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Scoping Review of Family and Community Engagement Strategies Used in School-Based Interventions to Promote Healthy Behaviors

Shannon L. Michael, PhD, MPH^a, Seraphine Pitt Barnes, PhD^b, Natalie J. Wilkins, PhD^c

^aSenior Health Scientist, Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, GA.

^bSenior Health Scientist, Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, GA.

^cHealth Scientist, TeamLead, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention, Atlanta, GA.

Abstract

BACKGROUND: School efforts to promote health among students are more successful when families and community members are involved.

METHODS: We conducted a scoping review to summarize and categorize family and community engagement strategies used in US school and out-of-school time (OST) interventions to address physical activity (PA) and nutrition in kindergarten through 12th grade students.

RESULTS: The National Network of Partnership Schools' Six Keys to Success framework was useful in organizing the types of family and community engagement strategies used in included interventions. Many interventions used multiple family and community engagement strategies, with the most common being communicating with families and community members; providing support or education to families; and collaborations among school/OST program and community to support students and their families.

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Address correspondence to: Shannon L. Michael, Senior Health Scientist, (sot2@cdc.gov), Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, GA.

Conflict of Interest

The authors do not have any conflict of interest.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Human Subjects Approval Statement

Preparation of this paper did not involve primary research or data collection involving human subjects, and therefore, no institutional review board examination or approval was required.

SUPPORTING INFORMATION

The following Supporting Information is available for this article:

Additional supporting information may be found online in the Supporting Information section at the end of the article.

CONCLUSIONS: This review identified six common family and community engagement strategies used in school and OST interventions for PA and nutrition. Including family and community engagement strategies in school and OST interventions could play an important role in maximizing support, resources, and expertise to promote healthy behaviors among all students.

Keywords

parent engagement/involvement; family engagement/involvement; community engagement/involvement; school health programs; physical activity; nutrition

Physical activity (PA) and healthy eating—important behaviors that affect the health and well-being of children and adolescents—have been declining over the past decade.^{1–3} The school environment is ideal for providing opportunities for students to learn about and practice these healthy behaviors, and these behaviors can further be promoted and reinforced by engaging parents (herein referred to collectively as “families,” which includes biological parents; other biological relatives such as grandparents, aunts, uncles, or siblings; and nonbiological parents such as adoptive, foster, or stepparents), community members, and organizations.^{4,5} Partnerships among the home, school, and community environments can help deliver clear and consistent messages to students, encourage the development of healthy behaviors, assist students in receiving necessary preventive care, and provide access to resources and supportive networks.^{5–7}

While much of the research on family and community engagement in schools has focused on students’ academic achievement,^{8,9} studies have shown positive associations between family and community engagement and healthy behaviors among students^{10–13}—with authors supporting the inclusion of family and community engagement strategies.^{11,14} Despite the interest in using family and community engagement strategies in school-based PA and nutrition interventions, little effort has been made to identify, categorize, and explain the different types of strategies used.

In the education literature, studies have used the National Network of Partnership Schools’ (NNPS) Six Keys to Success framework to identify and organize specific strategies for family and community engagement to increase student success.¹⁵ The six keys to success (ie, types of involvement) are communicating, parenting, volunteering, learning at home, decision-making, and collaborating with the community. This framework is based on Epstein and colleagues’ theoretical perspective called “overlapping spheres of influence,” which posits that three contexts—home, school, and community—act as overlapping spheres of influence on children and on conditions and relationships in the three contexts.¹⁵ This framework can be used to identify family and community engagement strategies used in existing school and out-of-school time (OST) PA and nutrition interventions.

To our knowledge, no review has yet been conducted to identify family and community engagement strategies used in school and in OST interventions to address PA and nutrition. Researchers, schools, and other state and local practitioners could use such information as a basis for actions to engage families and community members to promote healthy behaviors. We aimed to (1) identify strategies that current school and OST interventions are using to engage families, community members and organizations in PA and nutrition interventions;

(2) describe study and population characteristics by the family and community engagement strategies identified; and (3) examine if studies that assessed students' PA and dietary behaviors had results in the expected direction by the family and community engagement strategies identified.

