Program and the Ongoing Hunger Crisis in Mississippi. J Miss State Med Assoc, 56(10), 300-2. doi:#electronic resource number#.	Study Design
12	Collins, AM, Klerman, JA. Improving Nutrition by Increasing Supplemental Nutrition Assistance Program Benefits. Am J Prev Med. 2017. 52:S179-s185. doi:10.1016/j.amepre.2016.08.032.	Included in Turner 2019 review
13	Cotwright, C. J.,Alvis, C.,de Jesus Jimenez, F.,Farmer, P.,Okoli, C.,Delane, J.,Cox, G. O. (2020). Improving Willingness to Try Fruits and Vegetables Among Low-Income Children Through Use of Characters. Health Equity, 4(1), 84-90. doi:10.1089/heq.2019.0113.	Intervention/Exposure
14	Cullen, D, Blauch, A, Mirth, M, Fein, J. Complete Eats: Summer Meals Offered by the Emergency Department for Food Insecurity. Pediatrics. 2019. 144:#pages#. doi:10.1542/peds.2019-0201.	Outcome

	Citation	Rationale
15	De La Cruz, M. M.,Phan, K.,Bruce, J. S. (2020). More to offer than books: stakeholder perceptions of a public library-based meal programme. Public Health Nutr, 23(12), 2179-2188. doi:10.1017/s1368980019004336.	Outcome
16	Di Noia, J.,Byrd-Bredbenner, C. (2013). Adolescent fruit and vegetable intake: influence of family support and moderation by home availability of relationships with afrocentric values and taste preferences. J Acad Nutr Diet, 113(6), 803-8. doi:10.1016/j.jand.2013.02.001.	Intervention/Exposure
17	Di Noia, J.,Contento, I. R. (2010). Fruit and vegetable availability enables adolescent consumption that exceeds national average. Nutr Res, 30(6), 396-402. doi:10.1016/j.nutres.2010.06.008.	Intervention/Exposure
18	Di Noia, J.,Cullen, K. W. (2015). Fruit and Vegetable Attitudes, Norms, and Intake in Low-Income Youth. Health Educ Behav, 42(6), 775-82. doi:10.1177/1090198115578752.	Intervention/Exposure; Comparator
19	Ehrenberg, S.,Leone, L. A.,Sharpe, B.,Reardon, K.,Anzman-Frasca, S. (2019). Using repeated exposure through hands-on cooking to increase children's preferences for fruits and vegetables. Appetite, 142(#issue#), 104347. doi:10.1016/j.appet.2019.104347.	Intervention/Exposure
20	El Mikati, H. K.,Boateng, A. O.,McKinney, B. M.,Haberlin-Pittz, K.,Pike, J.,Perry, P.,Hannon, T. S.,Yazel-Smith, L. (2020). Forever-Fit Summer Camp: The Impact of a 6-Week Summer Healthy Lifestyle Day Camp on Anthropometric, Cardiovascular, and Physical Fitness Measures in Youth With Obesity. J Prim Care Community Health, 11(#issue#), 2150132720903888. doi:10.1177/2150132720903888.	Intervention/Exposure
21	Gachupin, Francine C.,Morehouse, Laura,Bergier, Nicole,Thomson, Cynthia (2019). Describing a Public-Health Summer Camp for Underserved Children: Healthy 2B Me. #journal#, 90(4), 39-51. doi:#electronic resource number#.	Intervention/Exposure
22	George, G. L.,Schneider, C.,Kaiser, L. (2016). Healthy Lifestyle Fitness Camp: A Summer Approach to Prevent Obesity in Low-Income Youth. J Nutr Educ Behav, 48(3), 208-12.e1. doi:10.1016/j.jneb.2015.12.010.	Intervention/Exposure
23	Gordon, AR, Briefel, RR, Collins, AM, Rowe, GM, Klerman, JA. Delivering Summer Electronic Benefit Transfers for Children through the Supplemental Nutrition Assistance Program or the Special Supplemental Nutrition Program for Women, Infants, and Children: Benefit Use and Impacts on Food Security and Foods Consumed. J Acad Nutr Diet. 2017. 117:367-375.e2. doi:10.1016/j.jand.2016.11.002.	Included in Turner 2019 review
24	Gorman, K. (2006). Kid's summer shape-up: Encourage better snack choices and more activity. Obesity Management, 2(3), 119. doi:10.1089/obe.2006.2.119.	Intervention/Exposure; Publication Status; Other
25	Halpern-Felsher, B.,McLaughlin, S. (2016). The Importance of Scientific Mentoring Programs for Underrepresented Youth. J Health Dispar Res Pract, 9(5), 87-89. doi:#electronic resource number#.	Intervention/Exposure; Outcome
26	Hanson, K. L.,Kolodinsky, J.,Wang, W.,Morgan, E. H.,Pitts, S. B. J.,Ammerman, A. S.,Sitaker, M.,Seguin, R. A. (2017). Adults and Children in Low-Income Households that Participate in Cost-Offset Community Supported Agriculture Have High Fruit and Vegetable Consumption. Nutrients, 9(7), #Pages#. doi:10.3390/nu9070726.	Intervention/Exposure
27	Hatcher, Daniel W.,FitzSimons, Crystal Weedall,Turley, Jill R. (2014). The Role of Out-of-School Time in Reducing Hunger and Preventing Obesity. #journal#, #volume#(#issue#), #Pages#. doi:#electronic resource number#.	Outcome; Publication Status; Other
28	Heim, S.,Stang, J.,Ireland, M. (2009). A garden pilot project enhances fruit and vegetable consumption among children. J Am Diet Assoc, 109(7), 1220-6. doi:10.1016/j.jada.2009.04.009.	Intervention/Exposure
29	Hopkins, L. C.,Fristad, M.,Goodway, J. D.,Eneli, I.,Holloman, C.,Kennel, J. A.,Melnyk, B.,Gunther, C. (2016). Camp NERF: methods of a theory-based nutrition education recreation and fitness program aimed at preventing unhealthy weight gain in underserved elementary children during summer months. BMC Public Health, 16(1), 1122. doi:10.1186/s12889-016-3765-7.	Other
30	Hopkins, L. C.,Fristad, M.,Goodway, J. D.,Melnyk, B.,Eneli, I.,Holloman, C.,Kennel, J. A.,Webster, A.,Sharn, A. R.,Gunther, C. (2018). Feasibility and acceptability of technology-based caregiver engagement strategies delivered in a summertime childhood obesity prevention intervention: results from an internal pilot of the Camp NERF (Nutrition, Education, Recreation, and Fitness) study. Pilot Feasibility Stud, 4(#issue#), 153. doi:10.1186/s40814-018-0340-2.	Outcome

	Citation	Rationale
31	Hopkins, L. C.,Gunther, C. (2015). A Historical Review of Changes in Nutrition Standards of USDA Child Meal Programs Relative to Research Findings on the Nutritional Adequacy of Program Meals and the Diet and Nutritional Health of Participants: Implications for Future Research and the Summer Food Service Program. Nutrients, 7(12), 10145-67. doi:10.3390/nu7125523.	Study Design; Outcome
32	Hopkins, L. C.,Hooker, N. H.,Gunther, C. (2017). Securing a Stop to the Summer Setback: Policy Considerations in the Future Expansion of the Summer Electronic Benefit Transfer for Children. J Nutr Educ Behav, 49(8), 692-699.e1. doi:10.1016/j.jneb.2016.10.010.	Study Design
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	Citation	Rationale
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	Citation	Rationale
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