METHODS

We used the Joanna Briggs Institute principles for conducting a systematic scoping review to guide our process for this review and completed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA-ScR) extension for scoping reviews checklist.^{16,17}

Search Strategy

We identified articles including family and community engagement within a larger systematic review of US school-based interventions to address PA and nutrition. Research librarians developed search strategies for the review of reviews (January 2010 to June or October 2018) and seven separate searches for individual articles (2010 to 2020). All searches queried Medline (OVID), PsycInfo (OVID), CINAHL (EBSCO), Scopus, ERIC (ProQuest), Education Database, and Sociological Abstracts. More details about the methodology for the overall systematic review can be found in the introduction and methods paper to this special issue.¹⁸

Study Selection and Data Extraction

We established inclusion and exclusion criteria as part of the larger systematic review process, as described in Table 1 of the introduction and methods paper.¹⁸

As part of the data extraction process, paired SMEs indicated whether articles included a family or community engagement component. The included studies reflect a specific subset of the family and community engagement literature specifically focused on school-based PA and nutrition programs, and not engagement practices in schools more broadly. Our review is limited to only the articles included in the larger systematic review. Any uncertainties on the full data abstraction process and identification and categorization of family and community engagement components were discussed among SMEs until consensus was reached. Additional details about systematic review methods, documentation, data extraction, and risk of bias assessment can be found in the introduction and methods paper at the start of this special issue.¹⁸

Synthesizing the Data

After we identified articles with family and community engagement components, two authors (SLM, SPB) reviewed and discussed 119 articles that included family and community engagement. The authors organized the articles into six family and community engagement strategies (Table 1). These strategies are based on the NNPS Six Keys to Success framework.¹⁵ Articles were removed from this review if they did not include family and community engagement strategies. The PRISMA diagram shows a summary of the number of articles included (Figure 1).

Articles that included more than one of the six family and community strategies were included in each of the strategies addressed. Once studies were organized by strategy, the authors conducted a simple count analysis to present the overall study characteristics for each strategy in terms of study design, school level, location type, race/ethnicity, and health behaviors assessed. Because family or community engagement components were part of broader PA and nutrition programs, and their effectiveness was not tested separately in almost all of the studies, we could not explicitly state if family or community engagement components directly affected the intended outcomes of studies. However, we were able to state the directionality of results for PA and dietary intake assessed in the studies by each of the six strategies. We determined whether the observed outcomes for physical activity and dietary intake were in the expected direction. The aim of this scoping review is to examine how families and community members are engaged in school health interventions that promote PA and nutrition and the general directionality of the results, not to provide an in-depth synthesis or analysis of the results of the studies reviewed.

FINDINGS

This scoping review includes 67 articles, with 66 unique studies describing 67 interventions, about family and community engagement strategies within school and OST interventions to address PA and nutrition. Forty-six articles reported on both family and community engagement strategies in the school-based and OST interventions^{19–64}; 15 articles reported only on family engagement strategies^{65–79}; and 6 articles reported only on community engagement strategies.^{80–85}

Table 2 presents study design and demographic characteristics (eg, race/ethnicity of students, school-level) in aggregate by each of the family and community engagement strategies. Across the 66 unique studies, 41 were quasi-experimental design, and 25 were randomized control trials or controlled clinical trials. The majority focused on the elementary school level (n = 35) and on interventions in schools in which the majority population comprises minority groups (ie, majority black, majority Hispanic, or majority racial or ethnic minority groups) (n = 43). Half of the studies did not report location type (n = 32), but the majority of studies reporting location type were in an urban setting (n = 22). Table S1 includes detailed information about each included article, arranged by study, including intervention components and characteristics, population demographics, and risk of bias assessments. In the following subsections of the results, the “n” will refer to the number of studies and interventions; however, the “n” will not always match the number of articles cited because some of the articles included two studies and interventions, and some of the studies and interventions were published in multiple articles examining different outcomes (see the first column in Table 2 for the number of articles, studies, and interventions for each strategy).

Communication with Families and Community Members

Communicating with families was a frequently used family engagement strategy (n = 41).^{19,21–23,25,26,28,30,31,35–37,39,40,42–44,47,49–54,56–59, 61,63,66,67,69,70,72–79} None of the studies specifically explained how schools communicate with community members about school health policies, practices, and programs. Schools used a variety of approaches

to communicate with families about school health policies, practices, and programs including newsletters, e-mail or websites, parent listservs, telephone calls, parent information nights, event calendars, information on bulletin boards, parent forums, and other informational materials such as parent handbooks, booklets, and postcards. These communications typically aimed to make families aware of healthy eating and PA; get families' support for and participation in school health initiatives; or provide specific information to families about the importance of these healthy behaviors. Some of the interventions also provided reports about students' fitness results and overall health.^{31,57} Among interventions that included this strategy to engage families, 19 of the 25 that assessed PA^{19,22,23,25,26,30,31,35,37,39,44,56,63,66,72-76} and 14 of the 22 that assessed dietary intake^{19,22,23,28,30,35,37,39,40,61,73,79} had at least some positive results.

Educational Classes and Support for Families

Providing educational classes and support for families was also a common strategy (n=28).^{19,20,23-25,31,33,35-38,46,47,49,50,52-58,60,64,66,67,75,79} Family nights or family wellness events are an example of this strategy. These events were designed to attract families to the school to engage them in health education and promotion activities, which could include skill-building workshops for families such as preparing healthy meals or physically active games. Other interventions used internet classes, home visits, and workshops or classes on a specific health topic for families to increase knowledge and skills related to PA and nutrition. Among interventions that included this strategy to engage families, 11 of the 15 that assessed PA^{19,20,23,24,31,33,35,37,56,66,75} and 11 of 15 that assessed dietary intake^{19,20,23,24,33,35,37,46,60,79} had at least some positive results.

Volunteer Opportunities for Family and Community Members

Seven interventions engaged families^{20,22,24,30,45,48,68} and nine engaged community members^{20,25,26,30,36,38,45,51,55} in volunteer opportunities. Three of these interventions engaged both families and community members.^{20,30,45} These interventions provided opportunities for families and community members to use their time and skills to support school health initiatives. Examples of family and community member volunteer opportunities included preparing and serving meals to students, providing social support for a PA program, developing a community action team to support activities in the school, and leading a district-wide fitness challenge. Among interventions that included this strategy to engage families, four of the five that assessed PA^{20,22,30,48} and all five that assessed dietary intake^{20,22,24,30,48} had at least some positive results. Among interventions that included this strategy to engage community members, four of the seven that assessed PA^{20,25,26,30} and two of the four that assessed dietary intake^{20,30} had at least some positive results.

Involvement of Families and Community Members in Decision-Making

Ten interventions involved families and community members in decision-making for school health policies and practices, with five reporting involvement of both families and community members in decision-making,^{20,32,34,38,41} three reporting involvement of families only,^{27,35,77} and two reporting involvement of community members only.^{26,37} Families and community members were involved in decision-making by being on school health councils, advisory boards, or taskforces to provide input on the planning and

implementation of nutrition and PA policies, practices, and programs. Among interventions that included this strategy to engage families, all four that assessed PA^{20,34,35,41} and all three that assessed dietary intake^{20,34,35} had at least some positive results. Among interventions that included this strategy to engage community members, all five that assessed PA^{20,26,34,37,41} and all three that assessed dietary intake^{20,34,37} had at least some positive results.

Reinforcement of Health Knowledge and Practices in the Home and Community Environment

Nineteen interventions provided students and their families with activities that could be done at home to reinforce messages and practices learned about nutrition and PA.^{29,33,39,48,52,53,56,58,62,63,65,68,71–74,78,79} Some interventions provided healthy eating and PA take-home messages for students to review with their families, whereas others provided students with take-home activities to do with their families to encourage healthy eating and PA habits. One intervention had the school nurse meet with families to discuss eating and PA habits and identify potential health goals for families.⁵⁸ Two of the interventions were OST programs that provided families with take-home activities to help reinforce healthy eating and physical activity messages and practices.^{29,39} Among interventions that included this strategy to engage families, 9 of the 12 that assessed PA^{29,33,39,48,53,56,72,74,79} and 8 of the 10 that assessed dietary intake^{33,39,48,62,71,73,79} had at least some positive results.

Collaborations Among School and Community to Support Students and Their Families

Forty-three interventions focused on school, community, and family collaborations to promote healthy behaviors among students.^{19–54,56–64} Six additional interventions focused on collaborations between school and community members or organizations but did not include families.^{80–85} Many of the interventions linked students and their families to resources, programs, and services provided by the community. Other collaborations included promoting participation in community-based health events, providing coupons from community businesses for use by families, and receiving financial support from community groups to promote and implement school health policies and practices. Several interventions engaged staff members from universities as well as health centers and other health organizations to support and deliver school health activities and programs. Among interventions that included school, community, and family collaborations, 19 of the 25 that assessed PA^{19,20,22–24,26,29–31,33–35,37,39,41,44,48,56,63} and 20 of the 24 that assessed dietary intake^{19–24,28,30,33–35,37,39,46,48,60–62} had at least some positive results. Among the interventions that included only school or OST program and community collaborations, all two that assessed PA^{80,82} and all three that assessed dietary intake^{80,81,84} had at least some positive results.

DISCUSSION

This scoping review systematically identified and categorized family and community engagement strategies used in school and OST interventions to promote PA and nutrition among school-aged students. Although the effect of family and community engagement strategies on health behaviors is beyond the scope of this review, we note that most studies

did not separately assess the effect of the family and community engagement strategies on health behavior outcomes. Therefore, we present evidence in this review on how families and community members were engaged in interventions, and generally, if the results for interventions that included family and community engagement strategies were in the expected direction.

The NNPS's Six Keys to Success framework served as a useful way to identify and categorize the family and community strategies used in the 66 studies included in this review. Many interventions used the strategies of communicating with families (n=41) or providing education or support to families (n = 28). Previous studies have shown the value of communicating and educating families on PA and healthy eating.⁸⁶ While receiving communications about school health practices and programs was common for families, none of the interventions explained how schools communicated with community members or organizations about these school health efforts. The strategy of providing support and education to families was implemented differently across the interventions, making it difficult to identify whether one approach was better than the other or how best to implement this strategy.

We also found that collaborating with the community, including working with staff from universities or local health organizations, was another strategy used often by schools in the interventions included in this review. This strategy emphasizes the importance of schools engaging community members and organizations to promote healthy behaviors. In a previous review, diet and PA interventions in a school-based setting with home and community components were found to have the most evidence for effectiveness.¹⁰ However, that review did not identify specific strategies used within these components that contributed to their effectiveness. Other reviews also have shown that school partnerships with community groups provide additional services, resources, and supports, and that these partnerships have positive effects on student educational and health outcomes.^{5,87}

In our review, few interventions used the strategies of providing volunteer opportunities, decision-making, and reinforcing health messages in the home and community. These strategies require more time and effort from families and community members to be engaged as well as for school staff to identify and support these efforts, which might explain why fewer interventions used these strategies. Across all six family and community engagement strategies, we found, in general, many of the studies looking at these strategies within comprehensive interventions had results in the expected direction (27 of the 35 studies that assessed PA and 26 of the 35 that assessed dietary intake). Few of the studies had results in the unexpected direction (1 of the 35 that assessed PA and 3 of the 35 that assessed dietary intake). While we cannot attribute the findings solely to family and community engagement strategies, it does underscore that strategies for family and community engagement in school and OST interventions that promote PA and nutrition may be important components but merits further investigation.

Similar to previous reviews,¹¹⁻¹³ we were unable to document the effect of family and community strategies on PA and dietary intake because these strategies were rarely evaluated separately. However, three studies included in our review did examine this

effect by comparing intervention arms with and without a family (or community) component.^{19,25,53} Two interventions that included at least three family engagement strategies (ie, communicating with families, educating and supporting families, and collaborations among school/OST program and community to support students and their families) demonstrated increases in PA levels^{19,25} and consumption of daily fruits and vegetables among elementary students in urban settings.¹⁹ Another intervention showed an increase in elementary school students' fitness levels in the intervention arm that used four family engagement strategies (ie, communicate, support/educate, reinforce health messages in the home, and collaborate with community).⁵³ This study also examined community engagement strategies separately, but these strategies did not have an effect on PA and dietary intake.⁵³ This might have been due to the way the community engagement strategies were measured.

We found many of the interventions included in this review used multiple family and community engagement strategies. While we were unable to assess whether single or multiple strategies are effective, we were able to identify how many studies used more than 1 strategy. Of the 66 studies, 11 used 1 strategy, 27 used 2, 17 used 3, and 11 used 4. None of the studies used more than 4 strategies. Not surprisingly, most of these studies were focused on the elementary school level, where more family and community engagement is common. More research is needed to understand the effect of family and community engagement on health behaviors as well as which strategies are best in a given school level and population.

Lastly, family and community engagement in schools can be used as a powerful health equity strategy. Several of the studies included in this review had written communications in multiple languages, offered interpreters, and asked families about their schedules and preferences to help all families have access to the information they needed to promote their children's PA and healthy dietary behaviors. These efforts build strong and trusting partnerships between home, school, and community to help families support their children with learning about and practicing healthy behaviors.⁸⁸ In addition, these efforts can help families understand the health-related information being taught, so they can reinforce these messages in the home. These efforts also can help families feel welcomed in the school, so they would feel comfortable volunteering and being more involved in the decision making of school health policies and practices. Strengthening these partnerships and providing information to families to have a voice and improve their children's health and their own health can have ripple effects on health and educational outcomes, regardless of cultural background, education, and income level.^{89,90} Given this, more research is needed to identify how all families can have access to the information and support needed to promote their children's physical activity and dietary intake behaviors as well as to be involved in decision-making on these health behaviors that affect their children's learning and health.

Limitations

The introduction and methods article at the start of this special issue outlines some limitations of the overall methodology we used, including the potential for social desirability bias and detection bias inherent in studies that do not use blinding, and our inability to

present standardized outcomes or measures of effect size.¹⁸ Some additional limitations should be noted. We coded the presence of family and community engagement approaches within intervention studies designed to support student PA and diet quality as opposed to conducting independent searches related to family and community engagement. While we implemented a rigorous review process, studies could have been omitted because we only reviewed articles that were identified as having family and/or community components within the studies included in the larger systematic review of school-based interventions to address PA and nutrition.

We sought to categorize each study according to the family and community engagement strategy used, and to do so, we used the description of parent/family engagement provided in the study. Although authors may not have fully described the family and/or community engagement strategy, we tried our best to include the study under the appropriate strategy. Lastly, most of the studies provided comprehensive or multi-component interventions, so we could not isolate the effect of the family and community engagement strategies. As such, the expected direction of the results we provide in the results section should be carefully interpreted.

IMPLICATIONS FOR SCHOOL HEALTH POLICY, PRACTICE, AND EQUITY

State, district, and school level policies and practices can use the WSCC framework to promote the health and success of students with an emphasis on family and community engagement.⁹¹ Two components of WSCC support family engagement and community involvement. A review of reviews demonstrated the value of these two components in school health programs to help schools foster partnerships to support, share, and maximize resources.⁵ While more research is needed to identify the most effective family and community engagement strategies on health behaviors, studies have shown that family and community engagement happens when school leadership and teachers make it a priority, want and expect family and community engagement, and promote engagement of families and community members.^{15,92–94}

School leaders and administrators can set expectations about creating strong partnerships among families, schools, and community members. Skills to engage families in student learning are also critical. Professional development on strategies, tools, and materials for planning, evaluation, and ongoing support can increase the capacity of schools and districts to build and sustain better partnerships.^{15,95} For example, CDC's *Parents for Healthy Schools* can be used to motivate and educate parents to help create healthy school environments.⁹⁶ Additionally, community-based schools and community organizing can advance family and community engagement in school health programs as families and other community members work together to help to move low resource and low performing schools toward better resource and performance trajectories with intentional shared power and responsibilities.^{15,89,90}

This scoping review identifies specific family and community engagement strategies that researchers can consider as they develop school and OST interventions to promote healthy behaviors among children and adolescents. Researchers can consider the following

actions as they develop interventions: (1) clearly identify specific family and community engagement strategies that are being used in the intervention; (2) isolate the effect of family and community engagement strategies on health behaviors and other outcomes; and (3) decide whether to examine single or multiple family and community engagement strategies within their intervention. Being able to perform these additional actions could provide policymakers, school administrators, and other leaders in school health more evidence for policies, programs, and practices at the school level.

Conclusions

Most of the evidence to date on family and community engagement exists within multi-component school and OST interventions on PA and nutrition. While it would be useful to understand how specific family and community engagement strategies affect student health behaviors, there is value in implementing these multicomponent approaches, including using these six family and community engagement strategies within school and OST interventions. This scoping review demonstrated a promising way to identify, categorize, and explain the different types of family and community engagement strategies used in school and OST interventions to promote PA and healthy eating among students in grades K-12. A big step forward would be for future research to better identify and explain the family and community engagement strategies used as well as assess the resources needed to incorporate these approaches to improve student health behaviors and outcomes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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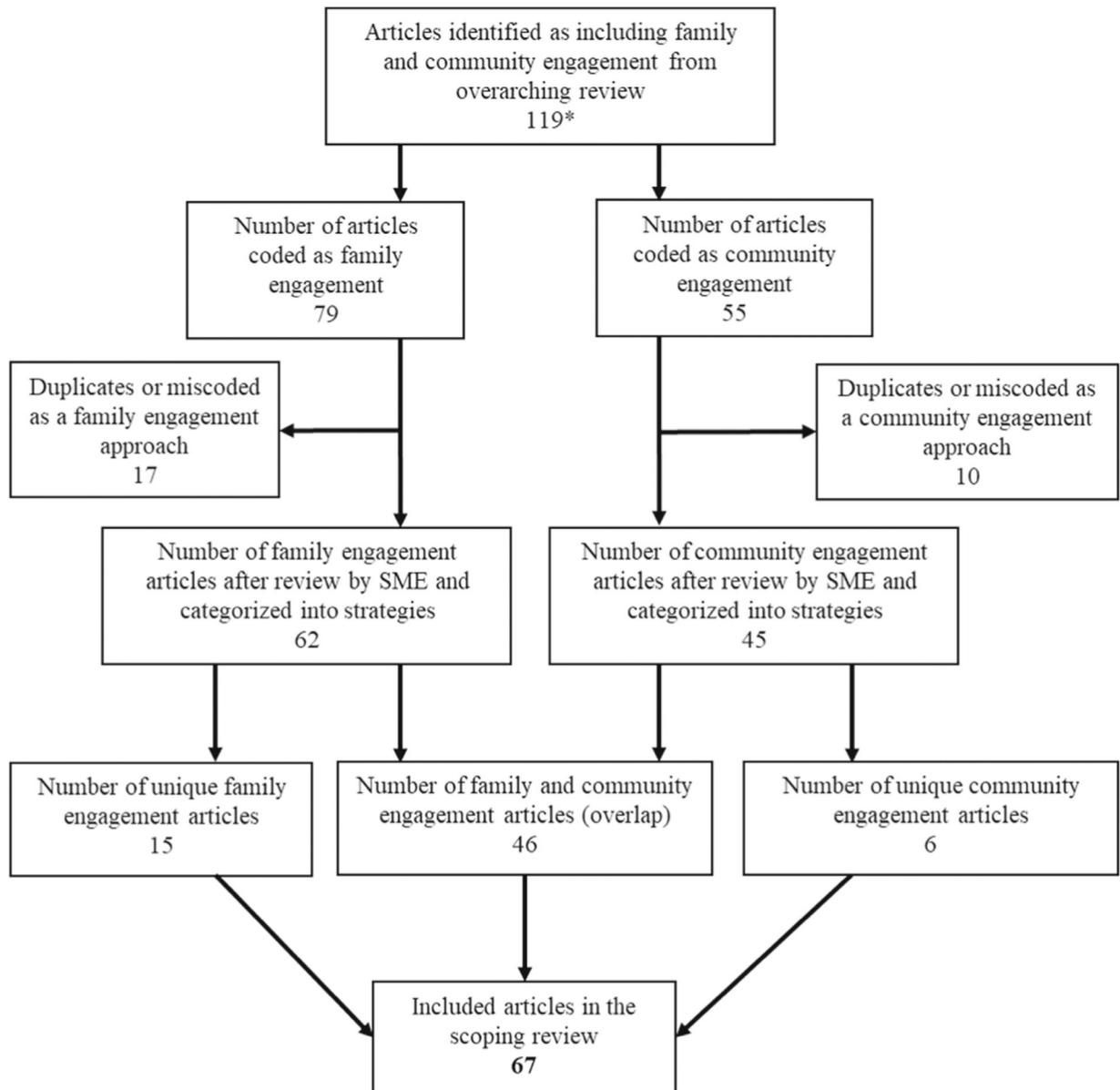


Figure 1. PRISMA Diagram for Family and Community Engagement Articles

Abbreviations: SME, subject matter expert. *There were 314 peer-reviewed articles screened for family and community engagement. Some articles were included in both family and community categories.

Table 1.

Description of Family and Community Engagement Strategies

#	Family* and Community Engagement Strategy [†]	Description
1	Communication with families and community members	Establish clear communication channels between school staff and families and community members and organizations to inform them about school health-related activities such as learnings from health education classes, screening programs, nutrition and physical activity programs, and other health-related events and other community-based programs that focus on family and student health.
2	Education classes and support for families	Provide opportunities to build families' knowledge, skills, and leadership to support the development of positive health attitudes and behaviors among students and help build healthy home and school environments.
3	Volunteer opportunities for family and community members	Offer a variety of ways for parents and community members and organizations to become involved as school volunteers to assist with activities such as enriching health and physical education classes, improving the delivery of health services, supporting taste testing activities, and helping maintain school gardens.
4	Involvement of families and community members in decision-making	Include families and community members and organizations as participants in school decisions, school activities, and advocacy activities through the Parent Teacher Association or Parent Teacher Organization, school health council, or school action teams to plan special health-related events. Families and community members and organizations also can serve on school committees or in leadership positions to assist with school decisions in developing school health policies and practices. This also includes input from families (eg, focus groups or surveys) on things like what programs to offer or how they liked a program.
5	Reinforcement of health knowledge and practices in the home and community environment	Engage families in homework assignments or other health activities at home to reinforce messages and practices at home, in school, and in out-of-school time programs. This also includes out-of-school time programs providing activities and assignments for students to do with family members in the home or community.
6	Collaborations among school and community to support students and their families [‡]	Coordinate information, resources, and services from community-based organizations, businesses, cultural and civic organizations, social service agencies, faith-based organizations, health clinics, colleges and universities, and other community groups that can benefit students and families. This includes families obtaining useful information and resources from these organizations and helping get access to community programs, services, and resources. This also includes having health professionals outside of the school (e.g., university faculty members and graduate students, non profit organizations, and local health departments) lead, support, and/or deliver school health activities and programs specific to physical activity and nutrition in schools and OST programs.

* The word family is used to refer to the adult primary caregiver(s) of a child's basic needs (eg, feeding, safety). This includes biological parents; other biological relatives such as grandparents, aunts, uncles, or siblings; and nonbiological parents such as adoptive, foster, or stepparents. Families guide the child's upbringing, which includes the interaction processes between family and child that contribute to the child's emotional and social development.

[†]The six family and community engagement strategies are based on the six keys to success (ie, types of involvement)¹⁵ and the Centers for Disease Control and Prevention's *Strategies for Parent Involvement in School Health and Parents for Healthy Schools*.^{88,96}

[‡]Collaboration examples vary across interventions. Schools and OST programs might collaborate with community members and organizations to support and provide resources for students and families. They also might collaborate with community members and organizations to lead or deliver programs.

Table 2.

Aggregated Description of Physical Activity and Nutrition Interventions That Included Family and Community Engagement Strategies

		Study Participant Characteristics			Intervention Outcomes* +: supports hypothesis; = no effect; -: does not support hypothesis		
Family and community engagement strategies used in interventions (Number of articles/studies/interventions)		Study design [†]	School level	Location type [‡]	Race/ethnicity [§]	Student physical activity behaviors [¶]	Student dietary intake behaviors [¶]
Communication with families and community members							
Family engagement N = 42/41 ^{¶/41}	RCT/CCT (n = 15) QED(n = 26)	Elementary (n = 23) Middle (n = 2) High (n = 2) Multiple (n = 11) Not reported (n = 3)	Urban (n = 12) Rural (n = 5) Suburban (n = 3) Not reported (n = 21)	Majority white (n = 8) Majority black (n = 7) Majority Hispanic/Latino (n = 9) Majority racial and ethnic minority groups (n = 10) Race/ethnicity varied (n = 1) Not reported (n = 6)	Total interventions: n = 25 + (n = 19) = (n = 12) - (n = 0)	Total interventions: n = 22 + (n = 14) = (n = 16) - (n = 2)	
Community engagement N = 0/0/0	NA	NA	NA	NA	NA	NA	
Education classes and support for families							
Family engagement N = 28/28 ^{¶/28}	RCT/CCT (n = 8) QED(n = 20)	Elementary (n = 18) Middle (n = 1) High (n = 0) Multiple (n = 5) Not reported (n = 4)	Urban (n = 10) Rural (n = 4) Suburban (n = 2) Not reported (n = 12)	Majority white (n = 4) Majority black (n = 5) Majority Hispanic/Latino (n = 9) Majority racial and ethnic minority groups (n = 7) Race/ethnicity varied (n = 1) Not reported (n = 2)	Total interventions: n = 15 + (n = 11) = (n = 9) - (n = 0)	Total interventions: n = 15 + (n = 11) = (n = 10) - (n = 2)	
Community engagement N = 0/0/0	NA	NA	NA	NA	NA	NA	
Volunteer opportunities for family and community members							
Family engagement N = 7/7 ^{¶/7}	RCT/CCT (n = 2) QED(n = 5)	Elementary (n = 5) Middle (n = 1) High (n = 0) Multiple (n = 0) Not reported (n = 1)	Urban (n = 3) Rural (n = 0) Suburban (n = 0) Not reported (n = 4)	Majority white (n = 2) Majority black (n = 0) Majority Hispanic/Latino (n = 4) Majority racial and ethnic minority groups (n = 1) Not reported (n = 0)	Total interventions: n = 5 + (n = 4) = (n = 3) - (n = 1)	Total interventions: n = 5 + (n = 5) = (n = 3) - (n = 0)	
Community engagement N = 9/9 ^{¶/9}	RCT/CCT (n = 2) QED(n = 7)	Elementary (n = 4) Middle (n = 1) High (n = 1) Multiple (n = 1) Not reported (n = 2)	Urban (n = 3) Rural (n = 0) Suburban (n = 0) Not reported (n = 6)	Majority white (n = 1) Majority black (n = 2) Majority Hispanic/Latino (n = 4) Majority racial and ethnic minority groups (n = 1) Not reported (n = 1)	Total interventions: n = 7 + (n = 4) = (n = 5) - (n = 1)	Total interventions: n = 4 + (n = 2) = (n = 3) - (n = 0)	

Involvement of families and community members in decision-making

Family and community engagement strategies used in interventions (Number of articles/studies/interventions)	Study Participant Characteristics				Intervention Outcomes* +: supports hypothesis; = no effect; -: does not support hypothesis
	Study design [†]	School level	Location type [‡]	Race/ethnicity [§]	
Family engagement N = 8/8 [¶] /8	RCT/CCT (n = 2) QED(n = 6)	Elementary (n = 4) Middle (n = 0) High (n = 0) Multiple (n = 3) Not reported (n = 1)	Urban (n = 0) Rural (n = 2) Suburban (n = 0) Not reported (n = 5) Not applicable (n = 1)	Majoritywhite (n = 2) Majority black (n = 2) Majority Hispanic/Latino (n = 3) Majority racial and ethnicminority groups (n = 0) Not reported (n = 1)	Student physical activity behaviors : n = 4 Total interventions: n = 3 + (n = 4) = (n = 1) - (n = 0)
Community engagement N = 9/7 [¶] /7	RCT/CCT (n = 2) QED(n = 5)	Elementary (n = 3) Middle (n = 0) High (n = 0) Multiple (n = 4) Not reported (n = 0)	Urban (n = 1) Rural (n = 0) Suburban (n = 0) Not reported (n = 5) Not applicable (n = 1)	Majoritywhite (n = 1) Majority black (n = 2) Majority Hispanic/Latino (n = 1) Majority racial and ethnicminority groups (n = 1) Not reported (n = 2)	Student dietary intake behaviors : n = 3 Total interventions: n = 5 + (n = 5) = (n = 1) - (n = 0)
Reinforcement of health knowledge and practices in the home and community environment					
Family engagement N = 18/19 [¶] /19	RCT/CCT (n = 10) QED(n = 9)	Elementary (n = 14) Middle (n = 0) High (n = 1) Multiple (n = 2) Not reported (n = 2)	Urban (n = 4) Rural (n = 2) Suburban (n = 1) Not reported (n = 12)	Majoritywhite (n = 6) Majority black (n = 3) Majority Hispanic/Latino (n = 3) Majority racial and ethnicminority groups (n = 5) Not reported (n = 2)	Total studies/interventions: n = 12 Total interventions: n = 10 + (n = 9) = (n = 5) - (n = 0)
Community engagement N = 0/0/0	NA	NA	NA	NA	NA
Collaborations among school and community to support students and their families[#]					
Familyandcommunityengagement N = 45/43 [¶] /44	RCT/CCT (n = 16) QED(n = 27)	Elementary (n = 24) Middle (n = 4) High (n = 1) Multiple (n = 8) Not reported (n = 6)	Urban (n = 13) Rural (n = 5) Suburban (n = 2) Not reported (n = 22) Not applicable (n = 1)	Majoritywhite (n = 11) Majority black (n = 6) Majority Hispanic/Latino (n = 11) Majority racial and ethnicminority groups (n = 5) Not reported (n = 5)	Total interventions: n = 24 Total studies/interventions: n = 25 + (n = 19) = (n = 14) - (n = 1)
Community engagement only N = 6/6 [¶] /6	RCT/CCT (n = 1) QED(n = 5)	Elementary (n = 1) Middle (n = 0) High (n = 3) Multiple (n = 0) Not reported (n = 2)	Urban (n = 3) Rural (n = 1) Suburban (n = 0) Not reported (n = 2) Not applicable (n = 0)	Majoritywhite (n = 2) Majority black (n = 0) Majority Hispanic/Latino (n = 1) Majority racial and ethnicminority groups (n = 2) Not reported (n = 1)	Total interventions: n = 3 Total studies/interventions: n = 3 + (n = 3) = (n = 1) - (n = 0)

Abbreviations: NA, not applicable; QED, quasi-experimental design; RCT/CCT, randomized control trial or controlled clinical trial.

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* Examples of outcomes that support hypothesis and would be coded include (+): increased consumption of fruits, vegetables, whole grains; increased intake of water, fiber; and decreased intake of sodium, added sugars, saturated fat, and sugar-sweetened beverages (eg, soda), minutes of physical activity, and physical fitness.

† Examples of QED: 2-group cohort, including regression discontinuity; 1-group cohort; interrupted time series; repeat cross-sectional.

‡ Not applicable indicates the study is nationally representative or state representative; not reported indicates that authors did not describe location type.

§ Majority defined as 50% of population from a specific racial or ethnic group.

|| Totals for measured outcomes may exceed the number of interventions evaluating a given outcome because a single intervention may be counted more than once if it reports mixed findings; for example, an intervention that reported increased consumption of fruits but not vegetables would count as both a (+) and (=) for dietary intake. Similarly, the number of interventions may exceed the number of articles since a study may have more than one intervention arm.

¶ Numbers under study design, school level, location type, and race/ethnicity pertain to the number of studies.

The first row under this strategy includes interventions that promoted collaborations among school/OST program and community to support students and their families. The second row includes interventions that promoted collaborations among school/OST program and community to support students.